

# Effect of Mindfulness Training Program on Internet Gaming Addictive Behavior among Suez Canal University Students

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**Abstract:** Background: Mindfulness is a psychological and coping strategy used to adjust maladaptive behaviors such as internet gaming addictive behavior and improve awareness and reduce stress, anxiety and depression. Aim of the study: Evaluate the effect of mindfulness training program on internet gaming addictive behavior among university students. Research design: Quasi-experimental research design with pre-post assessment was used. Setting: The study was conducted at Suez Canal university- Ismailia city in a randomly selected six faculties divided in to two medical, two practical and two theoretical faculties. Sample: A systematic random sample of 203 university students were selected in this study. Tools for data collection: Data was collected using five tools namely; knowledge about internet gaming, video game usage questionnaire, game addiction scale, problematic video game play revised scale and mindfulness attention awareness in addition to demographic characteristics sheet. Results: There was a highly statistically significant relation between low levels of highly engaged, problem gamers, and addicted gamers and high level of mindfulness. It is evident that game addiction increased with low level of mindfulness. After implementation of mindfulness training program, the majority of intervention group had high level of mindfulness compared to pre intervention. The statistical significant independent positive predictor of mindfulness attention awareness was the gaming addiction. Conclusion: The mindfulness training program had a positive effect on decreasing gaming addictive behavior among university students in intervention group. Recommendations: Dissemination of this mindfulness training program to other students in different faculties at Suez Canal University.

**Keywords:** Addictive behavior, Internet gaming, Mindfulness, Training program, University students.

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## 1. INTRODUCTION

Today the internet is one of the most essential instruments, inevitable and powerful inescapable of many teenagers' daily lives. However, the internet has a bright Perspectives such as sending messages, reading news, conducting business and other activities. On the contrary, misuse of the internet frequently pushes teenagers who spend a lot of time daily in using electronic media into many types of addiction which lead to significant impairments (Yao et al., 2020). This lifestyle may affect many activities such as learning, doing homework and social relationships (Nafee, et al., 2018).

Internet addiction and internet gaming disorder are prevalent problems among university students, that affect negatively all dimension of their quality of life, physical, social and mental aspects as well as overall psychological wellbeing, that result in complete separation from environment and lack of communication with others in addition to its negative consequences on the activities of daily living (El deeb, et al., 2022 & Shaheen et al., 2019).

Unfortunately, gaming addiction falls under the category of gaming disorder because it is a pattern of recurrent persistent gaming behavior which may be offline or online. The disorder can present through the escalation or continuation of gaming despite the occurrence of unfavorable circumstances, so that daily activities and other life interests become marginal, and impaired control over game, including context, end, duration, intensity, frequency and onset (Lopez-Fernandez, 2018).

However, mindfulness is an important practice in the digital era. It is a form of pure attention, on a purpose, in the moment and without judgment to develop nine basic attitudes namely, without judgment, patience, openness, trust, no ambition, letting go, accepting, being grateful, and generosity (kim, 2008). The aim of a mindfulness practices is to help the individual to find the right behavior and become aware of own behavior, habits and own reactions; it is very useful for teenagers to give up away from addictive behaviors (Allen et al., 2021).

Additionally, the mindfulness intervention is a meditation method consisting of a combination of affective, cognitive, moral, intrapersonal and interpersonal methods, it refers to the methods for reducing and coping with stress and increase empathy for teenagers with internet and gaming addiction, or prevents craving for addiction as well as enable conscious self-regulation to increase decision making awareness of problematic internet use with a critical attitude (Sancho et al., 2018). Furthermore, it allows individuals to recognize their needs more clearly and respond with more flexibility to internal and external pressures through an awareness with conflict and maladjustment, then the motivation to control the gaming which leading to more controlled behavior (Im , 2013).

A psychiatric mental health nurse (PMHN) provides counseling and ongoing care for addictive behaviors, provides health promotion, prevention and early detection of problems among adolescents using core competencies and knowledge as well as using motivational interviewing techniques (Sharma et al., 2021).

