

**IMPACT OF SOCIAL MEDIA USAGE ON DEPRESSION AND ANXIETY: A MIXED-METHODS STUDY ACROSS DIVERSE DEMOGRAPHICS**

**P. Nallaperuma<sup>1,2\*</sup>, C. Sri Manukalpa<sup>2</sup>, K. Bandara<sup>2</sup> and R. Kankanamge<sup>2</sup>**

<sup>1</sup>*Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka.*

<sup>2</sup>*SLIIT City University, BOC Merchant Tower, Colombo, Sri Lanka.*

\*pubudu22malith@gmail.com

The pervasive integration of digital technologies into daily life has transformed social interaction paradigms; yet its implications for mental health, particularly depression and anxiety, remain a critical public health concern. Although existing literature presents conflicting findings, few studies have systematically examined how social media usage patterns influence mental health across diverse demographic groups. Addressing this gap, this study employed a mixed-methods approach combining a systematic literature review with an empirical investigation of 220 Sri Lankan participants, including students, employed professionals, and unemployed individuals. Data collected through a validated questionnaire assessing social media behaviors, depressive symptomatology (*e.g.*, social isolation posts, upward social comparisons), and anxiety indicators (*e.g.*, restlessness, concentration difficulties) were analyzed using Python-based computational methods. Results revealed a dose-response relationship between social media engagement and mental health outcomes: 34.1% of participants spending 2 – 4 h daily on platforms such as Facebook and Instagram exhibited clinically significant depression and/or anxiety symptoms, while 22.7% of heavy users (> 4 h day<sup>-1</sup>) met thresholds for undiagnosed mood disorders. Notably, behavioral markers (*e.g.*, negative emotional valence in posts, frequent social comparisons) emerged as stronger predictors than usage duration alone, while self-compassion ( $\beta = -0.42$ ,  $p < 0.01$ ) and deliberate usage practices acted as protective moderators. These findings challenge the homogeneity assumption in digital mental health research, support the development of machine-learning tools to detect at-risk users based on linguistic and engagement patterns, and underscore the need for tiered interventions combining psychoeducation on mindful usage with platform-level design modifications, thereby offering a demographic-sensitive framework for understanding technology-mediated mental health risks.

**Keywords:** Anxiety, Computational mental health, Depression, Digital well-being, Social media