PREDICTORS OF POSTPARTUM WEIGHT SELF-MANAGEMENT BEHAVIORS

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FUNDING

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INTRODUCTION

- Women who do not lose their pregnancy weight by the first year are at risk for overweight and obesity later in life (Amorim et al. 2008; Linne et al., 2004; Rooney et al., 2005; Walker et al., 2005)

- Gestational weight can be carried into subsequent pregnancies, compounding risk (Linne & Rossner 2003)

- Overweight and obese women face higher risk in reproductive health and during pregnancy (Arendas et al., 2008; Ferraro et al., 2012)

- Overweight/obesity can be transferred intergenerationally (IOM 2009; Sonneville et al., 2011; Oken et al. 2009)
Women’s health can be viewed within the life-course perspective.

The postpartum transition is just one of a series of interconnected stages

(Johnson, Gerstein, Evans, & Woodward-Lopez, 2006; Lu & Halfon, 2003; Misra, Guyer, & Allston, 2003)

Achieving healthy weight is an identified priorities for women’s health care

(CDC, 2006; Moos, 2010; USDHHS, 2012.

Weight self-management is comprised of the cumulative results of daily choices made over the lifespan (Ryan, 2009)
THEORETICAL FRAMEWORK

• Transitions Theory
  (Meleis, 2000)

• The Integrated Theory of Health Behavior Change
  (Ryan, 2009)

• Both theories:
  • Applicable to postpartum weight self-management
  • Complementary to one another

• The synthesis of the 2 theories allows for an expanded set of explanatory variables

• Each offers a unique contribution:
  • Transitions theory provides the context
  • ITHBC provides the process variables and the outcome variables
CONCEPTUAL MODEL

Transition Theory

Transition Conditions/
Nature of the Transition

Awareness & Engagement

ITHBC

Condition-Specific
Knowledge and Beliefs

Social Facilitation

Proximal Health
Outcome

Social Support

Social Influence

Engagement in
Weight Self-
Management
Behaviors

Personal and Postpartum Factors
- Age
- Transition Difficulty
- Prepregnancy BMI
- SES
- Type birth

Patient Activation
## Conceptual-Theoretical-Empirical Linkages

<table>
<thead>
<tr>
<th>Conceptual Level Constructs (Transitions Theory [TT] and ITHBC)</th>
<th>Transition Conditions (TT)</th>
<th>Awareness &amp; Meanings (TT) Condition-Specific Beliefs (ITHBC)</th>
<th>Social Facilitation (ITHBC)</th>
<th>Engagement (TT) Proximal Outcome (ITHBC) Engagement in Behaviors that maintain function and minimize health declines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empirics</td>
<td>DQ mTDS</td>
<td>mPAM-13</td>
<td>PSQ</td>
<td>SIQ</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>ESQ SEBS</td>
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STUDY AIMS

Study Aim 1: to explore the processes of postpartum weight self-management by examining the associations between transition conditions, patient activation, social support and social influence on engagement in weight self-management behaviors (eating and physical activity)

Hypotheses:

1) Women’s personal factors will have a direct association with engagement in weight self-management behaviors at 6 and 12 weeks after the birth of a baby.
2) Women’s personal factors will be associated with the level of patient activation for postpartum weight self-management behaviors at 6 and 12 weeks after the birth of a baby.
3) Patient activation for postpartum weight self-management will have a direct, positive association with engagement in weight self-management behaviors at 6 and 12 weeks after the birth of a baby.
4) Social facilitation (social support and social influence) will have a moderating effect on the relationship between patient activation for postpartum weight self-management and weight self-management behaviors at 6 and 12 weeks after the birth of a baby.
STUDY AIMS

**Study Aim 2:** is to examine the potential role providers and other social influencers play in encouraging engagement in PPWSM behaviors.

**Research Question:** Who do women identify as significant sources of social influence on their engagement in PPWSM behaviors?
METHODS

Design

Prospective, Longitudinal, Correlational

Survey data collected at 3 time points:
- Enrollment during postpartum hospitalization
- Telephone call at 6 weeks
- Telephone call at 12 weeks

PI recruited 2-3 days per week
- 3 urban, tertiary perinatal centers in 2 cities
- Diverse patient populations

Incentives
- $5 gift card mailed after the 6-week call
- $10 gift card mailed after the 12-week call

Sampling/Procedure

Inclusion criteria:
- At least 24 hours post-birth of a liveborn infant
- At least 18 yrs old
- No maternal or newborn complications
- Mother has a landline or mobile phone and home address for follow-up
- Self-report of sufficient English proficiency to complete study surveys
- BMI > 18.5

Power analysis: 92 women needed

35% oversampling to compensate for loss to follow-up: N = 124 planned enrollment
METHODS: INSTRUMENTS

Enrollment

- Demographic and Personal Characteristic Questionnaire
- Modified Transition Difficulty Scale (mTDS)
- Patient Activation Measure, short form (PAM-13)
- Social Influence Questionnaire (SIQ)

