Effectiveness of Structured Intervention Module on Video Game Addiction among Adolescents in Nepal

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ABSTRACT

Introduction: Online gaming addiction has been associated with several detrimental effects in teenagers, such as worsening mental health, elevated levels of psychoticism, anxiety, and depression, strained family relationships, reduced quality of life, an increase in social anxiety, subpar academic performance, and enhanced sleep deprivation.

Objective: This study aimed to assess the effectiveness of a structured intervention module on video game addiction among adolescents.

Methods: A true experimental investigation was conducted among 348 adolescents from the control and 348 adolescents from the experimental group. The questionnaire was developed using the Gaming Addiction Scale. Data were coded, entered, and analysed using the Software Statistical Package for Social Sciences (SPSS) version 21. Data was analyzed using descriptive and inferential statistics (t-test).

Results: The mean age of the participants in the control group and experimental group were 17.3, and 18.3 respectively. The majority of the participants were male in both the control and experimental groups (52.6% and 55.7%). About 39.7% of adolescents from the control group and 29.6% of the adolescents from the intervention group were studying in twelve standards. The majority of the participants in both the control and experimental groups started playing video games at the age of 7 to 8 years. The most popular mode of video game play among the participants in the control (61.5%) and experimental groups (60.3%), was online. Multi-player was highly preferred by study participants in both the control group (71.6%) and the experimental group (74.1%). After receiving interventions, video game addiction reduced significantly among the experimental group, from 42% to 25% during the post-test. However, the status of video game addiction remained constant among the control group at 46.3%. During post-tests, the study found that there was a significant difference in the mean scores between the control group (3.7 ± 0.6) and the experimental group (1.9 ± 0.7). The difference was found to be statistically significant ($p<0.0001$).

Conclusion: The study showed that the structured intervention module was effective in reducing gaming addiction among adolescents in the experimental group. This study highlights that intervention modules can help reduce gaming addiction levels among adolescents.

116

KEYWORDS

Adolescents, Control, Experimental, Gaming Addiction, Nepal, Nursing Students

INTRODUCTION

Online gaming satisfies a variety of requirements for people, but when it becomes an addiction, it has negative impacts on people, especially adolescents, and can harm their mental health (Purwaningsih & Nurmala, 2021). Addiction to online gaming has been linked to several negative outcomes in adolescents, including poorer mental health, increased psychoticism, anxiety, and depression, strained family dynamics, lower quality of life, a rise in social phobia, poorer academic performance, and improved sleep deprivation (De Pasquale et al., 2020). Adolescent's addiction to online gaming harms their life in several ways (Haberlin & Atkin, 2022).

Addiction to the internet is one of the biggest issues. Adolescents with Internet addiction typically experience issues with their mood, family relationships, school performance, and daily routine. Online gaming may also be impacted by aggressive tendencies. In Saudi, the prevalence of video game addiction was 62.1% (Alrahili et al., 2023). According to current estimates, the prevalence of video game addiction varies with 15% in Europe and 8.5% in the US (Rajab et al, 2020; Saquib et al., 2017). About 44.2% of the students in Nepal are addicted to online games (Bhandari et al., 2020). Similarly, 18.9% of adolescents showed internet gaming addiction as identified in another study (Shrestha et al., 2023). Similarly, another study showed moderate to severe levels of internet addiction (Singh & Shrestha, 2021).

A significant difference was found among adolescents after the intervention module had been implemented to reduce gaming addiction (Kumari & Dhiksha). Similarly, another study showed that brief internet-delivered intervention was effective in reducing the gaming disorder (Park et al., 2020). Despite a high prevalence of gaming addiction among adolescents, there are limited intervention studies conducted in Nepal to reduce gaming addiction. Thus, this study aimed to analyse the effectiveness of intervention module in gaming addiction.

MATERIALS AND METHODS

A true experimental research design was conducted for this study. The study was conducted among adolescents from two higher secondary schools in Kathmandu in which one was selected as the control group and the other as an experimental group. A sample of 348 adolescents in each group was selected by using a stratified proportionate random sampling technique. Based on the nature of this study, self-administrative questionnaire were used to gather necessary data from the participants. A self-administered questionnaire consisted of socio-demographic variables, family characteristics, school characteristics and gaming variables.

A pretesting of gaming addiction was measured by using a game addiction scale. The first section of the questionnaire included demographic variables and gaming variables. The second section consisted of items from the Game Addiction Scale (Lemmens *et al*) to assess game addiction among adolescents using the Likert scale that ranged from never-0, rarely-1, sometime-2, often-3, to very often-4. A score of 4 or higher was considered as addicted to games in the study.

