

## Internet Gaming Disorder: Depression, Anxiety and Stress among Gamers

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### Abstract

The arrival of the internet in the development of technology is one of the great successes for mankind. The information that used to be accessible only physically, now can be retrieved just at the fingertips ever since the existence of the internet network. Physical games can also be adapted and have gone through a phase of innovation into the screen. Even so, the presence of this internet game has also created various issues for its players in a negative way and one of it is internet gaming disorder (IGD). For those experiencing IGD will have symptoms such as confusion towards daily routines, negative effects on health and in extreme cases are able to disengage themselves from the real world. This study was conducted to examine how the existence of internet games can impact the mental health of internet game players in Malaysia. This includes their level of depression, stress, and anxiety. A set of questionnaires was used to collect data and a total of 118 were successfully analyzed. The result of the study shows that there is a strong and positive relationship between IGD and all three psychological distress: depression, stress, and anxiety. The result of the study also shows that the three psychological distress can be predictors of IGD. Some recommendations are also given for future research.

**Keywords:** Internet Gaming Disorder (IGD), Psychological Distress, Stress, Anxiety, Depression

### Introduction

Present day, technological advancement has grown more refine compared to the past. The existence of electronic devices such as computers and smartphones has greatly changed the way humans live today. In addition, the presence of the internet in people's lives has also helped them a lot in everyday life in terms of searching, sharing, and storing information. This is very different from what existed in old days where this had to be done physically and took a lot of time and energy. The arrival of advanced technology has also changed the way humans entertain and fill their leisure time. Among them are internet games which are very popular

among young people in today's era. However, the growth of internet gaming technology has created new problems among young people which can be addictive. Extreme addiction to internet gaming can also disrupt a person's normal way of life rather than meeting basic life needs such as eating and drinking as well as interfering with rest and sleep routines.

The Diagnostic and Statistical Manual of Mental Disorders 5<sup>th</sup>. Edition (DSM-V) has also recognized the disadvantages of IGD and the need to make a more in-depth study of them (APA, 2013). It is because, if this new problem is not contained and given attention, it will have a devastating effect on the youth in the future. Internet games are one of the options for gamers to fill their leisure time (Ko, 2014). Many things can be found through playing internet games including satisfaction, the feeling of achieving something, interacting socially and an exciting experience for individuals who play internet games. According to APA (2013), an individual can spend time playing internet games to the point of ignoring his other interests. This will cause deterioration and difficulties in his daily life.

Przybylski et al (2017) added that IGD should be categorized as one of the significant stressors. This is because, usually individuals will be confused by the enthusiasm to play internet games, or it is one of the pathological diseases that need to be given attention and treatment. Rumpf et al (2018), stated there are already many data that shows IGDs can have adverse effects on individuals, and it includes negatively impact on their health. Individuals who engage with internet games have specific motives or purposes such as entertainment and to compete with one another (Lee et al., 2017). However, excessive internet gaming can have a detrimental and negative effect on the individual (Paulus et al., 2018). Hence, it is necessary for researchers to do more research on these adverse effects so that individuals involved in the internet gaming industry get appropriate information about the importance of taking care of themselves as well as physical and mental health while playing internet games. Drapeau (2012) mentioned psychological distress is a term that is often used in the field of mental health and is a benchmark for a person's level of mental health. It can include various branches of symptoms of mental health issues such as anxiety, depression, and the inability to function normally. Psychological distress also means emotional suffering which can be divided into symptoms such as depression and anxiety (Mirowsky & Ross, 2002). Furthermore, according to Ware and Kleinman (1992) it is also related to somatic symptoms that are highly dependent on the customs of everyone individually.

Excessive internet gaming can drive individuals to get IGD and this can cause them to get depression (Liu et al., 2018). The existence of negative effects on the mental health of these individual has caused the IGD as a matter that researchers need to pay attention to (APA, 2013). This is because when individuals with depression are potentially able to do things that can harm themselves including having the idea of committing suicide-related behavior (Roesch, 2015). Based on Ko et al (2021), although the existence of suicidal ideation is closely related to suicide attempts, but not all those who have suicidal ideation will attempt to commit suicide.

