Associations between eating behaviors and body image of women during the postpartum period

Erika Oltmanns
ABSTRACT

ASSOCIATIONS BETWEEN EATING BEHAVIORS AND BODY IMAGE OF WOMEN DURING THE POSTPARTUM PERIOD

Erika Oltmanns, M.S.
School of Health Studies
Northern Illinois University, 2017
Dr. Beverly W. Henry, Director

Background Maternal dietary intake during pregnancy and the postpartum period significantly affects mothers’ and infants’ health. Low nutritional status and elevated weights are associated with increased health risks.

Objective To determine associations between disordered eating behaviors and body satisfaction of women with varying pre-pregnancy BMIs, during the postpartum period.

Design Exploratory research that utilized survey methods in a cross-sectional design. Recruitment included distribution of online links to the survey. Self-reported weight/height were used to measure BMI, weight gain, and loss. The EDE-Q 6.0 was utilized to assess disordered eating behaviors and the BIQ was used to assess body satisfaction.

Participants Forty-six English speaking mothers over eighteen years old up through six months postpartum with no prior eating or body image disorders were included.

Statistical Analyses Spearman’s rho correlations were utilized to analyze comparisons between EDE-Q, BIQ scores, and weight factors, and Kruskal-Wallis tests were used to analyze differences amongst these measures and demographic data.

Results Results indicated a statistical significance between EDE-Q and BIQ scores, p= 0.03, rho= 0.583. Statistically significant results were found between the EDE-Q and weight gained during pregnancy p= 0.047, rho= 0.295. Time since delivery compared to EDE-Q scores showed significance, p=0.23 rho=0.334. Results indicated a significance between exercise and the EDE-Q subscale of restriction, p=0.011.

Conclusions Disordered eating behaviors and body image are correlated. Disordered eating behaviors are associated with weight gain, time since delivery, and exercise. This research provides concepts for further research related to eating and weight status during and post pregnancy.
ASSOCIATIONS BETWEEN EATING BEHAVIORS AND BODY IMAGE OF WOMEN DURING THE POSTPARTUM PERIOD

BY

ERIKA OLTMANNS

A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE MASTER OF SCIENCE

SCHOOL OF HEALTH STUDIES

Thesis director:
Beverly W. Henry
ACKNOWLEDGMENTS

First, I would like to thank Dr. Beverly W. Henry. Without her support, guidance, and feedback through every step of this process, I would not have been able to complete this thesis. Her knowledge, resources, and patience in working with me always included helpful responses. I highly appreciate the contributions she has made in the process of this work and I am grateful to have worked with her.

Additionally, I would also like to thank Drs. Sheila Barrett and Priyanka Ghosh Roy for serving on my committee and taking the time to aid me in this process as well. I would also like to thank the staff at the Swedish American Hospital Clinics and the Kane County Breastfeeding Coalition for assisting in the recruitment process.

Finally, I would like to take the time to thank my family and friends for their help and undying support in this endeavor.
DEDICATION

I would like to dedicate this project to all the mothers in the world. They spend most of their lives caring for their children and placing their children’s needs above their own. I dedicate this thesis to them in the hopes of expressing appreciation for the challenges they face for their children.
TABLE OF CONTENTS

LIST OF TABLES..............................................................................................................viii
LIST OF FIGURES...........................................................................................................ix
LIST OF APPENDICES......................................................................................................x

Chapter

1. INTRODUCTION........................................................................................................1
   Justification.................................................................................................................1
   Statement of the Problem...........................................................................................5
   Research Purpose.........................................................................................................6
   Hypotheses..................................................................................................................6
   Operational Definitions...............................................................................................7
       Body Mass Index......................................................................................................7
       Postpartum Stages....................................................................................................8

