FACTORS IMPACTING ONLINE GAMING ADDICTION ON MENTAL HEALTH OF ADOLESCENTS STUDYING IN THE CONTEXT OF KARACHI

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ABSTRACT

The purpose of this study was to investigate the factors impacting online gaming addiction on mental health including emotional, psychological and social well-being of adolescents from five secondary schools of Karachi, Pakistan. It was hypothesized that engagement in online gaming (referring to electronic game playing over a computer network) has impacts on the overall mental health of these adolescents. This study employs between-subject design and a survey research method in which a sample from the population of gamers is taken using purposive sampling. The sample is composed of 103 participants who play online games (average age = 14.6, SD=1.8). The researchers conducted a survey for finding out the factors impacting online gaming addiction (OGA) and Mental Health (MH). The Internet gaming Disorder Scale–Short-Form (IGDS9-SF) and Mental Health Continuum Short Form (MHC-SF) was utilized as measures. Statistical analysis was done through SPSS V-26.0. Descriptive statistical tools were used for demographics, Analysis of Variance (ANOVA) for determining the influence of different variables and Pearson r correlation is used to find out the correlation of online gaming with mental health. The results showed that there is a significant influence of several factors on OGA and MH whereas a weak negative correlation is found between online gaming addiction and mental health of adolescents. On the basis of result findings, the researcher recommends that online gaming can be used for coping mechanism. Even parents and teachers can set proper rules for playing online games preferably on weekends or twice a week.
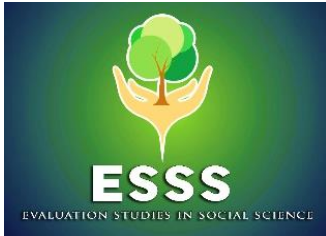
Keywords: *online gaming, mental health, adolescents*

INTRODUCTION

"All work and no play, makes Jacks a dull boy"

Howell, J. (1659, p. 8) as cited in Simpson and Speake (2009)

It appears difficult to disagree with this notion as many of us have spent our childhood playing different types of games including physical and several board games as indoor games. There was a time when we played games for endless duration. Atari and other television based games were common. Similarly, children nowadays are involved in online gaming.

Online games and their effects on mental health is one of the increasing concerns of all those who are linked with adolescents. Extensive literature is available since online gaming has become a disorder and accepted by DSM V in 2013 (Beard et al., 2017; Durmique & Castillo, 2018; Faulkner et al., 2015). When the researchers studied the components of addiction and the criteria that made online gaming a disorder, it was something shocking. To become addicted, a person has to meet the criteria and according to the researchers' observations, adolescents in Karachi are developing some of the attitudes that may lead to addiction and disorder. At the same time, the incidents that occurred one after the other. Three suicide cases of extreme gamers occurred within a short span of time in Lahore, Pakistan. All three were young males aged 16–20 years and their suicides appear to be related to PUBG addiction The News, 2022; Butt, 2020). It is likely that all three individuals experienced other predisposing factors relating to psychological instability. These were namely PUBG-related suicide during the coronavirus disease-2019 pandemic in Pakistan.

To understand the scenario, some statistics may help. Out of 54% of Pakistan's population who have internet connectivity, about 76% of Pakistanis are connected to the internet in Karachi, Lahore, Rawalpindi and Islamabad (Tribune, 2020). Pakistan has about 118.8 million internet users, making it the 8th-largest population of internet users in the world. This fact implies that even adolescents who belong to low socio-economic status have access to the internet (Wikipedia, 2021). This was initially due to the online teaching and learning demands. Most of the adolescents in Karachi got access to the internet and digital devices during COVID-19. Now these adolescents after attending their classes and researching on the internet are exposed to multiple internet games and get indulged in playing these games more often. A case was reported in a newspaper about the killing of a mother and three siblings by a 14-year-old boy. The mother who was shot dead was a widow and a lady health worker. She used to scold him to study and not to spend time playing this game (The News, 2022).

