Feasibility and Acceptability of Guided Imagery to Sequentially Address Multiple Health Behaviors During Pregnancy

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Introduction

- Pregnancy includes physical and psychological challenges. Mobile health (mHealth) applications (apps) have large reach and offer possibilities for creative and appealing behavioral interventions.
- Guided imagery is a mind-body technique that involves the visualization of events, sensations, goals, and emotions. There is evidence to support its use during pregnancy and this technique is ideally suited for mHealth delivery options.

Study Purposes

- To evaluate the feasibility, acceptability, and basic efficacy of using guided imagery delivered by an mHealth app (Pregpal, figure 2) that is designed to address sleep, stress, food cravings, and physical activity in pregnant individuals. We hypothesize that participants will actively engage the app ($\geq$ .50 daily use across 35 days) and report positive experiences.

Design and Methods

- Within-subjects, feasibility trial with pre, weekly, and post-intervention measures and post interviews.
- Guided imagery audio files based on cognitive and motivational functions adapted from Paivio (Figure 1).
- De-identified data stored on a secured server using Qualtrics. Cloud tracking data allowed us to measure usage.
- Recruitment: WV CTSI PBRN, WVU Departments of Family Medicine and Obstetrics and Gynecology, and social media (Facebook).

Inclusion Criteria

- iOS device user, 18-39 years in low-risk pregnancy
- Up to 32 weeks pregnant and able to exercise
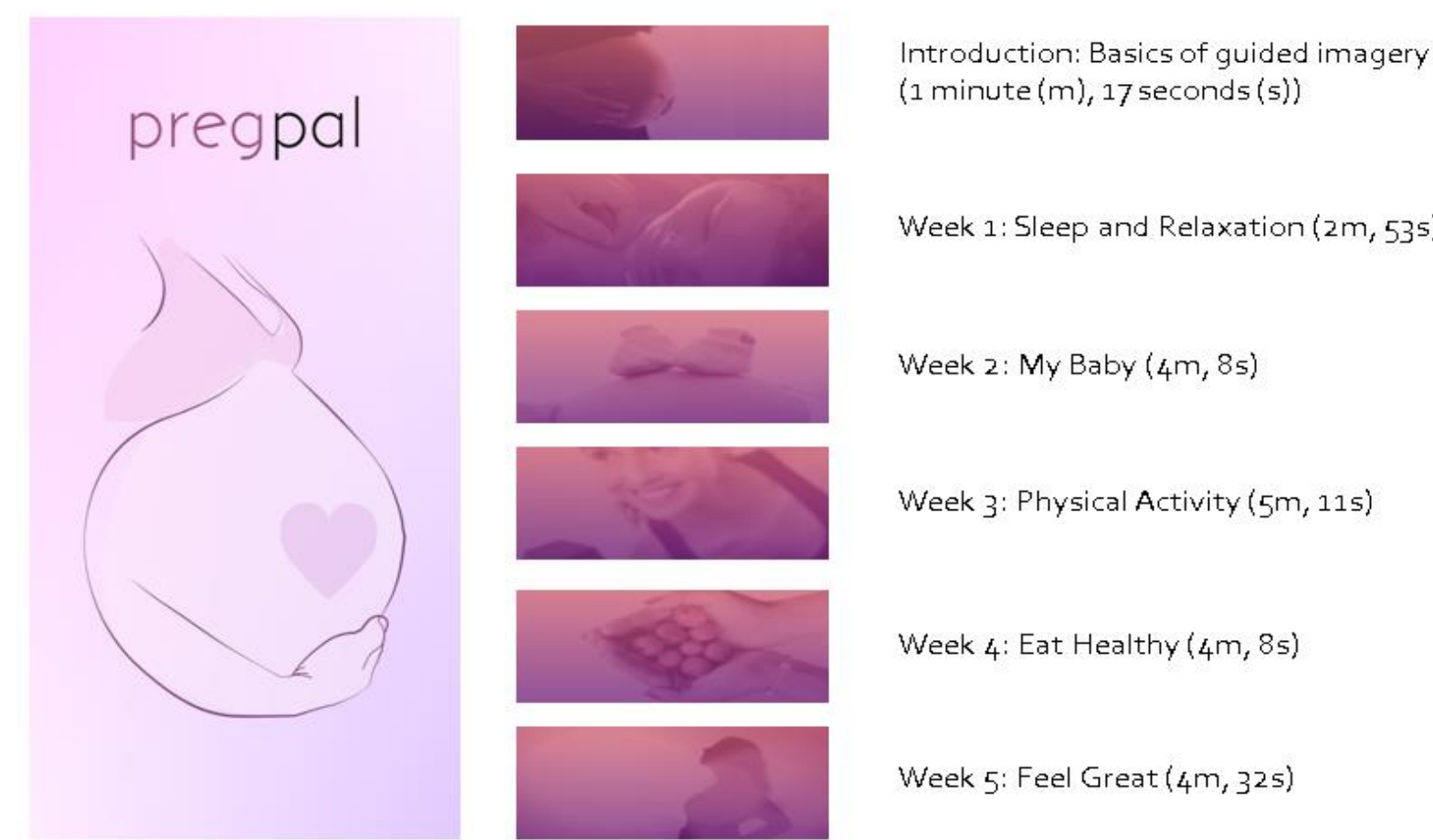- Focused recruitment in later stages of data collection for those with BMI = $\geq$ 25 kg/m^2

