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Self-Esteem, Family Functioning and Internet Gaming Disorder among In-School Adolescents

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Abstract

Internet gaming comes with possibilities of adverse effects on individuals if not controlled. This study aims to observe the predictive influence of self-esteem and family functioning on internet gaming disorder among Nigerian in-school adolescents. Using a multi-staged sampling to select 468 participants who responded to the Hare Self-Esteem Scale, Internet Gaming Disorder Scale-Short Form (IGDS9-Sf) and Index of Family Relations Scale. A high prevalence (20.5%) of at-risk of Internet Gaming Disorder (IGD) was reported. Self-esteem did not significantly predict internet gaming disorder; family functioning had a negative significant prediction of internet gaming disorder. Also, gender significantly influenced IGD [t (468) = 4.50, p <.01] with males reporting higher mean scores than female students, Again family structure had no significant influence on the other hand time spent gaming had a significant influence on internet gaming disorder. Authors conclude that there is a high prevalence of IGD among in-school adolescents and that family functioning and gender are significant predictors of IGD while self-esteem is not. Avenue to assess for IGD should be provided in Secondary school and psychological interventions are recommended for students who report being at risk of IGD.

Keywords: Internet gaming, self-esteem, Family functioning, in-school adolescents, Nigeria.

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Introduction

Playing games is a form of entertainment enjoyed by tens of millions across the globe. While many of these people will have no problems in their gaming activities, there is the possibility of certain adverse and harmful effects that could occur with certain individuals. Studies have suggested that the excessive usage of technological devices can pose risks, particularly for age groups like adolescents (Eleuteri et al., 2017). The American Psychiatric Association (2013) recognized 'Internet gaming disorder' as a condition for further study in the Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-5). Proposing nine criteria for the disorder in the manual, namely: preoccupation, withdrawal symptoms, tolerance, unsuccessful attempts to control, loss of interest in previous hobbies, continued excessive use, deception, use for escaping a negative mood, and jeopardizing a significant relationship, job or opportunity (APA, 2013).

Gaming disorder (GD) was recognised by the World Health Organization, with its criteria included in the 11th edition of the International Classification of Diseases (ICD 11) (WHO), and has received expert approval (Castro-Calvo et al., 2021). Gaming as an activity has become the daily routine for many individuals. According to the Entertainment Software Association's (ESA) 2020 report, there were an estimated 214 million gamers in the United States, with 75% consisting of children and adolescents. According to a report by Newzoo (2021), the total number of gamers in Sub-Saharan Africa grew from 77 to 186 million people between 2015 and 2021.

Nigeria is reported as having the highest number of gamers, with about 46.5 million people and the second largest gaming market in Africa, with a total value of 184.6 million USD (Newzoo, 2021). Gaming currently cuts across three broad categories; PC gaming, console gaming and mobile gaming. It entails engaging with virtual environments, characters and obstacles present in a game setting. Video games have a broad classification, including action, adventure, strategy, sports and simulation. These also provide a variety of experiences, encompassing both individual-focused storylines and interactive online multiplayer modes. Gaming disorder is

defined in the ICD 11 as a pattern of gaming behaviour characterized by impaired control over gaming, increasing priority given to gaming over other activities, and continuation or escalation of gaming despite negative consequences for at least 12 months. Internet gaming disorder is described as the persistent use of internet-based video games, often involving interaction with other players, leading to notable distress for the individual involved (APA, 2013). Lemmens et al., (2015), described pathological gaming as persistent, recurrent and excessive involvement with computer or video games that cannot be controlled despite associated problems. The prevalence rates of IGD from conducted studies on representative samples reveal 1.4% in Norway (Wittek et al., 2016) and 2.5% in Slovenia (Pontes et al., 2016). Fam (2018) reported a prevalence rate of 4.6% from a meta-analysis among adolescents, while Atia et al., (2020) reported a prevalence of 7.9% among an Egyptian adolescent sample.