Eskin et al (2016) states psychological stress, suicidal ideas and behaviors are very common in university students. Furthermore, psychological distress is strongly related to suicidal ideas and behaviors. This is very worrying because it can affect not only mental health, but also the lives of the individuals involved. So, it is better to look at this from the root before it spreads further, involving the lives of the individuals involved. Anxiety is also a thing that contributes

to IGD. This can be seen through a study conducted by Marino et al (2020) stating that there is a correlation between IGD and anxiety. This is because these individuals have issues such as social anxiety showing symptoms like fear of interacting with people and even getting out of the house causing them to be more likely to spend time playing internet games. Nonetheless, extreme time spend playing internet games has also created symptoms of IGD.

Studies that conducted by Bonnaire and Baptista (2019) found that gender plays a role in the existence of IGD and even depression. Men who were young and had high scores on anxiety as well as depression reported dealing with IGD. On the other hand, women who have less education and high levels of depression reported to have IGD. However, the relationship between the symptoms of depression and the IGD can be clearly seen through the test results that have been carried out. Most of the gamers spend their time on playing internet games because they try to escape from the real world and the psychological distress experienced. Even so, their unsuccessful efforts made their situation worse. This can be seen through a study conducted by Lin et al (2021) where those with IGDs reported having high levels of stress and depression. This is a result of them trying to cope with the psychological stress faced by experiencing the same cycle of stress through playing internet games. This shows that it is necessary to watch and monitor the behavior so that one does not fall into IGD. In this study, author focused on the influence of IGD on depression, stress and anxiety levels among internet game players. This is because the symptoms introduced by the APA in the DSM-V also covering the emotional level and mental health of players in addition to diagnose the existence of addiction of internet gaming. This is important because high levels of these three symptoms can lead the individuals into even worse directions such as self-harm and suicide. Therefore, this study is expected to shed more light on the relationship of IGD towards the levels of depression, stress and anxiety among internet game players.

### **Method**

Participants in this study includes 118 youths aged 19 to 45 years old ( $M = 28.91$ ,  $SD = 5.38$ ). They were among those who are part of a Facebook gaming group of Malaysia who volunteered to participate in the study. The participants comprised of 99 males (83.9%) and 19 females (16.1%). The questionnaire used in the study was a combination of three different inventories as well as a set of demographic questions including the number of hours spent playing internet games in a week. In addition, IGD is measured using the IGD Scale-Short Form (IGDS9-SF) where higher overall scores indicate high level of IGDs. It also has 9 items that measure nine different dimensions. Based on Pontes and Griffiths (2016), IGDS9-SF has a high reliability ( $\alpha = 0.87$ ) indicating this scale has good reliability. In addition, this study also used the Depression, Anxiety, Stress Scale (DASS-21) test tool to measure three dimensions of psychological distress. Each dimension has the same scoring method but has a different interpretation of the score. This test has 21 items and according to Musa et al. (2007), each dimension of distress has good reliability: depression ( $\alpha = 0.84$ ), anxiety ( $\alpha = 0.74$ ) and stress ( $\alpha = 0.79$ ).

Pilot studies were conducted before the questionnaire link was opened to the sample of participants to ensure that the questionnaire was understandable and can be repaired if there was an error. A group of five people was selected by the researcher to participate in the pilot study. The group consists of those who have an intermediate proficiency in Bahasa Melayu so that they can checked the language used in the questionnaire and suggest any corrections to

be made. After the pilot study was conducted, researcher opened the link to a sample of study participants and distributed it through Facebook's social media platform. Study participants were required to answer all parts of the questionnaire including demographic details, Depression, Anxiety, Stress Scale (DASS-21) and also IGD Scale-Short Form (IGDS9-SF). Before they answer the questions, informed consent and a brief explanation of the study were explained on the first page and they need to press the 'agree' button to continue to answer the question.

## Results

Based on the Table 1, all three dimensions have the same minimum and maximum scores where 0 is for minimum and 42 for maximum. The median score for depression is 12, followed by stress (14) and anxiety (10).

