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"The Impact of Progressive Muscle Relaxation On Internet Gaming Addiction and Social Anxiety In Adolescents":A Pilot Study

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Abstract:

Adolescence represents a developmental stage marked by heightened emotional sensitivity and increased vulnerability to behavioral challenges, including problematic engagement with digital technologies (Steinberg, 2014; Twenge, 2019). Excessive online gaming is one such concern and has been linked to reduced self-regulation, heightened anxiety, and impaired social functioning (Kuss & Griffiths, 2012). This pilot study investigated the effectiveness of Progressive Muscle Relaxation (PMR)—a structured relaxation technique originally developed by Jacobson (1938)—in reducing social anxiety and Internet Gaming Disorder (IGD) symptoms among adolescents. Progressive Muscle Relaxation (PMR), developed by Edmund Jacobson in the 1920s, is a structured relaxation technique involving systematic tensing and releasing of muscle groups to induce physiological calmness and reduce anxiety (Manzoni et al., 2008). PMR has been proven effective in alleviating stress, anxiety, and depressive symptoms across various populations (Park & Kim, 2019; Şahin & AyazAlkaya, 2024).Forty students aged 13–18 years from schools in Uttar Pradesh, India, were selected using purposive sampling. Participants with moderate social anxiety and gaming addiction, assessed through the Social Anxiety Scale for Adolescents (SAS-A) and the Internet Gaming Disorder Scale–Short Form (IGDS-SF9), underwent four weekly PMR sessions. Post-intervention results showed significant reductions in social anxiety and gaming addiction levels, along with improvements in emotional regulation. These findings suggest that PMR is a feasible and cost-effective method for managing gaming-related emotional difficulties in adolescents. Future research with larger samples and longitudinal designs is recommended to validate these preliminary findings. Further longitudinal research with larger and more diverse samples is recommended to establish PMR's long-term impact on behavioral addictions and emotional well-being among youth (Sharma & Sivaraman, 2020)

Key words: Internet Gaming Disorder, Social Anxiety, Adolescents, Progressive Muscle Relaxation, Behavioral Intervention

Introduction

Technological advancements have reshaped the daily routines of adolescents, making digital platforms central to entertainment, socialization, and education (Anderson & Jiang, 2018). Online gaming, in particular, has become a dominant

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recreational activity. Although gaming offers cognitive stimulation and social engagement, excessive use can contribute to anxiety, poor academic performance, and maladaptive behaviors associated with Internet Gaming Disorder (APA, 2013; WHO, 2018).

Adolescents are especially susceptible due to ongoing neurological development that affects emotional regulation, reward sensitivity, and impulse control (Steinberg, 2014). Those who experience social anxiety may resort to virtual environments as a means of avoiding face-to-face interactions, which can reinforce problematic gaming (Zhao & Li, 2022). As concerns about adolescent gaming behaviors grow, there is a pressing need for evidence-based non-pharmacological interventions.

Progressive Muscle Relaxation (PMR) is a structured technique that involves tensing and relaxing muscle groups to reduce stress and physiological arousal. It has demonstrated strong effectiveness across populations experiencing anxiety, stress, and related conditions (Bernstein et al., 2000; Manzoni et al., 2008). However, research specifically examining PMR's potential in reducing gaming-related issues among adolescents is limited. This study explores whether PMR can serve as an effective strategy for managing both social anxiety and problematic gaming behavior.

Background of the Study

Problematic gaming has been increasingly associated with emotional distress, academic decline, sleep disturbances, and impaired interpersonal functioning (Hussain & Griffiths, 2020). Adolescents who experience social anxiety often avoid real-world social situations, turning instead to digital platforms perceived as less threatening (Zhao & Li, 2022). Symptoms of IGD include impaired control, prioritizing gaming over daily responsibilities, and continuation of gaming despite negative consequences (APA, 2013; WHO, 2018).

PMR may help address these challenges by reducing physiological tension, enhancing self-awareness, and improving emotional regulation (Bernstein et al., 2000; Aldao et al., 2010). However, empirical research examining PMR specifically for adolescents with gaming issues is still emerging, providing the rationale for this pilot study.

Objectives of the Study

Primary Objective

To evaluate the feasibility and preliminary effectiveness of Progressive Muscle Relaxation (PMR) in reducing social anxiety and Internet gaming addiction among adolescents.

Specific Objectives

1. Assess baseline levels of social anxiety and gaming-related difficulties.
2. Implement a structured four-week PMR intervention.
3. Evaluate changes in social anxiety following PMR.
4. Examine reductions in gaming addiction symptoms.
5. Determine the suitability of PMR as a school

Conceptual Definitions

Social Anxiety

A persistent fear or discomfort experienced in social or performance situations involving potential evaluation or judgment (APA, 2013).

