

# Virtual Reality Gaming Addiction

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**Abstract—** *As Virtual Reality games started gaining popularity with the masses, growing addiction to these games was quite typical. Research has shown that technological advancements such as social media can result in addiction [1], and VR gaming is no exception to this. Therefore, suitable measures need to be taken to deal with such addictions. The objective of this research is to investigate and identify the negative impacts of Virtual Reality gaming addiction and study ways in which this addiction can be treated. This research has used primary and secondary data collection methods such as digital search and surveys. Both qualitative and quantitative data were collected to understand VR gaming addiction, to find out why such games are addictive, what are the impacts of such addiction and whether any measures are taken to solve this problem. The research clearly identified that there is very minimal work that has been done in dealing with VR gaming addiction and therefore has proposed solutions to deal with VR gaming addiction.*

**Key Words—** Virtual Reality, Virtual Reality Gaming, Virtual Reality Addiction, Virtual Reality Gaming Addiction, Popular VR Games, Negative Impacts of Virtual Reality Gaming.

## I. INTRODUCTION

Virtual Reality(VR) is a computer simulated environment that allows users to experience an environment virtually, without being there. The experience thus created is very close to reality. VR is most commonly used in entertainment applications such as gaming and 3D cinema. It is implemented by using interactive devices like gloves headsets or helmets [2]). Most of the computer games can be successfully transformed into VR format, with new and better interaction. The year 2018 has seen emergence of new games and new content. VR gaming has come a long way after the release of its first prototypes -the

Oculus VR and Samsung Gear VR. Newer releases include the Vive headset by HTC, Google Cardboard and Sony VR headset. The rapid pace of technological development and better affordable VR hardware has resulted in VR advancement. The VR gaming industry has already won a significant share of the market and continues to grow at a fast rate. It is in this context that gaming addiction can become an issue that would need to be dealt with. VR itself is not the issue, as it is successfully used in various other fields such as medicine, especially, in the field of robotic surgery where it has been proven to be very successful. It is also used in education such as taking students on virtual field trips (McShane, n.d.). Besides this, VR has also found its niche in the entertainment and tourism industries and in military.

## II. LITERATURE REVIEW

### A. Research Questions

This research will focus on answering the following questions:

RQ1: What are the major impacts of VR Addiction?

RQ2: How can they be managed effectively?

Data was to be collected through a survey conducted on VR games players who had the possibility of experiencing some negative impacts.

### B. Background of the study

The definition of addiction states that it is a strong and harmful need to regularly have something or to do something (Webster, 2016). Sometimes, VR gaming can lead to addiction that may resemble drug or alcohol addictions, thus negatively impacting the VR users themselves as well as the others involved with them in some way. This is because, VR creates an immersive computer-generated environment that is so convincing that the users would react the same way they would in real life. [3]

Popular VR Games:

This section aims to investigate the popular games that may lead to addiction, understand the negative effects of gaming addiction and propose effective methods of dealing with this. Data was gathered about the popular VR games and a list of the very popular four games were chosen for study. These are

1. Batman Arkham VR
2. The climb
3. Chronos
4. The Surgeon Simulator 2013

All data collected in this section is from blogs and reviews of gamers due to lack of articles.

**Batman Arkham VR:** This is a virtual reality game that is designed by Rocksteady Studios to be played on PlayStation and is designed to give the players “The Batman experience” with a strong dose of the dark psychology that the Arkham games are well known for. [4]. The game is played in first-person, meaning the player gets to be Batman. This game contains a high level of details of all the places in Batman Universe which allows the player to feel that unique sense of presence in these legendary locations through virtual reality. This will make the players play the game several times to explore all the details for hours and this makes the game addictive.

