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Problem Video Gaming Among Children Enrolled in Tertiary Weight Management Programs

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Abstract

Prior studies show seven percent to nine percent of children demonstrate gaming behaviors that affect a child's ability to function (e.g., problem gaming), but none have examined the association between problem gaming and weight status. The objective of this study was to determine the prevalence of problem gaming among children enrolled in tertiary weight management programs. We administered a computer-based survey to a convenience sample of children aged 11–17 years enrolled in five geographically diverse pediatric weight management (PWM) programs in the COMPASS (Childhood Obesity Multi-Program Analysis and Study System) network. The survey included demographics, gaming characteristics, and a problem gaming assessment. The survey had 454 respondents representing a diverse cohort (53 percent females, 27 percent black, 24 percent Hispanic, 41 percent white) with mean age of 13.7 years. A total of 8.2 percent of respondents met criteria for problem gaming. Problem gamers were more likely to be white, male, play mature-rated games, and report daily play. Children in PWM programs reported problem gaming at the same rate as other pediatric populations. Screening for problem gaming provides an opportunity for pediatricians to address gaming behaviors that may affect the health of children with obesity who already are at risk for worsened health and quality of life.

Keywords: weight management program, problem video gaming, pediatric

Introduction

ELECTRONIC GAMING HAS become nearly ubiquitous among children, with nearly 90 percent of children in the United States reported to play electronic games on a regular basis.[1] In a previous study, our group demonstrated rates of electronic game use among children enrolled in tertiary pediatric weight management (PWM) programs similar to the general population, but with increased rates among boys and white patients.[2] Concurrent with the increase in electronic game use has been a rise in the prevalence of problem gaming, prompting inclusion of the diagnosis of Internet gaming disorder (IGD) in the appendix of the most current version of the American Psychological Association's *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-V).[3] Problem gaming is a construct used to describe electronic gaming behaviors that are problematic, leading to difficulties with sleep, mood, relationships, and academic achievement.[1,4–10] Over the past two decades, this construct has been refined and multiple methods for measuring it have been created,[4,5,8,10–12] with the most widely studied instruments incorporating addiction criteria, including feelings of euphoria with gaming, development of tolerance to gaming, experience of withdrawal if gaming is stopped, preoccupation with gaming, loss of interest in other activities, and negative effects of gaming on life and relationships.[5,13] Using these criteria, multiple studies have found the prevalence of problem gaming among demographically and geographically diverse pediatric populations to be between 6.5 percent and 9 percent,[6,9,14] with rates in the United States being about 8.5 percent.[1]

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Given that problem gaming is an emerging concern among children and can contribute to an increase in the amount of time a child spends being sedentary, which is associated with risk for weight gain, it may be a useful construct to evaluate in children with obesity. Problem gaming may also be important to evaluate in children with obesity since both problem gaming and obesity are associated with mental health disorders such as attention-deficit/hyperactivity disorder (ADHD) and decrease in a child's daily functioning, including academic achievement.[14–21] While multiple studies have demonstrated an association between sedentary behaviors such as increased screen time and obesity,[22–29] studies specific to electronic gaming have not consistently demonstrated an association between gaming behaviors and weight status. Additionally, no studies to date have evaluated the effect of problem gaming on weight status.[30–34] Therefore, this study sought to determine the rate of problem gaming and its associated characteristics among children with obesity seeking care in PWM programs. Because problem gamers spend more time gaming, and thus potentially more time sedentary, and sedentary behaviors are associated with obesity, it is possible that one cause of obesity is problem gaming. Furthermore, problem gaming and obesity both share associations with ADHD and poor academic achievement, potentially also contributing to an association between problem gaming and obesity. Because of these possible associations, we hypothesized that children seeking treatment in PWM programs would report problem gaming at a higher rate than the general pediatric population.