Figure 1

Theoretical Considerations

Functions of Guided Imagery adapted from Paivio (1986)

	Motivational	Cognitive
General	**Goal Oriented Imagery** • **General health and wellness** • **Images of a healthy mother and baby**	**Skill-based imagery** • **Imagery vividness using senses and emotions**
Specific	Arousal and Affect • Stress reduction • Positive emotions • Increased confidence • Body image • Being a healthy mother and nurturing the baby's growth	Strategy • Regular imagery practice • Planning and strategies to stay active and eat healthy • Walking • Healthy eating

Figure 2: Pregpal landing page and audio files

Introduction: Basics of guided imagery (1 minute (m), 17 seconds (s))
Week 1: Sleep and Relaxation (2m, 53s)
Week 2: My Baby (4m, 8s)
Week 3: Physical Activity (5m, 11s)
Week 4: Eat Healthy (4m, 8s)
Week 5: Feel Great (4m, 32s)

Results

- We enrolled 58 persons and 46 completed the trial (79%) from 10 different states. Table 1 displays the characteristics of our sample and Figure 3 displays engagement with the app across the trial
- Post-intervention interviews were conducted with 42 participants and results corresponded with the engagement data.

Characteristic	Overall
	N (%)
Total pre-tested	58
Education	
High School or Less	12 (21)
Vocational/Some College	10 (17)
Associate Degree	7 (12)
College Degree (Bachelors)	14 (24)
Post-Graduate	15 (26)
Race	
White	54 (92)
Black	1 (2)
Biracial	3 (6)
Hispanic	
Continuous variables	Mean (SD)
Age	28.5 (4.4)
Pre-pregnancy body mass index	27.6 (7.3)
Weeks pregnant	18.8 (6.3)

Table 1

Wilcoxon signed rank t-tests of study completers (pre- to post–test) showed significant findings:

- Reduced depression, anxiety, and stress (Δ = 2.02, p=0.00).
- Reduced sedentary behavior (Δ = 10.39 minutes, p=.02).
- Changes in body image: reduced preoccupation with complexion, increased sexual attractiveness, dissatisfaction with body parts, and prioritization of appearance.

- 100% (n=42) reported positive experiences with guided imagery; 97% (n=41) reported positive experiences with the app; 97% (n=41) would recommend the app.
- 13 indicated clear preference for Sleep/Relaxation file, 14 indicated their least favorite file was Eat Healthy: usage and interview data were congruent.

