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RESEARCH PAPER

Symptoms of PUBG Addiction among Male Adolescents: A Comparison between College Level Student Cricketers Vs Non-Athlete College Students

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ABSTRACT

This research was undertaken with the objective of comparing the well-being of college level student cricketers and non-athlete college students in relation to Player Unknown's Battlegrounds' (PUBG). We included 400 male adolescent students between the ages of 16 and 18 who had played PUBG and assessed their gaming addiction by using the Gaming Addiction Scale (GAS). The comparison of data between both groups was conducted using the Mann-Whitney U test. A significant distinction exists between athletes and non-athletes. Non-athletes had significantly higher rates of PUBG addiction than college level student cricketers. The findings of this study indicated that cricket athletes have lower levels of PUBG addiction compared to non-athlete adolescents. However, this study utilized self-reported questionnaire to collect data, that lack the comprehensive assessment required for clinical applications. Hence, future investigations should seek to replicate the study's findings by using experimental approach that could provide a clearer cause-and-effect relationship.

KEYWORDS Adolescents, Athletes, College Students, Cricket Players, PUBG

Introduction

In the recent few years, the sudden rise of online gaming has captured the attention of millions around the globe. While gaming can be a form of recreational activity, however uncontrolled gaming behavior has emerged as a major concerning issue among adolescents (Gao, Wang, & Dong, 2022). Due to the continuous surge in the usage of mobile gaming, there is also an escalating apprehension surrounding the probability of addictive behaviors (Männikkö, Billieux, Nordström, Koivisto, & Kääriäinen, 2017).

Additionally, over the past decade, several studies have examined the addiction of internet among general population Rumpf et al. (2014), Müller, Glaesmer, Brähler, Woelfling, and Beutel (2014) and (Y. Y. Li et al., 2021). As a complex phenomenon, addiction can be comprehended through six sub-factors including withdrawal, salience, conflict, problems, mood modification and tolerance (Griffiths, 2005; Muzaffar, et al. 2020). However, the term "internet addiction" is not endorsed by the recently released fifth edition of the "Diagnostic and Statistical Manual of Mental Disorders" (DSM-5). "Instead, the DSM-5's third section incorporates the term "internet gaming disorder" as a condition

that requires further clinical research and experience before attaining the status of a formal disorder (Muzaffar, et al. 2019; Liu et al., 2020).

Among the growing popularity of different video games, PlayerUnknown's Battleground (PUBG) particularly has garnered a massive adolescent player base. As a result of its competitive nature and captivating gameplay, prevalence of PUBG in male adolescents has taken a notable surge (Jain & Jain, 2021). Since, adolescence is a very critical phase of development during which physical, emotional and cognitive changes occur in a human body (Sawyer, Azzopardi, Wickremarathne, & Patton, 2018). Therefore, gaming addictions are more susceptible to be developed among younger individuals.

Despite a considerable focus on PUBG addiction, a relative scarcity of research, investigating the probable impact of sports participation on its prevalence still remains missing. Some prior studies focusing on investigating the consequences of PUBG on physical and psychological well-being portrayed consistent negative outcomes (Mamun & Griffiths, 2021; Sunil, Sharma, & Anand, 2021). Research findings have also indicated that excessive video gaming corelates with restricted engagement in leisure activities, diminished sleep time, decreased satisfaction with daily life and poor academic performance (Aggarwal, Saluja, Gambhir, Gupta, & Satia, 2020). Therefore, in line with these prior findings, it is reasonable to infer that addictive nature of PUBG can have severe psychological impacts on its users.

PUBG addiction can also give rise to several physical health conditions including weight gain, diminished eye sight, neck discomfort (Pugalendhi & Janet, 2019). Additionally, competitive and intense nature of PUBG may also foster some major psychological issues including impaired interpersonal relationships, youth violence, family conflicts, depressive symptoms and reduced self-esteem (D'Souza, Manish, & Deeksha, 2019).