Methods

Problem gaming instrument

We used a validated instrument used previously in several large pediatric studies to assess for problem gaming behaviors.[1,6,9,14,35–37] This instrument has demonstrated strong convergent, predictive, and criterion validity, as well as strong reliability with an internal consistency between 0.7 and 0.9.[1,5,38] We used a version of the instrument that was modified in 2013 by the instrument's developer to reflect the nine domains identified for IGD in the DSM-V. For this pediatric version, item 8 was modified to reflect difficulties at school rather than at work. Additionally, two items (items 7 and 11) from the original instrument were retained to assess if the respondent spent less time with friends or family because of gaming and if the respondent skipped sleeping, eating, or bathing because of gaming. Participants were asked to rate how much they agreed that each of 11 items was true. No or don't know was scored as 0, sometimes was scored as 0.5, and yes was scored as 1. Consistent with scoring on the original instrument, from which this instrument was derived, and other studies on problem gaming, scores were summed, with a score of 5.5 or more (one-half of the maximum possible score) classified as diagnostic of problem gaming.[1,13,35,39]

Other gaming characteristics

In addition to the assessment of problem gaming, items were included to assess other gaming characteristics, including location of gaming (bedroom, other room in home, or outside the home), devices on which games were played (video game console, movement-based console, dedicated handheld device, computer, tablet, or mobile phone), and with whom the child played (alone, family members, friends, or online gamers). Similar to prior studies,[1,9] time spent gaming was assessed by asking children to report the typical before lunch, between lunch and dinner, and after dinner play both on weekdays and weekends. The number of reported hours on a typical weekday was summed and multiplied by 5, and the number of reported hours on a typical weekend was summed and multiplied by 2, with the sum of these two numbers then representing the number of hours spent gaming per week. Finally, respondents were asked to report the ratings of the games they played. The Entertainment Software Ratings Board (ESRB) assigns ratings to video games in the United States ranging from early childhood (intended for preschool children) to everyone (similar to a general audience-rated movie) to mature (similar to a restricted-rated movie).[40]

Demographic, psychosocial, and visit characteristics

The survey also included items assessing demographics, including sex, race/ethnicity (categorized as black, white, Hispanic, and other, for analysis), and age (in years). Participants were also asked to self-report school performance (most typical grade in school as asked in the validated Youth Risk Behavior Survey)[41] and whether they had been told by a teacher or medical provider that they had a learning disorder or ADHD (to which possible replies were yes, no, or I don't know). Parental restrictions on gaming were assessed (limits on types of games played and time allowed to play, as well as use of games as a reward). Visit characteristics included whether a parent helped the child to complete the survey.

Survey administration

We administered the instrument to a convenience sample of consecutive patients seeking treatment in five PWM programs in the United States. The programs were located within geographically diverse children's hospitals in the Midwest, Mid-Atlantic, and South. Sites were recruited from the Childhood Obesity Multi-Program Analysis and Study System (COMPASS). The COMPASS is a practice-based research network of 25 PWM programs across 14 states formed in 2012 with the support of the National Association of Children's Hospitals and Related Institutions (now incorporated as part of the Children's Hospital Association). Participants were recruited by a research staff member before a routine visit (new or followup) to the weight management program between March and December of 2014 and were permitted to complete the survey only once during the time period. Patients were included in the study if they were between the ages of 11 and 17 years and able to complete a survey in English. Patients were excluded if a legal guardian was not present or could not read English or Spanish (to complete an e-consent in one of these primary languages). At four sites, participants used tablet computers or wall-mounted computers and REDCap[42] software to complete the survey. At one site, participants completed the survey on paper. Patients were permitted to complete the survey on their own or with their parents' help. The surveys were anonymous; time shifting of the survey's date/time stamp prevented identification of participants. The study was approved by the Institutional Review Boards of the participating programs.

TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF PARTICIPANTS BY PROBLEM GAMING CATEGORY

Characteristic	*Total,* N *(%) or mean (*SD*)*	*Nonproblem gamers, N (%) or mean (*SD*)*	*Problem gamers,* N *(%) or mean (*SD*)*	*Significance*	
Total	454 (100.0)	417 (91.8)	37 (8.2)		
Sex				aOR 3.1 (95% CI 1.5–6.7)	$p < 0.003$
Male	213 (47.0)	186 (87.3)	27 (12.7)		
Female	240 (52.9)	230 (95.8)	10 (4.2)		
Race/Ethnicity				χ^2	$p < 0.002$
Black	121 (26.9)	119 (98.2)	2 (1.6)		
Hispanic/Latino	109 (24.3)	99 (90.1)	10 (9.1)		
White	195 (41.3)	170 (87.2)	25 (12.8)		
Other	24 (5.3)	24 (100.0)	0 (0.0)		
Age (years)	13.7 (1.9)	13.7 (1.9)	13.9 (1.7)	Mean	$p < 0.68$
Parent assisted with survey				aOR 1.6 (95% CI 0.8–3.2)	$p < 0.23$
Yes	137	121 (29)	16 (43.2)		
No	317	296 (71)	21 (56.8)		

CI, confidence interval; *SD*, standard deviation.

Analyses

The prevalence of problem gaming in this cohort was calculated, and the distribution of problem gaming scores was visualized by a histogram. Descriptive analyses of problem gaming instrument items were performed and sensitivity and specificity of select items reported. Bivariate analyses were conducted to describe the association between problem gaming status and patient demographics, visit characteristics, and other gaming characteristics. We performed multiple logistic regression analysis examining the association between problem gaming and gaming characteristics, adjusting for demographic characteristics. Analysis was performed using SPSS 22 (IBM, Armonk, NY).

Results

Participants

A total of 457 surveys were completed across all sites, with a 99.3 percent completion rate, yielding a total of 454 surveys for analysis. The number of completed surveys per site ranged from 12 to 149 with a median of 100. As this was a convenience sample of consecutive visits, we are unable to calculate the participation rate. There were no reports of technical problems with the survey. Verification of responses and followup of incomplete surveys were not possible because of the anonymous nature of the survey. Characteristics of participants are shown in Table 1. Males (47 percent) and females (53 percent) were

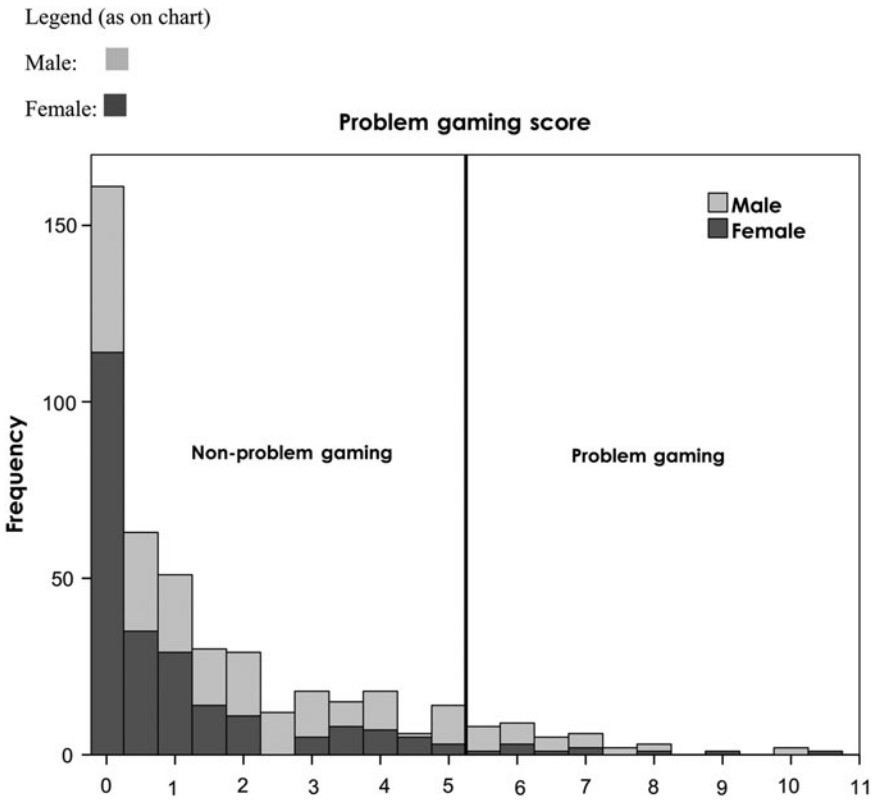

FIG. 1. Histogram of problem gaming scores.

equally represented. Participants were diverse (27 percent black, 24 percent Hispanic, 41 percent white) and representative of the patient populations enrolled in the PWM programs. Mean age of patients was 13.7 years (standard deviation [*SD*] 1.9).