Follow-Up

- PAM-13
- Postpartum Support Questionnaire (6-wk only)
- mTDS
- Eating Styles Questionnaire
- Stanford Patient Education Research Center Exercise Behaviors Scale (SEBS)
CONTENT VALIDITY—MODIFIED INSTRUMENTS

Content Validity was performed according to Lynn’s (1986) method for the two revised instruments:

- PAM-13, modified for postpartum weight self-management
- SIQ: modified for the relevant social influencers

Items rated by
- 7 Provider-experts
- 7 Mother-experts

Most items found to be valid by at least one expert group

All items retained:
- Those not rated highly enough by the experts were items that reflected concepts of interest in the study
- Identified in the literature
- The expert comments reflected current practice reality, not the potential
## Data Analysis

### Research Question/Hypothesis

<table>
<thead>
<tr>
<th>Research Question/Hypothesis</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women’s personal factors will have a direct association with engagement in weight self-management behaviors at 6 and 12 weeks after the birth of a baby.</td>
<td>Multiple Regression: IV: 5 transition conditions (age, SES, type of birth, transition difficulty, and prepregnancy BMI) DV: 2 PPWSM behaviors (healthy eating and physical activity)</td>
</tr>
<tr>
<td>Women’s personal factors will be associated with the level of patient activation for postpartum weight self-management behaviors at 6 and 12 weeks after the birth of a baby.</td>
<td>Multiple Regression: IV: 5 transition conditions (age, SES, type of birth, transition difficulty, and prepregnancy BMI) DV: Patient Activation Score*</td>
</tr>
<tr>
<td>Patient activation for postpartum weight self-management will have a direct, positive association with engagement in weight self-management behaviors at 6 and 12 weeks after the birth of a baby.</td>
<td>Hierarchical Multiple Regression Step 1: Patient Activation Step 2: SI total score and SS difference score Step 3: Interaction terms between PA and SI/SS DV: 2 PPWSM behaviors (healthy eating and physical activity)</td>
</tr>
<tr>
<td>Social facilitation (social support and social influence) will have a moderating effect on the relationship between patient activation for postpartum weight self-management and weight self-management behaviors at 6 and 12 weeks after the birth of a baby.</td>
<td>Paired t-tests Each influencer’s SI score compared to each of the others Composite family/friend SI score compared to composite provider SI score</td>
</tr>
<tr>
<td>Who do women identify as significant sources of social influence on their engagement in PPWSM behaviors?</td>
<td>**</td>
</tr>
</tbody>
</table>
# RESULTS: SAMPLE DEMOGRAPHICS

<table>
<thead>
<tr>
<th>Transition Conditions</th>
<th>Post-Birth</th>
<th>6 Weeks</th>
<th>12 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Age [M (±SD)]</td>
<td>29.0 (5.3)</td>
<td>29.4 (5.3)</td>
<td>30.6 (5.1)</td>
</tr>
<tr>
<td>Hollingshead Index [M (±SD)]</td>
<td>37.3 (16.9)</td>
<td>38.7 (16.8)</td>
<td>40.1 (17.3)</td>
</tr>
<tr>
<td>Type of Birth [n (%)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>84 (67.2)</td>
<td>64 (70.3)</td>
<td>47 (71.2)</td>
</tr>
<tr>
<td>Cesarean</td>
<td>40 (32.0)</td>
<td>27 (29.7)</td>
<td>19 (28.8)</td>
</tr>
<tr>
<td>Transition Difficulty [M (±SD)]</td>
<td>124.10 (30.81)</td>
<td>132.64 (31.62)</td>
<td>129.98 (33.06)</td>
</tr>
<tr>
<td>Weight Category [n (%)]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>49 (39.2)</td>
<td>37 (41.1)</td>
<td>29 (43.9)</td>
</tr>
<tr>
<td>Overweight</td>
<td>29 (23.2)</td>
<td>21 (23.3)</td>
<td>15 (22.7)</td>
</tr>
<tr>
<td>Obese</td>
<td>46 (36.8)</td>
<td>32 (35.6)</td>
<td>22 (33.3)</td>
</tr>
<tr>
<td>Prepregnancy BMI [M (±SD)]</td>
<td>28.67 (7.9)</td>
<td>28.6 (8.2)</td>
<td>28.1 (8.2)</td>
</tr>
</tbody>
</table>

### Sample Descriptors

<table>
<thead>
<tr>
<th>Level of Education [n (%)]</th>
<th>Post-Birth</th>
<th>6 Weeks</th>
<th>12 Weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial High School or Less</td>
<td>9 (7.2)</td>
<td>6 (6.6)</td>
<td>6 (9.1)</td>
</tr>
<tr>
<td>High School Graduate</td>
<td>18 (14.5)</td>
<td>12 (13.2)</td>
<td>5 (7.6)</td>
</tr>
<tr>
<td>Partial College</td>
<td>50 (40.3)</td>
<td>37 (40.7)</td>
<td>22 (33.3)</td>
</tr>
<tr>
<td>College Graduate</td>
<td>21 (16.9)</td>
<td>15 (16.5)</td>
<td>12 (18.2)</td>
</tr>
<tr>
<td>Graduate Degree</td>
<td>26 (21.0)</td>
<td>21 (23.1)</td>
<td>21 (31.8)</td>
</tr>
</tbody>
</table>

