

ORIGINAL ARTICLE

An Assessment of Knowledge, Attitude, and Practice of Video Gaming and the Relationship with Depression among University Students

Anisa Salleh, Radiah Abdul Ghani

Department of Biomedical Science, Kulliyah of Allied Health Sciences, International Islamic University Malaysia, Pahang, Malaysia

ABSTRACT

Introduction: Video games which are electronic games played on a video screen, has the potential to be one of the leading causes of depression among youth. Since there are only few studies on the issue, this study identified the level of knowledge, attitude, and practice (KAP) on the effects of video gaming on depression among International Islamic University Malaysia (IIUM) students and the correlation between them. **Methods:** A self-developed questionnaire, with four sections on socio-demographic characteristics, knowledge, attitude and practice on depression and video games, was used to do a cross-sectional survey among 140 IIUM students. The level of KAP was evaluated using a descriptive frequency table. Pearson correlation test was used to determine the correlation. **Results:** The majority of the respondents had moderate level of knowledge (56.4%) and attitude (57.1%). For practice scores, the majority portrayed a poor level of it (73.6%). Only knowledge and attitude scores showed positive correlation ($r = 0.440$). **Conclusion:** This study showed that increasing knowledge on factors of excessive video gaming habits and factors that increases the risk for development of depression can be helpful in tackling the rising rate of depression among the youth in Malaysia.

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Corresponding Author:

Radiah Abdul Ghani, PhD
Email: radiah@iium.edu.my
Tel: +609-5705207

INTRODUCTION

Depression among the youth is currently on the rise as technology continues to develop, leading to the addition of gaming disorder in the 11th Revision of the International Classification of Diseases (ICD-11) (1). Studies suggest that this disorder only affects certain people “that are in digital- or video-gaming activities” (1). Video games are defined as “a variety of interactive games played on different display platforms, for example gaming devices, television, or mobile devices” (2). It is also defined as “a computer game designed mainly for entertainment purposes” (3). Video games have been a form of entertainment since 1967 when Ralph Baer first came up with a prototype video game console called “Brown Box” (4). Since then, video games in all

forms and genres have spread globally and Malaysia is not excluded from the list. In Malaysia, the revenue in the video game segment alone is estimated to reach US\$489.10 million in 2022 and the number of users in 2021 amounted to 13.6 million users (5,6). As of October 2021, most of the users were aged from 25 – 34 years at 36.2%, followed closely by users aged from 18 – 24 years at 25% (7). As youth is defined by the United Nations as those aged between 15 – 24 years, there is potential for a closer look at the mental health of video game consumers that are Malaysian youth (8).

In China, a gaming curfew on minors was enforced in which gamers under 18 years old are banned from playing online between 10 p.m. to 8 a.m. The rules also include a maximum of 90 minutes of gaming on weekdays and three hours on weekends and holidays, as well as a limit on money spent on the games in which those from 8 to 16 years old can spend until 200 yuan and 16 -18 years old can spend a maximum of 400 yuan (9). These rules are due to a study in 2015 that revealed around 500 million

Chinese citizens have visual impairment, suspected due to mobile phones and video games (10). In Indonesia, a study was conducted on the relationship between online game addiction and depression in adolescents in which the study revealed that adolescents that are mildly and severely addicted to online games have 2.4 times higher chances to experience depression compared to those not addicted (11). In Malaysia, there are several studies that investigated video games in relation to mental health issues. One of it is a study that researched factors that have correlation to internet gaming disorders (IGD) among Malaysian university students and found out that there is a significant number of students who were at risk of IGD and recommended for gaming hygiene advice that is given to at-risk students in preventing the development of IGD (12).