Problem gaming scores

Examining problem gaming score as a continuous variable yielded the histogram shown in Figure 1. Scores ranged from 0 to 10.5 with a median score of 1 and a strong skew to the right (skewness of 1.55). Thirty-two respondents (7 percent) reported never gaming, and, of the remainder who reported ever gaming, 160 (35 percent) reported no problem gaming behaviors (scored a 0 on the problem gaming instrument). Thirty-seven respondents met criteria for problem gaming, yielding a prevalence rate of 8.2 percent.

Problem gaming instrument items

Table 2 shows the responses to the individual items among respondents who reported any gaming sorted by problem gaming status. The item most endorsed by problem gamers was ''In the past year, have you played video games as a way of escaping from problems or bad feelings?'' with 94.6 percent responding yes or sometimes in comparison with 28.9 percent of nonproblem gamers, yielding a sensitivity of 94.6 percent and a specificity of 70.0 percent for detecting problem gaming. Of the items, the most specific for problem gaming was a yes in response to ''In the past year, have you hurt or lost a friendship or family relationship because of your gaming?'' with a specificity of 99.7 percent, but a sensitivity of only 16.2 percent.

Association between problem gaming with demographic and visit characteristics

Table 1 describes the rates of problem gaming by demographic and visit characteristics. Males were three times more likely to be classified as problem gamers than females (odds ratio [OR] 2.9, 95% confidence interval [CI] 1.3–6.2). Problem gaming was more prevalent in white non-Hispanic patients when compared with patients of other races or ethnicities (OR 2.7, 95% CI 1.4–5.7). There was no difference in age between problem gamers and nonproblem gamers.

Association between problem gaming and psychosocial characteristics

Table 3 describes the rate of problem gaming by self-reported grades in school, self-reported diagnosis of ADHD or learning disorder, and family limit-setting and reinforcement behaviors around gaming. There were no differences between self-reported grades in school, prevalence of ADHD, or learning disorders between problem and nonproblem gamers (Table 3). Problem gamers were 3.3 times more likely (95% CI 1.5–7.3) to report that their parents used gaming as a reward and 2.2 times more likely (95% CI 1.1–4.6) to report that their parents limited the time spent gaming on school days.

Association between problem gaming and gaming characteristics

Table 4 describes the rates of problem gaming by gaming characteristics. Among respondents who played games,

Table 2. Responses to Problem Gaming Instrument

	Problem gamer	
	No, N *(%)*	*Yes,* N *(%)*
In the past year, have you played video games as a way of escaping from problems or bad feelings?		
Yes	53 (13.7)	24 (64.9)
No	261 (67.3)	2 (5.4)
Sometimes	59 (15.2)	11 (29.7)
Don't know	15 (3.9)	0 (0)
In the past year, have you needed to spend more and more time and/or money on video games to stay excited?		
Yes	17 (4.4)	22 (59.5)
No	313 (80.7)	7 (18.9)
Sometimes	43 (11.1)	8 (21.6)
Don't know	15 (3.9)	0 (0)
In the past year, have you become less interested in other activities because of gaming?		
Yes	18 (4.6)	21 (56.8)
No	318 (82.0)	5 (13.5)
Sometimes	43 (11.1)	9 (24.3)
Don't know	9 (2.3)	2 (5.4)
In the past year, have you become restless or irritable when attempting to cut down or stop playing video games?		
Yes	24 (6.2)	19 (51.4)
No	314 (80.9)	6 (16.2)
Sometimes	37 (9.5)	12 (32.4)
Don't know	13 (3.4)	0 (0)
In the past year, have you ever felt you could not stop playing video games?		
Yes	27 (7.0)	19 (51.4)
No	313 (80.7)	7 (18.9)
Sometimes	37 (9.5)	9 (24.3)
Don't know	11 (2.8)	2 (5.4)
In the past year, have you been spending less time with friends and family because of how much you play video games?		
Yes	11 (2.8)	17 (45.9)
No	324 (83.5)	6 (16.2)
Sometimes	41 (10.6)	13 (35.1)
Don't know	12 (3.1)	1 (2.7)
In the past year, have you ever skipped sleep, eating, or bathing so that you could spend more time playing video games?		
Yes	26 (6.7)	16 (43.2)
No	317 (81.7)	8 (21.6)
Sometimes	40 (10.3)	12 (32.4)
Don't know	5 (1.3)	1 (2.7)
In the past year, have you ever lied to family or friends about how much you play video games?		
Yes	15 (3.9)	16 (43.2)
No	350 (90.2)	12 (32.4)
Sometimes	13 (3.4)	9 (24.3)
Don't know	10 (2.6)	0 (0)
In the past year, have you ever done poorly on a school assignment or test because you spent too much time playing video games?		
Yes	20 (5.2)	16 (43.2)
No	319 (82.2)	12 (32.4)
Sometimes	39 (10.1)	8 (21.6)
Don't know	10 (2.6)	1 (2.7)
In the past year, have you hurt or lost a friendship or family relationship because of your gaming?		
Yes	1 (0.3)	6 (16.2)
No	379 (97.7)	29 (78.4)
Sometimes	4 (1.0)	1 (2.7)
Don't know	4 (1.0)	1 (2.7)