**The Climb:** This VR game from Crytek Video Game Company, is very popular and is about climbing mountains using headset and the Xbox controller. The Climb treats the act of climbing as a puzzle to be solved. The game suits all kind of gamers and especially the ones who enjoy climbing and therefore, there is a huge likelihood of players getting engaged in the game for hours together [5]. One benefit of the game is that it transports players to different locations and helps them overcome Acrophobia (fear of Heights). The negative effect however, is that the players stand up and use all their body to play the game and this results in body pain, particularly, a strain on the neck [5]. It also influences the brain where the player has trouble distinguishing between reality and the game after playing it.

**Chronos:** This is one of Oculus Rift’s new VR games. The game is about a hero trying to save his homeland from evil characters.

This is done by solving puzzles presented. Chronos, according to gamers, was so effective that even non-VR games could not compare with it [6] However, the gamers took at least 15 to 20 hours to finish the whole game.

Playing for this long leads to a craving to spend more and more time playing the game [6], which eventually leads to addiction.

**Surgeon Simulator 2013:** In this game, the player acts as a real surgeon and saves people’s lives. The player exists as an arm hovering above an operating table. Various movements of the mouse help to accomplish various actions for the surgery. s [7]. The game benefits those in the medical field or with such intentions by giving basic lessons on surgeries, including organ transplant. One reason for getting addicted to this game is that the players may continue to live or think about the situations in the game even when they have ended the game.

### III. RESEARCH METHODOLOGY

Both quantitative and qualitative data was collected for this study. Secondary data was collected through digital search and literature review. Besides this, survey was conducted amongst a sample of 36 gamers, as a means of primary data collection. The survey was aimed at collecting data directly from the players themselves to gather their opinions in proposing a solution to the problem of game addiction.

#### A. Survey analysis

Q1 and Q2 in the survey were targeted to know the age and gender of the participants. 22 of the participants were female and 13 were males. Most of the participants were aged between 16 to 20 and 21 to 24 which shows that most gamers are teenagers and young adults.

Q3: Have you played VR games?

This question was aimed to determine the popularity of VR gaming (fig 1). Though, it was expected that not many would have the experience of playing VR games, it was found 26 of the participants had experienced VR games. This indicates the enthusiasm and interest to such technology.

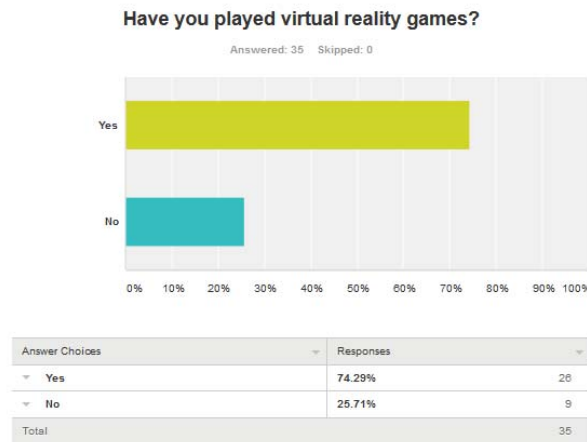


Figure 1

Q4: How were you introduced to virtual reality gaming?

This question was aimed at determining how the respondents were introduced to VR gaming ( fig 2). It was found that most gamers learned about VR through YouTube. Participants who provided other answers gave the sources as friends' recommendations, shows and the Internet etc.

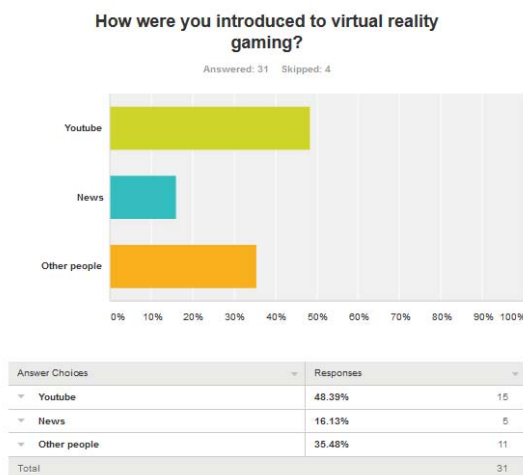


Figure 2

Q5: What is the VR game of your choice?