Given the concerning and profound repercussions of compulsive behavior of PUBG, experts are now trying to explore ways to mitigate its addictive nature. However, physical activity or sports participation might be one such factor that would effectively encounter the adverse impacts of video gaming such as PUBG (Aggarwal et al., 2020). This is due to the fact that physical activity provides a nurturing environment for adolescents that are struggling with gaming dependency (AlMarzooqi et al., 2022). Moreover, it also serves as a healthy diversion, effectively steering their attention away from PUBG (Rudolf et al., 2020). Consequently, experts began their quest to identify sports activities that would effectively aid in mitigating the negative impacts of PUBG addiction.

While understanding the importance of promoting healthier activities, the experts sought to identify the most engaging physical activities, to captivate individuals seeking an escape from the virtual realm of gaming. Nevertheless, among various rigorous sports activities, Cricket turned out to be one of the most popular sports among adolescents (Das et al., 2015). Therefore, the experts are now trying to investigate whether involvement in a rigorous sports activity like cricket would serve as a protective factor against PUBG addiction or vice versa. Subsequently, the findings of this study may also aid experts and policymakers in fostering preventive and interventional strategies for future to tackle such harmful addiction among adolescents.

Hypothesis

It is hypothesized that college level student cricketers have a lower level of PUBG addiction symptoms compared to non-athlete college students due to their increased physical activity and discipline in time management.

Literature Review

Addiction is a medical condition characterized by an irresistible engagement with gratifying stimuli despite negative outcomes (Kranzler & Li, 2008). Previous articles have shown that video gaming addiction can have detrimental impacts on young individuals, including social problems, emotional disturbances and diminished academic achievement Chandrima et al. (2020), Ahmed, Abdalla, Mohamed, and Mohamed (2022). However, one such factor that seemed to have a positive influence in mitigating the addictive nature of video gaming is physical activity.

In order to support this perspective of ours, a study by (Hong et al., 2020) indicated that engaging in physical exercise may contribute in the reduction of gaming addiction behavior. Another study involving 250 undergraduate students proposed that the negative impact of gaming addiction could be mitigated through physical activity (Abbasi, Jagaveeran, Goh, & Tariq, 2021). In line with these findings, some other studies including Hazar and Hazar (2018), Henchoz et al. (2016), Shabina, Jan, and Alsaedi (2023) and Gülü et al. (2023) also revealed that engaging in physical activity could possibly play a pivotal role in diminishing the adverse effects of gaming addiction.

Material and Methods

Research design

The study assessed college students' PUBG gaming addiction using a cross-sectional survey. Four hundred male adolescent students were chosen for the current investigation. Responses were obtained through a survey questionnaire from students attending twenty distinct colleges in Lahore.

Eligibility criteria

The study enrolled participants that encompassed the following criteria: -

- Participant had to be a male.
- In case of athlete, participant should be part of any cricket club located in Lahore and was also a college student.
- For non-athlete, only enrolment in college (class 11^{th} or 12^{th}) was mandatory.
- Participant should be an adolescent whose age should range from 16-18 years.
- Participant should be a regular player of PUBG for the past 6 months.

Whereas, following participants were excluded from the study:

- The study focuses on male adolescents therefore, female participants were excluded.
- Those who were not regular players of PUBG (either cricketers or non-athletes).
- Participants with inconsistent or incomplete information relevant to the study.
- Participants who had pre-existing physical or psychiatric problems.
- Those who were elder than the age limit of (16-18 years).

Instruments

Basic Demographic Data

Information about the basic demographics form is a questionnaire used to collect data about the backgrounds of participants and the information required to assess eligibility criteria. Participants were asked about the name of their college, the name of their club, their age, their study programs (intermediate level), their level of sports (no play sports, club level, intercollegiate level), their physical information (resting heart rate, height, weight, BMI), their sports experience (only for athletes), and their PUBG experience.

Gaming addiction scale (GAS)

Gaming Addiction Scale, developed by (Lemmens, Valkenburg, & Peter, 2009) was utilized as a tool to assess the addiction of PUBG among adolescents in this study. We opted for this tool due to its established validity and reliability to assess gaming addiction in this age group.

Data Collection Procedure

We used the Lahore Population Survey Questionnaire to design and administer the survey. We visited twenty (20) colleges and thirty-one (31) cricket clubs one by one. The consent of all the participants was taken on priority basis.

