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Scientific Research

The effect of video games on mental and physical health of male and female students of universities

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((وَقُل رَّبِّ زِدْنِي عِلْمًا))

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ABSTRACT

Background:

Computer games are considered as the most popular entertainments in modern societies, however it has negative effects of physical and mental health .It decreases the sleep quality due to suppression of sleep hormone which effect by the lights that emission from screens .Eyes also effected due to accommodate to near vision and over focus in the screen . Gamers suffer from back pain due to bad posture for long time to finish particular game. Moreover The sedentary behavior among gamers increase the obesity.

Aim of the study:

This study aim to evaluate the effect of video games on mental and physical health among both male and female in student of collage.

Subject and Method:

The study was cross _sectional among male and female at deferent college in Iraq ،use non random sampling method in to questionnaire that was designed for the students we receive response from 170 students .The data collection online by Google form questionnaire .Chi _square test used for testing the association between variables under study.

Results:

Number of participants were 100, age was between (18_24),female (48%),male (52%).48% of participants were in healthy field, 18% literary field, 20 % scientific field, 14%technical field. 50% of participants considered their self as they Have nutrition problems and same percent not have these problem.11% of participants considered their self as they always have headache, 31% mostly have headache, 43% Some times and 15% scarcely have headache. 53% of participants were suffer from difficulty to focus and 47% have no dificulty.54% have back pain 46% of participants were not have back pain.46%of participants considered their self as they wear glasses and 54%not wear. 11% of participants were always have difficulty to sleep 46%mostly,31%Some times and 12% scarcely have difficulty to sleep.

Conclusion:

This study show the majority of gamers from health field and the male was playing morethan female. We found mental and physical effects on gamer especially those who play four hours in the day. The majority physical effect was back pain, and the mostly mentaleffect was the difficult on sleep.

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Introduction

1.1 video games

Video games, also known as computer games, are electronic games that involves interaction with a user interface or input device – such as a joystick, controller, keyboard, or motion sensing device – to generate visual feedback. This feedback is shown on a video display device, such as a TV set, monitor, touchscreen, or virtual reality headset.

Computer games are considered as the most popular entertainments in modern societies and they target a variety of people in different ages. The addiction to the rivalry and excitements of the games make them the most common entertainment programs for today's teenagers, so that they do anything to reach a higher level of the game, they immerse in the game so much that they completely separate from their surroundings(1).

Computer games started in 1972 with Pong, a computer tennis game, and thendeveloped in hardware and software systems. Improvement of quality and variety of games increasingly spread it in the society especially adolescences(2). It is believed that computer games like watching TV, Especially because these games are more active compared to watching TV, they are considered more effective(3). Since these games are known as the second entertainment after TV, opponents of these games emphasize on their negative effects such as stimulating anger and violence, costing a lot of money and having negative effects of physical and mental health, which are much higher than the positive effects of the games such as increasing the coordination of eyes and hands(4).

1.2 sleep disorders

Inadequate sleep is a common phenomenon for gamers. If you neglect sleep every day, it will eventually carry over to other parts of your life. You won't be able to stay focused in other areas of your life like collage, work, or even everyday life, which will inevitably affect your performance in those areas of your life.

Hours of gaming daily often result in less sleep, especially if you play later atnight or with gamer friends from different time zones. It's easy to play "just one more game," which results in "just one less hour of sleep." Excessive gaming can lead to poor sleep and other adverse physical health effects .Sleep deprivation also leads to impaired memory and relationship stress,significantly diminishing your overall quality of life.

Adequate sleep is essential for overall health. Depending on your age, at a minimum, experts advise to sleep between 7 to 9 hours per day, but if you play games well into the night, this is nearly impossible. It can be challenging to function normally when you only sleep a couple of hours or do not sleep at all(5).

Delayed bedtimes and late waking times may further lead to the rhythm desynchronization and impact academic performance(6) . Other potential mechanisms in disrupting sleep may include psychological stimulation (i.e., excited mood due to use of video games)(7) , light-emitting screens ,light may suppress sleep-promoting hormones like melatonin(is a hormone that your brain produces in response to darkness)that are typically elevated before bedtime (8) , and shortened sleep duration (9).