2. METHODS..................................................................................................................9
   Research Design..........................................................................................................9
   Participants................................................................................................................10
   IRB Approval..............................................................................................................11
   Instruments................................................................................................................11
       Screening Survey...................................................................................................12
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-Ended Questions</td>
<td>12</td>
</tr>
<tr>
<td>The EDE-Q 6.0</td>
<td>13</td>
</tr>
<tr>
<td>The BIQ</td>
<td>13</td>
</tr>
<tr>
<td>Sociodemographic Information</td>
<td>14</td>
</tr>
<tr>
<td>Data Collection</td>
<td>14</td>
</tr>
<tr>
<td>Recruitment</td>
<td>14</td>
</tr>
<tr>
<td>Pilot Testing</td>
<td>16</td>
</tr>
<tr>
<td>Data Collection from the Sample</td>
<td>17</td>
</tr>
<tr>
<td>Scoring</td>
<td>18</td>
</tr>
<tr>
<td>The EDE-Q</td>
<td>18</td>
</tr>
<tr>
<td>The BIQ</td>
<td>20</td>
</tr>
<tr>
<td>Statistical Methods</td>
<td>21</td>
</tr>
<tr>
<td>3. RESULTS</td>
<td>22</td>
</tr>
<tr>
<td>Participant Responses</td>
<td>22</td>
</tr>
<tr>
<td>Demographic Characteristics of the Sample</td>
<td>23</td>
</tr>
<tr>
<td>Data Categorization</td>
<td>25</td>
</tr>
<tr>
<td>Instrument Reliability</td>
<td>26</td>
</tr>
<tr>
<td>Score Summary</td>
<td>27</td>
</tr>
<tr>
<td>Analysis of Hypotheses</td>
<td>28</td>
</tr>
<tr>
<td>Hypothesis 1</td>
<td>28</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>30</td>
</tr>
<tr>
<td>Summary of Open-Ended Questions</td>
<td>31</td>
</tr>
<tr>
<td>Additional Findings</td>
<td>32</td>
</tr>
<tr>
<td>4. DISCUSSION</td>
<td>35</td>
</tr>
<tr>
<td>Demographic Statistics</td>
<td>35</td>
</tr>
<tr>
<td>Eating Behaviors and Body Satisfaction</td>
<td>36</td>
</tr>
<tr>
<td>BMI, Eating Behaviors, and Body Satisfaction</td>
<td>36</td>
</tr>
<tr>
<td>Additional Findings</td>
<td>37</td>
</tr>
<tr>
<td>Weight Gain Beyond Recommendations and Eating Behaviors</td>
<td>37</td>
</tr>
<tr>
<td>Exercise and Eating Behaviors</td>
<td>39</td>
</tr>
<tr>
<td>Weight Gain, Weight Loss, and Time Since Delivery</td>
<td>40</td>
</tr>
<tr>
<td>Limitations</td>
<td>41</td>
</tr>
<tr>
<td>Implications for Future Research</td>
<td>43</td>
</tr>
<tr>
<td>Summary</td>
<td>44</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>46</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>50</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Standard BMI Categories</td>
<td>7</td>
</tr>
<tr>
<td>2. Stages of the Postpartum Period and the Duration of Each Stage</td>
<td>8</td>
</tr>
<tr>
<td>3. Categorization of Questions Used for Scoring Subscales of the EDE-Q</td>
<td>19</td>
</tr>
<tr>
<td>4. Demographic Data of Postpartum Mothers</td>
<td>24</td>
</tr>
<tr>
<td>5. Summary of Instrument Scores</td>
<td>28</td>
</tr>
<tr>
<td>6. EDE-Q and BIQ Responses Based on BMI Mean Ranks</td>
<td>30</td>
</tr>
<tr>
<td>7. Weight Gain Compared to BMI, EDE-Q Scores, and Weight Loss</td>
<td>32</td>
</tr>
<tr>
<td>8. Weight Status Prior to, During, and Post-Pregnancy</td>
<td>34</td>
</tr>
<tr>
<td>Figure</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1. Scatterplot of EDE-Q and BIQ scores</td>
<td>29</td>
</tr>
<tr>
<td>2. How many children do you have?</td>
<td>75</td>
</tr>
<tr>
<td>3. Do you exercise?</td>
<td>75</td>
</tr>
<tr>
<td>4. What is your favorite food?</td>
<td>76</td>
</tr>
<tr>
<td>Appendix</td>
<td>Title</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
</tr>
<tr>
<td>A.</td>
<td>Review of Literature</td>
</tr>
<tr>
<td>B.</td>
<td>Screening Survey</td>
</tr>
<tr>
<td>C.</td>
<td>IRB Approvals</td>
</tr>
<tr>
<td>D.</td>
<td>Approval of Use of Instruments</td>
</tr>
<tr>
<td>E.</td>
<td>Open-Ended Questions: Pie Charts</td>
</tr>
<tr>
<td>F.</td>
<td>The EDE-Q 6.0</td>
</tr>
<tr>
<td>G.</td>
<td>The BIQ</td>
</tr>
<tr>
<td>H.</td>
<td>Demographic Information Survey</td>
</tr>
<tr>
<td>I.</td>
<td>Recruitment Flyers and Social Media Posts</td>
</tr>
<tr>
<td>J.</td>
<td>EDE-Q Subscale Items</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Justification