Gamers were provided with the list of most popular VR games gathered through literature review (fig 3). Of these games, most gamers had experienced Batman VR. Gamers added more games played by them, to the list (fig 4).

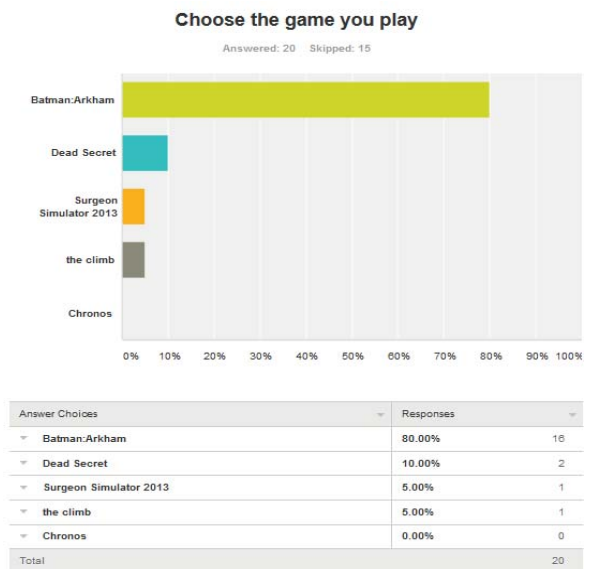


Figure 3

Forza horizon	10/19/2016 9:23 PM	<a href="#">View respondent's answers</a>
Plain VR games	10/15/2016 8:37 AM	<a href="#">View respondent's answers</a>
Football	10/13/2016 1:03 PM	<a href="#">View respondent's answers</a>
The Playroom VR	10/13/2016 12:10 PM	<a href="#">View respondent's answers</a>
Chronos	10/13/2016 9:23 AM	<a href="#">View respondent's answers</a>
Pes	10/12/2016 9:52 PM	<a href="#">View respondent's answers</a>
FIFA-street fighter-oen paice-black borne		
call of duty	10/12/2016 10:52 AM	<a href="#">View respondent's answers</a>
Tilt brush	10/12/2016 10:11 AM	<a href="#">View respondent's answers</a>

Figure 4

Q6: What makes Virtual reality gaming interesting?

Through literature review, information was gathered on what might make every VR game listed, addictive (fig 5). These reasons were provided in this question to help determine the factors that make VR gaming addictive. Most players agreed that it is the sense of reality while playing, that is most attractive. Other reasons were also provided by respondents (fig 6).

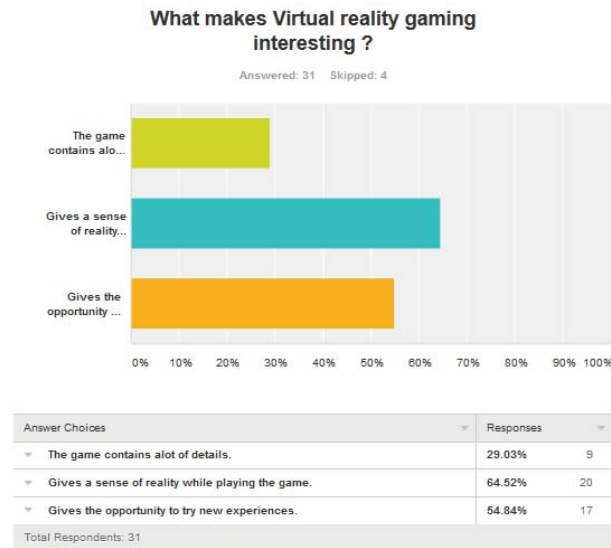


Figure 5

Spending time
10/13/2016 1:03 PM <a href="#">View respondent's answers</a>
Escape the real world
10/13/2016 12:10 PM <a href="#">View respondent's answers</a>
.
10/12/2016 12:02 PM <a href="#">View respondent's answers</a>
Puts you in a whole different world, and experience it live
10/12/2016 10:11 AM <a href="#">View respondent's answers</a>

Figure 6

Q7: What could be the negative impact of playing virtual reality games?