Gaming disorder has received extensive study across the world, most notably in Western and Asian countries (Berle et al., 2015; Stavropolous et al., 2016; Anderson et al., 2016; Raneri et al., 2022; Dong & Potenza, 2022; Wang et al., 2022). On the other hand, research in this field has not been as extensive in Africa specifically Nigeria. According to a report by Statista (2023), the number of game users in Africa is expected to increase to 457.20 million by 2027, with a significantly large percentage of these users being adolescents. This necessitates deliberate and appropriate research in the field. The terms internet gaming disorder (IGD), gaming disorder (GD) and pathological gaming (PG) will be used interchangeably in this study.

When using technological systems, adolescents are more in danger than any other age group (Eleuteri et al., 2017). They are going through a lot of significant physical, cognitive, emotional, and social changes right now in their lives as individuals. Their fascination with technology, especially the internet and gaming, may make it an easy way for them to escape from reality when it comes to problems with self-acceptance, social acceptability, and fitting in. Adolescents may be more prone to developing a media addiction than adults since they are still in the process of developing psychologically and have less self-control than adults, according to studies (Haug et al., 2015; Kim et al., 2019).IGD may develop as a result of unhealthily using gaming to deal with stress and aggression. Adolescents frequently behave riskily and may turn to addictive behaviour as a coping mechanism for stress, frustration, or failure. They might also be motivated by a need for excitement or an exaggerated optimism brought on by a sense of invincibility as they make the transition from childhood to adulthood (Passos et al. 2015).

A person's overall sense of value and worth is influenced by a variety of life experiences, which in turn affects how that person will experience life in the future. According to Rosenberg (1965), self-esteem is a person's sense of self-acceptance, self-respect, and self-worth. It expresses how happy and confident a person feels with their skills, attractiveness, and identity. It also affects a person's subjective feelings and sense of worth, profoundly affecting their ideas, feelings, behaviour, and interactions with others. Multiple reports have tried to explain an association between IGD and self-esteem, suggesting that gamers may try to acquire self-esteem, compensating for a weak self-image through a display of game mastery to escape reality, fulfil the need for social reinforcement and overcome social tribulation (Scerri et al., 2019). Consequently, adolescents who possess positive self-esteem are more likely to experience favourable psychosocial well-being. (Adegunju et al., 2017). A lack of confidence in one's self may make it easier to become addicted to games during adolescence, as doing so allows an escape from reality to a world of happiness in gaming. Gaming provides the opportunity for the individual with low self-esteem to portray a different persona. On gaming sites, they can manifest a different identity from their real self.

According to Bronfen brenner's (1979) ecological model, the family is the most immediate and influential part of the ecological environment as regards human development. This logically means that the family as a system may have a larger impact on an individual's behaviour than other systems. An unfavourable family environment can result in detrimental developmental outcomes. Taking inspiration from this theory, several studies have investigated the influence of family factors on adolescent Internet addiction (Wartberg et al., 2015; Wartberg et al., 2017). According to Olson et al., (2014), the term "family functioning" encompasses the holistic assessment of the quality and functioning of a family unit. A poorly functioning family may struggle to provide children with the emotional warmth they need. As a result, children may seek emotional support from external sources, such as online platforms, increasing the likelihood of developing various forms of adolescent pathological behaviour including IGD (Schneider et al., 2017). Gamers with IGD are likely to come from less warm and cohesive families (Choo et al., 2015; Zhu et al., 2015; Bonnaire&Phan, 2017). Conflict among family members has been related to risk-taking behaviour among adolescents (Hamid &Nawi, 2013).