Data analysis

SPSS (v 22.0) was used for statistical analysis. First, simple descriptive summaries were calculated using variables. To compare the means of two independent variables, an independent Mann-Whitney Test was employed. This test also examined if there was any statistical foundation for significant differences where the p value was kept (< 0.05).

Results and Discussion

Overall analysis of Mann-Whitney U test revealed that there was significant disparity in median values, U values, z values and p values of both groups. Additionally, overall GAS score was also lower in cricket-students (Mdn = 116.07) compared with non-cricket students (Mdn = 284.93) and this difference was significant ($N\ c_{\text{ricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 3113.500, z = -14.853, p < .01. Eventually, these findings portray that participation in a rigorous physical activity like cricket can reduce the overall GAS score in adolescent's groups of college students. The detailed breakdown of the components of GAS and their findings are mentioned below:

Salience

The test statistics and their significance, as determined by a variety of methods, are included in this output. The U statistic for each group was calculated after considering each group individually. The analysis of Mann-Whitney test showed that the score of saliences was lower in cricket-athletes (Mdn = 164.50) compared with non-cricket students (Mdn = 236.50) and this difference was significant ($N\ c_{\text{ricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 12800.000, z = -7.965, p < .01. The result suggests that participation in cricket game can reduce the salience in adolescent's college students as shown in Table 1.

Tolerance

While collecting the data, the prospective of two groups was divided. The results indicate that there are substantial disparities in median rank values of the two groups as demonstrated in Table 1. The Tolerance score was lower in cricket-athletes (Mdn = 151.00) compared with non-cricket students (Mdn = 250.00) and this difference was significant ($N\ c_{\text{cricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 10100.000, z = -10.620, p < .01. These findings reveal that participation in cricket game can reduce the Tolerance in adolescent's college students.

Mood Modification

Moreover, according to their perceptions, difference in prospectives can be seen in the Mann-Whitney test. The scores of Mood modification were lower in cricket-athletes (Mdn = 155.50) compared with non-cricket students (Mdn = 245.50) and this difference was significant ($N\ c_{\text{cricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 11000.000, z = -9.284, p < .01 as shown in Table 1. Hence these findings indicate that participation in cricket game can reduce the Mood modification in adolescent's college students.

Withdrawal

The score of Withdrawal (as shown in Table 1) was lower in cricket-athletes (Mdn = 164.50) compared with non-cricket students (Mdn = 236.50) and this difference was ($N\ c_{\text{cricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 12800.000, z = -7.191, p < .01. This scoring outcome constitute that participation in cricket game can reduce the Withdrawal in adolescent's college students.

Relapse

Similarly, it has also been observed that the score of Relapse was lower in cricket-athletes (Mdn = 170.50) compared with non-cricket students (Mdn = 230.50) and this difference was ($N\ c_{\text{cricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 14000.000, z = -5.995, p < .01 as illustrated in Table 1. The result of Mann-Whitney test, in this regard, suggests that participation in cricket game can reduce the Relapse in adolescent's college students. This outcome also demonstrates a statistically notable variation among the cricket students and non-cricket students regarding the perceptions of their competencies.

Conflict

Lower scores of Conflicts in cricket-athletes (Mdn = 179.50) compared with non-cricket students (Mdn = 221.50) were indicated by Mann-Whitney test and this difference was significant ($N\ c_{\text{cricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 15800.000, z = -4.264, p < .01. The final outcomes suggested that there are major significant differences in cricket students as compared to non-cricket students

Problems

The Mann-Whitney U test revealed a distinct and notable divergence in median and significant values revealing potentially lower scores. Problems in cricket-athletes (Mdn = 157.00) when compared to non-cricket students (Mdn = 244.00) and this difference was significant ($N\ c_{\text{cricket students}}$ =200, $N_{\text{non-cricket students}}$ = 200) = 11300.000, z = -8.962, p < .01. Engaging in cricket can potentially reduce problems among adolescent college students as indicated in the Table 1.