### 1.2 Significance of the Study:

In recent years, internet gaming addiction is one of the most popular internet activities. It can be pleasurable and rewarding but some individuals develop pathological manner of usage. Although the internet could be very productive and have inherent advantages, it could have a drastically opposing effect and disadvantages (Al Gammal et al., 2019). In Egypt, mobile gaming is becoming the standard way to game. Indeed, considering the country's high rates of smartphone penetration and the relative costs associated with traditional gaming consoles (Egypt Mobile Gaming Statistics, 2022).

## 2. THE AIM OF THE STUDY

This study aimed to evaluate the effect of mindfulness-training program on internet gaming addictive behavior among university students.

### Objective of the study:

- 1- Assess internet gaming addictive behavior and its risks among university students.
- 2- Assess mindfulness among university students.
- 3- Explore the relationship between internet gaming addiction levels and mindfulness among university students.
- 4- Design and implement a mindfulness training program for university students who have internet gaming addictive behavior.
- 5- Measure the effect of a mindfulness training program on internet gaming addictive behavior among university students at Suez Canal University

## 3. SUBJECT AND METHODS

### 3.1. Study design:

A quasi-experimental research design was used in the study.

### 3.2. Study setting:

The study was conducted at Suez Canal University in Ismailia city on six faculties divided in to two medical, two practical and two theoretical faculties.

- Medical faculties: faculty of Nursing and faculty of Pharmacy.
- Clinical faculties: faculty of science and faculty of computing and information.
- Theoretical faculties: faculty of literature and faculty of tourism and hotels.

### 3.3. Study subjects:

A sample of 203 university students divided in to two groups (102 intervention group and 101 control group) having internet gaming addictive behavior were included in the study and chosen randomly from first and second academic years in each faculty during the period of data collection.

### 3.4. Tool for data collection:

Interviewing questionnaire was used in the current study to collect the needed data. It is divided into five tools.

#### Tool 1: Interview questionnaire form

This tool was constructed by the researcher based on review of pertinent literature. It included two parts:

##### Part I: Demographic characteristics:

Included students' age, gender, residence, faculty name, recreational activities, academic level and family income.

##### Part II: Knowledge about electronic games:

consisted of six questions covering the name of internet game used and its classification, favorite place used during gaming and reasons for using internet game. Each correct answer was scored "1" and the incorrect scored "2". The scores of all questions were summed-up and converted into a percent score.

#### Tool 2: The Video game usage questionnaire

It was developed in an English language by **Tolchinsky, (2013)** and translated into Arabic by the researcher using translating back translation technique to ensure its validity (**Behling & Law 2000**). It consisted of a 11 items to assess information regarding the average number of hours played per week, average duration of each playing session, what time of day the player typically plays, and an estimate of how much of each player's life is spent engaged in these games, preference for online interaction and playing games over real life interactions, and whether or not the participant identified as a "gamer" i.e., someone who is an avid video game player.

##### Scoring system:

Questions 8,9,10 and 11 rated on a three-point Likert-type scale (1 = Never, 3 = Sometimes, 5 = Often) and then summing up item scores.

According to total score of the video game usage which ranging from 4 to 12, users who scored  $4 \leq 6$  points were defined as low video game usage user, and 7 points or higher were defined as high video game usage user.

#### Tool 3: The game addiction scale (GAS)

It was developed by **Lemmens, (2009)** and translated into Arabic by **Asaad et al., (2019)**. It consisted of 21 items to assess pattern of gaming among adolescents whether it is normal, risky or disordered gaming. It is designed to measure seven domains; salience, tolerance, mood modification, withdrawal, relapse, conflict and problems.

Each domain is represented by three questions with the phrase "How often during the last 6 months" preceding every question to explore the impact of gaming on different aspects of the subject's life.

**Scoring system:**

Respondents indicate their responses on a 5-point Likert-type scale (1 = never, 2 = almost never, 3 = sometimes, 4 = often, 5 = very often). Respondents who endorse all 4 domains tapping core addiction criteria (relapse, withdrawal, conflict, problems) are categorized as addicted gamers, while those who endorse 2 or 3 of the core criteria are categorized as problem gamers. Respondents who endorse all the 3 domains tapping gaming engagement (salience, tolerance, mood modification), whereas fulfilling none or one of the core addiction criteria are categorized as highly engaged gamers. Non addicted/non problem/non highly engaged gamers endorse less than the mentioned above scores.