Similar considerations exist for online gaming. Gamers from different time zones often participate in multiplayers games (10). Therefore, some gamers may avoid logging off or may arise in the middle of the night to continue gaming(11) , leading to irregular or disorganized sleep-wake patterns. Individuals may become sleep-deprived in order to engage in virtual activities. Consistently, playing online games has been associated with longer sleep latencies and shorter total rapid eye movement (REM) sleep(12) .

1.3 Vision issues

Most video games require a lengthy time commitment to finish any particular game, thus forcing the player to stay focused on the screen during their playtime ,so more and more people are experiencing a variety of ocular symptoms related to computer use. These include eyestrain, tired eyes, irritation, redness, blurred vision, and double vision, collectively referred to as computer vision syndrome. Computer vision syndrome symptoms may be the cause of ocular (ocular-surface abnormalities or accommodative spasms) . However, the major contributor to computer vision syndrome symptoms by far appears to be dry eye. Treatment requires a multidirectional approach combining ocular therapy with adjustment of the workstation. Proper lighting, anti-glare filters, ergonomic positioning of computer monitor and regular breaks may help improve visual comfort(13).

1.4 Obesity and overweight

obesity is a and a public health problems in the 21st century, The central cause of obesity is the imbalance between calorie expenditure and intake, resulting from greater consumption of energy-dense foods and increased sedentary lifestyles(14). Video game use is considered a risk behavior for developing obesity; it increases sedentary time and may be associated with consumption of unhealthy beverages and snacks during play games .In fact, there is no direct effect between video game addiction and obesity ,But the links between video game addiction and reduced sleep, and from sleep to obesity and its associated metabolic issues were found. And curtailed sleep has been found to increase one's levels of obesity, which can lead to physiological changes in adolescents metabolism, resulting in cardio-metabolic disease(15,16).

1.5 Musculoskeletal disorder

Musculoskeletal disorders are now a growing health problem affecting both adults and young people. Musculoskeletal disorders (MSD) are usually musculoskeletal-related occurrence or recurring injuries and pains in the body. The commonly affected body parts are the back, neck, and shoulder.(17-25) Computer use is widely perceived as a new risk factor for musculoskeletal disorders. Computer usage has become increasingly important in people's daily lives, and students are no exception Computers have made work to be accomplished faster, easier, neater and less frustrating to the users. However, its use has some side effects(17).

Several studies have found association between computer use and musculoskeletal disorders among university students. The academic demand of university students entails rigorous work (assignments, tests and writing examinations). These academic tasks involve the constant use of the computers; as such students spend most of their times in computer laboratories(20,21). Several reasons could be advanced to explain the prevalence of musculoskeletal problems among the university students. These included the lifting of heavy load, prolonged sitting, improper posture, stress, high academic demand/workload and lack of regular exercise. University students subject themselves to hours of prolonged reading writing and computer work which make them high-risk group for various musculoskeletal problems(24,25). From the health, economic and educational standpoint, recurrent musculoskeletal pain symptoms in students may likely result to negative health outcomes to students and their society. Pain is usually link to discomfort, and may limit students 'daily and leisure time, increase psychological stress and financial costs because of the repetitive use of the rehabilitative therapeutic health care services. Fundamentally, recurrent pain symptoms may affect the academic performance of the students as well as their future working capacity and health in their transition from university to working life. Viewed in this context, it is important for university authorities to identify the possible modifiable musculoskeletal problems risk factors and plan early supportive and preventative measures for a better quality of life for students, who are future leaders(21).

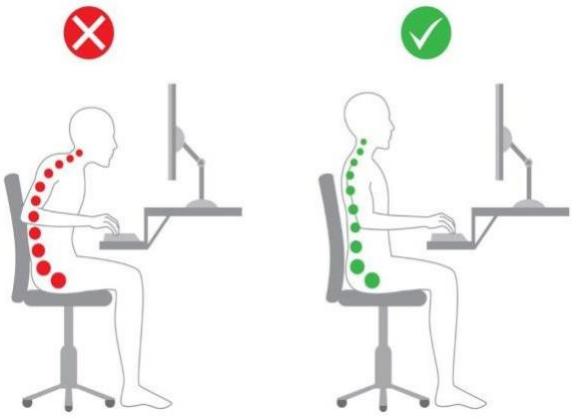

Figure1.1.effect of computer games in body posture

1.6 Lack motivation

We all want to feel excitement in life, and we all want to be entertained. Wealso have a primal need for accomplishment and friendships .Gaming addresses all those needs at the same time.

