



IMPACT OF VIDEO GAMING AMONG MEDICAL STUDENTS: UNRAVELLING THE BENEFITS

Physiology

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ABSTRACT

Background & objectives: Study aims to assess gender preferences of video gaming in medical students and their benefits. **Methods:** Study was conducted in medical students at Dr.DY Patil medical college,Pimpri,Pune.Gaming experiences was analyzed. **Results:** Our study had video game genre,its description,examples with gender preferences,onset,hours of playing games with problem solving,logical thinking and hand eye coordination skills.Mostly played as stress buster,fun,few played as a passing time,excitement,few were addicted too.Age of onset as highly significant $p < 0.0000$ with $p < 0.0001$ as significant for duration of playing (hrs/day).On the other hand problem solving,logical thinking and hand eye coordination skills was good in male gamers while female gamers were found to be average. **Conclusion:** Playing video games actually has benefit.We identified skills such as problem solving,logical thinking and hand eye coordination in male gamers as compared to females also with game preferences.These skills can be useful when they choose to become surgeon or otherwise.

KEYWORDS

Medical; Technology; Health; Skills

INTRODUCTION :

Every year a large number of students gets enrolled in medical profession. They go through various adjustments in new environment with intensive medical curriculum, stressful exams, clinical cases, assignments and research projects. Therefore students like to get some relief from these stressors by spending their free time enjoying their hobbies, recreational activities they love, one of them is playing video games.[1]

Video game is basically an electronic game with moving graphic features or objects on a display screen using a device like computers, consoles or mobile devices.[2] Traditionally been boys' toys or games. Women do not play as many video games as men do.

Even academically, new media technologies video games are used as virtual reality environments, so medical profession is no exception to it.[3] On the other hand the gamer achieves certain skills such as problem solving, logical thinking and hand eye coordination skills which would be beneficial to them in their profession now or in future. The present study therefore seeks video games in medical students in both males and females and their benefits which can be useful for budding doctors.

MATERIALS AND METHODS:

Study was conducted at the university of Dr. D.Y Patil medical college hospital and research centre, Pimpri, Pune, after obtaining approval from the institutional ethics committee. We had 50 participants, 25 females (average age = 13.72), 25 male (average age = 10.84). They were self-identified as a "gamer." Informed consent was obtained. Video game history questionnaire was used with previous use of particular types of video games, hours of playing and sleep, age of onset. There are millions of video games in the market with vastly different themes and goals. We used, limbo; an artistic two-dimensional black and white platform puzzle game, a nameless boy searching for his lost sister, a unique approach to game development in which creative decisions. Angry birds, a logic based video game. Piano tiles, a single player mobile game based on hand-eye-coordination. Following gameplay, participants were asked to play the games. Data was expressed as mean $\pm$ standard deviation (SD) and percentage frequency (%). Statistical analysis was done by using student's unpaired t-test in Microsoft Office Excel and $p < 0.0000$ was considered as highly significant and significant. Results were taken and statistically matched with the other gender group.

RESULTS:

Results are summarized in Tables 1-6. A total of 50 medical students (50 gamers; M=25; F=25) aged between 18 and 21 years [M=19.06, SD = 0.97] participated in the study. Male students played games regularly with a median 2 h/day, more often than female students. Video game preferences and gaming skills was analyzed in percentage frequency (%). There was an increase in hours of playing in males as compared to females.

Table 1. Video game genre and its description, reason, examples & percentage frequency (%) of male and female gamers

Genre	Description	Examples	% of Gamers Males	% of Gamers Females
All	All genres among the study category	Any	5(20)	-
Fantasy	Games that let you assume a fantasy character	Final Fantasy, Legend of Zelda	2(8)	10(40)
Strategy	Games that use strategic planning skills	Age of Empire	4(16)	3(12)
Action	Game that simulates exciting or violent action	God of War	4(16)	0(0)
FPS	Games where you shoot other characters	Quake, DukeNukem	3(12)	1(4)
Online	Games that have element of chance.	Rummy, Solitaire	2(8)	5(20)
RPG	Games that let you assume character(s)	Elder Scrolls V: Skyrim, StarWars	2(8)	4(16)
Adventure	Games where you go on an adventure	Resident evil, tomb raider	3(12)	2(8)

Table 2. Reason for playing video games in both male and female gamers in percentage frequency (%)

Reason of playing	Males N=25	Females N=25
Addiction	5(20)	0(0)
Stress buster	11(44)	8(32)
Passing time	3(12)	6(24)
Fun	4(16)	9(36)
Excitement	2(8)	2(8)

Table 3. Age of onset, duration of gaming and sleeping hours in both males and female gamers

Parameters	Male Mean $\pm$ SD	Female Mean $\pm$ SD	P value
Age of onset	10.84 $\pm$ 1.748	13.72 $\pm$ 2.131	**0.0000
Duration of game(hrs)	2.36 $\pm$ 0.860	1.48 $\pm$ 0.653	*0.0001

Data expressed as Mean $\pm$ SD, $p < 0.00001$ = Highly significant and $p < 0.0001$ = Significant

Table 4. Percentage (%) frequency of problem solving, logical thinking and hand eye coordination in male gamers (N=25)

Logical thinking	3(12)	10(40)	12(48)
Hand eye coordination	2(8)	13(52)	10(40)

Skills	Poor/Slow	Average	Good
Problem solving	4(16)	10(40)	11(44)

Table 5. Percentage (%) frequency of problem solving, logical thinking and hand eye coordination in female gamers (N=25)

Skills	Poor/Slow	Average	Good
Problem solving	6(24)	12(48)	7(28)
Logical thinking	1(4)	13(52)	11(44)
Hand eye coordination	2(8)	13(52)	10(40)

Table 1 summarizes the eight genres, all strategy, fantasy, action, adventure, FPS, RPG and online with the examples. Study shows video game genre, its description, examples with gender preferences. On interviewing the male and female gamers most common reasons for playing games. Table 2. Mostly played as stress buster (M;44%, F:32%), addiction (M;20%:F:0%), fun (M;16%:F:36%), passing time (M;12%:F:24%) and excitement (M;8%:F:8%), with age of onset as highly significant $p < 0.00001$ and $p < 0.0001$ as significant for sleep (hrs) and duration of playing games respectively.

