

Development of adapted postpartum PROMIS sleep disturbance and sleep-related impairment item banks

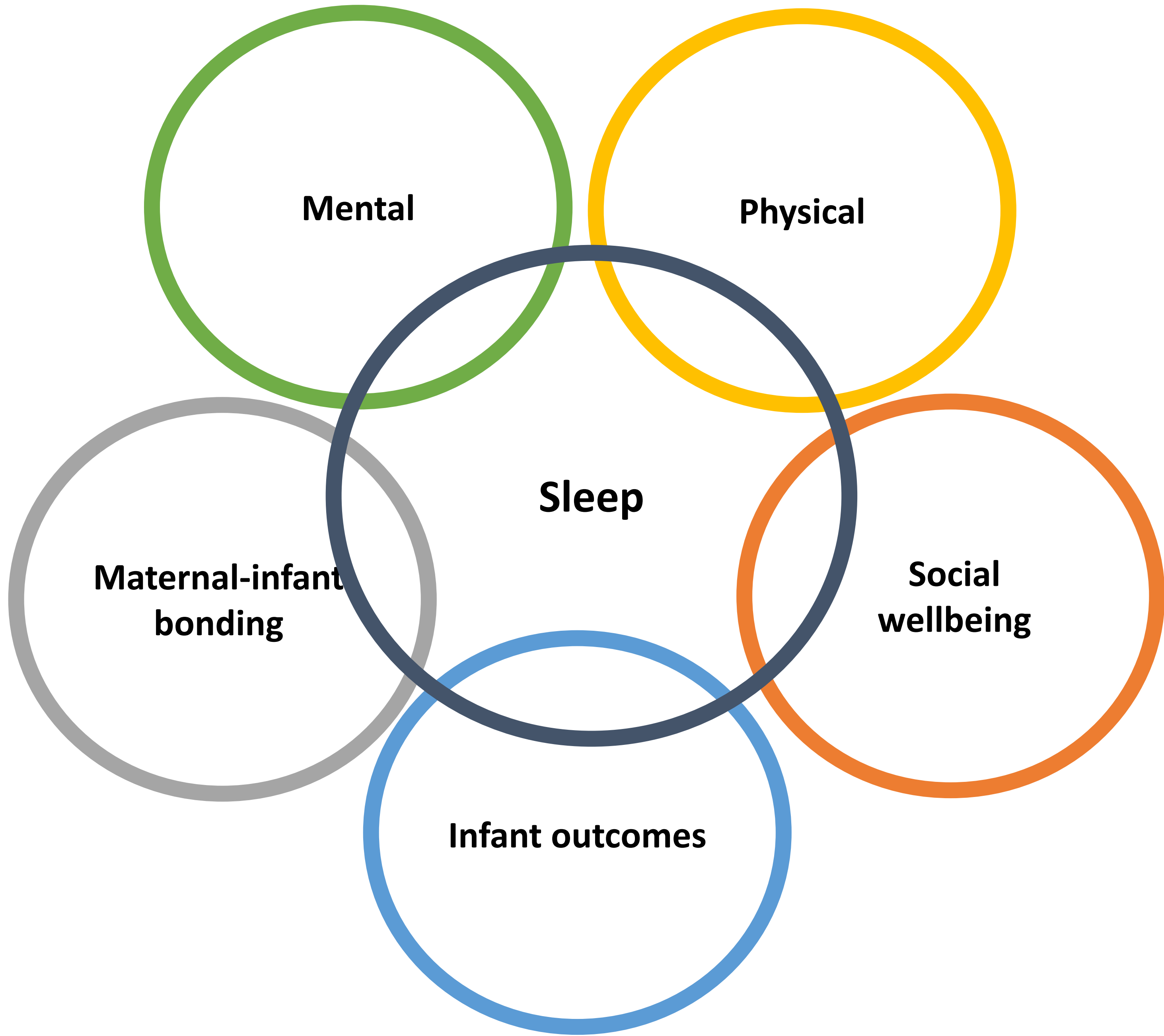
Moe Takenoshita, MBBChir, MRCS; Z Bekemeyer, BS; Hannah Sukhedo, BS; Sara Shaunfield, PhD; Rachel Manber, PhD; Brendan Carvalho, MBBCh, FRCA; Xiaodan Tang, PhD; David Cella, PhD; Deirdre Lyell, MD; Lu Tian, PhD; Sara Ciechanowicz, MBBS, MS, MD(Res); Suzan Carmichael, PhD, MS; Arden Morris, MD, MPH, FACS; Sean Mackey, MD, PhD; Pervez Sultan, MBChB, MD(Res), FRCA and collaborators*

Collaborators-include all experts interviewed and Delphi participants

Background & Aim

Background

- Postpartum sleep impacts maternal & infant outcomes.