Video gaming poses no threat to an individual's wellbeing. However, with excessive use, it can be harmful, especially to youth who may not be aware of it. A study by Wang in 2019 researched the association between mobile game addiction and depression, social anxiety, and loneliness which revealed that higher self-reported depression, social anxiety, and loneliness were found in youth with mobile game addiction (13). Therefore, knowing the level of KAP on the effects of video gaming on depression among IIUM students will help in establishing guidelines to protect both mental and physical wellness of video game users. We hypothesised that the level of knowledge, attitude, and practice on the effects of video gaming on depression among the students is at a good level. Hence, this study aimed to investigate the level of KAP on the effects of video gaming on depression among IIUM students.

MATERIALS AND METHODS

Study design

The data for this study was obtained using a cross-sectional method. The self-developed questionnaire was distributed from February until March 2020.

Sample population

This study included students from all three of IIUM campuses which are IIUM Kuantan, IIUM Gombak and IIUM Pagoh.

Questionnaire construction

The questionnaire used was a self-made questionnaire which consists of four sections. The first section was divided into two subsections. The first subsection, sociodemographic data, includes gender, age, year of study, kulliyah, programme of study and nationality. The second subsection for video gaming characteristics encompasses genre of games played, preferred gameplay, amount of time spent per game session in a day, preferred day for game session, platform of video game used, gaming style and amount of money spent on games. For the second, third and fourth section, it was

for KAP on the effects of video gaming on depression. This part used the Likert scale which consisted of five choices of answers; strongly disagree, disagree, neither agree nor disagree, agree, strongly agree. The categories of the Likert scale were coded in numerical values which was 1 for strongly disagree, 2 for disagree, 3 for neither agree nor disagree, 4 for agree and 5 for strongly agree (14). The participant have to choose only one out of the five choices of answers.

Before the questionnaire was distributed, content validation via 5 experts in the related fields to the study was done to determine the validity and reliability of the questionnaires as well as to ensure the questionnaires will suit the aim of the study. This was followed by a pilot study to detect any flaw of the questionnaires and to ensure the questionnaire was easy to understand and to answer. A pilot study was then done in a small group of 12 respondents among IIUM students in Kuantan campus. The Cronbach's alpha calculation for the pilot study was 0.793, which falls between the acceptable range of 0.7 to 0.8.

Data collection

An online questionnaire was distributed using purposive sampling among IIUM students. Google Forms was used to create a link for the questionnaire, which was distributed via social media platforms (WhatsApp, Facebook, Instagram, Twitter).

Statistical analysis

A statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 25.0 software. Frequency and percentage were used to describe the socio-demographic and video gaming characteristics. The level of knowledge, attitude and practice among respondents was evaluated by using the descriptive frequency table. Since all assumptions were met, a parametric Pearson correlation test was also used. When p values were less than 0.05, the differences were considered statistically significant. The scoring system for each question in all three KAP sections used the Likert scale. The scores were classified into three levels based on Bloom's cut off scale as follows: 1. good: 80.0%–100.0%; 2. moderate: 60.0%–79.0%; and 3. poor: \leq 59.0%. Bloom's cut off scale was adapted from a KAP study conducted on dengue fever prevention among the people of Male, Maldives and Bangkok (15).

Ethical Clearance

This study was approved by the IIUM Research Ethics Committee (IREC), International Islamic University Malaysia IIUM/504/14/11/2/ IREC 2020-BS(KAHS).

RESULT

Level of knowledge, attitude, and practice and its correlation

Figure 1 represents the category of scores for KAP on

the effects of video gaming on depression among the respondents, while Figure II represents the correlation between the three elements. Calculated using single proportion formula, a total number of 140 respondents participated in this study. 77 were males and 63 were females with a percentage of 55% and 45% respectively. The ages of the respondents ranged from 19 to 25 years old (mean age= 22.15, SD = 1.454). Overall, the majority of the respondents had moderate level of knowledge (56.4%) and attitude (57.1%). For practice scores, the majority portrayed a poor level of it (73.6%).

