Development and Efficacy of Acceptance and Cognitive Restructuring Intervention Program on the Symptoms of Internet Gaming Disorder and Psychological Well-being of Adolescents: A Pilot Study

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Abstract

Introduction: The internet has become an integral part of people's daily life. However, empirical studies indicate that its prevalent use among adolescents has negatively influenced them and, in some cases, resulted to Internet Gaming Disorder (IGD). The World Health Organization has recently recognized individuals with gaming disorder as having a mental health condition. The purpose of this study was to develop and test the feasibility and efficacy of an intervention program that would reduce the level of IGD, and improve the psychological well-being of the adolescents.

Method: The development of the program involved the use of sequential exploratory design, pre and post test pilot intervention design, Wilcoxon signed rank test, IGD and Ryff's Psychological Well-Being (PWB) scales. Focus group discussions and interviews were held to acquire in-depth understanding of the key issues, and the cognitive theoretical models of Pathologic Internet Use and Mindfulness were integrated.

Results: The eight module intervention program integrating the theories of Cognitive-Behavioral Model of Pathologic Internet Use and Mindfulness was administered in four weeks on a 3-hour session per module and was validated by experts in various disciplines. Statistical analyses showed significant difference in the post-test scores of the participants after the administration of the intervention program.

Conclusion: The pilot study using the Acceptance and Cognitive Restructuring Intervention Program (ACRIP) resulted in reduced levels of IGD and improved the psychological well-being from the selected adolescents. The study confirmed that the concepts and the structure of the program are reliable, feasible, and efficacious for testing on a larger base of adolescents who are at risk of IGD.

Keywords: Internet Gaming Disorder, Compulsive Internet Gaming, Psychological Well-being, Acceptance, Cognitive Restructuring

Introduction

As the phenomenon of IGD continues to emerge as a growing social issue and a significant public health concern affecting an increasing number of countries [1,2,3] the World Health Organization (WHO), in mid-2018, recently took a significant step and recognized this impulse brought about by modern technology as a mental health condition under 'gaming disorder' as its official nomenclature. In the 11th International Classification of Diseases (ICD-11) released in the mid-2018, "gaming disorder" is characterized as a pattern of persistent or recurrent gaming behavior ('digital-gaming' or 'video-gaming'), which maybe online (i.e., over the internet) or offline [4].

Empirical studies have linked compulsive internet gaming or IGD, the term used by the

American Psychiatric Association (APA) [5], with poor PWB among adolescents [6, 7, 8]. According to APA, long hours of gaming is the core feature of IGD wherein adolescents spend 8-10 hours or more of undivided attention daily or at least 30 hours gaming time weekly leading to the decline of daily activities. However, this is not the only gauge in establishing whether an adolescent is at risk of IGD. Actually, "IGD has nine core criteria: (a) pre-occupation with internet games, (b) withdrawal symptoms, (c) tolerance, (d) unsuccessful attempts to control participation in internet games, (e) loss of interest in previous hobbies, (f) continued excessive use of internet games, (g) deceiving family members, (h) using internet games to escape, and (i) losing significant relationships, jobs or education, or career opportunities leading to a significant impairment or clinical distress" as defined by the Diagnostic and Statistical Manual (DSM)-5 [5]. This alarming issue on the mental health of adolescents proposes the need to find remedies and intervention programs for this current and emerging disorder [4]. With the many and possible negative consequences of IGD which allow its behavior to be classified as pathological based on established clinical standard as per APA [9], IGD may require professional treatment [4, 16].

The most accepted and cited relevant cognitive-behavioral conceptualization of IGD is the Cognitive-Behavioral Model of Pathologic Internet Use (PIU) by Davis [10] which explains that an individual's problematic thought pattern can be a source of pathological behavior. The model suggests that PIU results from "problematic cognitions coupled with behaviors that either intensify or maintain the maladaptive response". It proposes that maladaptive cognitions are the proximal sufficient causes of the symptoms of IGD which primarily has two sub-types: thoughts about oneself, and thoughts about the world. The thoughts or focused attention on one's self have a ruminative cognitive style. Ruminating involves constantly thinking about issues linked with one's internet use which maintains the vicious cycle of IGD rather than being focused on other events in one's life. Examples of maladaptive cognitions about one's self include self-doubt, negative self-appraisals, and low self-efficacy. Distorted thoughts of one's self include, "I am worthless offline but online I am someone" and "I am a failure when I am offline" [6]. In general terms, a person who has a negative view of one's self uses the internet to gain feedback and positive social interactions. An individual with cognitive distortions about the world thinks that, "The internet is the only place I am respected", "Nobody loves me offline", "People treat me badly offline" and "The internet is my only friend" [10]. This type of maladaptive cognitive distortion intensifies IGD. Cognitive Behavioral Therapy (CBT) explains that all the behaviors and emotions are the effects of how a person views the self and the world based on one's thoughts and beliefs [10] which can be distorted by different reasons. The CBT is then applied to inculcate possible positive changes through questioning and self-talk. The intervention-based CBT have reportedly brought significant effects of positive