Research has shown an association between negative parental attitudes towards gaming and more symptoms of IGD (Jeong& Kim,

2011), and a negative association of IGD with parental supervision of gaming (Bonnaire & Phan, 2017). Researchers have also identified family relationships as being a strong protective factor for adolescents in addictive behaviours (Blustein et al., 2015; Keijsers, 2015). A positive family environment involves fulfilling family functions in a favourable manner, characterized by effective communication, adequate support, understanding, and warmth (Sari and Dahlia, 2018). In conclusion, multiple studies have shown the association between self-esteem, family functioning and internet gaming disorder among a variety of settings and different populations, with adolescent being more at risk.

According to research, some psychosocial aspects can contribute to the emergence of an internet gaming disorder in some people. Gaming disorder is very likely to increase due to family dynamics, parenting styles, dysfunctional relationships, and disputes (Bonnaire & Phan, 2017). According to studies (Saliş & Topçu Bulut, 2022; Steinfield et al., 2008), self-esteem has a complicated link with gaming disease and can both contribute to and be a result of it. However, little to no justification had been provided to address these ideas together among a Nigerian sample. Literature has considered internet gaming disorder with each of the listed variables together among similar samples throughout the world. Primarily this study aims to observe the links between self-esteem, family functioning and internet gaming disorder among secondary school adolescents in Abeokuta metropolis Ogun state, south-western Nigeria.

Research Questions

This study will be directed by the following research questions:
1. What is the prevalence and pattern of internet gaming disorder among secondary school adolescents in Abeokuta metropolis?
2. To what extent do self-esteem and family functioning influence internet gaming disorder among secondary school adolescents in Abeokuta metropolis?
3. What is the influence of gender and family structure and time spent gaming on internet gaming disorder among secondary school adolescents in Abeokuta metropolis?

Materials and Methods
Participants
A multi-stage sampling procedure was adopted in this study. In the first stage, Abeokuta metropolis, Ogun State was purposefully selected. In the second stage, the two local government areas (North and South)

were selected. In the third stage, three wards were randomly selected from each of the local governments. In the fourth stage, three secondary schools were selected from each of the selected wards (two public and one private school), making 6 secondary schools in total. The random selection for this study was used to select 468 in-school adolescents from the selected schools using a Python code.

Instruments

Three research instruments were adopted for this study. These are:
The Hare self-esteem scale (HSES) developed by Hare, (1975) consists of 30 statements to which the subject responds using a 4-point Likert scale ranging from strongly agree to strongly disagree. Approximately one-half of the statements are reverse-scored. The overall HSES score provides a measure of self-esteem. In addition, the HSES divides the construct of self-esteem into three sub-constructs. Peer self-esteem, home self-esteem and school self-esteem. The reported test-retest reliabilities over a three-month interval were .56, .61 and .65 for the three subscales and .74 for the total self-esteem measure.

Internet Gaming Disorder Scale-Short Form (IGDS-SF) was developed by Pontes & Griffiths, (2015). The instrument was designed to measure internet gaming disorder. Within the IGDSSF9, 'gaming' is defined as any activity played from a laptop, computer, gaming console, or any other device (i.e., smartphone or tablet) and can be either online or offline play (Pontes & Griffiths, 2015). The IGDS-SF9 is a 9-item self-report measure that assesses the severity of IGD, using DSM-V criteria (Pontes & Griffiths, 2015). Participants were asked to rate, on a 5-point Likertscale (1 = Never to 5 = Very often) how often each statement has applied to them over the past year (e.g., "Have you jeopardized or lost an important relationship, job, or an educational or career opportunity because of your gaming activity?"). *Video game addiction* is then equal to the sum of those responses, The IGDS-SF9 has shown strong reliability and validity in identifying severe video game usage (Pontes & Griffiths, 2015), a= .84. Possible scores range from 9 to 45 with higher scores being indicative of a higher degree of Internet Gaming Disorder (Pontes & Griffiths, 2015). The authors of the IGDSSF9 initially recommended that a conservative approach for differentiating between disordered gamers and non-disordered gamers would require a response of 'Very Often' on five out of nine items (Pontes & Griffin, 2015).