Based on Table I, most of the questions related to knowledge on depression were answered correctly by the respondents. Most of the respondents chose 'agree' as the answer for the question 'One way to treat depression is via psychotherapy' where strongly agree is the best answer for it. As to the question related to knowledge on video games, most of the respondents answered it correctly with a frequency of 87 (62.1%) where strongly agree is the best answer for this question. Most respondents answered correctly for only one question out of four on questions related to the effects of video gaming on depression. The majority of them, n=39 (27.9%) was aware that multiplayer gameplay induces more stress during gaming sessions due to the pressure. Most respondents (35.7%) disagreed with the statement 'Sleeping habits are not affected by daily usage of video games' whereas strongly disagree is the best answer for it. For the other two questions, most answered incorrectly with n=1(0.7%) and n=15(10.7%).

Table I also show the distribution of attitude on the effects of video gaming on depression. For questions related to attitude on depression, most of the respondents answered positively for most of the questions except for one question which was 'I know that one of the side effects of some medications is depression'. Fifty-six respondents (40.0%) chose a neutral answer for depression as a side effect of some medications as a neutral choice whereas strongly agree is the best answer for this question. For attitude on the effects of video gaming on depression, half of the questions received high frequency of the positive answers. One statement 'I am sure that playing video games will strengthen interpersonal bonding (close association or acquaintance between two or more people, e.g., family or kinship relations, friendship, marriage, relations with associates, work, clubs, neighbourhoods)' obtained the lowest frequency of the positive answer with n=3(2.1%). Table I then shows the distribution of practice on the effects of video gaming on depression. Most of the questions recorded the highest frequency of incorrect answers. There were two statements in which most of the

respondents chose neutral as their answer. Most of their answers indicate that they did not practice video games in a way that leads to the development of depression.

The relationship between KAP scores on the effects of video gaming on depression was examined using the Pearson's correlation coefficient. In Figure II, a low positive correlation can be seen of Pearson's correlation coefficient, $r = 0.440$, between knowledge and attitude scores. The r value indicates that the correlation is positive. The p -value is less than 0.001, signifying a statistically significant result. For correlation between attitude and practice scores, a negligible correlation can be seen of Pearson's correlation coefficient, $r = 0.126$. The r value indicates that the correlation is positive. The p -value is 0.137, signifying that the association between attitude and practice scores were not significant.

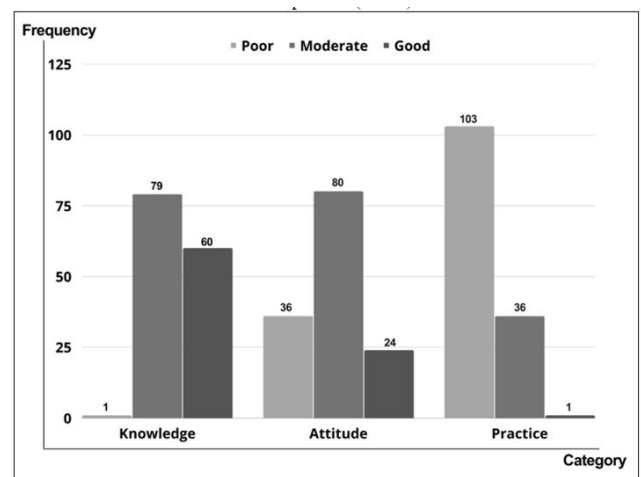
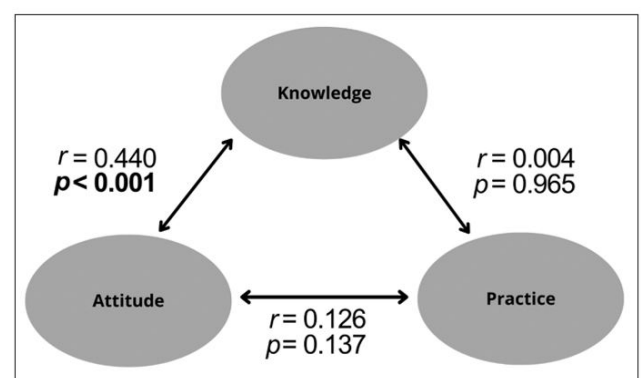