Table 3. Psychosocial Characteristics by Problem Gaming Status

	Total, N *(%)*	*Nonproblem gamer,* N *(%)*	*Problem gamer,* N *(%)*	*aOR (95% CI)*
Grades over the past year				
Mostly As	140	132 (31.9)	8 (20)	0.63 (0.27–1.47)
Mostly Bs	175	159 (38.1)	16 (43.2)	1.24 (0.62–2.51)
Mostly Cs	83	77 (18.6)	6 (15)	0.77 (0.3–1.99)
Mostly Ds	27	24 (5.8)	3 (8.1)	1.33 (0.37–4.86)
Mostly Fs	2	0 (0)	2 (5)	NA
None of these	3	3 (0.7)	0 (0)	NA
Have you been told you have ADHD?				
Yes	100	86 (20.6)	14 (37.8)	1.80 (0.86–3.77)
Have you been told you have a learning disorder?				
Yes	77	67 (16.1)	10 (27)	1.35 (0.60–3.03)
No	343	318 (76.3)	25 (67.6)	0.79 (0.37–1.68)
I don't know	34	32 (7.7)	2 (5.4)	0.93 (0.21–4.23)
Do your parents set limits on your gaming?				
Yes	182	164 (42.3)	18 (48.6)	0.73 (0.35–1.52)
No	243	224 (57.7)	19 (51.4)	Referent
What limits do your parents set on your gaming?				
Amount of gaming on school days	143	125 (29.8)	18 (48.6)	**2.19 (1.05–4.55)**
Amount of gaming on weekends	90	85 (20.2)	5 (13.5)	0.55 (0.2–1.5)
Types of games I can play	53	49 (11.7)	4 (10.8)	0.93 (0.3–2.9)
Who I can play games with	25	22 (5.2)	3 (8.1)	1.68 (0.45–6.22)
My parents use gaming as a reward				
Yes	67	55 (13.2)	12 (32.4)	**3.29 (1.48–7.29)**
No	387	362 (86.8)	25 (67.6)	Referent

Bold values indicate findings significant at an $\alpha = 0.05$ level.
aOR, adjusted odds ratio controlling for age, sex, and race/ethnicity.
ADHD, attention-deficit/hyperactivity disorder.

mean hours spent gaming were 33.1 hours per week (*SD* 31). Problem gamers played for a mean of 58 hours per week (*SD* 40) compared with 31 hours (*SD* 29) for patients who were not problem gamers. Total weekly hours played were still significantly associated with problem gaming when controlling for demographics (adjusted odds ratio [aOR] 1.02, 95% CI 1.01–1.03). Problem gamers were also 5.2 times more likely (95% CI 2.2–12.3) to report daily play. Problem gamers were 3.3 times (95% CI 1.1–10.0) more likely to report gaming on a dedicated handheld device (e.g., Nintendo's Game Boy; Nintendo Co., Ltd., Kyoto, Japan). Problem gamers were more likely to report playing early childhood-rated (aOR 5.9, 95% CI 1.3–26.8) and mature-rated (M-rated) games (aOR 3.0, 95% CI 1.4–6.6). There were no significant differences found between problem gamers and nonproblem gamers in terms of where or with whom they played.