Pregnancy is a period of great transformation for a woman, with new alterations not only to her body and her emotions, but also to her behaviors and possibly her health status. Pregnancy weight gain may be one such important change to address because a mother’s weight gain or weight retention may impact her health and well-being, not only in the short-term, during the postpartum time frame, but also in regards to her long-term health. This has been supported by the National Academy of Sciences, which found that weight status throughout the pre-pregnancy period, during pregnancy, and over the post-pregnancy period may associate with long-term negative health effects and complications.\(^1\) Disordered eating may influence a healthful pregnancy by altering intake and perceptions of one’s weight. Research has found that throughout pregnancy just under 8% of pregnant women were found as diagnosable with disordered eating, over 20% of women indicated elevated weight and shape concern, almost 9% participated in binge eating and just over 2% reported engaging in disordered eating behaviors.\(^2\)

Additionally, a committee consisting of the Food and Nutrition Board of the Institute of Medicine, and the Board on Children, Youth, and Families in the Division of Behavioral and Social Sciences and Education of the National Research Council re-evaluated weight gain
recommendations for pregnancy within the past six years and suggested the current guidelines for healthful pregnancy weight gain. This cohort researched various contributing factors related to women’s health and pregnancy weight gain and set ranges for weight gain during pregnancy based upon pre-pregnancy weight and levels of weight gain that may allow for appropriate fetal growth and health while reducing the risk for potential health complications throughout and post-pregnancy.¹

As indicated by the National Academy of Sciences, body mass index, or BMI, is a common measurement utilized to assess individuals’ health status based on a calculation associated with individuals’ weight and height (weight (kg)/height (m²)); various categories of BMI ranges include underweight, normal weight, overweight and obese divisions. Pre-pregnancy BMI is used to determine the amount of weight a woman may safely gain throughout her pregnancy to minimalize health risks.¹

The Northwest Center for Public Health Practice found that lower nutritional status of the mother prior to birth may elevate an infant’s chance of gaining long-term diseases or conditions, such as obesity, diabetes mellitus type 2, cancer, hypertension, osteoporosis, and cardiovascular diseases.³

In addition, the research of Sperry investigated body dissatisfaction, disordered eating, and depressive symptomology in mothers with children up to 5 years.⁴ Sperry reported an association between a woman’s BMI and eating disorder symptoms as well, noting that mothers with high BMI levels post-pregnancy exhibited significantly more eating, shape, and weight concerns and general eating disorder symptoms.⁴
To support health goals, the National Academy of Sciences (NAS) recommendations encourage women to attain a weight status within the normal range prior to pregnancy and provide resources for women to engage in healthful behaviors. To aid women in reaching normal BMI levels, the National Academy of Sciences also purports that resources be provided to women related to nutritional and physical education antecedent to pregnancy, throughout pregnancy, and during the postpartum period as well. In doing so, the NAS proposes that this is likely to aid in the lowering of complications during pregnancy, decreasing weight retention after birth, increasing health over longer durations, stabilizing the weight of infants at birth and preventing obesity among children. Possible areas recommended for additional studies by the NAS include the concepts of age, race/ethnicity, socioeconomic standing, co-morbidities, and genetic factors of both of the child’s parents, weight status of the infants at birth, gestational length, and dietary patterns, as well as exercise behaviors influence over weight gain during pregnancy.