- Existing patient-reported outcome measures (PROMs) do not address fundamental domains of postpartum sleep
- E.g. infant feeding, social support

Aim

To develop postpartum-specific sleep disturbance (SD) and sleep related impairment (SRI) PROMs for use up to 1 year postpartum

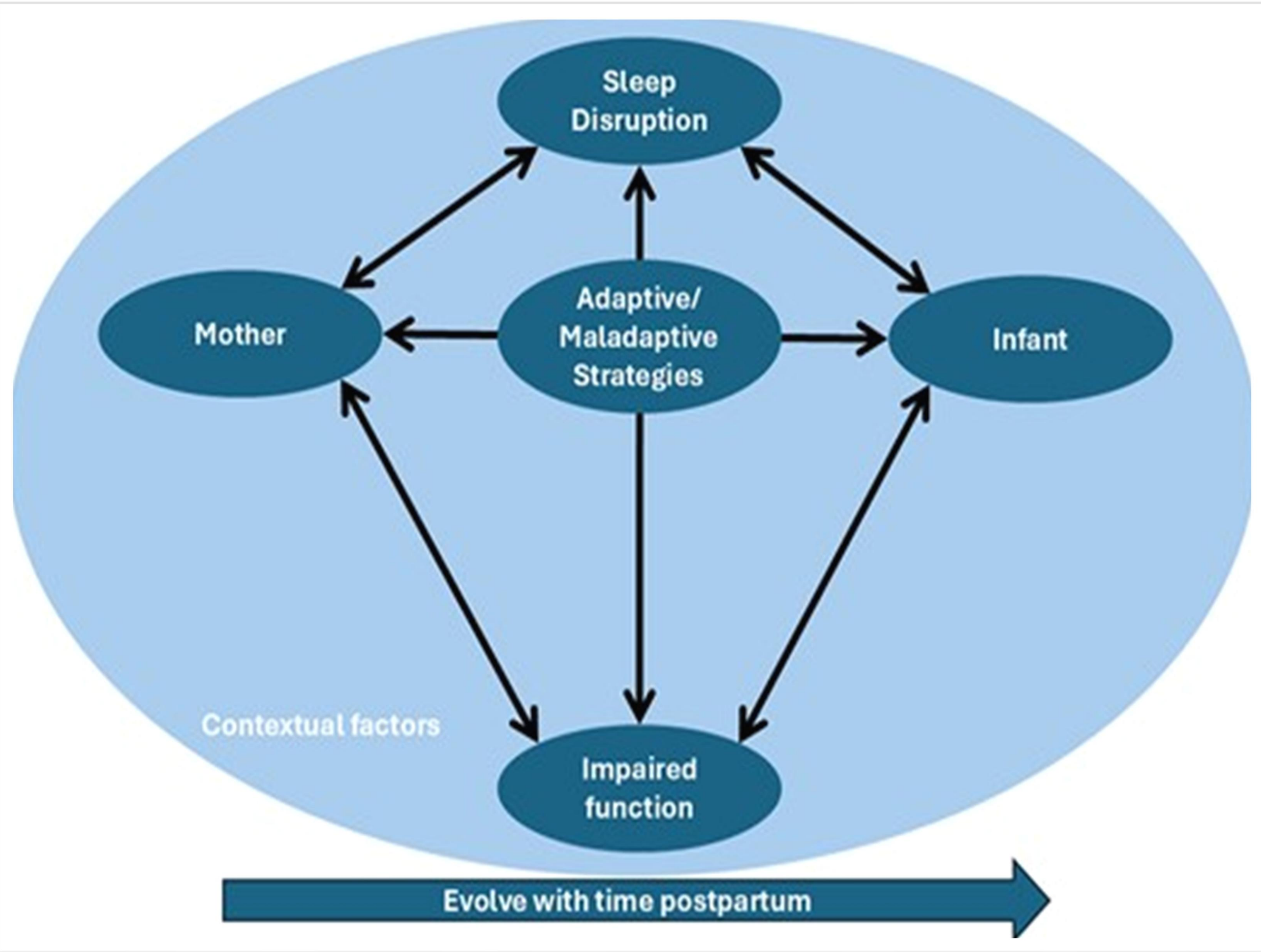


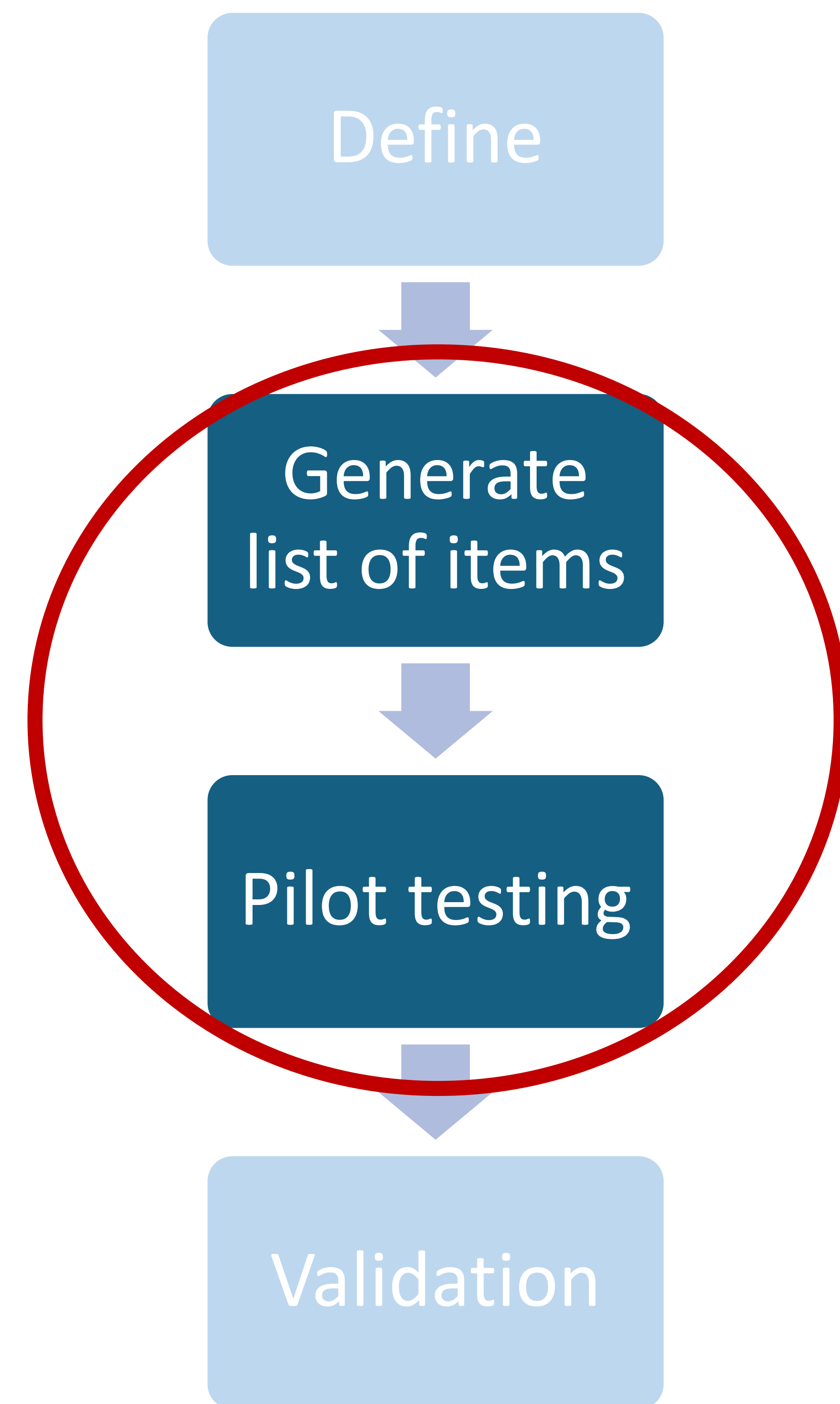
Figure 1. Conceptual Model of Postpartum Sleep (Bekemeyer 2025)