Figure I Category of knowledge, attitude, and practice of video gaming and the relationship with depression (n=140)



Note: The significant correlation between the categories is highlighted in bold

Figure II Correlation between knowledge, attitude, and practice scores of video gaming and the relationship with depression (n=140)

Table I Distribution of knowledge, attitude, and practice of video gaming and the relationship with depression (n=140)

Statement	Strongly Disagree Freq. (%)	Disagree Freq. (%)	Undecided Freq. (%)	Agree Freq. (%)	Strongly Agree Freq. (%)
KNOWLEDGE					
Depression					
Depression is a mental disorder that affects a person's mood.	0	0	1(0.7)	41 (29.3)	98 (70.0)
People with depression are more likely to experience fatigue.	1(0.7)	3(2.1)	13 (9.3)	53 (37.9)	70 (50.0)
Changes of appetite is one of the symptoms of depression.	2(1.4)	3(2.1)	13 (9.3)	51 (36.4)	71 (50.7)
One way to treat depression is via psychotherapy.	1(0.7)	3(2.1)	37 (26.4)	65 (46.4)	34 (24.3)
The presence of supportive family members helps to reduce depression.	1(0.7)	0	6(4.3)	30 (21.4)	103 (73.6)
Video Games					
Arcade games (Pac-man), computer video games and console games (Xbox) are the types of video games.	1(0.7)	0	10 (7.1)	42 (30.0)	87 (62.1)
The Effects of Video Gaming on Depression					
Sleeping habits are not affected by daily usage of video games.	48 (34.3)	50 (35.7)	21 (15.0)	15 (10.7)	6(4.3)
Single player induces more stress compared to multiplayer gameplay due to the pressure during game sessions.	39 (27.9)	33 (23.6)	34 (24.3)	22 (15.7)	12 (8.6)
Playing video games helps in increasing the ability to focus on other daily activities.	1 (0.7)	9 (6.4)	45 (32.1)	54 (38.6)	31 (22.1)
Increased level of depressive symptoms is associated with prolonged playing of video games.	18 (12.9)	41 (29.3)	41 (29.3)	25 (17.9)	15 (10.7)

CONTINUE

Table I Distribution of knowledge, attitude, and practice of video gaming and the relationship with depression (n=140) (CONT.)

Statement	Strongly Disagree Freq. (%)	Disagree Freq. (%)	Undecided Freq. (%)	Agree Freq. (%)	Strongly Agree Freq. (%)
ATTITUDE					
Depression					
I believe that loss of interest in daily activities is a symptom of depression.	1(0.7)	2(1.4)	13 (9.3)	57 (40.7)	67 (47.9)
I know that one of the side effects of some medications is depression.	4(2.9)	21 (15.0)	56 (40.0)	36 (25.7)	23 (16.4)
I am aware that feeling of helplessness is a symptom of depression.	1(0.7)	7(5.0)	18 (12.9)	57 (40.7)	57 (40.7)
The Effects of Video Gaming on Depression					
I know that violent video games increase aggression tendencies.	29 (20.7)	25 (17.9)	25 (17.9)	33 (23.6)	28 (20.0)
I believe that lack of sleep due to video gaming is associated with depressive symptoms.	12 (8.6)	32 (22.9)	40 (28.6)	37 (26.4)	19 (13.6)
I am aware that a decrease in social communication skills is associated with video gaming.	21 (15.0)	30 (21.4)	21 (15.0)	44 (31.4)	24 (17.1)
I am sure that excessive video gaming is associated with a decline in academic performance.	15 (10.7)	27 (19.3)	21 (15.0)	38 (27.1)	39 (27.9)
I am fine with interruptions from others while playing video games.	31 (22.1)	29 (20.7)	28 (20.0)	38 (27.1)	14 (10.0)
I am sure that playing video games will strengthen interpersonal bonding (close association or acquaintance between two or more people; ex: family or kinship relations, friendship, marriage)	3(2.1)	12 (8.6)	39 (27.9)	50 (35.7)	36 (25.7)

CONTINUE

Table 1 Distribution of knowledge, attitude, and practice of video gaming and the relationship with depression (n=140) (CONT.)