Furthermore, the American Pregnancy Association emphasized that nutrition before, during, and after pregnancy is important for the mother and the growing child. Many nutrient recommendations increase for women during pregnancy to ensure that both the mother and the fetus not only receive adequate energy through a combination of proteins, fats, and carbohydrates but also receive appropriate amounts of vitamins and minerals for metabolic functioning. Disordered eating may disrupt the availability of nutrients for healthful pregnancies. This may be exemplified in that women with previous eating disorder history, specifically a history of anorexia or anorexia in conjunction with bulimia, is associated with
reduced fertility. By obtaining sufficient nutrients, the mother is able to maintain her changing body and help provide proper nutrients for the fetus’s development. This is supported through the work of Thompson, Wall, Becroft, Robinson, Wild, and Mitchell, which found that women who consumed a more typical diet rather than one filled with less nutrient-dense foods in the beginning stages of pregnancy did not have as many small-for-gestational-age-newborns.

At the other end of the spectrum, Lee et al. found that increased gestational weight gain may be associated with large-for-gestational-age newborns. Both the findings of Thompson et al. and Lee et al. indicate the impact that the mother’s intake during pregnancy may have on the growing child. Occurrence of an eating disorder may also influence feeding practices and children’s intake of nutrients. Compared to mothers with bulimia nervosa and binge eating disorder (BED), those with no eating disorders are less prone to engage in restriction-based feedings and issues related to their infants’ actions associated with consumption. Besides the influence of nutrition on the growing child, the Association of Reproductive Health Professionals indicate the importance of nutrition for new mothers, especially with women who breastfeed, due to the necessity of maintenance in increased energy requirements for milk production.

A critical step or point in time for health care providers to offer assistance and support to the mother may be during the postpartum period because some women often face struggles in relation to their weight status after pregnancy. Research has shown there are several beliefs and interventions related to postpartum weight status, intake of food, and exercise behaviors, with varying levels of success. During this time, education and emotional support may deter or prevent risk factors that contribute to irregular eating-related behaviors and negative self-
imaging. Providing such assistance for mothers may then contribute to the intake of nutrients for healing and physical maintenance for breastfeeding mothers and may impact the degree to which infants receive nutrients for proper growth, functioning, and health.

As a result, this research may be significant because it not only may consider that general maternal health guidelines reinforce concern that chronic illnesses may develop from nutritional issues during pregnancy and post-pregnancy, but that it may provide information that may be targeted to address overall wellness of new mothers and their infants. Further review of the literature can be found in Appendix A.

Statement of the Problem

Pregnancy and the postpartum period contribute to many physical and emotional alterations among women. During pregnancy, women have increased nutrient needs and altered hunger levels so that their bodies may have enough nutrients to develop their growing child. During the postpartum period, women’s changed bodies do not automatically return to their pre-pregnancy selves. As such, the postpartum period may be a time of adjusting to these bodily alterations and new physical and emotional roles as mothers. These factors may then influence mothers’ feelings over their bodies and their eating behaviors, which may then affect their and their children’s health and well-being.
Research Purpose

The purpose of the present research was to determine associations between disordered eating behaviors in the postpartum period and the levels of body dissatisfaction of women during the postpartum period with pre-pregnancy BMIs that lie within the overweight and obese categories compared to women with normal pre-pregnancy BMIs. An additional underlying aim of the study was to determine associations between pre-pregnancy BMI, weight gain during pregnancy, and postpartum eating behaviors and body satisfaction levels of mothers. The overall goal of this research was to collect data that may be utilized in developing future resources for postpartum wellness among mothers and their infants, especially in relation to their physical and mental well-being.