Adolescents are the future of any society. Their engagement with productive activities is always cherished but not to the extent of addiction. The popularity of playing online games has grown immensely over the past decade BBC News, 2021; Gismundo, 2020). The present state of wellbeing of these adolescents is inevitable to be explored so that the due measures can be taken in time.At the same time, literature also brings an affirmative picture of these online gamers (Ferguson, 2010, Dumrique & Castillo, 2018). Gaming has also been proved supportive in student learning as it stimulates students' engagement in real life observation skills (Hwang & Chen, 2017). There are research studies reporting that gaming reduces flashbacks from posttraumatic stress disorder(Holmes et al., 2009); drops incidents of chronic pain complaints (Jones et al., 2016); enhances visual-spatial cognition (Spence & Feng, 2010) and also accelerates arithmetic, memorization, leadership, and team functioning (Thirunarayanan & Vilchez, 2012).

A real conundrum comes when another body of researchers done on the online gaming addiction shows its adverse effects on holistic development of adolescents (Kuss et al., 2013, Gismundo, 2020, Khan & Muqtadir, 2014). It is also known that problems arise when online
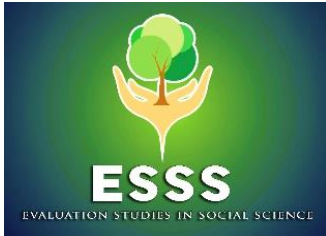
game playing is excessive. For instance, a survey study conducted in Canada, using the Problematic Videogame Playing Scale, that was developed by Tejeiro Salguero and Morán (2002), depicted that 1.9% adolescents out of 9.4% of adolescent gamers experience severe problems where as 7.5% also show symptoms of problematic gaming (Faulkner et al., 2015). As reported earlier, 75% of Pakistanis have internet connectivity but the issue is of constructive usage of this facility which is unknown to many adolescents. As a result, most of them are using it for only playing online games. Here comes the question of their mental health status as four youths reportedly committed suicide across the country after missing a task on a famous online game that triggered a big debate on the psychological impact of the online games (Butt, 2020).

Keeping in view the growing incidents, the Pakistan Telecommunication Authority (PTA), a state-run regulatory authority, cuffed several online games. But the ban was quickly lifted as activists argued this was an attack on freedom of expression (Butt, 2020). Cassidy stated that as the popularity of gaming devices among children is increasing around the world, it is leading to suicide or self-harm (as cited in Butt, 2020). Whereas our neighbor China's online game regulator has said that online gamers under the age of 18 will only be allowed to play for an hour on Fridays, weekends and holidays (BBC News, 2021).

This research aims to investigate the factors impacting online gaming addiction and mental health including emotional, psychological and social well-being of adolescents from five secondary schools of Karachi, Pakistan.
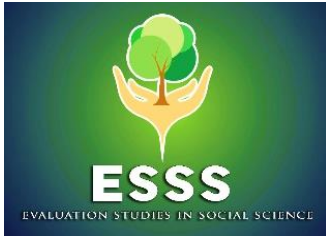
This brings some questions for the researchers:

1. Does the time spent on online gaming significantly influence Internet gaming addiction of adolescents?

2. Do different genre of online games significantly influence Internet gaming addiction adolescents have?

3. Is there a significant relationship between adolescents' internet gaming addiction and their mental health?

METHODOLOGY

Research design

This research study is based on cross-sectional survey research design. In this study. The researcher measures the outcome (mental health scores) and the exposures (internet gaming addiction scores) in the study participants aged ranged from 12-18 years, at the same time. The scales were administered face to face in the school setting. The whole survey took around ten weeks. For the exact procedure for working with these participants, ethical considerations were kept intact. Keeping the ethical considerations in view and as the