Tables 3 reviews the age of onset, hours of playing and sleeping hours respectively and analyzed by unpaired t-test. Table 4 and 5 shows the percentage frequency (%) of problem solving skills, logical thinking and hand eye coordination skills, which was more observed in male gamers as compared to female gamers. Although females did have averagely found skills. The results are given in a tabulated form based on the questions answered by the students related to their gaming preferences. The difference between the groups was found to be statistically significant.

DISCUSSION:

Medical education is a very demanding field. Burden of information in medical profession and lots of competition makes the learner anxious, depressed and stressed. Stress can be best managed by regular exercise, meditation or other relaxation techniques, sports and playing video games. Medical students are learning new coping strategies to handle stress by playing video games. [4] Gone are the days where video games were regarded as childish and waste of time but now the scenario is altogether different. Our study based on the gender preferences and benefits of video gaming in medical students would be beneficial to the budding doctors in long run. Subgroups of 50 respondents who were self-identified as game players and provided gameplay data with their game choices and hours of playing was significant while onset of gaming found to be highly significant in male gamers. Moreover, we also found that male gamers had an overall good problem solving, logical thinking and hand eye coordination skills while female gamers had average skills. This study therefore aimed to investigate gender preferences of video games in medical students, onset of gaming and gaming skills which can be useful for their future career. Usually boys are engaged in playing video games.

Although our study had both gender gamers which showed game genre with their preferences (Table 1) Other studies [5] reported that girls are motivated by easy games while boys by challenging ones. Another study examined the causal effect of playing games on virtual surgical endoscopy skills with a relatively more scientifically rigorous research design. [6]

Our study also had a positive influence on problem-solving skills, logical thinking, and hand-eye coordination by three different games; limbo, angry birds, and piano tiles 2, very few gamers had poor hand-eye coordination. (Table 4 & 5). One study, with the world of warcraft players, was correlational, making it impossible to discern whether playing the game improved problem solving or people with better skills in the first place were drawn toward this type of open-ended role-playing game. [7]

Griffith argued that although there are educational, social and therapeutic benefits to video games play, but in excess leads to addiction, playing 24×7 week and in some cases to a gambling problem. [8] We too had few students who got addicted to gaming. (Table 1).

One physician educator recently explained how gaming can transform competency-based education and shared three video games that are already helping students master clinical skills. [9]

In fact, medical curricula designers also should consider including video games as teaching tools, be it surgical or medical, so students will

not be stressed because of their academic demand and competition rather, they will have the motivation and healthy well-being. This also applies to their problem solving skills, logical thinking and hand eye coordination skills which they can enhance.

The strength of this study is that although our sample is representative of medical students. Here, we unraveled indirect observations which can help to assess the role of video gaming related and gender preferences with development of skills making it a positive impact on medical students. On the other hand, this study has limitations. Indulging for long hours may have a negative impact on health. Furthermore, studies needed in larger population and other professionals too.

CONCLUSION:

The present study concluded that there is a difference in male gamers and female gamers about game genre preferences, hours of playing, age of onset with problem solving, logical thinking and hand eye coordination. The whole process is based on individual skills. There can be negative effects and positive effects of games. In our study, it shows that medical students can develop skills which can be used for future use. Hence, video games can be included in education.

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REFERENCES:

1. Ali A, Fahad A, Abdullah N, Mohammed B, Abdulrahman A, Mohammed A. Effect of video games on medical students' academic performance: A Two-Institutions, Cross-Sectional Study. International Journal of Scientific & Engineering research. 2017;8(9):653-658.
2. Granic I, Lobel A, Engels C. The benefits of playing video games. American Psychologist. 2014;69(1):66
3. Frederick K, Craig G, Sen A, Michael F. Medical student attitudes toward video games and related new media technologies in medical education. BMC Med Educ 2010;10:1-11.
4. Mona S. Perception of stress and coping strategies by medical students at King Saud University, Riyadh, Saudi Arabia. Journal of Taibah University Medical Sciences. 2014; 9(1): 30-35
5. Ziemek K. Two-D or not Two-D: Gender implications of visual cognition in electronic games. In: Proceedings of the 2006 Symposium on Interactive 3D Graphics and Games. 2006; (3):183-190
6. Schlickum M, Hedman L, Enochsson L, Kjellin A, Fellander-Tsai L. Systematic video game training in surgical novices improves performance in virtual reality endoscopic surgical simulators: A prospective randomized study. World J Surg 2009;33:2360-7.
7. Steinkuehler C, Duncan S. Scientific habits of mind in virtual worlds. J Sci Educ Technol 2008;17:530-43.
8. Griffiths. Videogame addiction: Further thoughts and observations. Int J Ment Health Addict 2008;6:182-5.
9. <https://www.ama-assn.org/education/accelerating-change-medical-education/video-games-are-changing-medical-education>. Retrieved on 10/2/21