Hypotheses

1.) There is a relationship between disordered eating behaviors and body dissatisfaction during the postpartum period.
   a. There is a positive correlation between disordered eating behaviors and body dissatisfaction during the postpartum period.
2.) Women with pre-pregnancy BMIs within the overweight and obese categories will report more disordered eating behaviors and higher levels of body dissatisfaction during the
postpartum period than women who are within the normal weight BMI range during pre-pregnancy.

Operational Definitions

Body Mass Index

Body mass index is a current method utilized by health professionals to assess health status of individuals by comparing their weight-to-height ratio. Generally, those who are not within the normal weight category have a greater risk for health complications. Pre-pregnancy BMI is used to determine the amount of weight a woman may safely gain throughout her pregnancy to minimize health risks.¹ Table 1 categorizes what levels are considered to place someone in the categories of Underweight, Normal Weight, Overweight, or Obese and displays the recommended level of weight gain for women during pregnancy based on their pre-pregnancy BMI level.

Table 1

<table>
<thead>
<tr>
<th>Weight Category</th>
<th>BMI Range</th>
<th>Weight Gain Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>28-40 lbs</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>18.5-24.9</td>
<td>25-35 lbs</td>
</tr>
<tr>
<td>Overweight</td>
<td>25-29.9</td>
<td>15-25 lbs</td>
</tr>
<tr>
<td>Obese</td>
<td>≥30.00</td>
<td>11-20 lbs</td>
</tr>
</tbody>
</table>
Postpartum Stages

The postpartum period refers to the time frame after a woman has given birth. Romano, Cacciatore, Giordano, and La Rosa reported that the postpartum period is comprised of three different stages. The first stage occurs immediately and lasts about 6-12 hours after birth and includes risk for abrupt medical situations, such as hemorrhage or eclampsia. The second stage then includes transitions involving shifts in metabolism and possibly mental well-being, for example, and lasts roughly 2-6 weeks. The third and final stage of this period is the longest and may continue to 6 months after birth, as during this time frame, muscle and connective tissues are rebuilding. 16

Therefore, the present research may offer valuable insight to factors such as eating behaviors and body satisfaction levels that may influence these stages. This, therefore, may affect new mothers’ physical and mental well-being during the postpartum period. As a result, this research included participants up through 6 months postpartum. Table 2 describes the stages of the postpartum period.

Table 2

<table>
<thead>
<tr>
<th>Stage of Postpartum</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>6-12 hours postpartum</td>
</tr>
<tr>
<td>Second</td>
<td>2-6 weeks postpartum</td>
</tr>
<tr>
<td>Third</td>
<td>+6 weeks-6 months postpartum</td>
</tr>
</tbody>
</table>
CHAPTER II

METHODS

This research aimed to explore postpartum eating behaviors and body satisfaction of mothers through the 6-month postpartum period. One of the main purposes of this study was to investigate if there is a relationship between eating behaviors and body satisfaction during the postpartum period. An additional aim was to determine if there are differences in disordered eating behaviors of women with normal pre-pregnancy BMIs and those who have pre-pregnancy BMIs that are considered overweight or obese, excluding those with prior diagnosed eating disorders. This study also sought to determine differences in the level of body satisfaction experienced during the postpartum period with normal pre-pregnancy BMIs and those who have pre-pregnancy BMIs that are considered overweight or obese, excluding those with prior body image disorders.

Research Design

This exploratory research into eating behaviors and body satisfaction levels of new mothers employed survey methods in a cross-sectional design. Processes followed in a manner similar to Sperry, Shrewsberry et al., Shloim et al., and Hoffman et al., all of whom utilized self-
report questionnaires as a means of gathering data.\textsuperscript{4,17-19} Methods of self-reported research related to weight are supported through research which found that self-reported weight placed the most women in the same BMI category as clinicians would place them in based upon the women’s first prenatal appointment.\textsuperscript{20} Additionally, research has found that self-reported weight and height precision were not affected by disordered eating or depression.\textsuperscript{21} Quantitative and minimal qualitative data in this research was gathered through self-reported questionnaires completed by volunteering participants.