researcher selected the schools for data collection, the administration of these schools were approached through a prior appointment. The purpose of the research study and all potential concerns were shared. On the basis of the meeting, the administration allowed the researchers to approach the respective class teacher and in the presence of the class teachers, survey questionnaires were filled by the students. Once they filled the form, researchers glanced at those and checked for any incompleteness. This process took around fifteen different sessions altogether in five different schools. Researcher thanked the concerned personnel and the participants for their voluntary participation.
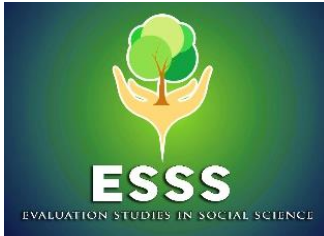
Sample

A total of 103 adolescents from five secondary schools in the central and east district of Karachi participated in this study. The adolescence were purposefully screened into this with a screening criteria of being adolescents, living in Karachi, Pakistan, aged between 12-18 years of any gender who play online games daily. Profile of the participants is shown in the demographic table 1 below. The majority of the participants aged between 13-15years constitute 70% of the total sample. Males were in majority (81%) than female participants (19%). Their monthly pocket money ranged between less than 500 PKR and around 1500 PKR. Almost 63% of them played either PUBG or Free Fire. 70% of them played with 2-8 people. More than 45% affirmed that they made purchases in games with real money. Approximately 85% of the participants spend between 2 to more than 8 hours in playing online games daily. This descriptive data has sketched a detailed image of the participants.

Table 1

Frequencies and percentages of the different categories showing profile of the participants

Category	Sub-category	F	%
Age	12 years old	7	6.8
	13 years old	29	28.2
	14 years old	20	19.4
	15 years old	23	22.3
	16 years old	4	3.9
	17 years old	7	6.8
	18 years old	13	12.6
Gender	Male	81	78.6
	Female	22	21.4
Monthly Pocket Money	Less than 500 rupees	20	19.4
	500-1000 rupees	5	4.9
	1000-1500 rupees	22	21.4
	More than 1500 rupees	56	54.4

Name of the Game Played	PubG	**48**	**46.6**
	Free Fire	15	14.6
	Candy Crush Saga	12	11.7
	Minecraft	6	5.8
	Solitaire	1	1.0
	8-Balls Pool	2	1.9
	Others	19	18.4
Number of the people adolescents play with	None (play alone)	17	16.5
	One	14	13.6
	Two	16	15.5
	Three	20	19.4
	Four	28	27.2
	More than four	08	7.8
Have they made purchases in games with real money?	Yes	47	45.6
	No	56	54.4
Number of hours spent in playing online games daily	Less than an hour	14	13.6
	1-2 hours	45	43.7
	3-4 hours	16	15.5
	5-6 hours	18	17.5
	7-8 hours	6	5.8
	More than 8 hours	4	3.9

Measures

Basically two scales were used to measure the variables of this study. Firstly, the short form of Mental Health Continuum (MHC-SF; Keyes (2006). The purpose of this instrument to indicate the current level of psychological functioning. It was developed in response to demands for a brief self-rating assessment tool that combined the three components of well-being: emotional, social, and psychological. It is a 14-item scale. The items are scored on a 6-point Likert scale of frequency from never to everyday (never=0, once or twice=1, about once a week=2, about 2 or 3 times a week=3, almost every day=4, every day=5) with continuous scoring the sum score can range between 0-70.

The other instrument used in this study is the Internet Gaming Disorder Scale (IGDS9-SF) by Pontes and Griffiths (2015). It is 9-item self-report measure. It indicates the degree of internet gaming addiction of an individual. Total scores can be obtained by summing up all responses given to all nine items of the IGDS9-SF and can range from a minimum of 9 to a maximum of 45 points, with higher scores being indicative of a higher degree of Internet Gaming Disorder. In order to differentiate disordered gamers from non-disordered gamers, researchers should check if participants have endorsed at least five criteria out of the nine by taking into account answers as '5: Very Often', which translates as endorsement of the criterion.
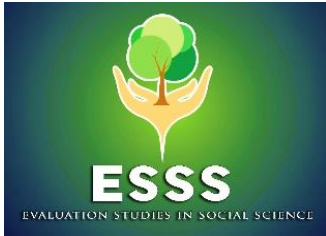
Data analysis