changes among the adolescents who are addicted to online internet gaming [11]; and is commonly used for issues of social disorders, cessation of substance abuse and prevention of relapse.

The cognitive theory of Mindfulness by Ellen Langer [12], states that mindfulness is "a flexible state of mind in which we are actively engaged in the present". It is both a state and a trait. The state is a "behavior in a particular situation; while the trait, can incline a person "to think and behave mindfully" [12]. It allows one to be sensitive to the environment that supports clearer thoughts and behaviors. It makes people uncover new opportunities that can re-evaluate old issues to support better decisions [12]. When we take the time to mindfully change our daily experiences, we become more interested and we improve on how we carry out things. It teaches individuals to become observant and allows the experience of one's thoughts. A person can then change his behavior aligned to one's thinking. In this way, it can be said that negative cognition influences psychological well-being. For this reason, it is imperative that in order to maintain one's psychological health, restructuring or alteration of one's negative to positive cognition is extremely necessary.

On this premise, the ACRIP was developed to improve the psychological well-being of adolescents and to reduce their risk of IGD and its symptoms. The ACRIP was subjected to an experimental study to test its modules' feasibility and efficacy.

Method

Selected participants for the pilot study included 10 adolescents (N=10) who were 14-18 years old (M=15.5, SD=1.024) and were from different secondary schools in India. The adolescents, who had never participated in a similar program, consented to be part of this research. They were randomly chosen based on the following inclusion criteria: (a) adolescent boys and girls (b) 12 to 18 years old, (c) staying/living with biological parents/guardians, (d) actively engaged in playing any of the available internet games (e) understand the English language, (f) have high score in the IGD and low score in PWB scales, (g) play more than 30 hours per week, and (h) have manifested at least five of nine symptoms of IGD in the last 12 months. The experimental study was carried out in consideration of ethical issues and a license was obtained from the Manila Med Ethics Review Committee. The measures used in this study are as follows:

Personal Data Sheet/Demographic Information Form (DIF)

The study perused a researcher-made personal data sheet/DIF to obtain the following socio-demographic and gaming profiles of the respondents: age, gender, number of hours of internet gaming per week, length of gaming per session, frequently played game title and genre, years of experience in internet gaming and family relations.

Internet Gaming Disorder (IGD) Scale

The IGDS9-SF [13, 14] assesses IGD's severity and its detrimental effects by examining both online and/or offline gaming activities occurring over a 12-month period. The IGD questionnaire consisting of nine questions represents the nine criteria of IGD as defined by

DSM-5. They are answered on a 5-point Likert scale ranging from 1 (never) to 5 (very often). Gamers are distinguished from non-gamers as having satisfied at least five of the nine criteria where each is answered as '5: Very Often', which translates as endorsement of the criterion.

Ryff's Psychological Well-Being (PWB) Scale

Ryff's Psychological Well-Being (PWB) scale consists of 84 items dealing with how an individual feels about himself and his life. This self-report scale was designed to assess an individual's well-being at a particular moment in time within each of these six dimensions: (a) autonomy, (b) environmental mastery, (c) personal growth, (d) positive relations with others, (e) purpose in life and (f) self-acceptance. Individuals respond to various statements by indicating on a 6-point Likert scale (1-strongly disagree, 2-moderately disagree, 3-slightly disagree, 4-slightly agree, 5-moderately agree, 6-strongly agree) how true each statement is for them. A participant's reply to negatively scored items (-) are reversed in the final scoring procedures so that high scores indicate high self-ratings on the dimension measured. Higher scores on each of the dimensions indicate greater well-being on that dimension [15].