The Index of Family Relations Scale (IFRS) was developed by Hudson, (1997). The scale is a 25-item scale designed to measure the extent, severity, or magnitude of problems that family members have in their

relationships with one another. The IFRS allows the respondent to characterize the severity of family problems globally and can be regarded as an overall measure of interfamilial stress. In scoring the scale, certain items are reverse-scored. The IFRS has a mean alpha of .95, indicating excellent internal consistency, and an excellent (low) Standard Error of Measurement of 3.65. The IFRS has excellent known-groups validity, significantly distinguishing respondents designated by themselves and their counsellors as having family relationship problems. The IFRS also has good construct validity, correlating poorly with measures with which it should not correlate, and correlating well with other measures with which it should correlate such as other parent-child and family relationship ratings.

Results

The sampled data were subjected to statistical tests to calculate the prevalence rate of internet gaming disorder among secondary school adolescents in Abeokuta metropolis. This was based on the cut-off of 32 to distinguish between disordered and non-disordered gamers from the study by Qin et al., (2020).

The result is summarised in Table 1.

Table 1
Frequency and Percentage Showing the Prevalence of Internet gaming disorder among secondary school adolescents

	IGD (N=23)		IGD-Risk (N=96)		Non-IGD (N=349)	
	N	*%*	*N*	*%*	*N*	*%*
Gender						
Male	18	78.26	65	51.69	165	47.28
Female	5	21.74	31	48.31	184	52.72

Based on the cut-off score, the IGD prevalence estimate in the present sample was 5%. The prevalence of IGD was 3.84% in male adolescents, which was higher than in female adolescents at 1.1%. 20.5% of the present sample are considered at risk for IGD, while 74.5% were considered non-disordered gamers.

Test of Relationship

To test the extent and direction of the relationship existing among the study variables, Pearson Product Moment Correlation analysis was utilised to test the variables. The findings were summarised in a matrix table and presented in Table 2

Table 2
Summary of Correlation Matrix among the Variables in the Study

Variables	1	2	3	4	5	6	7
1. Internet Gaming Disorder	1	-.081	-.206**	-.203**	.057	.200**	-.038
2. Self-esteem		1	.528**	.082	.077	.017	.087
3. Family Functioning			1	.084	.141**	-.084	.103*
4. Gender				1	.002	-.065	.036
5. Age					1	-.056	-.187**
6. Time spent gaming (daily)						1	.272
7. Family Structure							1
Mean	19.57	85.57	124.60	-	14.92	1.29	-
SD	6.74	10.28	26.30	-	1.64	.63	-

Note: **$p<.01$, *$p<.05$ N=468

The result in Table 2 showed that internet gaming disorder had a significant negative relationship with family functioning [$r(466) = -.21$, $p<.01$] and gender [$r(466) = -20$, $p< .01$]. A significant relationship with time spent gaming [$r(466) = .20$, $p< .01$], but no significant relationship with self-esteem [$r(466) = -.08$, $p >.05$], age [$r(466) = .06$, $p>.05$] and family structure [$r(466) = -.04$, $p>.05$]. It was further revealed that self-esteem had a significant relationship with family functioning [$r(466) = .53$, $p<.01$], but no significant relationship with gender [$r(466) = .08$, $p>.05$], age [$r(466) = .08$, $p>.05$], time spent gaming [$r(466) = .02$, $p>.05$] and family structure [$r(466) = .10$, $p>.05$].

Family functioning was shown to have a significant relationship with age [$r(466) = .14$, $p<.01$] and family structure [$r(466) = .10$, $p<.05$], but no significant relationship with gender [$r(466) = .10$, $p>.05$], and time

spent gaming [r(466 = -.10, p>.05]. Gender also revealed no significant relationship with age [r(466) = .00, p>.05], time spent gaming [r(466) = -.10, p>.05] and family structure [r(466) = .04, p>.05]. Age was revealed to have no significant relationship with time spent gaming [r(466) = -.06, p>.05] but had a significant negative relationship with family structure [r(466) = -.20, p<.01]. Finally, time spent gaming showed no significant relationship with family structure [r(466) = .30, p>.05].