If we take a look at Maslow's hierarchy of needs, we'll see that to feel fulfilled human beings seek to address all of those values – especially belonging and esteem, which come right after our most important needs like our safety and physiological needs are satisfied(26).

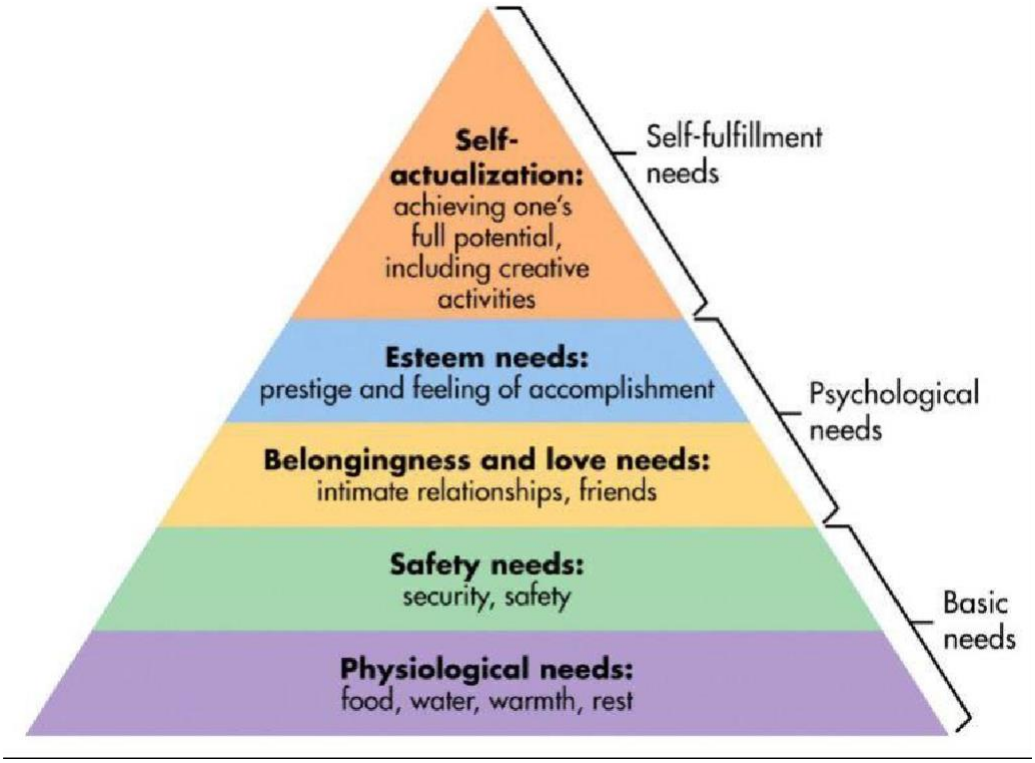

Figure1.2. Diagram of Maslow's hierarchy of needs(26)

As human beings, we simply need to fulfill those needs in one way or another. For many gamers, video games offer a safe, easy, comfortable, and convenient solution to help them address those needs .If you think about it, video games can help the gamer solve several challengesand address some of their most important needs, such as:

- Friendship
- Achievement
- Respect of and by others
- Entertainment
- Excitement
- Problem-solving
- Creativity

Because video games are so easily accessible nowadays, it's the most comfortable way of addressing the most important needs without risking going out in the world and doing other activities. So,

- They won't seek new friendships in their life because they have friends when they play games.
- They don't need a hobby where they can progress because they can do that in the video game.
- They won't be interested in talking to your or other family members because they get a sense of belonging online.
- They don't get bored when they play video games, so they won't try hobbies.

This issue may also connect to how your brain responds to the dopamine rush you experience playing games. When you play games, your brain starts to produce significant amounts of dopamine, which is the neurotransmitter that induces the feeling of pleasure.