An information drive about internet gaming, its unhealthy influence, and its impact in the life of students was conducted in different secondary schools in India. The concept of the disorder was explained as well as the importance of an intervention program performed by a mental health professional. Using the purposive sampling technique, a total of 456 adolescents were selected from among the students to participate in the study. An informed consent was also obtained from the adolescents and their parents/legal guardians and were confidentiality assured in regards to their information during the study. Thereafter, they were asked to fill-out the IGD and PWB scales.

For the pilot study, the researcher randomly chose 10 from among these adolescents that scored high in IGD and low in PWB scales; with a weekly gaming time of more than 30 hours and those who had manifested at least five of the nine IGD symptoms in the last 12 months.

Results

The intervention ACRIP program was carried out in two phases: program development and expert validation. Data gathering procedures during the program development involved studying the problem, deriving insights from the existing literature, and exploring relevant theories. An assessment of the current scenario was then conducted using the IGD and PWB scales, with interviews and focus group discussions to obtain firsthand information from the participants, parents/legal guardians and mental health experts on key concerns and possible resolutions. The program was then themed based on these issues and structured into modules. The creation of the modules followed a logical flow starting with introducing the ACRIP and its objectives to the adolescents, engaging the participants to open up and accept their thoughts and emotions, ventilating their negative mindset, moving them to accept who they are, encouraging them to re-

kindle lost relationships, empowering them to master and gain control over their thoughts and emotions with strong will and determination with the end result of achieving their set goals when they entered the program.

ACRIP Modules and its Objectives:

Module 1: Know the Other and Introducing ACRIP - To build rapport among the participants; educate about IGD; introduce ACRIP and the relevance of an intervention program; discuss potential for a quality life and promote exercise of mindfulness.

Module 2: Acceptance of Automatic Thoughts Starting with Oneself and Emotional Freedom - To help participants identify dysfunctional thoughts; orient about automatic negative thoughts and cognitive restructuring; and challenge participants to transform harmful self-talk to positive.

Module 3: Mastery over Mind and Ventilating Negative Energy - To help participants recognize, accept and ventilate negative thoughts and emotions; and impart strategies for self-improvement and building self-confidence.

Module 4: Re-kindle and Re-build Relationships - To enhance participant's understanding of the different factors of good communications; problem-solving techniques; re-building relationships and lost ties; and encouraging strong family support systems.

Module 5: Seal of Approval - To encourage love, respect and acceptance of self among participants for better mental health.

Module 6: Self-determination - To build a positive self-image; become self-reliant; and capable of making self-decisions based on set personal standards.

Module 7: Mindful Walking to Environmental Mastery - To enable participants to manage everyday affairs; take control of feelings; and develop coping mechanisms to build self-mastery.

Module 8: Anchored to Hope - To boost the morale of the participants and to believe their capacity to build a good future for themselves.

The ACRIP was then evaluated by a team of 11 mental health experts. The experts used the standard evaluation guidelines which was an adapted form of the tool developed and used by USAID. After thorough evaluations, the experts graded the program with an overall score of 'A' unanimously affirming the soundness, relevance and feasibility of the ACRIP. On the inter-rater reliability test of ratings given by the experts, the ACRIP was found be consistent and reliable. The inter-rater reliability resulted to a co-efficient of .78. The result of the experts' validation gave the assurance that the program is reliable and predicts high chances of being efficacious in bringing about affirmative changes.

For test of feasibility, a pilot study was carried out and was completed with a group of 10 adolescents as participants and used the pre and post test pilot intervention design. For statistical analysis, the 'Wilcoxon signed rank test' was used as an instrument to assess the pre and post test scores of the adolescents. The result of the statistical analysis is shown in Table 1. The result of the study confirmed that the modules developed for the

intervention program are reliable, feasible, and efficacious for testing on a larger base of adolescents who are at risk of IGD.

Table 1 shows the participants' pre-test and post-test mean scores and standard deviation values of the pilot study in terms of IGD and PWB. The results show a decrease in the adolescents' IGD level and increase in PWB level after the feasibility test as indicated by the mean score of the post-test; and that there is a significant difference in the pre-test and post-test scores of both IGD (Z= -2.809; p=.005) and PWB (Z= -2.803; p= .005).