A structured interventional module was prepared. The content validity of the structured interventional module was ascertained in consultation with the guide and expertise from the field of psychiatric nursing, psychiatrist and statisticians. Further consent was taken from participants regarding

117

their willingness to participate in the study. Then the structured intervention module was rendered in a controlled classroom session. Multiple post-tests were done to assess the effectiveness of the intervention module. The first post test was done in the third week after intervention, and second in six weeks after the intervention, using the same tool used for the pre-test to explore the effect of educational intervention.

The collected data were checked for completeness and entered in the Statistical Package for Social Sciences (SPSS) version 21 computer software for further analysis. Descriptive statistics such as frequencies, percentages, mean median and standard deviation were used to describe the data. Inferential statistics such as Paired t-test and Independent t-test were used to assess the effectiveness of the structured intervention module before and after intervention.

RESULTS

The mean age of the participants was 17.3 years in the control group and 18.3 years in the experimental group. The majority of the participants (56.3%) in the control group were aged between 16-17 years, while the majority (79.9%) in the experimental group were aged between 18-19 years. The majority of the participants from both the control and experimental groups were male (52.6% and 55.7%). Regarding ethnicity, the majority of the participants in both control and experimental groups belonged to the Janajati ethnic group. The majority of the participants in both control and experimental groups were from nuclear families, with 62.1% and 60.6% respectively. Most of the participant's father in both groups had completed their secondary education (29.3% and 31.6% respectively). Similarly, most of the participant's mothers had completed their secondary level of education (30.7% and 31%). The majority of the fathers were employed in both control and experimental groups (34.5% and 40.5%) while the majority of the mothers in both groups were homemakers (60.9% and 54.3%). Finally, the majority of the participants in both control and experimental groups had both parents as their current guardians/parents (54.6% and 65.8%).

Table 1: Socio-demographic Characteristics of the Participants (n=348)

Indicators	Category	Control		Intervention	
		Frequency	**Percent (%)**	**Frequency**	**Percent (%)**
Age group in years	Mean±SD	17.3±1.2		18.3±1.2	
	16-17	196	56.3	70	20.1
	18-19	152	43.7	278	79.9
Sex	Male	183	52.6	194	55.7
	Female	165	47.4	154	44.3
Ethnicity	Brahmin/Chhetri	124	35.6	129	37.1
	Janajati	155	44.5	136	39.1
	Madhesi	19	5.5	24	6.9
	Dalit	15	4.3	29	8.3
	Muslim	3	0.9	8	2.3
	Others	32	9.2	22	6.3

Family Type	Nuclear	216	62.1	211	60.6
	Joint	120	34.5	117	33.6
	Extended	12	3.4	20	5.7
Educational status of Father	Illiterate	20	5.7	17	4.9
	Can read and Write only	52	14.9	34	9.8
	Primary Level	90	25.9	93	26.7
	Secondary Level	102	29.3	110	31.6
	Higher Secondary	60	17.2	64	18.4
	Graduate or above	24	6.9	30	8.6
Educational status of Mother	Illiterate	59	17	47	13.5
	Can read and Write only	55	15.8	63	18.1
	Primary Level	75	21.66	87	25
	Secondary Level	107	30.7	108	31
	Higher Secondary	37	10.6	33	9.5
	Graduate or above	15	4.3	10	2.9
Occupation of Father	Self Employed	120	34.5	141	40.5
	Government Employee	45	12.9	40	11.5
	Agriculture	83	23.9	77	22.1
	Others	100	28.7	90	25.9
Occupation of Mother	Homemaker	212	60.9	189	54.3
	Self Employed	46	13.2	44	12.6
	Government Employee	17	4.9	16	4.6
	Agriculture	49	14.1	45	12.9
	Others	24	6.9	54	15.5
Current Guardian/Parents	Both Parents	190	54.6	229	65.8
	Father only	15	4.3	4	1.1
	Mother Only	18	5.2	15	4.3
	Family Members	72	20.7	60	17.2
	Relatives	41	11.8	32	9.2
	Others	12	3.4	8	2.3

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Table 2 shows the gaming-related characteristics of the study participants. The initiation of video game play was 7 to 8 years in control (71.3%) as well as experimental group (70.0%). The most popular mode of video game play among the participants in both control and experimental groups was online (61.5% and 60.3%, respectively). Multi-player was highly preferred by study participants in both the control group (71.6%) and the experimental group (74.1%). In terms of gaming partners, playing with friends were highly preferred in both the control group (73.9%) and the experimental group (77.0%). Smartphone/mobile device was mostly used to play game in the control group (89.4%) and the experimental group (92.0%). Majority of the participants played video game every day in both groups (39.7% and 45.1%). Majority of the particiapnts played video game for less than 5 hours per day in both groups (79.6% and 72.2%).