Participants

Inclusion criteria included mothers up through 6 months postpartum, age of the mother, language spoken by the mother, and the mother’s recall of her weight and height. Specific questions were asked in a screening survey shown in Appendix B. Participants were not excluded based on their race/ethnicity, socioeconomic, employment, or marital status. Exclusion criteria included women who were beyond the 6-month period after birth, those who did not speak fluent English, and those who were under the age of eighteen at the time of the child’s birth.

Also, given that Lee et al. found that individuals with prior eating disorder diagnoses are likely to continue disordered eating throughout pregnancy, those who reported a prior history of an eating disorder or a diagnosis of a body image disturbance were excluded from the study.\textsuperscript{8} These individuals were excluded because an underlying goal in the research was to establish what relationship exists between eating behaviors, body image, and weight of new mothers.
within the population of females who have not been previously diagnosed with an eating disorder. Participants were encouraged to contact their health care provider for further assistance as needed if they responded that a health care professional has told them they have an eating disorder or body image disorder.

IRB Approval

After approval from the Northern Illinois University Institutional Review Board and the Swedish American Hospital Institutional Review Board in June 2016, the following exploratory research involved gathering quantitative data by means of online and written questionnaires (Appendix C). Approval for use of the EDE-Q 6.0, an eating behaviors questionnaire developed by Fairburn and Beglin, and the Body-Image Ideals Questionnaire, developed by Cash, was obtained prior to IRB approval (Appendix D).

Instruments

After reviewing the screening survey to confirm that inclusion criteria were met, participants who met inclusion criteria were encouraged to participate in the study verbally or through the online directions, depending on the mode of survey administration. The full sequence of survey sections included the screening survey, responses on a short set of open-ended questions, then completion the 28-item EDE-Q 6.0 and then the 22-item BIQ. Last, participants completed a sociodemographic questionnaire of five items. In total, eligible
participants were asked to complete 58 items, not including the screening survey. Description of the survey sections and scoring guidelines for specific instruments are further detailed in the scoring section.

**Screening Survey**

To be eligible for the present research, a woman must have given birth within the past 6 months, speak fluent English, and equate to or exceed the age of eighteen at the time of the child’s birth, so that the mother may provide her own consent. For eligibility in the study, participants were asked to recall their pre-pregnancy weight and current weight and height information, as BMI level helped determine the group in which participants were placed. An example of the brief screening survey with the specific questions asked of participants may be found in Appendix B.

**Open-Ended Questions**

Three brief questions (Appendix E) were asked of participants prior to beginning the eating behavior and body image measures. Such questions were used as a basis to prepare the participants for answering a variety of self-report focused questions. These questions included: “How many children do you have?” “Do you exercise?” and “What is your favorite food?” Figures are shown in Appendix E describing participant responses to these questions.
The EDE-Q 6.0

The Eating Disorder Examination (EDE) Questionnaire 6.0 (Appendix F) is a 28-item self-report questionnaire developed by Christopher G. Fairburn and Sarah Beglin based on the EDE interview questions. Its purpose is to determine disordered eating behaviors within a given 30-day period through categorizing frequency of eating and shape-related behaviors into seven different divisions (No days, 1-5 days, 6-12 days, 13-15 days, 16-22 days, 23-27 days, and every day). Participants responded to questions such as “Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?”. Mond, Hay, Rodgers, Owen, and Beumont completed research to test for validation of the EDE-Q, with results indicating sound concurrent validity and adequate criterion validity. In the present study, the EDE-Q determines the presence of any recent disordered eating behaviors that participants may have engaged in. Questions related to the women’s menstrual cycles were removed from the questionnaire on the basis of the participant population exclusively having been comprised of recently pregnant participants.

The BIQ

The Body-Image Ideals Questionnaire (BIQ) (Appendix G) is a 22-item self-reported measure developed by Thomas F. Cash based on the self-discrepancy theory. Research has supported this instrument’s internal reliability. This questionnaire measures body satisfaction
by evaluating discrepancies between self-perception and idealization of one’s body and the perceived significance of various body features. This questionnaire helps to determine the level of body satisfaction that the new mothers experienced.