Thus, when you play for prolonged periods, your brain may get used to the rush of dopamine and high levels of stimulation, leading to no longer finding less stimulating activities interesting. When gaming becomes the only activity your brain finds pleasurable, a lack of motivation to participate in other activities is a natural outcome.

Unfortunately, even when you stop playing games, it may take time for your brain to re-calibrate and for you to enjoy experiences that include less excitement(27-28).

1.7 Depression and anxiety

Depression is a low mood and aversion to the activity, affecting a person's thoughts, feelings, behavior, tendencies, and sense of well-being(29).
Video gaming addiction positively correlated with depression, loneliness, and social anxiety especially in the young adult population. They also reported that young adults addicted to video games showed increased depression and anxiety and felt more socially isolated.

Some say this phenomenon as a bit of the “chicken and egg” scenario. In other words, do depressed young adults gravitate to isolating behaviors like gaming, or do otherwise well-adjusted young adults get so immersed in the gaming culture that it eventually pulls them out of circulation with their friends and family.

Many depressed individuals look for any number of ways to get a dopamine hit for their thirsty, isolated minds, a growing number of young adults are finding that the more screen time they engage in, the less likely they are to develop relationships with others(30).

It was found that people who spend more than 33 hours a week playing video games suffer 24% more depression than balanced gamers or those who play for 21 hours .also it found that people who spend more than 33 hours a week playing video games suffer 15% more anxiety than balanced gamers or those who play for 21 hours(30-31).

Aim of the study:

This study aim to evaluate the effect of video games on mental and physical health among both male and female in student of collage.

Chapter two subjects methods

2-Method

Study population:

The study was cross _sectional among male and female at deferent college in Iraq during the period from December _2022 to may _2023 participant aged between 20_24 years.

Sample size:

We use non random sampling method and we invite all students in different colleges in iraq to participate in to questionnaire that was designed for the students we receive response from 100 students.

Data collection:

The data collection online by Google form questionnaire in this study we ask about the time spend in play video games, the effect of video games on eyes, focus, back pain, sleep and nutrition and weight of Iraqi colleges students.

Data analysis:

The data was analyzed by using spss software version 24 then it was presented in form of tables of number with percentage. Chi _square test used for testing the association between variables under study. Statistical significance was considered whenever the p_value was equal or less than 0.05.

Chapter three
Results

3-Results

Number of participants were 100, the age of participants was between (18_24)years, female (48%),male (52%).

48% of participants were in healthy field, 18% literary field, 20% scientific field, 14% technical field, as shown in table (3_1).

3.1 Assessment of nutritional problem and body weight among the students

Fifty participants (50%)were have problems in nutrition and body weight, fifty participants (50%) not have problems in their nutrition and weight, as shown in table (3_1).

3.2 Assessment of headache and nausea among the students

Eleven participants (11%) reported that they always have headache and nausea , thirty _one participants (31%) reported that they mostly have headache and nausea, forty_ three participants(43%) Sometimes have headache and nausea , fifty participant(15%) scarcely have headache and nausea. as shown in table (1_3).

3.3 Assessment of difficult to focus among the students

Fifty_ three participants(53%)answered they suffer from difficulty to focus, forty_ seven participants (47%) have no difficult to focus. As shown in table (1_3).

3.4 Assessment of back pain among the students

Fifty _four participants (54%) were have back pain, forty _six participants (46%) answered that they not have back pain.

3.5 Assessment of wear glasses among the students

Forty_ six participants(46%) reported that they wear glasses, Fifty _four participants (54%) answered that they not wear glasses.

3.6 Assessment of difficult to sleep among the students

Eleven of participants (11%) were always have difficulty to sleep, Forty _six of participants (46%) answered that they mostly have difficulty to sleep, thirty _one of participants (31%) Sometimes have difficult to sleep and twelve of participants (12%) scarcely have difficulty to sleep.