Test of Hypotheses

Table 3
Simple Linear Regression Analysis showing the Prediction of Self-Esteem on Internet Gaming Disorder

Variable	β	t	R	R²	df	F
			.08	.01	1,466	3.10
Self-Esteem	-.08	-1.76				

N=468

Table 3 indicated that self-esteem did not significantly predict internet gaming disorder [β = -.08, *t* = -1.76, *p*>.05]. The result negated hypothesis 1 and it was rejected.

Table 4
Simple Linear Regression Analysis showing the Prediction of Family Functioning on Internet Gaming Disorder

Variable	β	t	R	R²	df	F
			-.21	.04	1,466	20.57**
Family Functioning	-.21	-4.54**				

Note: ** p < 0.01, N=468

It was observed in Table 4, that family functioning had a negative significant prediction on internet gaming disorder [β = -.21, t = -4.54, p <.01]. This means that the chances of developing internet gaming disorder decrease with an increase in family functioning. There was a significant variance of 4% contributed by family functioning to the total variance observed in internet gaming disorder (R = -.21, R2 =.04). The result confirmed hypothesis 2.

Table 5

Summary of Independent T-test showing the influence of Gender on Internet Gaming Disorder

Dependent Variable	Gender	N	Mean	SD	df	t	p
Internet Gaming Disorder	Male	248	20.86	7.10			
					466	4.50	< .01
	Female	220	18.12	6.10			

A t-test of independent samples was carried out to find out the influence of gender on internet gaming among the respondents. The result summarized in Table 5 indicated that gender had a significant influence on internet gaming disorder among the in-school adolescents [t (468) = 4.50, p<.01]. This was such that more male adolescents (M=20.86, SD=7.10) had internet gaming disorder compared to their female counterparts (M=18.12, SD=6.10). The result confirmed hypothesis 3 and it was accepted.

Table 6

Summary of Independent T-test showing the influence of Family Structure on Internet Gaming Disorder

Dependent Variable	Family Structure	N	Mean	SD	df	t	p
Internet Gaming Disorder	Single Parent	138	19.96	6.60			
					466	.81	> .05
	Intact Parent	330	19.41	6.82			

A t-test of independent samples was carried out to find out the influence of family structure on internet gaming among the respondents. The result summarized in Table 6 revealed that family structure had no significant influence on internet gaming disorder [t(466) = .81, p>.05], by implication, adolescents from single-parent homes (M = 19.96, SD = 6.60) do not differ from those who come from intact parent homes (M = 19.41, SD = 6.82). The result negated the formulated hypothesis 4 and it was rejected.

Table 7
One-Way ANOVA showing the Influence of Time Spent Gaming on Internet Gaming Disorder among Secondary School Adolescents in Abeokuta Metropolis

Dependent Variable	Source	SS	df	MS	F	p
Internet Gaming Disorder	Between Groups	976.10	3	325.40	7.50	< .01
	Within Groups	20260.44	464	43.70		
	Total	21236.53	467			

Indication in Table 8 revealed that time spent gaming had a significant influence on internet gaming disorder [F (3,464) = 7.50, p<.01]. This means that internet gaming disorder among secondary school adolescents differ based on the time spent playing games. A post-hoc comparison test was carried out to ascertain the difference that led to the significant influence.