**Tool4: Problematic Video Game Play-Revised (PVGPR) Scale**

It was developed by (Tolchinsky & Jefferson 2011) and translated into Arabic by the researcher using the translation back translation technique to ensure its validity (Behling and Law, 2000). It consisted of 35 questions which was administered using a 3-point Likert-type scale (1 = Never, 2 = Sometimes, 3 = Often). These questions address three factors; psychological, physical, and social consequences of problematic game play.

Factor 1: psychological dysfunction includes questions 1, 2, 3, 6, 11, 20 and 31.

Factor 2: mood regulation includes questions 5, 9, 10, 12 and 15.

Factor 3: physical dysfunction included questions 7,14,17,22, 24, 27, 30, 32 and 34.

Factor 4: concealing behavior includes questions 13, 19, 21, 28 and 29).

Factor 5: failure to limit play includes questions 8, 16 and 26.

Factor 6: time management difficulties include questions 4, 18, 23, 25, 33 and 35.

**Scoring system:**

According to total score of the (PVGPR) which ranging from 35 to 105, users who scored  $35 \leq 53$  points were defined as non-problematic user, and 54 points or higher were defined as problematic user

**Tool 5: Mindfulness Attention Awareness Scale (MAAS)**

It was developed by Brown & Ryan, (2003) and translated into Arabic by (Rayan & Ahmad, 2018). It consisted of 15 items to assess a core characteristic of mindfulness namely; a receptive state of mind in which attention, informed by a sensitive awareness of what is occurring in the present and simply observes what is taking place in which respondents indicate on a 6 point Likert-type scale (from 1= almost always to 6 = almost never) to evaluate the degree of awareness and attention regarding what is occurring in the present moment. Score 1 for each item indicates absence of attention or awareness, while score 6 indicates the greater level of attention or awareness.

**Scoring system:**

According to total score of the MAAS which ranging from 15 to 90, users who scored  $15 \leq 49$  points were defined as low-mindful user, and 50 points or higher were defined as high mindful user (Arpaci, 2021). High scores obtained from the scale indicate high mindfulness levels.

**Tool validity and reliability:**

The five tools were revised for face and content validity. It was ascertained by a panel of five experts. Three professors in the field of psychiatric and mental health nursing, two professors in the field of psychiatric medicine. The tools were rigorously revised for clarity, relevance, comprehensiveness, understanding and simplicity for implementation. No modifications were done.

**3.5. Field work:**

- Data was collected from the selected settings by researcher using five tools for data collections, where the student can answer questions after explaining the purpose of the study.

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- Data collection (pre-test) took about six months from (October 2020 / until April 2021), according to time available to students and their attendance schedule at faculties.
- The approximate time spent with each student during one to one interview is (40-45) minutes because of novelty of topic and time needed for warming up the relationship with student.
- It was difficult to gather all students at the same time; so they were divided into small groups and each group consisted of (7 -10) students because of COVID19 pandemic period to maintain distance and protective measurements.
- The researcher implemented the program for each group in scheduled times and days, a four weekly sessions were given on time of activity hours according to the time for each academic level (grade) and each faculty, the same content was provided using the same teaching methods, discussions, and handouts.
- To ensure that students understand the content of the program, each session started by a summary about what was given through the previous session and the objectives of the new one, taking into consideration the use of simple language to suit the student's level of understanding in their academic year.
- Motivation and reinforcement techniques as praise and recognition were used during the session to enhance participation and learning.
- The implementation phase lasted from the beginning of May 2021 to the end of October 2021.
- Evaluation phase of the mindfulness training program was at November 2021.

### 3.6. Pilot study:

A pilot study was carried out on (21 student) of the study participants to check the applicability and feasibility of the instrument, to identify the obstacles and problems, and to take needed measures to manage these obstacles and problems when collecting data. Also to estimate the time needed to fill in the tools. This sample was excluded from the total sample.