Discussion

Our findings did not support our hypothesis that problem gaming behaviors are higher in patients seeking PWM treatment than in the general pediatric population. The prevalence of reported problem gaming was 8.2 percent, which was comparable with the 8.5 percent reported in a national sample. Furthermore, the 3:1 ratio of male to female problem gamers was similar to that previously reported.[1,9,35] While the prevalence of problem gaming was not higher in this patient population, both obesity and problem gaming are known to be associated with sedentary behaviors, mental health disorders, and impaired quality of life.[14–21,34,43] Further investigation of how problem gaming may further impair the quality of life of children with obesity, and the potential mediating effects of sedentary behaviors and mental health disorders on this relationship, may lead to the development of novel targeted assessments and interventions for children with obesity specifically addressing problem gaming behaviors if identified.

Our investigations into gaming and psychosocial characteristics of problem gamers led to some novel findings in ratings of games played, use of handheld gaming devices, and academic achievement. We do not know if these findings are generalizable outside of the PWM population, but they may merit further study.

While previous work has revealed that problem gamers play more massive multiplayer online role-playing and first-person shooter games,[44,45] we are unaware of prior research examining the rating of games played by problem gamers. We found a strikingly increased rate of problem gamers playing M-rated games. Characteristics of M-rated games (e.g., intense violence, lifelike graphics, lengthier scenarios) may more easily induce flow states, provide positive reinforcement, and encourage longer play times to promote problem gaming. It is possible that increased striatal dopamine release and increased epinephrine in M-rated games could lead to physiological tolerance pathways.[46,47] The increased rate of playing early childhood games among problem gamers in our population likely reflects increased reporting of playing all types of games. While statistically significant, it seems to have limited clinical relevance given the small number of respondents.

Table 4. Gaming Characteristics by Problem Gaming Status

	Total	*Nonproblem gamer, N (%)*	*Problem gamer, N (%)*	*aOR (95% CI)*
Primary device for gaming				
Regular video game console	135	118 (30.4)	17 (45.9)	1.32 (0.59–2.91)
Movement-based console	26	23 (5.9)	3 (8.1)	2.68 (0.71–10.2)
Handheld device	23	18 (4.6)	5 (13.5)	**3.26 (1.06–10.04)**
Personal computer	46	39 (10.1)	7 (18.9)	2.08 (0.83–5.22)
Tablet	63	63 (16.2)	0 (0)	NA
Mobile phone	132	127 (32.7)	5 (13.5)	0.51 (0.18–1.39)
With whom do you usually play?				
Alone	199	184 (47.4)	15 (40.5)	0.92 (0.45–1.87)
Brother or sister	76	73 (18.8)	3 (8.1)	0.52 (0.15–1.79)
Mom or dad	8	7 (1.8)	1 (2.7)	1.71 (0.12–15.26)
Another family member	24	22 (5.7)	2 (5.4)	1.39 (0.29–6.56)
Friends	67	59 (15.2)	8 (21.6)	1.32 (0.56–3.13)
Other online gamers	51	43 (11.1)	8 (21.6)	1.63 (0.67–3.95)
I usually play online with				
People I have not met in person	36	29 (42)	7 (77.8)	2.57 (0.43–15.2)
People I have met in person	42	40 (58)	2 (22.2)	Referent
Where do you usually play?				
My bedroom	224	201 (51.2)	23 (62.2)	1.97 (0.95–4.06)
Another room in my house	169	156 (40.2)	13 (35.1)	0.73 (0.34–1.54)
Another family member's house	18	17 (4.4)	1 (2.7)	0.86 (0.11–6.97)
At my friend's house	9	9 (2.3)	0 (0)	NA
At school	4	4 (1)	0 (0)	NA
At an after-school program	1	1 (0.3)	0 (0)	NA
How often do you play video games				
Every day	204	174 (41.6)	30 (81.1)	**5.21 (2.2–12.33)**
About 4–5 times a week	69	64 (15.3)	3 (8.1)	0.36 (0.11–1.26)
About 2–3 times a week	71	68 (16.3)	3 (8.1)	0.54 (0.16–1.84)
About once a week	30	29 (6.9)	1 (2.7)	0.45 (0.57–3.54)
A couple times a month	30	30 (7.2)	0 (0)	NA
About once a month	21	21 (5)	0 (0)	NA
I never play video games	32	32 (7.7)	0 (0)	NA
What are the ratings of the games you play				
Early childhood	10	7 (1.7)	3 (8.1)	**5.87 (1.29–26.75)**
Everyone	172	156 (37.1)	16 (43.2)	1.38 (0.67–2.82)
E10+	134	118 (28.1)	16 (43.2)	1.59 (0.78–3.26)
Teen	150	143 (34)	17 (45.9)	1.31 (0.65–2.66)
Mature	136	113 (26.9)	23 (62.2)	**2.99 (1.36–6.58)**
Don't know	81	77 (18.3)	4 (10.8)	0.78 (0.26–2.37)