Table1

*DASS-21 three dimensions descriptive statistical analysis*

Dimension	Min	Max	Median	Mode	Average	Standard Deviation
Depression	0	42	12	6	13.70	11.08
Anxiety	0	42	10	.00a	11.36	9.17
Stress	0	42	14	14	13.08	9.74

**Note:** a. The existence of diverse modes

For mode, the most common score for depression was 6 ( $f = 14$ , 11.9%) while for stress it was 14 ( $f = 19$ , 16.1%). As for the anxiety dimension, as many as four scores appear the most making it multimodal where scores 0, 2, 4 and 12 ( $f = 12$ , 10.2%) have appeared at the same frequency. For the average min, the dimension for depression obtained a value of 13.7, the anxiety dimension obtained a value of 11.36 while stress obtained a value of 13.08. According to the interpretation score of the DASS-21, the average respondent scores for all three dimensions showed normal scores thus did not require attention and referral to the psychiatrist. For the depression dimension, the respondent's average score was at the stage of mild. For the stress dimension, the interpretation of the score is at the normal level, while for the anxiety dimension it is at the moderate severity level. Even none of the average scores of the three dimensions got severe or extremely severe, it shall not to be underestimated since it can easily change towards that level.

Based on Table 2, the minimum score obtained by respondents is 9 and the maximum score is 44. The median score is 21 and the most common score is 20 ( $f = 10$ , 8.5%). The average IGD score of respondents for this study was 21.78. According to Pontes & Griffiths (2015), those who fall into the score range between 36 to 45, are categorized as individuals who are dealing with IGD. Based on the result obtained, average score respondents for this study, shows that it still does not exceed the score categorized to those who faced IGD.

Table 2

*Descriptive statistical analysis of IGD*

Dimension	Min	Max	Median	Mode	Average	Standard Deviation
IGD	9	44	21	20	21.78	7.17

The total size obtained by the relationship between the two variables, IGD and stress is 0.52 which is in the large size category. This suggests that there is a strong positive and statistically significant relationship between the stress dimension and IGD,  $r = 0.52$ ,  $n = 118$ ,  $p < 0.001$ . From these results it can also be interpreted that the higher the level of IGD suggesting a higher level of stress of the person. From Table 3, the relationship between the IGD and anxiety obtaining a value of 0.44 indicates a moderate size. This means that the relationship in between anxiety and IGD is positive and has moderate strength,  $r = 0.44$ ,  $n = 118$ ,  $p < 0.001$ . It also gives the impression that if a person's level of IGD increases, thus their level of anxiety also increases. Based on Table 3, it can be seen also that the relationship between the IGD and depression has a large size of correlation with a value of 0.54. From these results it can be concluded that there is a positive and strong link between IGD and depression,  $r = 0.54$ ,  $n = 118$ ,  $p < 0.001$ . From these results it can also be interpreted that with the increase in the level of IGD, the level of depression of a person will also increase.

Table 3

*Analysis of correlation of age and time demographic information with variables*

	1	2	3	4	5
1. Age					
2. Time	.09				
3. Stress	-.08	-.03			
4. Anxiety	-.03	-.08	.86**		
5. Depression	-.03	.10	.84**	.78**	
.IGD	-.10	.25**	.52**	.44**	.54**

\*\*Correlation is significant at 0.01 (2-tailed)

\* Correlation is significant at 0.05 (2-tailed)

From the three analyses of the three dimensions in DASS-21, the levels of depression, stress and anxiety have a positive relationship with IGD. This suggests that as a person's level of IGD increases all three levels of psychological distress also increase. The results for the multiple regression analysis carried out on this test obtained the variance values described by the model for the whole were 30.9%,  $F(3, 114) = 16.98$ ,  $p < 0.001$ . This indicates that there are as many as 69.1% of other variables that can affect IGD. Through this table, it can also be seen that depression (beta = 0.36,  $p = 0.02$ ) recorded the highest beta values followed by

stress (beta = 0.27, p = 0.10) and anxiety (beta = -0.06, p = 0.66). This suggests that depression makes the strongest unique contribution to explaining the IGD. It is followed later by stress and anxiety. The overall results are as shown in Table 4.