| Race/ethnicity [n (%)]     |           |         |          |
| Black                      | 46 (36.8)  | 31 (34.1)| 20 (30.3)|
| Hispanic                   | 18 (14.4)  | 14 (15.4)| 12 (18.2)|
| Other                      | 12 (9.6)   | 8 (8.8)  | 8 (12.1) |

| Parity [n (%)]             |           |         |          |
| Primipara                  | 39 (31.2)  | 29 (31.9)| 21 (31.8)|
| Multipara                  | 85 (68.0)  | 62 (68.1)| 45 (68.2)|

| Marital Status [n (%)]     |           |         |          |
| Married/Living with partner| 97 (77.6)  | 74 (81.3)| 53 (80.3)|
| Single, not living with partner| 27 (21.6) | 167 (18.7)| 13 (19.7)|
## Loss to Follow-Up

<table>
<thead>
<tr>
<th></th>
<th>Completed 12 Weeks</th>
<th>Lost to Follow-Up</th>
<th>T (df)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (sd)</td>
<td>M (sd)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enrollment Transition Difficulty</td>
<td>126.27 (26.87)</td>
<td>121.56 (35.20)</td>
<td>-0.83 (122)</td>
<td>0.41</td>
</tr>
<tr>
<td>Enrollment Activation</td>
<td>66.81 (14.60)</td>
<td>75.39 (14.24)</td>
<td>3.30 (122)</td>
<td>0.001</td>
</tr>
<tr>
<td>Social Influence Total Score</td>
<td>398.73 (96.90)</td>
<td>405.07 (142.16)</td>
<td>0.29 (122)</td>
<td>0.78</td>
</tr>
<tr>
<td>Social Support</td>
<td>5.36 (39.08)</td>
<td>19.52 (37.18)</td>
<td>1.67 (90)</td>
<td>0.10</td>
</tr>
<tr>
<td>Age</td>
<td>30.37 (5.33)</td>
<td>27.37 (4.79)</td>
<td>-3.28 (122)</td>
<td>0.001</td>
</tr>
<tr>
<td>Hollingshead (SES)</td>
<td>39.67 (17.58)</td>
<td>34.69 (15.80)</td>
<td>-1.65 (122)</td>
<td>0.10</td>
</tr>
<tr>
<td>Prepregnancy BMI</td>
<td>28.01 (8.16)</td>
<td>29.48 (7.65)</td>
<td>1.02 (122)</td>
<td>0.31</td>
</tr>
<tr>
<td>Highest Level of Education</td>
<td>5.49 (1.36)</td>
<td>5.04 (0.94)</td>
<td>-2.20 (122)</td>
<td>0.03</td>
</tr>
</tbody>
</table>
RESULTS: CORRELATION SUMMARY

Diagram showing correlations between variables:
- Transition Difficulty--Enrollment
- Pre-pregnancy BMI
- SES

Correlation coefficients and p-values:
- Transition Difficulty--Enrollment: B = 0.10*, R² = 0.15
- Pre-pregnancy BMI: B = -0.37*, R² = 0.13
- SES: B = -0.28*, R² = 0.12
- Patient Activation at Enrollment: B = 0.23*, R² = 0.05
- Patient Activation at 6 weeks: B = 0.22*, R² = 0.05
- Low-fat eating behaviors--6 Weeks: B = 0.24*, R² = 0.06
- Physical Activity Minutes—6 Weeks: B = 0.33*, R² = 0.13
- Low-fat eating behaviors 12 Weeks: B = 0.38**, R² = 0.15
- Physical Activity Minutes—12 Weeks: B = 0.32*, R² = 0.10

*p < 0.05
**p < 0.001
KEY FINDINGS

- Women who are experiencing a difficult postpartum transition are less activated for postpartum weight self-management.

- Women with higher patient activation for postpartum weight self-management are more likely to engage in PPWSM behaviors.

- Women report that perinatal providers and postpartum nurses are as influential as those in women’s social circles over health behavior decisions.

- Social support and influence did not moderate the relationship between activation and PPWSM behaviors.

- The PAM-13 is a tool that can be used to individualize promotion of postpartum weight.
LIMITATIONS

Modified instruments
Data collected using 2 different methods
Convenience sample
Self-report for outcome measures
Sample mortality
Instruments and consent available only in English
FUTURE RESEARCH

- Ways that providers can effectively help women overcome their transition difficulties
  - Connections to community resources
  - Planning to overcome barriers
  - Identification of social contacts and support that women can leverage

- Ways that providers can harness women’s activation toward PPWSM
  - Tailored interventions
  - Assistance with setting attainable incremental goals
  - Self-monitoring plans

- Use of technology
  - Using interactive EHR tools to extend provider influence
  - Apps or online communities to promote women’s self-management efforts

- Interconceptional and Pregnancy weight self-management
  - Test early intervention—helping women enter pregnancy at a healthier weight and long-term effects
  - Self-management of weight during pregnancy

- Longitudinal tracking of women and families
  - Effects of women’s eating and physical activity behaviors on her family’s behaviors