

## Psychometric Validation of a Multidimensional Total Pain Scale for People with Heart Failure

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### Abstract:

**Introduction:** Heart failure (HF) is a chronic syndrome associated with multidimensional suffering encompassing physical, emotional, social, and spiritual dimensions. Despite this complexity, available instruments tend to assess pain unidimensionally, limiting comprehension of the full illness experience. This study aimed to develop and present psychometric validation evidence of a Total Pain Assessment Scale for people with HF.

**Method:** A quantitative, descriptive, cross-sectional survey was conducted with 208 Brazilian adults diagnosed with HF. Data collection was carried out online and in-person at a referral cardiac hospital. Confirmatory Factor Analysis (CFA) using Robust Diagonally Weighted Least Squares (RDWLS) was performed to evaluate the scale's internal structure. Internal consistency was assessed using Cronbach's alpha and McDonald's omega. Validity evidence based on external variables was obtained through Spearman correlations with anxiety (GAD-7), depression (PHQ-9), self-efficacy (GSES), and perceived social support (MSPSS) measures.

**Results:** The final scale comprises 14 items organized into three first-order factors (physical, emotional, and social pain) under a second-order general factor (total pain), yielding excellent fit

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indices (CFI = 0.994; TLI = 0.992; SRMR = 0.062; RMSEA = 0.062). Internal consistency was adequate across all factors ( $\alpha$  and  $\omega \geq 0.76$ ). Total pain showed significant positive correlations with depression ( $r = 0.71$ ) and anxiety ( $r = 0.66$ ), and negative correlations with self-efficacy ( $r = -0.32$ ) and social support ( $r = -0.22$ ).

**Conclusion:** The scale demonstrated robust psychometric properties, providing a valid and reliable tool for multidimensional total pain assessment in people with HF, with potential applications in clinical practice and health research.

**Keywords:**

Heart failure, total pain, scale validation, psychometrics, chronic disease.