A Pearson's correlation was administered to depict the linear association between the two continuous variables (Internet gaming addiction score and mental health scores). Next, two one-way ANOVA was conducted. The first analysis of variance (ANOVA) was conducted to examine the mean difference in internet addiction scores by the time spent in gaming daily whereas the second analysis of variance was applied to explore the mean difference in the internet addiction scores by the game genre.

RESULTS

A Pearson Correlation examined (as shown in table 2) the relationship between internet gaming addiction scores and the mental health scores. Scales scores were computed by adding responses to the items in the scales. A statistically significant relationship (r (103) = −.279, p<.01) was found between internet gaming addiction scores and the mental health scores. Results shows that there is a significant relationship but it was a weak and negative one. This means that as the internet gaming addiction scores increase, the mental health scores decrease and vice versa. As Mental Health Continuum – Short Form is based on three categories of well being named as emotional, social and psychological, so for the categorical analysis the correlation among these were also calculated for a detailed analysis.

The results showed that there is a statistically significant relationship between internet gaming addiction scores and emotional well-being (r (103)= −.315, p<.01). As there is a moderate negative correlation between internet gaming addiction scores and scores on emotional well-being items, so the increase in internet gaming addiction scores, brings a decline in emotional well-being. Psychological well-being relationship with internet gaming addiction scores was found to be statistically significant (r (103)= −.232, p<.05) and a weak negative. Overall, the result shows that the participant's internet addiction and mental health are negatively correlated means as the internet addiction score increases, the mental health deteriorates.
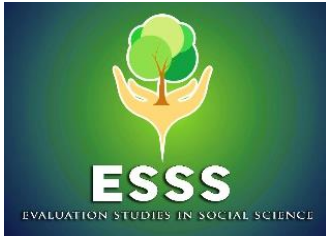
Table 2

The correlation of internet gaming addiction and mental health with its sub-scales

Variables	1	2	3	4	5
1. Internet gaming addiction	1				
2. Mental health	-.279**	1			
3. Emotional wellbeing	-.315**	.685**	1		
4. Social wellbeing	-.166	.818**	.340**	1	
5. Psychological wellbeing	-.232*	.819**	.520**	.406**	1

Note: **means that p is significant at $p<.01$ level (2-tailed), *means that p is significant at $p<.05$ level (2-tailed)

Table 3 shares the means and standard deviations on the measure of internet gaming addiction score with respect to the time spent on gaming daily. Results shows that the higher mean (M=31.00 and M=32.00) was reported with 7-8 hours and above

Table 3

Means and Standard Deviations on the Measure of Internet Gaming Addiction Score with respect to time spent daily on gaming

	N	Mean	Std. Dev.
Less than an hour	14	17.57	7.37
1-2 hours	45	20.91	4.56
3-4 hours	16	24.31	8.97
5-6 hours	18	24.11	7.55
7-8 hours	6	31.00	8.56
More than 8 hours	4	32.00	1.16

Table 4

One-Way Analysis of Variance of Internet Gaming Addiction Scores of Adolescents by Time Spent Daily on Online Gaming

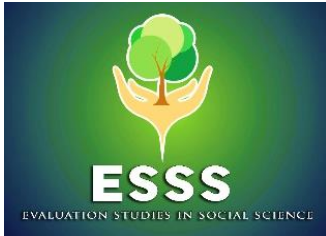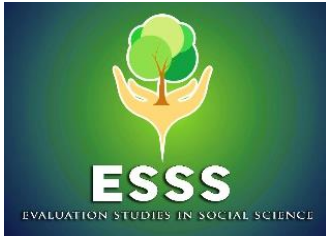| Source	df	SS	MS	F	Sig.
Between Groups	5	1337	267	6.23	<.000
Within Groups	97	4164	43		

