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Opinion Article

Postconcussion Syndrome: A Comprehensive Study on Symptoms, Assessment, and Gender Differences in University Students

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DESCRIPTION

Postconcussion Syndrome (PCS) encompasses a range of symptoms, including cognitive difficulties (such as attention, concentration, and memory issues), physical complaints (headache, fatigue, dizziness, blurred vision, sensitivity to light and noise), and psychosocial challenges (irritability, depression, anxiety, personality changes; American Psychiatric Association, 1994). Research indicates that 50% to 80% of individuals may experience postconcussion symptoms following mild head trauma during the acute period. While symptoms typically resolve, about 50% may persist for at least 3months, with 10% to 15% reporting persistent postconcussive symptoms, posing a significant clinical concern for functional disability.

Despite PCS being included in the DSM-IV for further investigation, its existence as a distinct syndrome related to mild traumatic brain injury remains debated. Studies suggest that only 7% to 8% of individuals with mild head trauma demonstrate measurable neuropsychological deficits. The subjective nature of PCS symptoms, coupled with overlap with other conditions complicates accurate assessment. There's evidence that the subjective experience of PCS may persist for years after the initial injury, and endorsement of PCS symptoms occurs frequently in the normal population and individuals with medical or psychological issues, as well as those involved in litigation. To address assessment challenges, self-report measures like the postconcussion syndrome checklist have been developed to evaluate symptom nature and severity. The PCSC assesses the frequency, intensity, and duration of 10 common PCS symptoms.

Initial studies comparing normal college students with those who had head injuries demonstratedsupportive correlations and potential utility in identifying persistent PCS symptoms in mild traumatic brain injury cases. However, prior studies are limited by small sample sizes and specific participant groups. Concerns about malingering influencing PCSC scores have been raised, and the issue of gender differences in PCS complaints remains unresolved. Questions about specific symptom endorsement, the relationship between PCSC symptoms, head injury, and psychological stress, and the need for large normative groups persist. This study aims to contribute to the clinical understanding of PCSC by providing psychometric and normative information. Specific symptoms will be examined to better understand response tendencies, and responses will be compared with previous head trauma experiences and Beck Depression Inventory scores.

A total of 326 undergraduate students (114 males, 212 females) from the University of Victoria participated in this study. Participants were recruited from introductory-level psychology courses to ensure an unbiased sample within the university population. The mean age of the participants was 20.6 years (SD=3.70), with a mean education level of 14.5 years (SD=1.51). Participants were unaware of the study's purpose, as it was presented as a "School and Health Questionnaire." Participants completed an eight-page survey covering topics such as head trauma, psychiatric and neurologic history, achievement, cognitive difficulties, sleep disturbance, social activity, and demographic information. As part of the survey, students also filled out the Beck Depression Inventory (BDI) and the Postconcussion Syndrome Checklist (PCSC).

The survey took approximately 25 minutes to complete. The PCSC required participants to rate their experience of 10 symptoms in terms of frequency, intensity, and duration, using a 5-point Likert-type scale (1=not at all, 5=constant or crippling). Four symptom scores were derived for each participant: Frequency total, intensity total, duration total, and a total score across dimensions. Additional information on the duration of loss of consciousness, age at injury, cause of head trauma, and length of hospitalization was collected. Participants were categorized into two groups based on their response to the

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question "Have you ever lost consciousness due to an accident in which you hit your head ?"

Among those reporting loss of consciousness (n=79, 24%), the majority (87%) had experienced mild traumatic brain injury (loss of consciousness <5 min), with an average time since injury of 5.7 years (SD=3.9), indicating persistent difficulties. A MANOVA was conducted to assess the pattern of responses on the PCSC and BDI concerning sex and reported head trauma. No main effect of head trauma was found on BDI scores or any PCSC scores. However, there was a main effect of sex (Hotelling's $F=6.25$, $p<0.001$). Univariate ANOVAs revealed significant results, with females scoring higher than males on PCSC Total Score, Frequency Score, Intensity Score, Duration Score, and BDI. No interaction between head trauma and sex was observed. Modest but significant correlations were found between PCSC Total Score and BDI ($r=0.55$), with individual PCSC items showing significant correlations with BDI.

CONCLUSION

In conclusion, this study contributes valuable insights to our understanding of Postconcussion Syndrome (PCS) in university students, focusing on the psychometric and normative aspects of the Postconcussion Syndrome Checklist (PCSC). The prevalence of mild traumatic brain injury in the sample aligns with existing literature, highlighting the significance of this issue among university students, with approximately 24% reporting injuries resulting in brief loss of consciousness. Despite the limitations of self-report and the high-functioning nature of the sample, our study suggests that the endorsement of postconcussion symptoms may be more indicative of general distress than the occurrence or severity of a concussion. The subjective nature of these symptoms remains a challenge for clinicians, but constrained self-report measures like the PCSC may offer utility in documenting complaints attributed to mild head trauma.