### 3.7. Ethical considerations:

Official permission was obtained from the ethical scientific research committee session number (14) code number (39/7-2018) at the faculty of nursing, Suez Canal University to upload the informed consent and get the students' agreements to participate in the study. The students were informed that any individual included in the study has the right to refuse to participate in the study or withdraw from the study at any time with no negative consequences to them, and the confidentiality of the data and results was maintained.

### 3.8. Data analysis:

Data were organized, revised, tabulated using the SPSS program, version 22. All continuous data were normally distributed and were expressed in mean  $\pm$  standard deviation. Categorical data were expressed in number and percentage. The student's t-test was used for comparison between two variables with continuous data. A correlation coefficient test was used to test for correlations between two variables with continuous data. Statistical significance was set at  $p < 0.05$  and P- Value  $< 0.001$  indicates highly significant.

Correlation co-efficient and linear regression analysis was used to detect the correlation between variables and independent predictors using Pearson coefficient correlation test.

## 4. RESULTS

**Table (1):** shows that, the students in the intervention and control groups had similar demographic characteristics, with almost equal mean age of  $19.5 \pm 0.69$  years and almost similar gender distribution. More than half of the students in the two groups were from urban areas and have intermediate income 66.5% and 86.2% respectively. The statistically significant difference between the intervention and control group concerning demographic characteristics was related to age and gender whereas p-value = 0.003 and 0.007 respectively.

**Table (2):** shows that the majority of studied students in both groups reported that preferred game was PUBG (78.8%), used mobile phone during playing game 71.4%, preferred playing games at home, preferred talking about internet games

during studying day and preferred internet games rather than reading or studying 88.2%, 85.2% and 88.7% respectively. However, more than half of them (59.6%) play IQ games.

**Figure (1):** shows that more than half of students (61.10%) were studied at theoretical faculties.

**Table (3) :**Shows that one third of studied students were playing video games from four to six times per week (34.0%) for one to three hours, and more than half of them (59.6%) were playing video games from one to three times per day, from one to three hours. Besides more than one third of them (37.4%) were playing video games science seven to ten years. More than two thirds of studied students owning a video game console or computer during playing (39.9%), while the majority of them (59.1%) preferred playing games from 6-11 pm.

**Figure (2):** reveals that after implementation of mindfulness training program, more than of studied students in intervention group (64.70%) had non problematic level of game addiction compared to (25.50%) pre intervention. In the control group, 38.60% had highly engaged level of game addiction.

**Table (4):** shows that, at post intervention, the level of mindfulness attention awareness was high among non-problematic (49.0%), highly engaged (2.9%), problem gamers (2.9%) and addicted gamers (1.0%) compared to pre intervention. There was a highly statistically significant relation between low levels of highly engaged, problem gamers, and addicted gamers and high level of mindfulness. It is evident that game addiction increased with low level off mindfulness, whereas  $p \leq 0.001$ .

## 5. DISCUSSION

Excessive online and offline gaming is a detrimental practice that is associated with gaming addiction (**Ayumi et al., 2019**). The majority of online game players are teenagers, who ecstatic to express themselves in the virtual world, they experience anxiety in the real world, which causes gaming addiction. Teenagers often engage in excessive internet gaming, playing nonstop until they forget to do other activities. This has a negative impact physically, psychologically, academically, socially and spiritually (**Humayya et al., 2022**).

Implementation of mindfulness is a set of meditation and psycho educational exercises aims to help teenagers comprehend certain basic concepts such as stress, attachment and dependence on internal and external motivations (**Kabat-Zinn, 2009; Rosa et al., 2019**).

The present study was conducted on a sample of Suez Canal University students representing six faculties categorized as medical, clinical and theoretical ones. Their demographic characteristics were those of typical adolescent university students, with a higher proportion from urban areas, consistent with where they studied; Suez Canal University. Also, the majority of the studied students were males. This result might be due to the fact that female students are attracted to activities that more oriented towards social and communication-related activities and that females in the Egyptian community received more family supervision than males, potentially preventing them from developing highly engaged level of internet gaming addiction. In addition, may be due to presence of more digital game types appealing to male students and females are interested with watching television.