All the negative impacts provided in this question were also gathered from literature reviews. Gamers only corroborated these viewpoints. Most participants agreed that the VR gaming causes physical pain.

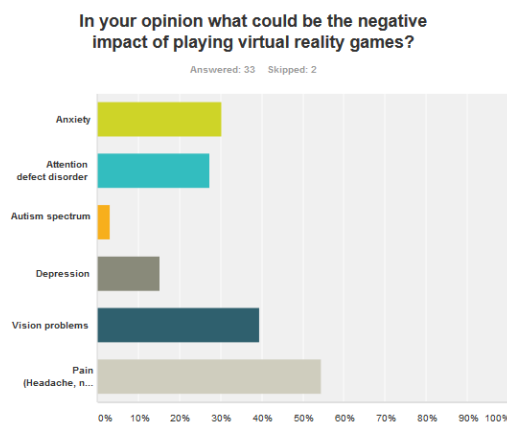


Figure 7

Q8: How long do you spend playing Virtual Reality Game?

It is known that spending long hours playing a game is one of the signs of addiction (fig 8). Most gamers spent 2 to 4 hours playing VR. However, 4 participants spent 6 to 8 hours playing VR which could be a sign of addiction.

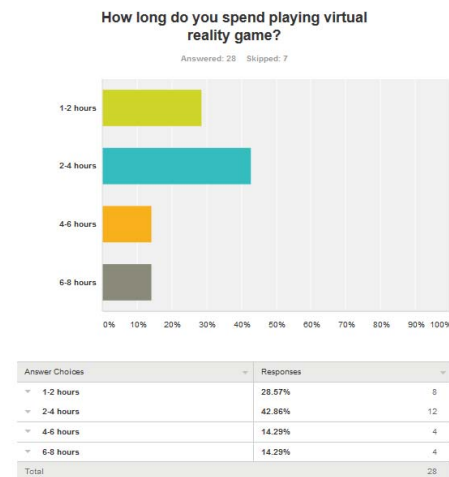


Figure 8

Q7: Do you think playing VR games for hours could lead to addiction?

This question was included to determine gamers understanding of the issue (fig 9). Only 6 of the participants have disagreed that long hours of gameplay will lead to addiction. The majority agreed that it leads to addiction.

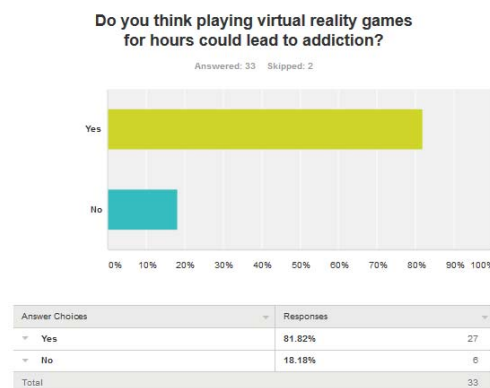


Figure 9

Q8: Suggest some solutions to solve the problem of playing for long hours?

There aren't any solutions to the problem of VR gaming addiction since it is still not proven to be a problem. This research also aims to propose a solution to this problem.