Table 5

Post Hoc Analysis of Variance of Internet Gaming Addiction Scores of Adolescents by Time Spent Daily on Online Gaming

(I) Duration	(J) Duration	Mean Difference (I-J)	Std. Error	Sig.
Less than an hour	1-2 hours	-3.34	2.01	.56
	3-4 hours	-6.55	2.40	.08
	5-6 hours	-6.54	2.34	.07
	7-8 hours	-13.43*	3.20	.00
	More than 8 hours	-14.43*	3.72	.00
1-2 hours	Less than an hour	3.34	2.01	.56
	3-4 hours	-3.21	1.91	.55
	5-6 hours	-3.20	1.83	.50
	7-8 hours	-10.09*	2.85	.01
	More than 8 hours	-11.09*	3.42	.02
3-4 hours	Less than an hour	6.55	2.40	.08
	1-2 hours	3.21	1.91	.55
	5-6 hours	.01	2.25	1.00
	7-8 hours	-6.88	3.14	.25
	More than 8 hours	-7.88	3.66	.27
5-6 hours	Less than an hour	6.54	2.34	.07
	1-2 hours	3.20	1.83	.50
	3-4 hours	-.01	2.25	1.00
	7-8 hours	-6.89	3.09	.23
	More than 8 hours	-7.89	3.62	.26

7-8 hours	Less than an hour	13.43*	3.20	.00
	1-2 hours	10.09*	2.85	.01
	3-4 hours	6.88	3.14	.25
	5-6 hours	6.89	3.09	.23
	More than 8 hours	-1.00	4.23	1.00
More than 8 hours	Less than an hour	14.43*	3.72	.00
	1-2 hours	11.09*	3.42	.02
	3-4 hours	7.87	3.66	.27
	5-6 hours	7.89	3.62	.26
	7-8 hours	1.00	4.23	1.00

* means that the mean difference is significant at the 0.05 level

A one-way ANOVA was performed to compare the effect of six different time spans spent on gaming daily on internet gaming addiction scores. The normality and homogeneity of variance assumption was met in this study. Result found that there is a significant difference in the internet gaming addiction scores between the six distinctive groups. Post hoc comparisons using the Tukey HSD test indicated that the mean score for the 7-8 hours (M=31, SD=8.56) was significantly different from the mean score of less than half an hour (M=17.57, SD=7.37). Similarly, according to the Post hoc comparison using Tukey's HSD, the mean differences between 1-2 hours and more than 8 hours is also significant. The groups that play online games for 7-8 hours or more had a higher addiction scores. Results shows that time spent on gaming does influence one's internet gaming addition.

Table 6

Means and Standard Deviations on the Measure of Internet Gaming Addiction Score of Adolescents by Different game genres

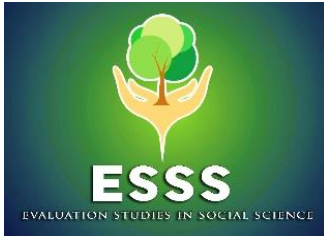| *(Different Games Genres)*	*N*	*Mean*	*Std. Dev.*
PubG	48	24.83	6.46
FreeFire	15	24.07	7.96
Eight Balls Pool	12	18.42	5.92
Candy Crush Saga	6	17.33	7.92
Solitaire	3	23.67	4.62
Others	19	19.58	7.76

Table 7

*One-Way Analysis of Variance of Internet Gaming Addiction Scores of Adolescents by Different Games*

Source	df	SS	MS	F	Sig.
Between Groups	5	824	164	3.420	.007
Within Groups	97	4677	48		

Table 8

Post Hoc Analysis of Variance of Internet Gaming Addiction Scores of Adolescents by Different Games