Table 8
Summary of Post-Hoc Bonfferoni Test showing the Mean Difference in Time Spent Gaming on Internet Gaming Disorder

Time spent gaming	N	Mean	SD	1	2	3	4
1. 1 hour and less	367	18.97	6.51	-			
2. 1-3 hours	77	21.16	6.70	-2.19	-		
3. 4-6 hours	14	20.78	5.78	-1.81	.38	-	
4. 6 hours and more	10	27.50	9.99	-8.52*	-6.33*	6.71	-

* p<.05

The mean scores as indicated in Table 8 shows that internet gaming disorder was more prominent for adolescents who spent over six hours on games daily (M= 27.50, SD=9.9) and this was followed by 1-3 hours

(M=21.16, SD=6.70), with the least being 1 hour and less (M=18.97, SD=6.51). Findings from the Post-Hoc multiple comparison test revealed that the mean difference between 1 hour and less, and 6 hours and more was significant (Md=-8.52, p<.05). Also, the mean difference between 1-3 hours, and 6 hours and more was significant (Md=-6.33, p<.05). By implication, the significant influence of time spent gaming on internet gaming disorder is attributed to the significant mean difference.

Discussions

The result showed a high prevalence of internet gaming disorder among the participants. This supports previous Nigerian studies (Ariyo, et al., 2020; Akpunne, & Akinnawo, 2019). This finding is also in line with results from other studies outside Nigeria. For instance a pooled prevalence of 5.4% from a sample of adolescents in southeast Asia (Chia et al., 2020), 5.4% from a study in Thailand (Taechoyotin et al., 2020) 5.7% from a sample of 12 to 25-year-old Germans (Wartberg et al., 2017) and 4.5% in a Slovenian sample (Macur and Pontes, 2021). The prevalence estimate for this study was significantly lower than the IGD findings of Yang et al., (2020) at 13.0% and Yu et al., (2021) at 13.5% for Chinese adolescents and Alfaifi et al., (2022) at 29.3% in Saudi Arabian sample. It was also slightly higher than the findings from Undavalli et al., (2020) at 3.50% in an Indian sample, and Chiu et al., (2018) in a Taiwanese sample at 3.1%. These differences in findings could be explained by the differences in geographic regions, time of data collection, by the instruments used or could represent a true difference in the investigated populations.

The studies listed above used a variety of instruments different from this study, though a similar age group was analyzed for most. It should also be noted that based on the current study, a substantial percentage of adolescents are affected by IGD.

Also, self-esteem did not significantly predict internet gaming disorder in this study. This research finding implies that adolescents' self-esteem levels do not impact their tendency to develop internet gaming disorder. Consistent with this finding, Teng et al., (2020) in their longitudinal study found that self-esteem did not significantly predict internet gaming disorder. Similarly, Cudo et al., (2019) in their study, reported that self-esteem was not a direct predictor of internet gaming disorder. Wichstrøm et al., (2019) in their study, also reported that self-esteem was not a significant predictor of future internet gaming disorder symptoms. Based on these results, it is likely that self-esteem problems, particularly low self-esteem are a potential

consequence or outcome of internet gaming disorder. The relationship between self-esteem and internet gaming disorder could also be mediated by a pre-existing condition, this is a likely possibility, seeing that there was no significant prediction of IGD by self-esteem.

Again, our research findings revealed that family functioning had a significant negative prediction on internet gaming disorder. This finding implies that a decrease in family functioning will cause a significant increase in internet gaming disorder among secondary school adolescents. The finding is consistent with prior research demonstrating a connection between family functioning and internet gaming disorder. One study by Bonnaire and Phan (2017), conducted with 434

French secondary school pupils found out that problematic gamers had lower family cohesion, more family conflicts and poorer family relationships (all components of family functioning) than their non-problematic counterparts. It was further reported that without gender considerations, cohesion, and family relationship are negatively associated with internet gaming disorder. Another study by Wartberg et al., (2020) reported similar findings, with a bivariate regression analysis showing among others statistically significant association between internet gaming disorder and lower family functioning. Jongil (2018) found that family cohesion and conflict were significantly associated with internet gaming addiction, with family conflicts significantly predicting internet gaming addiction among Korean adolescents. Wang et al., (2014), reported findings that internet gaming disorder was significantly more likely in adolescents that reported more perceived family disharmony. Fumero et al., (2020) in their study found that family functioning variables were negatively associated with internet gaming disorder. Internet gaming disorder could disrupt family functioning by leading to problems in the user's daily life and relationships with other family members, concurrently, a dysfunctional family could push an adolescent to escape into virtual worlds (Park et al., 2008).