Gathering the opinions of the gamers themselves will help in proposing solutions to VR gaming addiction. Gamers who filled in the survey suggested several solutions. The solutions are as follows:

They should not play for long hours because it impact on their health
10/19/2016 9:28 PM <a href="#">View respondent's answers</a>
Playing for long hours is bad for your health and you will be lazy you should play 3 h mx in day
10/19/2016 9:25 PM <a href="#">View respondent's answers</a>
They should not play for long hours because it impact on their health
10/19/2016 9:23 PM <a href="#">View respondent's answers</a>
Taking a break every hour will help the gamer with being active in real life more.
10/16/2016 7:14 PM <a href="#">View respondent's answers</a>
The game switch off after 2 to 4 hours
10/16/2016 7:12 PM <a href="#">View respondent's answers</a>
Try and make games that end easily. Long games will tend to long hours of VR, which is extremely dangerous for health.
10/15/2016 8:37 AM <a href="#">View respondent's answers</a>
Games can not work more than 4 hours daily
10/13/2016 1:03 PM <a href="#">View respondent's answers</a>
Take breaks every hour
10/13/2016 12:44 PM <a href="#">View respondent's answers</a>
-Try to avoid playing continuously for more than an hour. -Take breaks in between gaming -Let your siblings play. Whenever I see my siblings playing I lose interest while watching them and go do something else.
10/13/2016 12:10 PM <a href="#">View respondent's answers</a>
I am a researcher too. Please make use of this link: <a href="http://www.techaddiction.ca/computer_game_addiction.html">http://www.techaddiction.ca/computer_game_addiction.html</a>
10/13/2016 9:23 AM <a href="#">View respondent's answers</a>
Every player must balance between his playing time and exercise
10/12/2016 10:16 PM <a href="#">View respondent's answers</a>
If you manage your time for instance you have to leave time for praying , eating , going out or take rest
10/12/2016 9:52 PM <a href="#">View respondent's answers</a>

Figure 10

## B. Ethical Considerations

The data collected through survey strictly follows the ethical and legal requirements of the country and the law. No personal data have been collected and the data collected will be used to support the objectives of the research.

## IV. DISCUSSION

### A. The Problem

The negative impacts of VR gaming addiction are like any media addiction. As with any media addiction, playing VR games for hours can cause serious mental illnesses such as depression, anxiety, attention deficit disorder, and in many cases, autism spectrum traits and features, obesity, sleep problems, increased aggression [8]. These impacts affect both children and adults. The main impact of playing VR for long hours is that it may damage the brain in a way that people will not be able to distinguish between VR and reality. Most gamers who were surveyed in this study agreed that VR mostly causes physical pains such as neck

pain because they would have to stand and keep moving for hours. Reviews of players on blogs have stated the same as well. Other symptoms that are very likely for VR addiction are

- Avoiding other commitments to keep playing
- Avoiding social encounters
- Escapism

### B. The Solution

After analyzing the finding of the research and the survey, some solutions to VR gaming addiction can be:

#### 1. Individual and family therapy

Since VR gaming addiction is like any media addiction such as TV, a therapist can help the gamer overcome the addiction the same way media addiction is treated. Family can also join in helping by working together with the gamer. This is more efficient when the gamer is a teenager or a child. By organizing family trips or spending more family time and showing support to the gamer, this method can be successful.

#### 2. Building addiction facilities

Like drugs rehabs, a good solution is to build a media addiction rehabilitation centers that are specialized in treating all sorts of media addiction. These facilities can have a section specialized in VR gaming addiction specifically, to give the proper treatments.

#### 3. Create awareness

Players must have self-awareness and control. All players realize that playing games for long hours can lead to serious problems. Gamers should take the lead in treating themselves and that can be accomplished by reading useful books about what VR addiction is, determine if they are addicted or not and what measurements can be taken to overcome this problem.

## V. CONCLUSION

In conclusion, this research identified the most popular VR games which may lead to addiction along with the reasons which make them addictive, the negative impacts that gamers will suffer from if are addicted to VR games and proposed solutions to overcome this problem. The main challenge was that there is no proven research to prove that VR gaming addiction is a problem or the ways in which it can be treated. Therefore, this research used primary data collected from people who experienced VR gaming using

a survey. The study extends a word of caution to the VR gamers so that, they do not get addicted to VR gaming. Though the methods proposed as solutions have not been

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tested, further experiments can be done in the future to do this.

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