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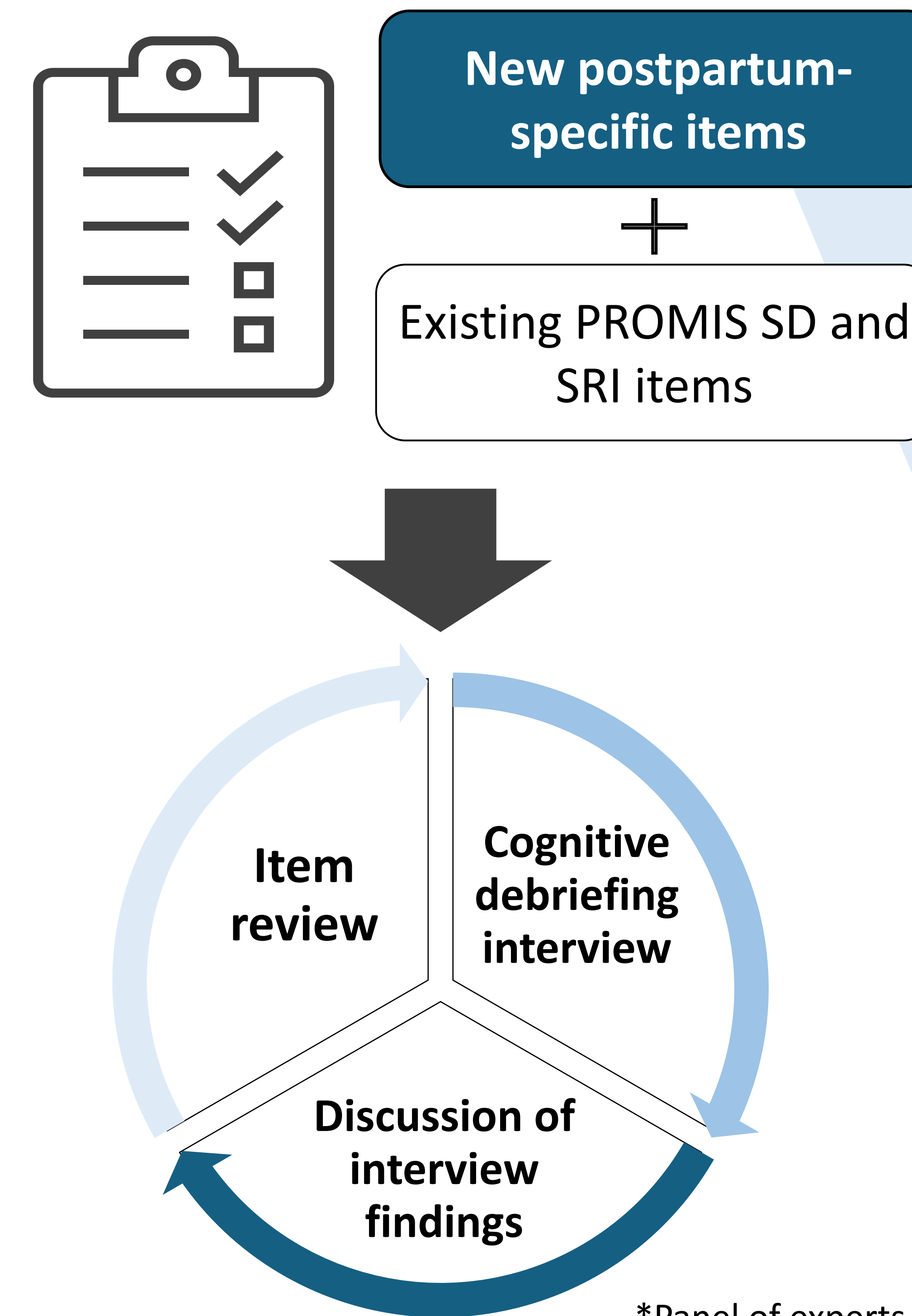
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Methods and Study Design

PROMIS methodology



1. Identified postpartum-specific domains that are **not captured** by existing PROMIS item banks
2. New items developed to cover postpartum-specific domains
3. New items integrated with existing PROMIS SD and SRI item banks



Phase 1: Develop items

Modified Delphi process

Iterative process of item generation and selection by stakeholders*

- **Round 1:** Item generation & selection for next round
- **Round 2:** Item modification & selection for next round
- **Round 3 :** Items voted for inclusion or exclusion.