Table 1
Summary of Differences between Cricket Athletes and Non-Athletes (Mann-Whitney U Test)

Cricket Athletes		Non-Cricket Students	
GAS factor	**Median rank**	**Median rank**	**Z-value**
Salience	164.50	236.50	-7.965†
Tolerance	151.00	250.00	-10.620†
Mood modification	155.50	245.50	-9.284†
Withdrawal	164.50	236.50	-7.191†
Relapse	170.50	230.50	-5.995†
Conflict	179.50	221.50	-4.264†
Problems	157.00	244.00	-8.962†
Overall GAS score	116.07	284.93	-14.853†

Discussions

This study was conducted with the aim of identifying differences in PUBG addiction among college student cricket athlete's and non-athlete's' adolescents. As far as the results related to PUBG addiction are concerned, the total (GAS) score was significantly lower among cricketers compared to non-players. It means PUBG addiction was less in cricket athletes. The Gaming Addiction scale indicated that non-athletes had significantly higher sub factor scores than Cricket athletes.

These findings align with prior study emphasizing the significance of physical activity in reducing sedentary behavior and screen time, and decreasing the likelihood of developing behavioral addictions like PUBG addiction (Y. Li et al., 2023). The theory of Ternary Interaction provides a framework for understanding the interplay between the environment, individual and behavior and also highlights the significance of environmental stimuli in shaping behavior (Oceja, Villanueva-Blasco, Vázquez-Martínez, Villanueva-Silvestre, & Al-Halabí, 2023).

Prior studies have also investigated the correlation between physical exercise and behavioral addiction, with findings indicating that engaging in physical activity might effectively lower the risk of developing mobile phone addiction (Sivrikaya & ÇETİN, 2023). However, this study adds to the existing literature by specifically focusing on PUBG addiction among college cricket students. Cricket was found to be a significant external environmental stimulus that reduced the risk of PUBG addiction in this study. One possible explanation for the lower levels of PUBG addiction among cricket students compared to non-cricket students is that participating in physical activity can effectively reduce sedentary behavior and screen time (Kim & Chun, 2023).

Physical exercise has shown to have a positive effect on mood, stress levels, and overall mental health (Ekinci, Ustun, & Ozer, 2016). It might make individuals less susceptible to PUBG addiction by reducing stress levels and improving overall well-being. The outcomes of the present study, dependent on the seven sub-factors of the Gaming Addiction Scale: "Tolerance, Salience, Mood Modification, Withdrawal, Relapse, Conflict, and Problem" also indicated that cricketers, a group of physically active individuals, had lower levels of PUBG addiction compared to non-athletes.

Additionally, cricket teams often have strict rules and regulations concerning the utilization of electronic devices, such as phones and tablets, during training and matches. This can help to limit the amount of time that athletes spend playing PUBG, and promote

healthy habits (Aswathy, Devika, & Girish, 2019). Furthermore, cricket clubs or teams can also offer support for players who may be struggling with PUBG addiction. This can include providing resources such as counseling services, or setting up mentorship programs to help players develop healthy habits and build resilience

Conclusion

In conclusion, the current study highlights the importance of physical exercise in reducing the risk of PUBG addiction in all sub-factors among college students. The results suggest that cricket students, as physically active individuals, have lower levels of PUBG addiction compared to non-cricket students in all sub-factors of the Gaming Addiction Scale. These findings have important implications for individuals and institutions looking to address the issue of PUBG addiction and support the idea that promoting physical activity should be considered as a potential strategy. Subsequent research endeavors should focus on replicating the study's findings using larger and more diverse samples to further understand the relationship between physical exercise and PUBG addiction in all sub-factors.

Recommendations

Caution should be exercised while interpreting the findings of this study as it exclusively focused on male college students, thereby neglecting the female population. Hence, the findings may not be generalizable to the broader population. Moreover, this study utilized self-reported questionnaire to collect data, that lack the comprehensive assessment required for clinical applications. Hence, the findings of this study cannot be used for diagnosing or treating individuals. Furthermore, as this study was conducted in urban area therefore, it's applicability to rural areas might be limited. Future investigations should seek to replicate the study's findings by using experimental approach that could provide a clearer cause-and-effect relationship. The researchers should also use larger and more diverse samples to further understand the relationship between physical exercise and PUBG addiction in all sub-factors. Consequently, rural population should be included to ensure a deeper and thorough comprehension of the phenomenon.

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