Table 3.1: General characteristics of studied participants

		NUMBER	PERCENTAGE%
Gender	Male	52	52%
	female	48	48%
Field of study	Health field	48	48%
	Literary field	18	18%
	Scientific field	20	20%
	Technical field	14	14%
Problems in nutrition and weight	Yes	50	50%
	No	50	50%
Headach and nause	Always	11	11%
	Mostly	31	31%
	Sometimes	43	43%
	scarcely	15	15%
Difficult to focus	Yes	53	53%
	No	47	47%
Back pain	Yes	54	54%
	No	46	46%
Wear glasses	Yes	46	46%
	No	54	54%
Difficult to sleep	Always	11	11%
	Mostly	46	46%
	Sometimes	31	31%
	scarcely	12	12%

Table (3-2) Relation between back pain and the hours of playing video

P. value <0.05

	gender	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr	P.value
	Yes	8	6	8	17	3	3	4	5	0.027
	No	11	8	3	6	11	0	4	3	

Table (3-3)Relation between headache andnausea with hours playing video games

p. value<0.05

		1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr	p. value
	always	0	0	0	3	3	0	2	3	0.021
	mostly	5	10	1	6	3	1	4	1	
	sometimes	5	2	1	3	2	0	1	1	
	scarcely	9	2	9	11	6	2	1	3	

Table (3-4)Relation between difficult to focus and playing video games

p. value > 0.05

		1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr	p.value
	Yes	6	9	5	10	11	3	4	5	0.102
	No	13	5	6	13	3	0	4	3	

Table (3-5)Relation between wearing glasses and hoursplaying video games

p. value > 0.05

		1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr	p.value
	Yes	9	5	5	12	5	0	5	5	0.555
	No	10	6	9	11	9	3	3	3	