Phase 2: Pilot testing

Cognitive debriefing interviews

- Items piloted among postpartum individuals.
- Feedback on clarity, comprehensiveness, relevance
- Items modified as appropriate

*Panel of experts included patient and partner representatives, as well as clinical and psychometric experts.

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Results

Participants

21 stakeholders included in the modified Delphi process

Delphi stakeholders	n=21
Patient representatives	5
PROM experts	4
Sleep expert	3
Psychiatry	2
Recovery expert	2
Anesthesiology	1
Epidemiology	1
Nursing/midwifery	1
OB/MFM	1
Medicine	1
Partner representative	1

Table 1: Delphi stakeholder expertise

10 patient representatives participated in cognitive debriefing interviews

Final Measures

- Postpartum SD: **9 new items**
 - Postpartum SRI: **4 new items**
- The new items covered **6 domains** not covered by existing PROMIS measures (Table 2):
- Psychological and social factors,
 - Pain,
 - Sleep interference with e.g., self-care, maternal-neonatal bonding, and energy
 - **9 items** directly related to the **infant**

Measure

Content of New Items

Sleep Disturbance	Frequency of nighttime neonatal awakenings
	Latency following nighttime neonatal awakenings
	Nighttime sleep duration
	Worry regarding infant wellbeing
	Sleep latency following care of neonate
	Sleep interference due to nighttime feeding
	Sleep interference due to pain
	Sleep interference due to thoughts of childbirth experience
Sleep Related Impairment	Social support for nighttime sleep
	Impact of sleep on maternal-neonatal bonding
	Impact of sleep on self-care
	Energy for self-care
	Energy for care of neonate

Table 2: Item content of the new items



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and Maternal Health

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Discussion and Conclusion

Sleep Disturbance

Please respond to each question or statement by marking one box per row.

	In the past 7 days...	1 time or less	2 to 4 times	5 to 7 times	8 times or more	
SleepPP1	On average per night, how often were you woken up by your baby?.....	☐	☐	☐	☐	
		I was not woken up by the baby	0 to 1 night	2 to 3 nights	4 to 5 nights	6 to 7 nights
SleepPP2	How many nights did you have difficulty going back to sleep after being woken up by the baby?.....	☐	☐	☐	☐	☐
		Less than 4 hours	4 to 5 hours			
SleepPP3	On average, how many hours per night did you sleep?.....	☐	☐			

In the past 7 days...

	Not at all	A little bit
SleepPP5	When I tried to sleep, I was worried about the baby's well-being.....	☐ 1 ☐ 2

In the past 7 days...

	Not applicable OR Not at all	A little bit
SleepPP6	I had trouble falling back to sleep after tending to the baby.....	☐ 1 ☐ 2
SleepPP7	Feeding the baby (or pumping) at night interfered with my sleep.....	☐ 1 ☐ 2

Sleep Related Impairment – Calibrated Items

Please respond to each question or statement by marking one box per row.

In the past 7 days...

	Not at all	A little bit	Somewhat	Quite a bit	Very much	
SleepPP10	It was hard to connect with my baby because I was not sleeping well.....	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
SleepPP11	My sleep impacted my ability to care for myself.....	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

In the past 7 days...

	Not at all	A little bit	Somewhat	Quite a bit	Very much	
SleepPP12	I had enough energy to care for myself.....	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
SleepPP13	I had enough energy to care for my baby...	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

- Postpartum-specific PROMIS SD and SRI item banks:
 - 36 items (27 existing and **9 new items**)
 - 20 items (16 existing and **4 new items**)
- Application to evaluate postpartum sleep
- Screening and identification of high-risk individuals

Discussion

- Next steps**
 - Clinical validation; psychometric evaluation
 - Establish population norms and minimal clinically important differences
- Limitations**
 - Participants limited to the US.
 - Limited Sample size

References



Thank you

Special thanks to my mentors and collaborators:

R Manber, S Shaunfield, X Tang, D Cella, L Tian, S Carmichael, D Lyell, A Morris, S Mackey, S Ciechanowicz, B Carvalho, P Sultan

Contact



Email: moet97@stanford.edu

Phone: +1 (650) 613 1550



Division of Obstetric Anesthesiology and Maternal Health