Bold values indicate findings significant at an $\alpha = 0.05$ level.
aOR, adjusted odds ratio controlling for age, sex, and race/ethnicity.

Problem gamers reported gaming primarily on dedicated handheld devices more frequently. While previous research found increased gaming among adolescents who owned dedicated handheld devices versus multiuse tablets,[48] the association between problem gaming and handheld devices appears to be a novel finding. These handheld devices allow the user to game regardless of physical location, increasing possible play time and allowing the choice of gaming during any other activity.

Problem gamers reported that their parents used gaming as a reward significantly more often than nonproblem gamers. This may represent the importance of gaming to problem gamers and their parents' realization of its effectiveness as a reward. The increased limits on school day gaming reported by problem gamers likely reflect their parents' belief that their gaming negatively affects their academic work. However, unlike prior studies, we found no significant difference in grades for problem and nonproblem gamers.[1,9,35,49] This may be due to inaccurate self-reporting of grades or other unmeasured factors that may influence grades such as parental education level or socioeconomic status.

The most significant limitation of our study was the inability to independently verify responses, a challenge intrinsic to our anonymous survey method. Additionally, it is possible that participants underreported problem gaming behaviors because of social desirability or misreported other variables such as academic performance and mental health diagnosis. As this was a cross-sectional survey study, we could identify significant associations between the variables of interest, but could not establish causality. As the central hypothesis was related to problem gaming rates in the PWM population, we did not conduct mediation analyses for the gaming, psychosocial, or demographic variables studied.

In conclusion, this study of children seeking treatment in multiple PWM programs found a prevalence of problem gaming behavior very similar to that found previously in diverse pediatric populations. Although not significantly higher among this patient population, problem gaming, which affects 1 of 11 children, remains an important issue to identify and address in PWM programs. This is especially the case since increased sedentary screen hours may contribute to weight gain in problem gamers and because the social dysfunction associated with problem gaming may affect weight management success and the patient's quality of life.

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Authors' Contributions

Dr. Stubblefield conceptualized the study, helped create the study instrument, assisted with data analysis, and drafted the initial manuscript. Drs. Datto and Phan conceptualized the study, helped create the study instrument, recruited and enrolled patients, assisted with data analysis, assisted with drafting the manuscript, and reviewed and revised the manuscript. Drs. Werk, Stackpole, Siegel, Stratbucker, Tucker, and Christison expanded the study to their respective institutions, recruited and enrolled patients, provided feedback for study implementation, and reviewed and revised the manuscript. Dr. Hossain performed power analyses to determine the project size, clarified study aims and goals, and performed detailed statistical analysis. Dr. Gentile conceptualized and refined the study, providing specific guidance for the development of the survey instrument and appropriate approaches for analysis. He also reviewed and revised the manuscript. All authors approve the manuscript as submitted.

Author Disclosure Statement

No competing financial interests exist.

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