Continued Results

Figure 3

Contacted Study Staff (n=178) → Enrollment
Pre-Screened (n=61)
Pre-Tested (n=58) → Baseline
Week 1 Audio Downloads (n=379)
Week 2 Audio Downloads (n=276)
Week 3 Audio Downloads (n=245) → Intervention
Week 4 Audio Downloads (n=229)
Week 5 Audio Downloads (n=243)
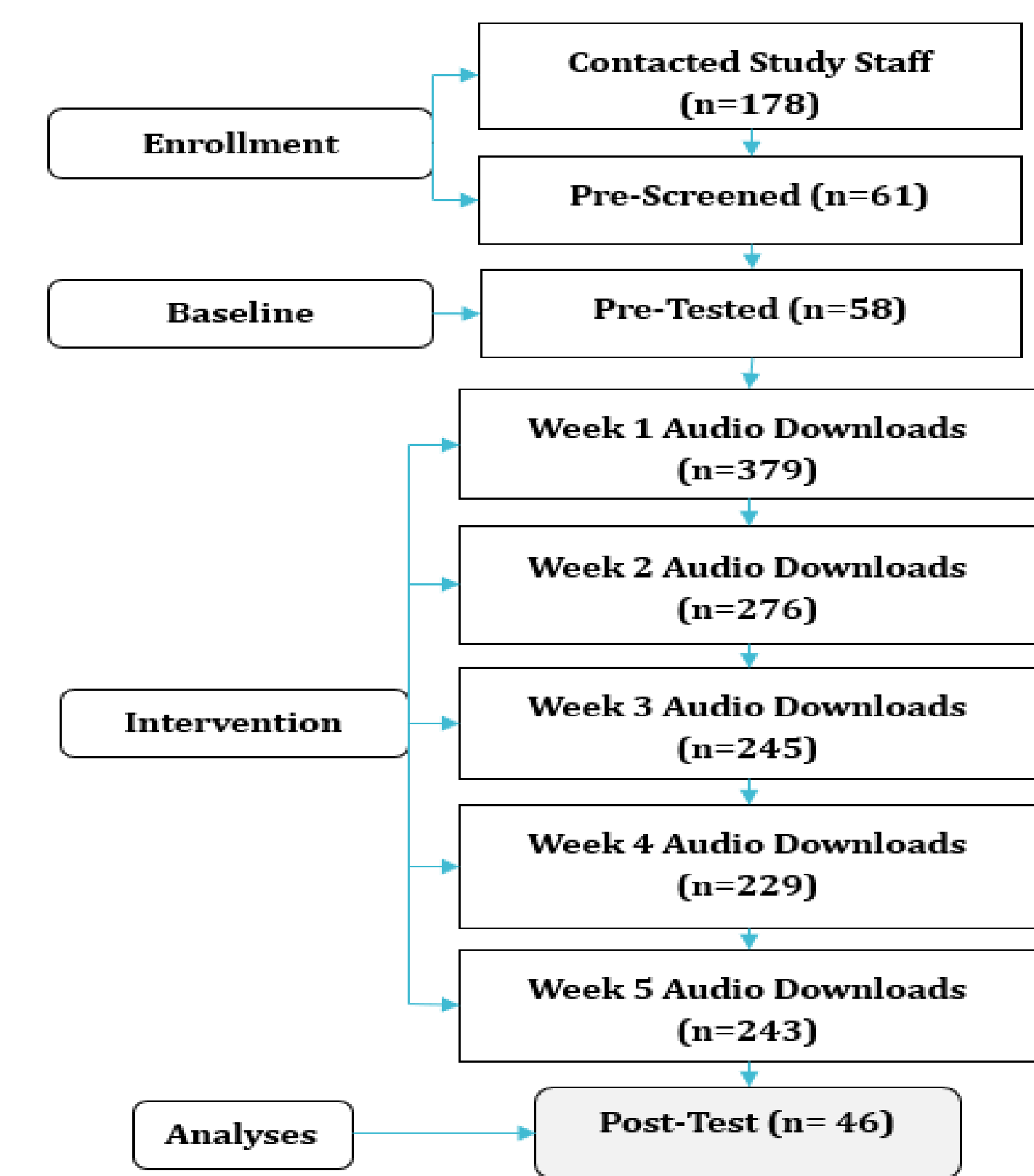Post-Test (n= 46) → Analyses
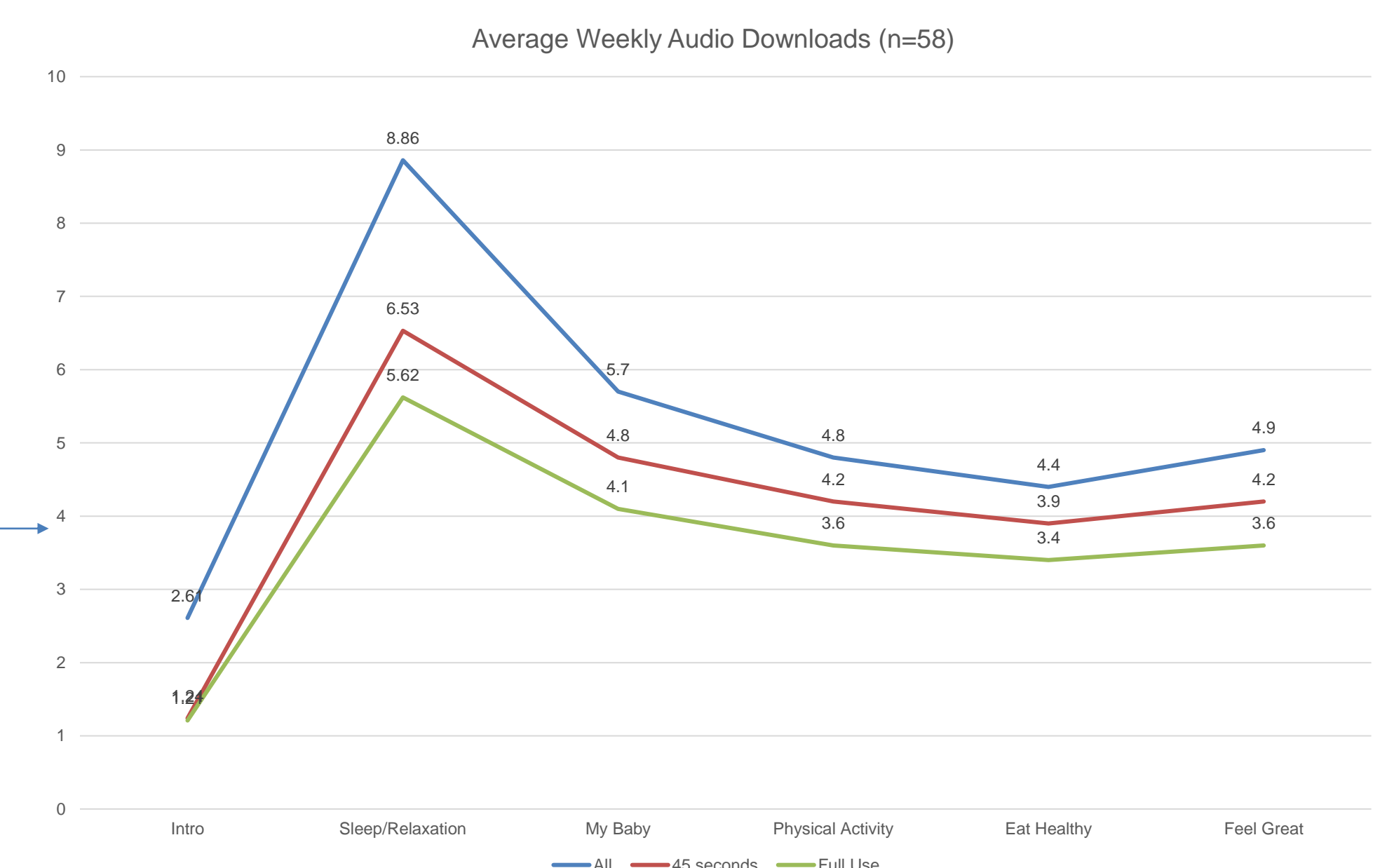

Figure 4

Average Weekly Audio Downloads (n=58)

"I felt that it [guided imagery] did help me relax more and be more conscientious about my personal health and well-being…I would definitely recommend it to other pregnant women."

"With the eating part…I may not have been able to see the fruit, but I could feel it in my mouth…my mouth would get watery, and I thought that was neat and I was not expecting that."

Conclusions and Future Plans

- Usage and acceptability was demonstrated although engagement was lower than predicted.
- Future efficacy testing should include a larger and more diverse sample with additional choices built into the delivery system.
- The PI is currently exploring commercialization options and funding mechanisms at NIH.

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