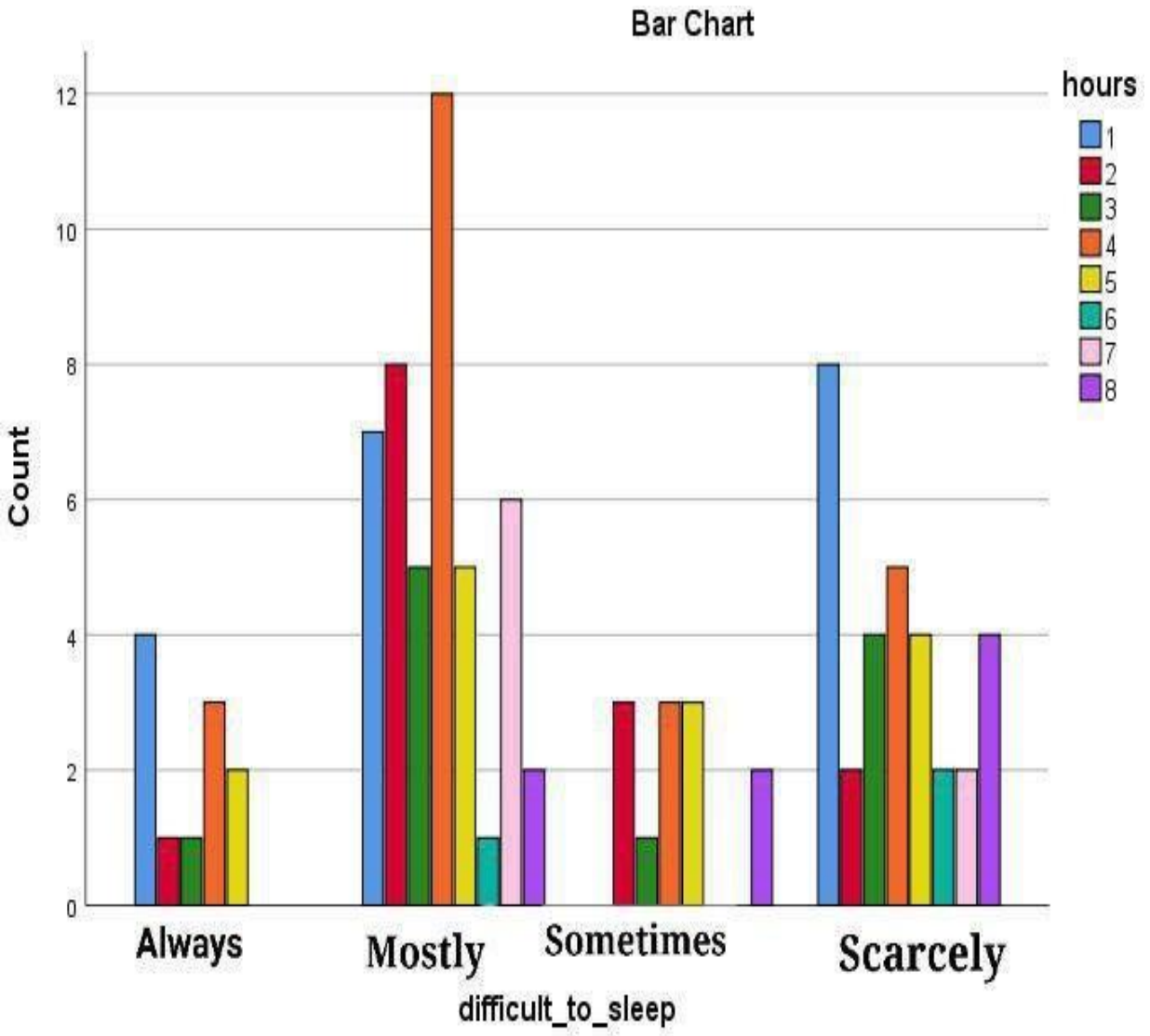

Figure (3-1)relation between difficult to sleep and hours of playing video game

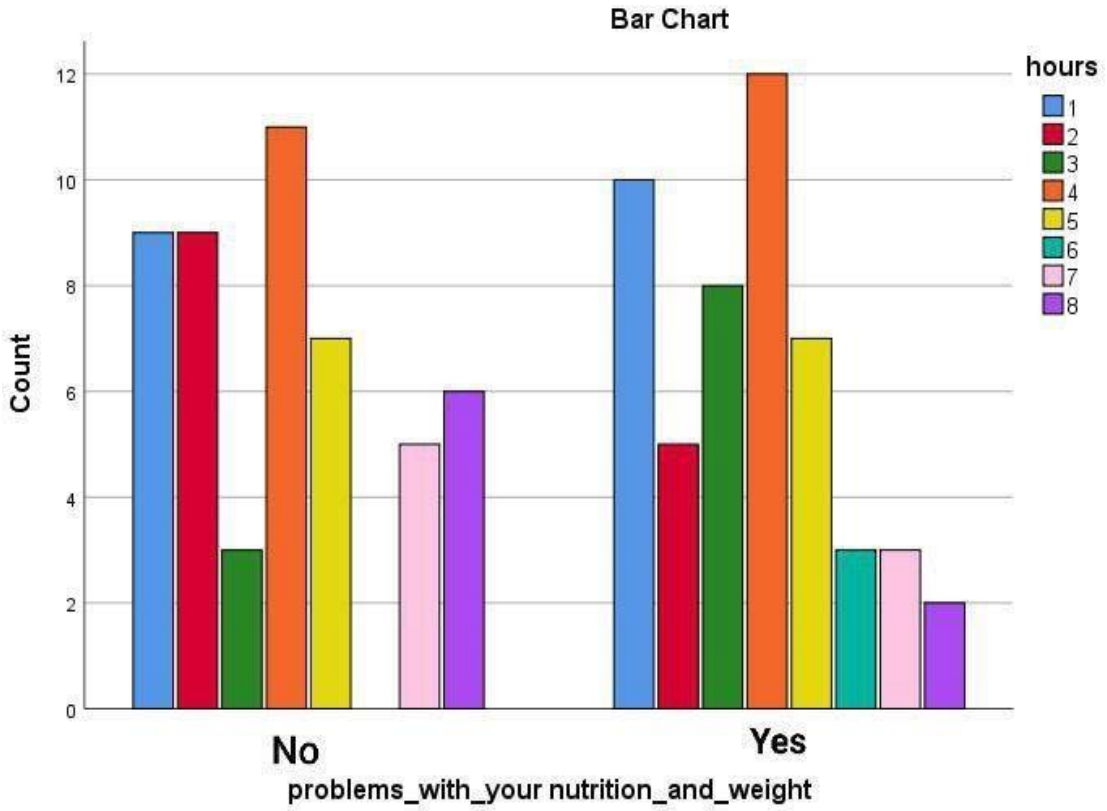

Figure (3_2) Relation between problems in weight and hoursplaying video games

Chapter four
Discussion

4-Discusion:

