A systematic review of patient-reported outcome measures to assess postpartum fatigue using Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) guidelines

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Introduction

- Fatigue is a burden to a substantial proportion of women in the postpartum period,[1] and is recognised as a key domain of postpartum recovery.[2]
- Whilst postpartum fatigue is common, there remains no consensus regarding the best patient-reported outcome measure (PROM; a structured questionnaire allowing patients to report their health status) to be used to evaluate this complex multidimensional construct.
- In this review, we utilise Consensus Based Standards for the Selection of Health Measurement Instruments (COSMIN) guidelines to evaluate the psychometric measurement properties of existing PROMs used to assess fatigue in postpartum women, make recommendations regarding which is the best available measure, and make suggestions for future research.

Methods

- We searched four databases with no date limiters, for validated PROMs used to assess postpartum fatigue. Studies were considered if they evaluated at least one author-defined domain of fatigue in the postpartum setting and one psychometric measurement property of a PROM.
- Essential postpartum fatigue domains to include for instrument assessment were decided by author consensus as Physical, Mental and Interference. A PROM was considered to have adequate content validity only if it evaluated all three proposed domains.

Each PROM study was assessed as per COSMIN guidelines:

1) Risk of bias in relation to methodology for the 8 psychometric measurement properties.
2) Individual study and overall performance ratings were provided for all 8 psychometric measurement properties for each PROM. If no studies assessed a specific measurement property, then this was reported as indeterminate (?).
3) An overall rating was assigned based upon COSMIN criteria and the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. Grading of the level of evidence was based on assessment of risk of bias, inconsistency, imprecision, and indirectness.
4) Each PROM was classified with a level of recommendation of A, B or C. Class A PROMs have adequate content validity and ≥ low-quality evidence for sufficient internal consistency are recommended for use; Class B PROMs not meeting criteria for A or C have potential to be recommended for use, but require further research to assess their quality; and Class C PROMs with high quality evidence for an insufficient psychometric measurement property. Class C PROMs are not recommended for use.

Results

- Figure 1 summarises the included studies. In total there were 49 studies evaluating 18 PROMs of fatigue in 21,209 postpartum women.
- All three fatigue domains were assessed by four PROMs: Fatigue Assessment Scale (FAS), Brief Fatigue Inventory (BFI), Checklist Individual Strength (CIS) and Fatigue Severity Scale (FSS).
- The FAS, which is easily accessible online and free to use, was the only PROM to demonstrate adequate content validity and at least a low level of evidence of sufficient internal consistency, resulting in a Class A recommendation (Table 1).

Figure 1. Summary of search

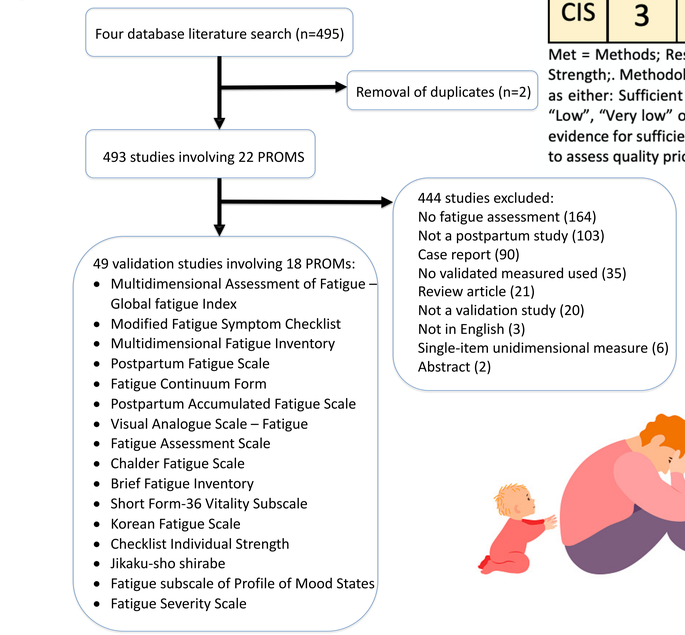


Table 1. Summary of findings for PROMS with adequate content validity

PROM	Content Validity: Number of Domains	Structural validity			Internal consistency			Cross-cultural validity/ measurement invariance			Reliability			Measure-ment Error			Hypothesis testing			Responsiveness			Recommend-ation
		Met	Res	LoE	Met	Res	LoE	Met	Res	LoE	Met	Res	LoE	Met	Res	LoE	Met	Res	LoE	Met	Res	LoE	
FAS	3	Very good	+	High	Very good	+	High	NA	?	NA	Adequate	-	Mod-erate	NA	?	NA	Very good	+	High	NA	?	NA	A
BFI	3	NA	?	NA	Very good	?	High	NA	?	NA	NA	?	NA	NA	?	NA	Very good	+	High	Inade-quate	=	Very low	B
FSS	3	NA	?	NA	Very good	?	Low	NA	?	NA	NA	?	NA	NA	?	NA	Very good	+	Mod-erate	Inade-quate	?	Very low	B
CIS	3	NA	?	NA	NA	?	NA	NA	?	NA	NA	?	NA	NA	?	NA	Very good	±	Low	Inade-quate	±	Very low	B

Met = Methods; Res= Results; FAS = Fatigue Assessment Scale; BFI = Brief Fatigue Inventory; FSS = Fatigue Severity Scale; CIS = Checklist Individual Strength;. Methodology reported as either: 'Very good,' 'Adequate,' 'Doubtful,' 'Inadequate' or 'Not assessed' (NA) Ratings for overall quality reported as either: Sufficient (+), Insufficient (-), Inconsistent (±), or Indeterminate (?); LoE=Level of evidence using GRADE reported as: "High," "Moderate," "Low", "Very low" or "Not assessed" (NA) Recommendation: (A) evidence for sufficient content validity (3 domains assessed) and at least low-quality evidence for sufficient internal consistency (measures can be recommended for use); (B) measures categorized not in A or C (require further evaluation to assess quality prior to recommendation for use); (C) high quality evidence for an insufficient measurement property (not recommended for use).

Discussion

The Fatigue Assessment Scale is the best currently available PROM of postpartum fatigue. However, this PROM fails to assess several important areas of postpartum recovery, such as care of the infant and the impact of fatigue on psychosocial functioning and employment. Future studies should utilise the FAS to measure postpartum fatigue, but development of a more specific PROM could help advance our understanding of this neglected area of postpartum health research.

References

1. Henderson, J., Alderdice, F. & Redshaw, M. Factors associated with maternal postpartum fatigue: an observational study. BMJ Open 9, e025927, doi:10.1136/bmjopen-2018-025927 (2019).
2. Sultan, P., Sadana N., Sharawi N., et al. Evaluation of Domains of Patient-Reported Outcome Measures for Recovery After Childbirth: A Scoping and Systematic Review. JAMA Netw Open 3, e205540, doi:10.1001/jamanetworkopen.2020.5540 (2020).