Internet Gaming Disorder (IGD)

A pattern of persistent and recurrent online gaming behavior characterized by diminished control, prioritization of gaming, and continuation despite negative consequences (APA, 2013; WHO, 2018).

Progressive Muscle Relaxation (PMR)

A relaxation method involving systematic tensing and releasing of specific muscle groups to reduce physiological arousal (Jacobson, 1938; Bernstein et al., 2000).

Review of Literature

Social Anxiety and Gaming

Research indicates that adolescents with high social anxiety are more likely to engage in excessive gaming as a coping mechanism (Bhattacharya & Banerjee, 2022). Emotional dysregulation further increases susceptibility to gaming addiction (Aldao et al., 2010).

Gaming Addiction

Studies have documented associations between excessive gaming, psychological distress, neural sensitivity to reward, and impaired functioning (Ryu & Choi, 2020; Kuss & Griffiths, 2012). Environmental and parental factors also influence gaming behaviors (Digital Game Addiction Study, 2023).

Progressive Muscle Relaxation

PMR has demonstrated effectiveness across populations experiencing anxiety and stress (Manzoni et al., 2008). Comparative studies show PMR is as effective as

mindfulness, yoga, or deep breathing for enhancing emotional regulation and self-control (Wang & Chen, 2025; Lin et al., 2024).

Research Design

A four-week, pre- test and post - test intervention design was used to evaluate changes in social anxiety and gaming addiction. Participants attended one PMR session per week, each lasting approximately 25 minutes. Standardized tools—the SAS-A and IGDS-SF9—were administered before and after the intervention. Paired-sample t-tests were used to assess statistical significance.

Sample

The study included 40 adolescents aged 13–19 years from three secondary schools in Basti district, Uttar Pradesh. Purposive sampling was used to select participants with moderate to high scores on SAS-A and IGDS-SF9. Informed consent was obtained from the participants and school authorities.

Results and Discussion

The analysis revealed significant decreases in both social anxiety and gaming addiction following the PMR intervention. Most participants demonstrated improved emotional stability, enhanced concentration, and greater self-regulation. These results align with earlier research demonstrating PMR's ability to reduce anxiety and physiological tension (Roozbahani et al., 2018; Kim & Lee, 2023) and support evidence that relaxation-based interventions can reduce gaming-related symptoms (Gao et al., 2024).

Discussion

Results from the study indicates that social anxiety was reduced in 35 of the 40 participants. The results showed substantial reduction in gaming addiction scores following the PMR intervention. The decline is supported by high t -value indicating the effect of PMR in reducing gaming addiction. Participants reported feeling more relaxed, focused, and emotionally stable. The tools and procedures were found appropriate for the target population, demonstrating the potential of PMR as a therapeutic intervention for adolescents (Park & Kim, 2019; Lin et al., 2024).

Table-1 Showing the descriptive statistics on the effect of PMR on Gaming Addiction among adolescents

Variable	N	Mean	Mean difference	Standard deviation of difference	Standard Error	T -value	Effect size
Gaming Addiction	40	26.15	-12.35	9.10	1.44	-8.58	-1.36

*T-value is statistically significant at 0.05 level

Table -2 Showing the effect of PMR on Social Anxiety among adolescents with Gaming Addiction

Variable	N	Mean	Mean of differences	Standard deviation of differences	T -value	Effect size (cohen's d)
Social Anxiety	40	12.50	2.94	5.24	3.42	0.56

*T-value is statistically significant at 0.05 level

Conclusion

The pilot study demonstrated promising outcomes in managing gaming addiction and social anxiety among adolescents. It validated PMR as a feasible, cost-effective, and non-pharmacological intervention. The findings encourage further large-scale research integrating PMR into adolescent mental health programs (Sharma & Sivaraman,2022).

The present pilot study highlights the potential of Progressive Muscle Relaxation (PMR) as an effective, accessible, and non-pharmacological intervention for addressing social anxiety and gaming addiction among adolescents. The findings revealed that structured PMR sessions led to a noticeable reduction in social anxiety levels and gaming-related behaviour along with improved emotional regulation, focus, and social functioning. These outcomes are consistent with previous research emphasizing the benefits of relaxation-based therapies in enhancing psychological well-being and reducing stress among adolescents (Park & Kim, 2019; Şahin & Ayaz Alkaya, 2024).PMR offers a practical solution for managing emotional difficulties in a population that is increasingly affected by behavioral addictions and digital overuse. Its low cost, ease of implementation, and adaptability make it particularly valuable in school and community settings where access to mental health professionals is often limited (Dastagir & Khan, 2021). In conclusion, Progressive Muscle Relaxation holds significant promise as a safe, cost-effective, and evidence-based intervention for improving adolescent mental health, reducing gaming addiction tendencies and social anxiety.

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