The aim of this study is to evaluate the effect of video games on the mental and physical health of male and female college students
There were 100 participants of both sexes, 52% male compared to 48% female. gender differences in the brain may help explain why males are attracted to video game.
Male can also use contemporary technology to play video games at home and in the arcades, but female must spend hours alone at home. Male therefore have greater opportunities than female .
Female also have less time to play than male because they are more involved in daily tasks such as cleaning and cooking.
In addition, in accordance with previous studies (32) gamers believe that at least 70% of the main characters in the games were male. Female video game characters were also rated as more sexually provocative, weaker, more aggressive, and more likely to seek rescue than male characters.
The primary characters' gender and roles may have been inaccurately remembered by participants because they weren't playing the games when they made these predictions, or they may have been impacted by the games since they were more frequently. However, these findings are congruent with previous analyses of games (32), the content of video games may
negatively affect the expectations that children and adolescents have for the roles of male and female , and perhaps adversely affect efforts to attain gender parity. In both sexes, 54% of people experience back pain, and the majority of them (24%) those who play five hours in a day. This relationship may be arise on through spending a lot of time sitting down, adopting poor postures, using insufficient or disorganized furnishings, or being inactive. The sitting position causes a variety of changes in the musculoskeletal systems of the different parts of the body, including an increase of about 35% in the internal pressure in the intervertebral disc nucleus, stretching of all spine structures (ligaments, nerves, and small joints), a reduction in blood flow to the lower limbs, and the enhancing inflammatory processes muscle structures with associated pain symptoms. like what has been documented in the literature 13.7% in Sao Paulo, and the city of Pelotas (RS, Brazil) (33). (SP, Brazil), 19.5%; (34) 31.6% of it occurs in southern Brazil; (35) Tunisians make up 28.4% of the population (36) whereas Japanese citizens make up 28.9%.

These variations could be connected. Populations, exposure duration, and psychological factors all affect how pain in the lumbar areas is defined.

In this study, 48% of gamers came from the health field, where stress and depression may be more prevalent due to the particular stresses of interactions with patients, families, and employers, which resulted in a 4-hour gaming session by 23% of gamers across all academic disciplines. dangerous exposures at work, including COVID-19 and other infectious diseases as well as dangerous medications and other situations. physically taxing work with a potential for harm from dealing patients, for example
Headaches and nausea affect 43% of gamers. The reason for this is that although your brain is aware that you are still sitting down, the sensory information it is receiving from the screen is contradicting and suggests movement. predicted that stability in posture control would emerge before the onset of subjective sickness symptoms. Studies like those by, and Bonnet et al. (37) have all supported up this assumption. Participants who did not feel nauseous while sitting showed different head movements than those who did. Postural movement was more pronounced in those who eventually developed the disease than in those who did not. This contrast supports the theory of motion sickness and postural instability. Numerous studies According to many research, those who are exposed to nauseating stimuli and people who are not have different patterns of physical movement such as Faugloire et al (38).
Other analyses, though, did not find this impact.
like Bonnet et al. (37). The differences in body mobility between participants with and without illnesses did not alter over the course of the current study. According to this finding, the prevalence of motion sickness was related to differences in body movement.

Most gamers (46%) have trouble falling asleep, and most (50%) have to sleep for four hours because of light exposure. Gamers are exposed to artificial light when they look into screens from electronic devices like TVs, computers, or handheld video game consoles. This artificial light might cause the brain to believe that it is daytime. In fact, from about two hours before night to one hour after waking, the body's internal clock is most susceptible to light. Blue light (39), which is the color of light that has the biggest effect on a person's sleep habits, is emitted by screens on electronic gadgets. Blue light has been demonstrated to reduce the body's generation of melatonin, which is one explanation for this.