Regarding residence, the present study revealed that the majority of the students in the intervention and control groups have intermediate income. This result explained by the fact that a university student needs a reasonably high income level to purchase the modern mobile devices and consoles required for gaming. Also purchasing fast internet and gaming software. Living in urban areas also affects on social connectedness where individual can't connect or chairing activities with others such as friends or neighbors.

Both study groups in the current study had similar demographic characteristics, which is very important in studies testing the effect of an intervention to avoid the effect of confounding variables, they therefore had similar age, place of residence and income distributions. These factors are known to be associated with internet gaming addictive behavior.

The previous result is consistent with (**Rawshon et al., 2017; Singh, 2018 & Mahmoud et al., 2022**) who reported that internet gaming addiction is more common among males than among females. In the same context (**Naaj & Nachouki, 2021**) revealed that internet gaming addiction is more common among male's university students in the United Arab Emirates (UAE) than female counterparts. On the other hand, (**Spilkova et al., (2017)**) found that, females are more prone to online communication and social media use while males are more prone to online gaming.

The previous result is inconsistent with (Lam et al., 2009) who reported that no gender differences in terms of internet addiction. The difference between both results might be due to the fact that, the studies were applied using different tools and among different sample size.

Regarding gaming preference, the current study found that the majority of studied university students mention that, their favorite game is PUBG (Player Unknown's Battlegrounds). This result might be due to the online games generally filled and supported with features of special items such as flow understanding, unique simulation, versatility, competition, and a plot an interesting story. This result is similar to the findings of Meschtscherjakov et al., (2016) who stated that, the favorite game among majority of studied students is PUBG. This result is incongruent with Khalil et al., (2020) who mention that 51.9% of the students didn't mention their favorite games, and game addict students showed significantly higher sports and action games practice.

Regarding devices used during playing internet video games, the current study revealed that, almost three quarters of students used a mobile phone. This result might be due to the adolescents consider smartphones as a main tool for meeting friends, online game playing, social network and to fulfill several responsibilities, as well as the availability of games which attract users through attractive images, colors, music, and advanced technologies that makes it easy to access games in the minimal time and effort. Congruent with a study conducted in Egypt by Saied et al., (2016) who study internet and Facebook addiction among Egyptian and Malaysian medical students, stated that the majority of the students of both groups reported that the most commonly used device in both groups was mobile phone. The prior result was corresponding with result of studies conducted by Lenhart et al., (2015); Urhan & Karci (2021); Zala & Misra (2022) who stated that, the majority of the students used mobile phones followed by computers to play games. Additionally, WanYaacob et al., (2021) mentioned that students chose a mobile phone as a preferable gaming device because it is multi-purpose and quick to manage rather than other platforms, such as computer, console, and arcade which are likely to be more complex to use.

Also, the current study revealed that the majority of students preferred playing games at home. This result can be explained by the fact that the mobile is used for different roles, gamers often use the mobile phone to access online games at home through Wi-Fi and they may have sufficient time after studying day to prevent distraction during class time which help to expose them to the non-stop experience of playing the games. This result was similar to a study conducted in Egypt by Mahmoud et al., (2022) who stated that students with internet addiction significantly had internet access in their homes than students of normal internet use. Also Saied et al.,(2016) mentioned that the majority of the students reported that "home" is the most frequent place for internet access.

Regarding classification of games, the current study finding indicated that more than half of students play IQ games. This result might be due to the fact that intelligence games are one of the best ways to spend free time because it attracts users for spending fun time to solve puzzles rather than browsing social media pages for long hours aimlessly. This result is in agreement with Urhan & Karci (2021) who conducted a comparative study between Turkish and Romanian students mentioned that, all Turkish students (126) play tactics games, 100 of them played action games and 69 of them played puzzle games. On the other hand, among 73 Romanian students, 33 stated they play action games, 31 of them preferred adventure games and 20 of them played tactics games.

