



Depression Anxiety Stress Scales-21: Systematic Review of the Measurement Properties

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PURPOSE

The Depression Anxiety Stress Scales (DASS)-21, measuring emotional symptoms of depression, anxiety, and stress, is relatively short and freely available in the public domain. So, it was applied in various clinical or non-clinical populations in many countries. However, concerns have been emerged about the discordant results of its measurement properties. For example, its structural validity has been reported as three-factor, 2nd-order three-factor, bi-factor, two-factor, or one-factor models. Nevertheless, a systematic review of the DASS-21 has never been conducted. The aim of this study was to systematically review measurement properties of the DASS-21.

METHODS

Databases MEDLINE, EMBASE, and CINAHL were searched. The search strategy consisted of three groups of search terms: name of instrument, type of instrument, and measurement properties. The methodological quality of each study was assessed using the updated COnsensus-based Standards for selection of health Measurement INstruments (COSMIN) Risk of Bias checklist. The quality of measurement properties of studies was rated against the updated criteria for good measurement properties. The quality of evidence was rated using, a modified Grading of Recommendations Assessment, Development, and Evaluation approach.

RESULTS

A total of 48 studies were included (Fig. 1). The content validity of the DASS-21 had sufficient and moderate quality of evidence. The instrument exhibited sufficient high-quality evidence for bi-factor structural validity and its internal consistency. The instrument also had sufficient high quality of evidence for hypothesis testing for construct validity. Regarding criterion validity, only the DASS-21 Depression scale demonstrated sufficient high-quality evidence. The measurement invariance across gender demonstrated inconsistent moderate quality evidence. Reliability of each subscale had insufficient low-quality evidence. Responsiveness had sufficient but low-quality evidence for depression and stress, and insufficient and very low-quality evidence for anxiety. No study reported on measurement error (Table 1).

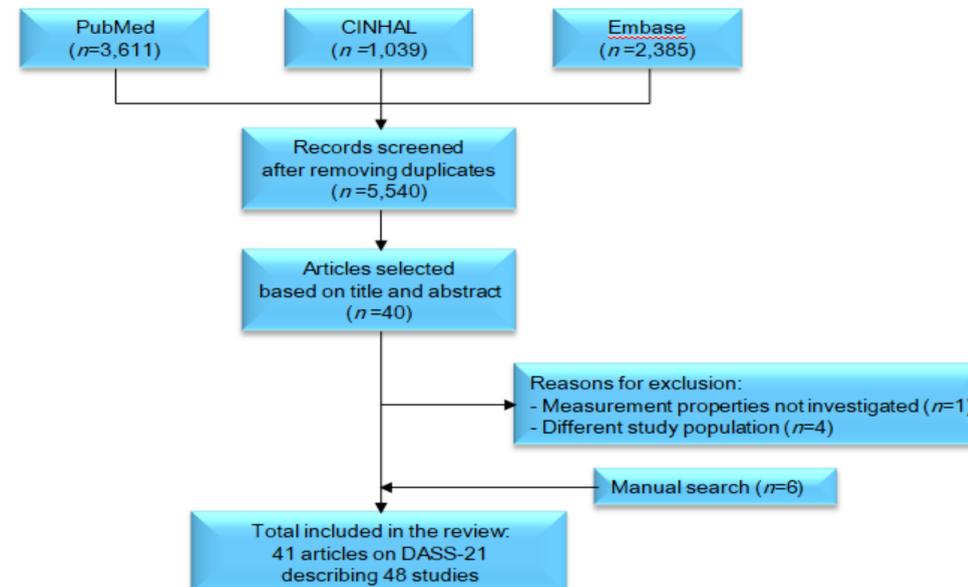


Fig. 1 Flow diagram of the systematic review according to PRISMA

Table 1 Summary of findings[†]

Measurement property [‡]	Overall rating [‡]	Quality of evidence [‡]
Content validity [‡]	Sufficient [‡]	Moderate [‡]
	Relevance: Sufficient [‡]	Very low [‡]
	Comprehensibility: Sufficient [‡]	High [‡]
Structural validity [‡]	Comprehensiveness: Sufficient [‡]	Very low [‡]
	Three-factor structure: Sufficient [‡]	Moderate [‡]
Internal consistency [‡]	Bifactor structure: Sufficient [‡]	High [‡]
	Three-factor structure: Sufficient [‡]	Moderate [‡]
Cross-cultural validity/ [‡]	Bifactor structure: Sufficient [‡]	High [‡]
Measurement invariance [‡]	Three-factor structure: Inconsistent [‡]	Moderate [‡]
	Bifactor structure: Not summarized [‡]	Not graded [‡]
Reliability [‡]	DASS-21 Depression: Insufficient [‡]	Low [‡]
	DASS-21 Anxiety: Insufficient [‡]	Low [‡]
	DASS-21 Stress: Insufficient [‡]	Low [‡]
Criterion validity [‡]	DASS-21 Depression: Sufficient [‡]	High [‡]
	DASS-21 Anxiety: Insufficient [‡]	Moderate [‡]
	DASS-21 Stress: Sufficient [‡]	High [‡]
Hypothesis testing for construct validity [‡]	Convergent validity: [‡]	[‡]
	DASS-21 Depression: Sufficient [‡]	High [‡]
	DASS-21 Anxiety: Sufficient [‡]	High [‡]
	DASS-21 Stress: Sufficient [‡]	High [‡]
	Known-groups validity: [‡]	[‡]
Responsiveness [‡]	DASS-21 Depression: Sufficient [‡]	High [‡]
	DASS-21 Anxiety: Sufficient [‡]	High [‡]
	DASS-21 Stress: Sufficient [‡]	High [‡]
Reliability [‡]	Depression: Sufficient [‡]	Low [‡]
	Anxiety: Inconsistent [‡]	Very low [‡]
	Stress: Sufficient [‡]	Low [‡]

CONCLUSION

The DASS-21 demonstrated sufficient high-quality evidence for bi-factor structural validity, internal consistency (under bi-factor), criterion validity (only for depression), and hypothesis testing for construct validity. Further studies are required for the rest of measurement properties.