Most gamers (46%) wear glasses. Due to the fact that many games cause the brain's impulses to increase quickly based on the player's performance and the difficulty of the game, the majority of the (19%) spent 4 hours playing. This

increased visual strain, especially on the dominant eye, causes a loss of fusion. Young video game players might experience sever diplopia and a momentary loss of orthotropia as a result of this intense brain stimulation, while frequent blinking would restore orthotropia and individual vision. Third, the Lang-Stereotest I revealed a significant loss of stereopsis in the video game group, although ,exposure to other electronic screens showed no effect on stereopsis in either group. Writing and surfing the Internet, two common visual occupations during video viewing events, often cause saccadic movements of both eyes, whereas video games, which demand a quick response to fast-moving pictures, may predominantly elicit quicker monocular pathways, primarily limited to the dominant eye. Binocular vision would not be necessary or even beneficial during high-speed gaming. This would hinder visual performance as a whole.
Similar to the group of people who played video games in this investigation, Ancona et al. (40) discovered random dot stereopsis on the Lang-Stereotest II in a number of cases of small angle strabismus without motor fusion and substantial regional suppression, but not on the Lang-Stereotest I. These types of small-angle strabismus constitute a diagnostic group that is distinct from Lang's description of microtropia. The latter is caused by a genetic predisposition that alters the binocular cells in regions 17 and 18, resulting in a complete loss of randomization of points with 100% specificity on the Lang-Stereotests.

However, if it can be determined that different results from the two Lang stereotests were performed on the same patient, as was the case in both the present study and the study by Ancona et al. (40), this can be interpreted as the result of the brain's functional inhibition of stimuli from the patient's non-dominant eye, and these cases would be classified as "functional micro-orientation Also, visual defects were more common in the dominant eye of patients in the video game group. During examination in comfortable setting, reduced visual acuity in the dominant eye was found that could not be improved by correction. Additionally, the refractive errors found were more pronounced in the dominant eye. The higher the speed required to play video games, the greater was the effort required from the dominant eye to achieve the best performance in the performance in the shortest possible period of time. Interestingly, reduced visual acuity often improved in cycloplegia, regardless of the nature of the visual defect. In the shortest amount of time possible.

53% of gamers find it difficult to focus. Most of them (20%) spent 5 hours this way. Video games can kill brain cells and interrupt a person's sleep; previous finding indicate that a single night of prolonged exposure to VGs can have a strong impact on attention skills. The ability to maintain attention is fundamental for college students' development because it is at the basis of a series of cognitive tasks (41). The attention decline adversely affects academic performance, especially during the examination (42). This may partly explain some results that showed a positive correlation between use of VGs and low academic performance (43).

50% of gamers have issues with their weight and diet. Some of them claim that they have low weight on the one hand, and obesity on the other, because they spend more time playing video games than sports. The overeating associated with playing video games has been observed without an increase in subjective feelings of hunger and appetite, and this observation is supported by the objective markers of appetite Though it is unclear if "eating in the absence of hunger" is more related to a satiety signal capacity degradation or to the reward system that is generated by mental stress, it is known that both may be involved.

How do you prove that obesity results from consuming more calories at a subsequent ad libitum meal than from lounging in a comfortable chair? Video game-related "mental stress" is a topic of particular interest and could help to explain why those who engage in this sedentary activity eat more. It is consistent with recent studies that have reported significant increases in several stress markers with seated video game playing in children and adults (44,45) that the sympathetic tone and mental effort were higher in the video game play condition than in the resting condition. Additionally, these findings are in line with recent experimental research that demonstrate how computer-related activities constitute a special kind of sedentary behavior that are stressful and physically taxing on the body (46,47).

5-limitations of study:

The sample were taken only from student in collage not of school (child and adult) so further study can increase the number of participants to include both school and college students and take percentage to compare between who spent more time on video game, so result of this study may not generalized to general population,

the time of collecting sample were at academic year so time spent on video game may vary during vacation and time of examination.

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Chapter five
Conclusions and Recommendation

6-Conclusion :

This study show the majority of gamers from health field and the male was playing morethan female. We found mental and physical effects on gamer especially those who play four hours in the day. The majority physical effect was back pain, and the mostly mentaleffect was the difficult on sleep.

7-Recommendation:

1-An approach among the gamers should promote reducing the hours of playing.

2-Further population-based prospective studies are needed to focus on the negative effects of video game.

3-We recommend take breaks to relaxed the body and eyes and use anti-glare computer glasses.

4- A larger study to include other age groups.

5-The present study was carried out among Universities students during the academic year, The hours of playing may differ in other age groups and may vary during vacations and at the time of examinations.

6-Conducting awareness programmes ,seminars or lectures that warn of the dangers of excessive computer games.

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