## 6. CONCLUSION

Based on the findings of the present study, it can be concluded that the majority of both intervention and control group had high levels of game usage, game addiction, problematic video game playing and low level mindfulness before mindfulness training program implementation, these high levels were decreased significantly after implementation of mindfulness training program among intervention group. Additionally, the statistical significant independent positive predictor of mindfulness attention awareness was the gaming addiction. Therefore, mindfulness training program had a positive effect on reduction game addiction behavior among studied university students.

## 7. RECOMMENDATIONS

### A) Education:

- 1- Developing a clear and impressive orientation programs about adverse effects of internet gaming addiction on adolescents' health status through mass media and health education in the schools, universities and family-centered care.
- 2- Conducting educational and awareness seminars sessions about mindfulness training for educators in university classroom to help students who are addicted to electronic games and need management.

**B) Institutional management and practice:**

1. Conducting a trusted health websites and numerous communicating channels to increase awareness through school campaigns, about negative consequences of gaming addiction.
2. Universities should augment first-year curriculum at different educational levels with mindfulness training practices.
3. Urging parents to occupy their adolescent's free time with useful activities and set a clear time limit for online gaming.
4. Dissemination of mindfulness training programs to other students in different faculties at Suez Canal University on large sample size for further confirmation of the findings and improvement in internet gaming addictive behavior.

**Table 1: Demographic characteristics of studied university students in the intervention and control groups (n=203).**

Demographic characteristics Variables	Total		Intervention group		Control group		Test t-test	p-value
	No.	%.	No.	%.	No.	%.		
<b>Age (years):</b>								
≥18	26	12.8	12	11.8%	14	13.9	11.5	0.003**
19	58	28.6	19	18.6%	39	38.6%		
20	119	58.6	71	69.6%	48	47.5%		
Mean ±SD	19.5±0.69		19.6±0.70		19.4±0.71			
Range	18-20		18-20		18-20			
<b>Gender:</b>								
Male	124	61.1	53	52.0	71	70.3	7.1	0.007**
Female	79	38.9	49	48.0	30	29.7		
<b>Residence:</b>								
Rural	68	33.5	34	33.3	34	33.7	0.002	0.96
Urban	135	66.5	68	66.7	67	66.3		
<b>Income according to students' response:</b>								
Low	22	10.8	8	7.8	14	13.9	1.9	0.38
Intermediate	175	86.2	91	89.2	84	83.2		
High	6	3.0	3	2.9	3	3.0		

(\*) significant p-value <0.05. insignificant > 0.05.

**Table 2: Distribution of studied university students in the intervention and control groups according to their awareness regarding electronic games (n=203).**

Variables Preferred game	Total		Intervention group		Control group		t--test	p-value
	No.	%	No.	%	No.	%		
PUBG	160	78.8	91	89.2	69	68.3	13.3	<0.001**
Medal of Honor	26	12.8	17	16.7	9	8.9	2.7	0.098
Home escape	37	18.2	24	23.5	13	12.9	3.9	0.049*

**Devices used (Multiple response questions)**

Mobile Phone	145	71.4	78	76.5	67	66.3	2.6	0.11
Laptop	40	19.7	25	24.5	15	14.9	2.9	0.08
PlayStation	42	20.7	27	26.5	15	14.9	4.2	0.041*
PC computer	42	20.7	29	28.4	13	12.9	6.7	0.009**



**Game classification**

Excitement	108	53.2	58	56.9	50	49.5	1.1	0.29
IQ	121	59.6	69	67.6	52	51.5	5.5	0.019*
Simulation	56	27.6	29	28.4	27	26.7	0.07	0.79
Sports	75	36.9	43	42.2	32	31.7	2.4	0.12
Chess / Puzzle	82	40.4	46	45.1	36	35.6	1.9	0.17
Action	91	44.8	46	45.1	45	44.6	0.006	0.94
Strategy	64	31.5	32	31.4	32	31.7	0.002	0.96
Traditional / Cards	61	30.0	35	34.3	26	25.7	1.8	0.18
Terror	42	20.7	19	18.6	23	22.8	0.53	0.47