According to Table 3, the proportion of video game addiction was similar among participants in the control and experimental groups, with 49% and 42%, respectively, during the individual pre-test. However, after implementation of intervention module it was found that video game addiction was reduced significantly among the experimental group, from 42% to 25% during the post-test. Meanwhile the status of video game addiction remained constant among the control group at 46.3%.

Table 2: Gaming Characteristics of the Participants (n=348)

Indicators	Category	Control		Intervention	
		Frequency	Percent (%)	Frequency	Percent (%)
Age at 1st gameplay	7 to 8 Years	248	71.3	244	70
	9 to 10 years	80	23	79	22.7
	11 to 12 years	17	4.9	18	5.2
	13 to 14 years	3	0.9	7	2.0
Mode of video game play	On line	214	61.5	210	60.3
	Offline	134	38.5	138	39.7
Gaming type preference player	Single Player	99	28.4	90	25.9
	Multi-Player	249	71.6	258	74.1
Gaming Partner	Family member	22	6.3	28	8.0
	Friends	257	73.9	268	77.0
	Unknown Player	69	19.8	52	14.9
Gaming Device	Laptop/Computer	37	10.6	28	8.0
	Smartphone/Mobile	311	89.4	320	92
Frequency of gaming(hrs/Week)	Every day	138	39.7	157	45.1
	5-6 days per week	91	26.1	84	24.1
	3-4 days per week	39	11.2	36	10.3

120

	1-2 days per week	80	23.0	71	20.4
Frequency of gaming hrs. per day	≤5 hrs per day	277	79.6	286	82.2
	>5 hrs per day to 12hrs per day	66	19.0	61	17.5
	>12 hrs per day	5	1.4	1	0.3

Table 3: Video game addiction and their pre/post-test status in the control and experimental group (n=348)

Video Game Addiction	Pre-Control	Pre-Experimental	Post-Control	Post-Experimental
None	177(50.9%)	202(58.8%)	187(53.7%)	261(75.0%)
Yes	171(49.1%)	146(42.0%)	161(46.3%)	87(25.0%)

Table 4: Paired Samples test of Pre and Post-test among control and experimental group regarding video game addiction (n=348)

Video Game Addiction	Pre-test	Post-test	P-Value
Control	3.8±0.6	3.7±0.6	0.453
Experimental	3.8±0.7	1.9±0.7	0.000

Paired samples test

Table 4 displays the paired samples test results of study participants from both control and experimental groups during pre and post-tests regarding video game addiction. The mean scores for video game addiction were not significantly different among the control group. However, there was a significant difference in mean scores comparison between pre and post-tests for the experimental group, with a p-value of less than 0.0001.

Table 5: Paired Samples test of Pre and Post-test among control and experimental group regarding video game addiction (n=348)

Video Game Addiction	Control	Experimental	P-Value
Pre-test	3.8±0.6	3.8±0.7	0.878
Post-test	3.7±0.6	1.9±0.7	0.000

Independent Samples test

As shown in Table 5, there were no significant mean differences between the control and experimental groups during the pre-test (P>0.05). However, during post-tests, the study found that there was a significant difference in the mean scores between the control group (3.7±0.6) and the experimental group (1.9±0.7). The difference was found to be statistically significant (p<0.01).

DISCUSSION

The mean age of the participants in the control group and experimental group were 17.3, and 18.3 respectively. The majority of the participants were male in both the control and experimental groups (52.6% and 55.7%). About 39.7% of adolescent from the control group and 29.6% of the adolescents from the intervention group were studying in twelve standards. In the study by Joshi et al. (2022), out of 417 students, the mean age was 17 years. The majority of the participants (66.7%) were male and (36.0%) were studying in twelve standards.

The majority of the participants started playing video games at the age of 7 to 8 years in both groups. Similar findings were shown in Shrestha et al. (2023) where the majority 79.4% of the participants played a game at more than 6 years of age for the first time. In the study by Aydin et al. (2021), it was shown that the minimum age for playing video games was 1 year.