(I) Game	(J) Game	Mean Difference (I-J)	Std. Error	Sig.
PubG	FreeFire	.77	2.05	1.00
	Eight Balls Pool	6.42	2.24	.06
	Candy Crush Saga	7.50	3.01	.14
	Solitaire	1.17	4.13	1.00
	Others	5.25	1.88	.07
FreeFire	PubG	-.77	2.05	1.00
	Eight Balls Pool	5.65	2.69	.30
	Candy Crush Saga	6.73	3.35	.35
	Solitaire	.40	4.39	1.00
	Others	4.49	2.40	.43
Eight Balls Pool	PubG	-6.42	2.24	.06
	FreeFire	-5.65	2.69	.30
	Candy Crush Saga	1.08	3.47	1.00
	Solitaire	-5.25	4.48	.85
	Others	-1.16	2.56	1.00
Candy Crush Saga	PubG	-7.50	3.01	.14
	FreeFire	-6.73	3.35	.35
	Eight Balls Pool	-1.08	3.47	1.00
	Solitaire	-6.33	4.91	.79
	Others	-2.25	3.25	.98
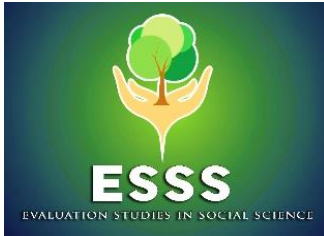
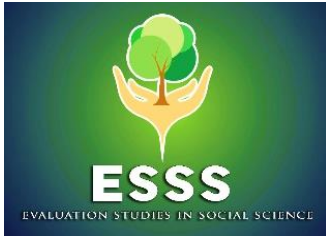|				
Solitaire	PubG	-1.17	4.13	1.00
	FreeFire	-.40	4.39	1.00
	Eight Balls Pool	5.25	4.48	.85
	Candy Crush Saga	6.33	4.91	.79
	Others	4.09	4.31	.93
Others	PubG	-5.25	1.88	.07
	FreeFire	-4.49	2.40	.43
	Eight Balls Pool	1.16	2.56	1.00
	Candy Crush Saga	2.25	3.25	.98
	Solitaire	-4.09	4.31	.93

A one-way ANOVA was performed to compare the effect of six different games on internet gaming addiction scores. The normality and homogeneity of variance assumption was met in this study. Result found that there is a significant difference in the internet gaming addiction scores between the six distinctive game genres. Despite of F-test being significant, Post hoc comparisons using the Tukey's HSD test revealed no significant mean difference between any of the six groups. So the linear pair-wise comparison was done which indicated that the mean score for the PubG (M=24.8, SD=6.46) was significantly different from the mean score of Candy Crush Saga (M=17.33, SD=7.9). Similarly, the linear pair-wise comparison also highlighted that the mean differences between Free Fire and Candy Crush is significant. The groups that play PubG or Free Fire had a higher addiction scores. Results show that genre of the online games does influence one's internet gaming addiction score.

DISCUSSION AND IMPLICATIONS

The other side of the coin

Internet gaming addiction is negatively correlated to mental health. At the same time, the time spent daily on gaming and the genre of the games played also have a significant influence on the internet gaming addiction of adolescents. Through this research, the researchers have gained the insights that sometimes what seems like a real problem can be a blessing in disguise. Like in the case of this research, the researchers found that online gaming can be used for coping purposes and can keep mental health intact. At the same time, the alarming news of assassinations, gives it a different direction. Researchers realized the need to see this issue from a different angle and different perspective.