Table 4

*Multiple regression results*

Model	Non-standard coefficient		Standard Coefficient		Collinearity Statistics		
	$\beta$	Standard Error	Beta	t	Sig.	Tolerance	VIF
Malar	16.53	0.95		17.47	<.001		
Stress	0.20	0.12	0.27	1.66	0.10	0.22	4.50
Anxiety	-0.48	0.11	-0.06	-0.44	0.66	0.31	3.23
Depression	0.23	0.10	0.36	2.36	0.02	0.26	3.78

**Note:** Dependent variables: IGD (IGD) (r = 0.56, r<sup>2</sup> = 0.31, Adj r<sup>2</sup> = 0.29)

**Discussion**

Looking at the results of the above analysis, IGD are indeed related and connected to all three psychological distresses namely depression, stress, and anxiety. Furthermore, it can be concluded that the relationships between all variables are quite strong, indicating that it has the potential to be one of the reasons why those who face IGD also have the potential to be facing all three psychological distresses. This is in line with a study conducted by Jaafar et al (2021), where internet game disorder does have a positive relationship with psychological factors such as stress, depression and anxiety. Compared to the study conducted by Jaafar et al (2021) where stress is the highest contribution, this study shows that depression has the greatest contribution in explaining IGD. It is likely that different types of samples could influence the results of the studies. If seen, the studies conducted by the past researchers, the samples were among university students where the sample of the authors were those who really had experience and experts in computers and internet games.

Despite this, both studies did show a positive correlation between the two variables in between IGD and also all three psychological distresses. Therefore, this should be noted where such potential can negatively affect the level of mental health of the person. It is common to see on TV and social media nowadays whereas internet gaming can have an impact on a person's mental health. Thus, judging by the relationship between IGD and the psychological distress from this study, researchers also agree with the following statements. Therefore, internet gamers can use their free time by playing the internet game. However, it is important to be careful and look at all aspects and perspectives so that they can monitor their actions so as not to fall into things that could have a detrimental impact on their mental health. From the study conducted, depression is the highest dimension contributing to the explanation of IGD versus stress and anxiety. Ostinelli et al (2021) explains that there is an impact on emotional aspect for people who suffers from the IGD. Thus, from here it can be

concluded that it is important for the players of the internet game to always be alert to their emotions and not to fall to the point of causing the IGD. This is because of its effect on emotions that potentially lead them to be facing with depression.

For those in the online gaming circle who have been professionally diagnosed with IGD or for those who might not have, it is necessary to take proactive steps in their lives to move towards making a change for the better. This is because, if they do not change their current behavior, then the behavior could create distress and cause stress, anxiety, and depression. In other words, the increase of IGD positively correlates with level of psychological distress. Therefore, the individual themselves need to be vigilant of symptoms of IGD that occur in their lives thus proactively making the necessary changes towards maintaining a good mental health. Another interesting point to discuss is that increasing of age will not necessarily lead to an increase in IGD and psychological distress. This can be seen from a study conducted by Moustafa et al (2017) in which psychological distress decreases with the increasing of age. Similarly, the result for present study shows that there is a negative correlation on the relationship between age and also psychological distress and even IGD. This is likely due to the lack of sources of pressure faced by those who have been aged.

It can also be seen that as age increases, there is also an increase in the time spent playing internet games. As explained in the study of Lescop and Lescop (2014), players spend their time playing internet games as one of ways to relieve stress. Thus, this coincides with the results in this study. In addition, it was also found that the number of those who play internet games increases in the final phase of youth. This may be because economic stability affects the number of players in this phase. When viewed at the variance value of the regression results, psychological distresses such as stress, anxiety and depression only contribute to 30.9% to explain IGD. This means that there is another 69.1% of various factors that can explain IGD. When viewed from a study conducted by Ramón-Arbués et al (2020), problematic internet usage behavior is one of the factors causing psychological distress such as depression, anxiety, and stress. Other contributing factors also include smoking, insomnia, and lack of confidence. So here it can be concluded that IGD are one of the contributors to psychological distress.

### **Conclusion**

Although all respondents showed a normal score for DASS-21, nonetheless prevention actions must always be taken to avoid IGD for happening. Also, the result found there is a positive and strong link between IGD for both stress and depression. From these results it can also be interpreted that with the increase in the level of IGD, the level of stress and depression of a person will also increase. Based upon the multiple regression analysis it is predicted that 30.9% of the cause of IGD was due from stress, anxiety, and depression. In today's world the development of things associated with the internet is changing rapidly, including internet games. Therefore, there might be a possibility in the future that people could become addicted to internet gaming due to its virtual reality and artificial intelligence elements. If this happens then IGD is more likely to occur. To curb the matter, awareness of IGD and guidelines to playing internet games in a safe way should be given to school children. By doing so, it is hope that our younger generation would have a brighter future to lead.

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