**Preferred Place during play (Multiple response questions)**

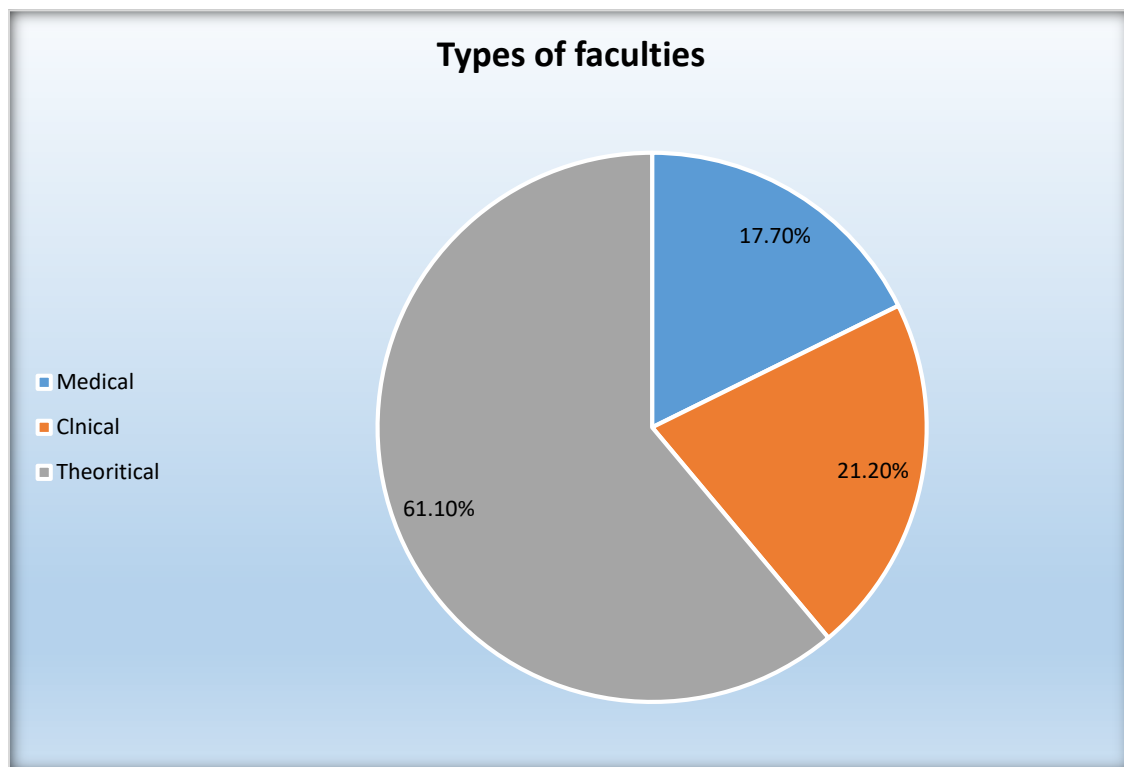
Home	179	88.2	94	92.2	85	84.2	3.1	0.078
College	37	18.2	13	12.7	24	23.8	4.1	0.042*
Café	51	25.1	30	29.4	21	20.8	2.0	0.16
Cyber	27	13.3	17	16.7	10	9.9	2.1	0.15
Transportation	72	35.5	32	31.4	40	39.6	1.5	0.22