Statement	Strongly Disagree Freq. (%)	Disagree Freq. (%)	Undecided Freq. (%)	Agree Freq. (%)	Strongly Agree Freq. (%)
I know that video games addiction is associated with physical health problems.	7 (5.0)	16 (11.4)	42 (30.0)	44 (31.4)	31 (22.1)
PRACTICE					
I play video games for more than 4 hours per day.	41 (29.3)	28 (20.0)	18 (12.9)	29 (20.7)	24 (17.1)
I did not participate in any physical sports during my free time.	44 (31.4)	36 (25.7)	14 (10.0)	24 (17.1)	22 (15.7)
I had skipped my meals while I was playing video games.	45 (32.1)	38 (27.1)	17 (12.1)	26 (18.6)	14 (10.0)
I experienced body aches (ex: headaches) after playing video games.	23 (16.4)	30 (21.4)	30 (21.4)	43 (30.7)	14 (10.0)
I had slept late past my usual bedtime because of video games.	15 (10.7)	16 (11.4)	16 (11.4)	53 (37.9)	40 (28.6)
I had isolated myself from my friends and families before because of video games.	40 (28.6)	47 (33.6)	20 (14.3)	20 (14.3)	13 (9.3)
I remained calm whenever I lost in playing video games.	11 (7.9)	35 (25.0)	41 (29.3)	37 (26.4)	16 (11.4)
I had missed a lecture due to playing video games.	109 (77.9)	18 (12.9)	6 (4.3)	3 (2.1)	4 (2.9)
I feel fine even without playing any video games in a day.	10 (7.1)	5 (3.6)	20 (14.3)	40 (28.6)	65 (46.4)
I play video games for constant hours daily.	26 (18.6)	40 (28.6)	42 (30.0)	22 (15.7)	10(7.1)

Note: Freq. = Frequency, Correct answer are in bold

DISCUSSION

Depression

In terms of depression, it is observed that most of the respondents have accurate knowledge on the concept of depression as well as the symptoms of this mental health disorder. This is in parallel with a study done to assess mental health literacy towards depression among non-medical students at a Malaysian university, in which the

students displayed good knowledge on the symptoms of depression (16). Based on the analysis, the findings indicate that a good level of knowledge also contributes to a good level of attitude in terms of symptoms of depression. Most of the respondents accurately know the symptoms of depression, which includes loss of interest in daily activities and feeling helpless. The good level of depression literacy among university students can be due to exposure to more opportunities to learn about mental health in the university (17).

Most of the respondents portrayed good knowledge in treatment of depression. This shows that the knowledge related to medical treatment provided for individuals suffering from depression are well known among the students. This is consistent with the result from research conducted in 2010 on knowledge of medication and professional help for depression, in which antidepressant was chosen as the first drug of choice, followed by herbs, vitamins, diazepam, nerve tonic, and Fluoxetine (16). However, for risk factors of depression, only less than half of the respondents are sure that one of the side effects of some medications is depression. This can be supported with an article published in 2015 by Dr. Laura Carr from Harvard-affiliated Massachusetts General Hospital which stated that most patients that are prescribed medications are not aware that they can cause depression, and this may be due to hesitation in inquiring with the doctor on their depressive symptoms (18).