Multi-player was highly preferred by study participants in both the control group (71.6%) and the experimental group (74.1%), followed by single-player (28.4% and 25.9%, respectively). Similarly, the proportion of the respondents playing multiplayer games regularly was 89.6% (Alrahili et al., 2020). The most popular mode of video game play among the participants in the control and experimental groups was online (61.5% and 60.3%, respectively), followed by offline (38.5% and 39.7%, respectively). Online gaming has been popular since the COVID-19 pandemic as depicted by Barr and Steward (2021). The majority of respondents reported an increase in multiplayer games, driven by a desire to socialize and make up for the lack of in-person communication. In terms of gaming partners, friends were highly preferred in both the control group (73.9%) and the experimental group (77.0%), followed by unknown players (19.8% and 14.9%, respectively) and family members (6.3% and 8.0%, respectively). Shrestha et al. (2023) found that 49% of the participants had regular game partners.

Most of the participants in both the control group (89.4%) and the experimental group (92.0%) played video games on a smartphone/mobile device, followed by a laptop/computer (10.6% and 8.0%, respectively). Similar findings were observed in the study by Joshi et al. (2022) where 85.1% of the participants played games on their mobile only, 9.1% played games on their laptop only, and 5.8% played games on multiple devices. Similarly, Shrestha et al. (2023) showed that 86.6% used mobile to play games while the remaining played games on devices other than mobile. In the present study, the higher frequency of playing video games in the control group was every day (39.7%), followed by 5-6 days per week (26.1%), 1-2 days per week (23.0%), and 3-4 days per week (11.2%). In the experimental group, the higher frequency of playing video games was also every day (45.1%), followed by 5-6 days per week (24.1%), 1-2 days per week (20.4%), and 3-4 days per week (10.3%). Compared to playing video games during the week, another study showed that the control group's daily internet usage increased more noticeably throughout the weekend and the week (Bonnaire et al., 2019). Another study showed that there was an average of 31.3 hours and 10.3 hours spent on gaming (Park et al., 2020).

Most of the participants in the control group of this study played video games for less than 5 hours per day (79.6%), followed by more than 5 to 12 hours per day (19.0%), and more than 12 hours per day (1.4%). In the experimental group, most of the participants played video games for less than 5 hours per day (72.2%), followed by more than 5 to 12 hours per day (17.5%), and more than 12 hours per day (0.3%). According to Esposito et al. (2020), most of the participants spent their time in video play games for three hours (34.24%). Study by Aydin et al. (2021) also showed that 36.3% of children spent ≥ 2 hours/day on screen. Another study conducted in Saudi showed that 63.1% of the respondents reported playing video games every day with an average of more than five hours of gaming time per day (25.2%)

(Alrahili et al., 2020). The most of the time spent on playing video games varied based on ages of students. It significantly influenced how their personality changed, for better or worse.

It was observed that the proportion of video game addiction was similar among participants in the control and experimental groups, with 49% and 42%, respectively, during the individual pre-test. The prevalence of IGD was found to be 18.9% among school-going adolescents in the study conducted by Shrestha et al. (2023) in Butwal. However, after receiving interventions, video game addiction was significantly reduced in the experimental group in post-test. Despite the decrease in addiction, the prevalence in our study was still higher than in other studies conducted in Nepal (8.5%) by Shrestha et al. (2020), and China (17%) (Liao et al., 2020). Short-term interventions are linked to decreased gaming frequency and duration as well as milder symptoms. About 88% elected to reduce gaming addiction (Park et al., 2020). However, the higher prevalence in the present study might be due to the nature of the research, and higher sample size.

In this study, the status of video game addiction remained constant among the control group with 46.3%. The analysis of video game addiction was carried out in terms of pathological and excessive addiction combined. Of the majority of students in the Joshi et al. (2022) study only 2.9% of students were disordered gamers. However, another study by Gentile et al. (2011) showed that although only 1% of children in the youngest age group developed into pathological players, a longitudinal study in Singapore's primary and secondary schools suggested that pathological gaming is more than just a typical childhood "phase."

In the present study, the post-test showed that 46.3% of the participants from the control group and 25% from the experimental group were addicted to video game play. In study by Sivrikaya and Cetin (2022) showed that the number of adolescent mainstreaming students who are not game addicts was 93.6%, while the number of game addicts was 6.4% according to the monothetic diagnosis. However, considering polythetic diagnosis, 39.5% were addicted to games. There was a low digital game addiction level among the participants. The prevalence is lower than the present study due to the larger sample size and nature of the study.

CONCLUSION

This study indicated that the structured intervention module was effective in reducing game addiction among adolescents. The experimental group showed a significant reduction in gaming addiction at 3 weeks and 6 weeks respectively. The results indicate that there were no significant differences in mean scores for aggression between the control and experimental groups during the pre-test. However, during the post-test at 3 weeks, and 6 weeks there was a significant difference in mean scores for gaming addiction levels between the control group and the experimental group. This study depicts the need for educational interventions among adolescents to reduce gaming addiction levels among adolescents.

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