These results show that internet gaming is high among adolescents between 13-15 years as they constitute 70% of the total sample as per expectations. Baglione et al., (2018) and Yee (2006) were initially puzzled at this weak correlation but literature review informed that at this age when adolescents have entered their teens and forming their identity where they want to satisfy their power need, increase their buying capacity and socialize with their peer as many
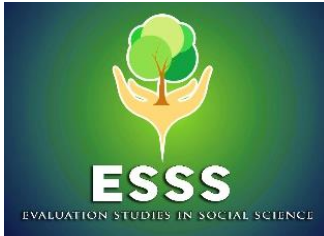
of them are playing it due to peer pressure (Yee, 2006). Durmique and Castillo (2018) indicated that these games are played as a coping mechanism. Even some explored the motives behind gaming, identified coping, escape and achievement as being steadily found to be connected with problematic gaming .In this time of COVID 19, they were facing issues with family, friends and teachers. They find staying in this virtual reality is more relaxing. These games offered players much needed respite from stress, supported them in dealing with their feelings, assisted social relations and provided support in times of uncertainty (Baglione et al., 2018).

Another reason for having a weak relationship could be the initiation stage. In this research, it was not asked when the participants initiated this activity. Most probably if the initiation stage is very late then the addiction is not strong enough. There are researches that are supporting that it could be due to the initial and minimum exposure to online gaming (Gismundo, 2020). Available studies indicate those individuals who initiate; Internet use at a younger age exhibit an increased risk for general; Internet addiction.

Prior research also suggests unique cognitive processes in online gaming, such that an individual's overall sense of self-worth can become contingent upon self-esteem derived from the gaming environment (Beard et al., 2017). This could be the reason for having significantly high scores on psychological well-being and thus overall mental health. Yet another study done in Pakistan by Khan and Muqtadir (2016) also narrated that some gaming is problematic whereas some gaming is non-problematic. So might be the types of games which the participants were playing, were under the non-problematic games. The content and even the graphics used in problematic games generate an impact on the mental health of the adolescents (Lam, 2014).

This weak but significant correlation also indicates that there are other variables that are working on the neutralization of mental health. Might be, the phenomena of gaming addiction needs to be seen from a cultural and situational lens (Jukschat, 2021). Such a change of perspective will definitely raise new questions and will shed light on aspects of the phenomenon that have not been explored in this context so far. These other variables are supposed to be studied that are neutralizing the addiction rating of the adolescents.

The limitations of the present study is the limited sample size. Even if more female participants could be approached, there could be a comparison between male and female gaming attitude. Secondly, the tools for gathering data were not contextual and vocabulary used in these tools also caused barriers in comprehension so the researcher administered the questionnaire herself and, as mentioned earlier in method section, explained the meaning of the unfamiliar words. Looking at the results of this study, it seems that internet gaming activities of the participants have not yet come to a point where they could affect the mental health and wellbeing of the participants. Several of the gaming attitudes such as playing for a limited time daily and playing with partners as a team, have sustained their mental health and did not affect their wellbeing.

Having said that it cannot be ignored that the relationship between internet gaming addiction and mental health is negatively associated and especially as the participants were mostly male, there is a dire need of arranging more physical sports and indoor games that they can play more often so that to enhance their physical, mental, social, emotional and overall sportsmanship. It will hopefully reduce the tendency of them being occupied with online games.
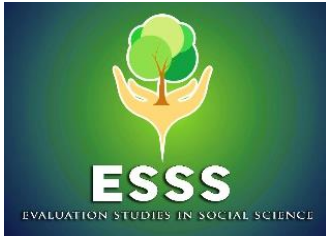
Furthermore, parents, school administrators and teachers need to build an alliance so that they can motivate these teens in the same direction to be involved in more physical and practical activities rather than virtual activities. It can also be a good idea to strengthen the bond between parents and teachers and make the responsibilities functional so that from time to time, both can inform each other of certain anti-social and addictive behaviors. School administrations can organize certain awareness sessions for parents and teachers so that they could be trained to handle the adolescents' demands and channelize them in academic and social tasks.

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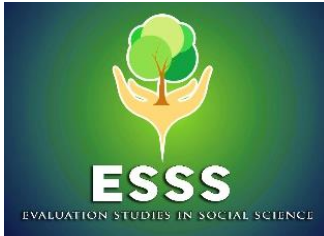
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