Video Games and Depression

One of the issues regarding the effects of video gaming on depression is the level of KAP on the risk factors of video games in the development of depression. For the risk factors, most of the respondents showed a moderate level of knowledge. It relates with the moderate level of attitude in which less than half of the respondents believe that violent video games do increase the tendency for aggression. This is in line with a study mentioned in the literature review, in which they found a significantly positive correlation between the exposure to violent video games with adolescent aggression (19). The findings suggested that a sufficient level of both knowledge and attitude by respondents contributes to a proper video gaming practice, from the low score in the practice section of statements related to the risk factors discussed. As shown in Table 1, it is seen that less than half of the respondents had practiced factors that increase the risk of development of depression such as not participating in any physical sports during their free time. However, nearly half of the respondents had a gradual increase in the hours spent playing video games daily. That practice is one of the criteria in The Gaming Addiction Scale, tolerance, in which the individual starts playing more and more video games (20). Less than half of the respondents had played video games for more than 4 hours per day. Four hours is used as a guideline based on a previous study in which playing video games for

more than 4 hours daily were considered as excessive. This is because there were no validated instruments to measure the severity of excessive computer playing (21). The next topic is the negative effects from excessive video gaming which increases the risk for the development of depression. The findings suggested that students are aware of the visible effects that video games possessed in the development of depression in an individual but are still lacking in the level of knowledge in the indirect negative effects of video gaming. In this study, it is observed that a good level of both knowledge and attitude on a topic relates to correct practice. However, a good level of knowledge in alterations of sleeping habits due to video gaming was associated with an improper practice. Although they are aware of it, more than half of the respondents had slept late past their usual bedtime because they were playing video games. This contradicting observation may be due to the addictive effect of video games on its users that led them to be unaware of the passing of time. Generally, the reasons video games can be so addictive are often related to how video games designers built the game to be challenging and interesting, but not too challenging that it will make the players give up. Online video games with other people are more addictive because they usually do not have a conclusion (22). This is also seen in the fact that over half of the respondents are aware that video gaming is linked to a loss in social communication skills, but only 15 are certain that playing video games will lead to weaker interpersonal bonds.

Next is about video game addiction and its association with physical health problems, which are believed by more than half of the respondents. In relation to this, nearly half of the respondents had experienced body aches, such as headaches, after playing video games. This is in line with a study conducted among adolescents on pain and musculoskeletal pain syndromes associated with video games, and the common pain experienced was pain in the hands and wrists (23).

The last topic is the symptoms of video game addiction that increases the risk for development of depression. One of the symptoms of video gaming addiction is being annoyed with interruptions from others while playing video games, which is agreed by nearly half of the respondents. This symptom is one of the criteria in The Gaming Addiction Scale, salience, in which the individual considers gaming to be the most important activity. Hence, interruptions of the important activity are considered not tolerable (20). Experiencing unpleasant emotions when they did not play video games in a day, are also in the criteria in the Gaming Addiction Scale, which is withdrawal. All these symptoms are considered as emotional signs or symptoms of video game addiction (22).

Limitation of Study

There are several limitations in the study. The first

limitation is the sample selection that raises a possibility of selection. Although it ranges from three separate campuses, the majority of the sample was unintentionally recruited from faculties in only one of the campuses. This is due to the implementation of data collection via the online method. The second limitation of the study is the measurement errors due to data collected via self-administered questionnaire. As the questionnaire was distributed via online platforms, there were possibilities of inaccuracies in terms of missing data and inaccurate comprehension of the questionnaire. The use of face-to-face questionnaires session are recommended for future research to ensure minimisation of measurement errors.

CONCLUSION

This study has shown that IIUM students portrayed a good level of knowledge, and good level of attitude towards on the effects of video gaming on depression, as well as proper practice of video gaming activities, hence lowering the risk of depression's development. Based on the findings in this study, increasing awareness of good video gaming habits among the youth is the first step in preventing development of mental health issues due to excessive video gaming in Malaysia.

Amongst the recommendation to enrich this research is by repeating this research with a bigger sample size and ages that range from 15 to 24 years old as it would encapsulate the youth age group. The vast results from a bigger sample size could lead to more reliable and valid results, as well as potential interesting issues from the study. Another recommendation would be to determine the depression level in youth that are categorised into those that do not play video games as a control group and video gamers as the second group. This can strengthen the study in observing whether playing video games have a direct correlation with depression.

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