Lastly, participants' feedback was obtained. Ten adolescents participated in the four-week long pilot testing of the eight module intervention program, and positively acknowledged, expressed fulfillment and appreciation for the program. Generally, they reported having less withdrawal symptoms on internet gaming, improved levels of concentration and increased psychological well-being. One said, "Yes, through this program, I have gained a lot, I have reduced my gaming time and learned to engage in different activities of life without withdrawal symptoms". Another participant said, "This intervention program enabled me to accept the realities of life and enhanced my self-confidence. Further, I have a better outlook now and have developed a positive perspective about my life".

Table 1. Wilcoxon Signed Rank Test Results Before and After the Treatment (n=10)

	PRE-TEST	POST-TEST		
	MEAN (SD)	MEAN (SD)	z	p value
IGD	41.50 (2.17)	20.80 (2.15)	-2.809*	0.005
PWB	125.90 (11.60)	420.30 (22.48)	-2.803**	0.005
PR	23.00 (3.59)	71.90 (4.18)	-2.814**	0.005
PL	22.80 (2.44)	71.90 (5.34)	-2.809**	0.005
PG	20.70 (2.26)	64.20 (4.05)	-2.810**	0.005
SA	20.20 (2.20)	71.70 (4.22)	-2.812**	0.005
AUT	19.60 (2.22)	69.00 (2.91)	-2.809**	0.005
EM	19.60 (3.44)	71.60 (4.35)	-2.805**	0.005

Notes: p=0.05; * - based on positive ranks; ** - based on negative ranks

Legend: IGD-Internet Gaming Disorder; PWB-Psychological Well-Being; PR-Positive Relations; PL-Purpose in Life; PG-Personal Growth; SA-Self-Acceptance; AU-Autonomy; EM-Environmental Mastery

Discussion

The development of the ACRIP program embraced the concepts of acceptance and cognitive restructuring to improve the psychological well-being of adolescents and reduce their level of IGD and its symptoms. The outcome of the experiment statistically supported and validated the impact and efficacy of the four week execution of the ACRIP as an intervention program. The pilot study conveys a strong implication that the concepts of the mindfulness theory and CBT are efficacious and have achieved the program objectives. The study validation with 10 adolescents was completed in four weeks to ascertain the program's feasibility and efficacy on a larger population.

The results of the pilot study is consistent with the validation and evaluation performed by the experts proving that the researcher-developed ACRIP is reliable to positively influence change in psychological well-being of the adolescents. The adolescents were able to embrace self-acceptance, develop autonomy and gain self-mastery through the acceptance and cognitive restructuring intervention. Hence, have shown positive change in their overall behavior and have expressed high hopes for brighter future and real life engagements. The adolescents also noticed that they can use the internet and play internet games less if they set their mind into it. They were able to identify what they were interested in and devote their time productively to these activities; and they also started to socialize. These positive changes reflected in the significant increase in post-test scores on each dimension of psychological well-being namely: positive relations, purpose in life, personal growth, self-acceptance, autonomy and environmental mastery. Prior to this pilot test, the researchers carefully examined the research conditions and the demographic profile of the participants to ensure homogeneity.

The ACRIP, as an intervention program, was designed and executed as a group activity. However, it can also be implemented on an individual level. During the pilot test, the participants expressed hesitations and were uncomfortable in opening up their feelings and experiences. To address this, individual or one-on-one engagements were held on some sessions. The application of ACRIP as an intervention program was mainly to address the dysfunction and symptoms brought about by IGD. This study suggests that other factors that may contribute in the deterioration of psychological well-being of adolescents leading them to uncontrollable internet gaming need to be prudently explored, considered and analyzed such as broken family issues, peer pressure, presence of a dominant personality that is negatively influencing the individual, and relationship issues among others. In order to maximize the benefits of the ACRIP, it may be further tested on a larger base of individuals with extensive planning and among different cultures.

Conclusion

As a remedy, the ACRIP has been tested as an effective intervention program to reduce the level of IGD among adolescents and to improve their overall psychological well-being. This program may also be used to prevent the development and break the cycle of IGD. This study also asserts the value of integrating CBT and Mindfulness

theories in cognitive restructuring towards alleviating the adolescents of the IGD symptoms and in enhancing their psychological health.

Acknowledgement

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