The result of hypothesis three showed that gender had a significant influence on internet gaming disorder among secondary school adolescents in Abeokuta metropolis, such that more males had internet gaming disorder than their female counterparts. This finding is in agreement with that of Yu et al., (2021) who found that there was a higher prevalence of internet gaming disorder among Chinese male adolescents at 19.2% than female adolescents at 7.8%. This was explained to a relatively large degree by higher levels of maladaptive cognitions among male adolescents. Similarly, Fumero et al., (2020), found out that Spanish male adolescents had a higher prevalence of

IGD than females. Also, Severo et al., (2020), reported that being male was a significant relevant IGD risk factor, with male gamers being 2.18 times more likely to develop internet gaming disorder than their female counterparts. Taechoyotin et al., (2020) reported a significant difference between male and female secondary school students in their study. Phan et al., (2020) reported that male adolescents scored above the threshold for symptoms of internet gaming disorder more frequently than females, at 20% vs. 7%. Many explanations have been given for this significant gender difference in internet gaming disorder, including, the possibility that female recreational gamers may show better executive control than men when facing gaming cues, which may provide resiliency against developing IGD (Dong et al., 2018).

Furthermore, our study found that family structure had no significant influence on internet gaming disorder among secondary school adolescents, leading to the rejection of the hypothesis. This implies that living with either single parents or both parents does not have any significant influence on whether they become disordered gamers. This finding is consistent with findings by Fumero et al., (2020), which reported that there was no significant association between internet gaming disorder and family type (single parent, nuclear or reconstituted). Wang et al., (2014), also revealed that there was no relationship between internet gaming disorder and whether an adolescent was from a single or intact-parent family.

Finally, the findings of the study revealed that time spent gaming had a significant influence on IGD among adolescents. This was such that individuals who spent more time playing games were more prone to developing IGD than adolescents who spent less time gaming. This finding is consistent with the finding of King et al., (2017), which showed that gaming activity had a strong correlation with internet gaming disorder symptoms, it was also shown to be a significant predictor of internet gaming disorder. Liao et al., (2020b) also revealed in their study, that individuals with internet gaming disorder, were more likely to spend more time gaming. Regression analysis also showed a significant association between gaming time per day and internet gaming disorder. Severo et al., (2020), also found supporting evidence for the association between times spent gaming and the increased likelihood of developing internet gaming disorder, specifically, participants who reported gaming more than 20 hours a week were 13.5 times more likely to present with IGD in comparison to those who reported playing less than 1 hour a week. Rho et al., (2018), found that a significant risk factor predicting internet gaming disorder is weekday gaming time, with individuals having IGD spending more time on games than normal gamers.

Conclusions and recommendations

Based on the findings of this study it is concluded that self-esteem is not a significant predictor of internet gaming disorder among secondary school adolescents. However, family functioning predicted internet gaming disorder significantly. Confirming that better family relationship and functioning reduces the chances of developing internet gaming disorder among adolescents. Furthermore, the study found that the structure of the family did not have any significant influence on internet gaming disorder, indicating that the chance of developing internet gaming disorder is comparable for adolescents from a single-parent family and an intact family. In addition, gender was shown to be a crucial influence on internet gaming disorder, with male adolescents being more disordered than their female counterparts. Finally, time spent gaming showed a significant influence on internet gaming disorder, indicating that the more time spent gaming, the higher the possibility of developing internet gaming disorder.

Avenue to assess for IGD should be provided in Secondary school and psychological interventions are recommended for students who report being at risk of IGD.

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