**Talking about game during studying day**

No	30	14.8	15	14.7	15	14.9		
Yes	173	85.2	87	85.3	86	85.1	0.001	0.98

**Prefer game over reading or studying**

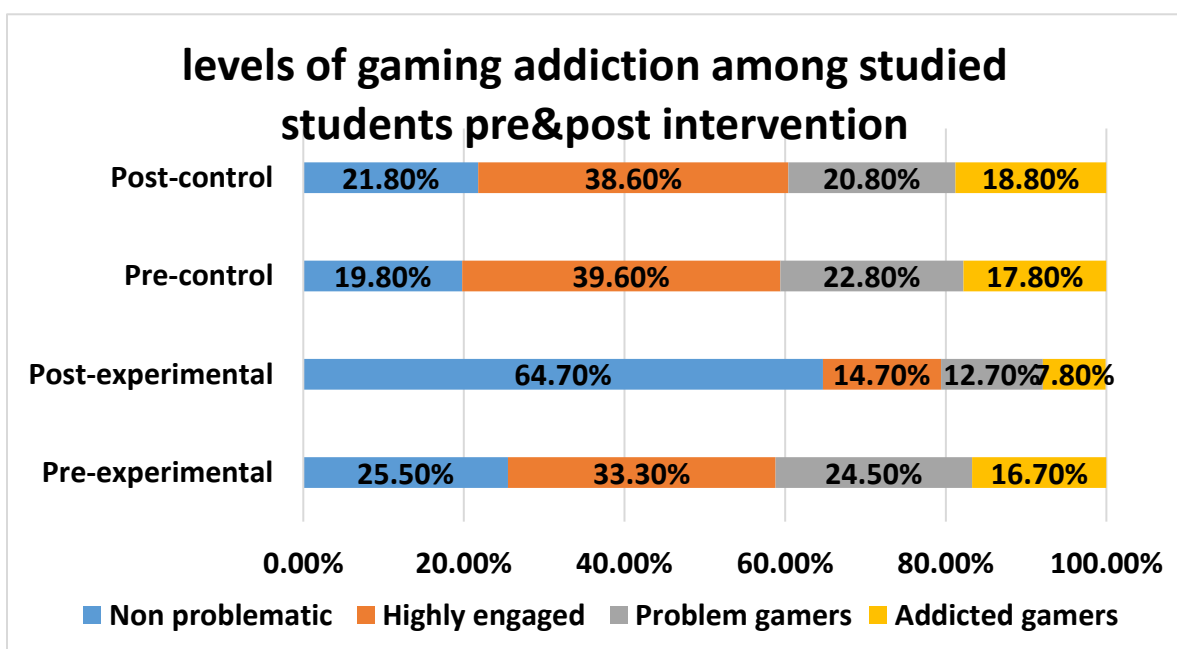
No	23	11.3	4	3.9	17	16.8		
Yes	180	88.7	98	96.1	84	83.2	9.4	0.002**



**Figure 1: Distribution of the studied university students in the intervention and control groups according to types of faculties (n=203).**

**Table 3: Distribution of studied university students in both group according to their video game usage (n=203).**

Items	Frequency	Percent
<b>How many times of playing video games /week?</b>		
1-3	66	32.5
4-6	69	34.0
7-10	68	33.5
<b>No. of hours of playing video games / week:</b>		
1-3	124	61.1
4-6	34	16.7
7-10	45	22.2
<b>How many times of playing video games / day?</b>		
1-3	121	59.6
4-6	55	27.1
7-10	27	13.3
<b>No of hours playing video games / day:</b>		
1-3	113	55.7
4-6	36	17.7
7-10	54	26.6
<b>No. of years of playing video games:</b>		
1-3	74	36.5
4-6	53	26.1
7-10	76	37.4
<b>Owning a video game console or computer (PC):</b>		
No	122	60.1
Yes	81	39.9
<b>Preferred time to play during a day:</b>		
6-11am	36	17.7
12-5pm	59	29.1
6-11pm	120	59.1
12-7am	101	49.8



**Figure 2: Levels of gaming addiction among intervention and control group pre and post program (n=203).**

**Table 4: Relation between levels of gaming addiction and mindfulness attention awareness among intervention group pre and post program (n= 102).**

Levels of gaming addiction	Pre-intervention						Post-intervention					
	Levels of mindfulness attention awareness										X <sup>2</sup> test	p-value
	Low		High		No.	p-value	Low		High			
	No.	%.	No.	%.			No.	%.	No.	%.		
Non problematic	24	23.5	2	2.0	0.001	0.97	16	15.7	50	49.0	22.30	0.0001**
Highly engaged	33	32.4	1	1.0	1.70	0.19	12	11.8	3	2.9	9.18	0.002**
Problem gamers	22	21.6	3	2.9	0.79	0.37	10	9.8	3	2.9	6.50	0.011*
Addicted gamers	15	14.7	2	2.0	0.43	0	7	6.9	1	1.0	6.63	0.01**

**P: p value for association between different categories**

\*Significant at P ≤ 0.05

\*\* Highly significant at p < 0.001

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