Sociodemographic Information

Self-determined sociodemographic information (Appendix H) was collected after the eating and body-image-related questionnaires. Sociodemographic information may include age, race/ethnicity, highest level of education, number of children the mother has birthed, and marital status. Pre-pregnancy and postpartum height and weight information were collected through self-report measures that were linked with the participants’ scores on the eating and body image questionnaires.

Data Collection

Recruitment

Recruitment efforts included promotional flyers, online social media posts, and contacting breastfeeding support groups. Initially staff at the 9th Street and Rock Valley OBGYN locations distributed an informational flyer (Appendix I) including the link to complete the survey from July through October. Links were also posted for the online version via the social
media medium of Facebook. Phrases posted via social media are listed in Appendix I. The screening survey was built into the online survey.

To increase sample size, the participant outreach was broadened to include women who had given birth in Northern Illinois and then anywhere in the United States, not solely at Swedish American Hospital clinics. A potential distribution of the surveys at a Swedish American breastfeeding support group was discussed with the support group’s manager. However, to protect patients’ privacy, the manager cautioned against distributing the surveys directly to this group. As such, the surveys were not distributed through this particular group setting. The Kane County Breastfeeding Coalition, however, helped distribute the survey link to potential interest groups and participants.

The goal in recruitment was to obtain at least 110 English-speaking mothers who gave birth in the past 6 months and were over the age of 18. The number of participants was determined based on the research by Patel et al. wherein only 21 mothers were divided into three different categories, based on eating disorder history and risk, which may have been more appropriate for the qualitative interview-based methodology of that research. However, in other investigations similar to the current research with more quantitative methods, researchers have chosen to recruit a greater number of participants for greater statistical generalization to the population. Specifically, Hoffman et al. divided mothers with prior eating disorder histories and those without eating disorder histories into two groups of 25 participants, whereas, Shloim et al. recruited 110 participants total after utilizing a computation that reported a total of at least 86 participants would offer appropriate statistically driven results.
The purpose of obtaining at least 110 participants for the current research was to obtain a sufficient number of women to categorize into the different BMI levels to aid in the analysis of the research’s results. Reports from the National Health and Nutrition Examination Survey in 2009–2010 showed that roughly 64% of adult women were either overweight or obese, with roughly 36% of these women fitting into the category of obesity in both 2009-2010 and 2011-2012. This aimed to allow for variations in the amount of participants within each BMI grouping for the current research.

To increase participation, recruitment expanded to Winnebago and Kane Counties, then to northern Illinois, and then recruitment was opened to any participant location. Outreach to members of the Northern Illinois University Student Dietetic Association occurred via e-mail to encourage further dissemination of the online version of the survey.

**Pilot Testing**

Each of the instruments utilized in the current study (the screening survey, the open-ended questions, the EDE-Q 6.0, and the BIQ) were piloted with paper and pencil with a small group of females of child-bearing age (n=2). The purpose of this pilot testing was to gather information on the ability of possible participants to comprehend of the materials, the length of time to complete the surveys, and the overall flow of the surveys. The pilot study was completed and the surveys were altered accordingly to improve clarity of the survey’s questions and reduce duration for the time taken to complete the survey. These actions were taken to promote a greater
degree of participant satisfaction while taking part in the present research. The pilot study resulted in an estimated average of over thirty minutes for paper-and-pencil survey completion, indicating the potential for sufficient response rates. The online survey was not piloted.

Data Collection from the Sample

Participants were asked to complete a questionnaire encompassing a brief list of open-ended items and three short sets of questions during their visit to one of the Swedish American clinics or online. Sperry conducted similar research using face-to-face data collection at a pediatric clinic in association with a university medical center.\(^4\) Participants had the option to choose to complete the surveys at the clinic on a mobile device or complete the online survey/questionnaires after their appointment at their own convenience.

In an attempt to increase flexibility for participants and to improve response rates, potential participants were offered the online link to complete the questionnaires through the online survey system Qualtrics. In a face-to-face setting, potential participants were handed a small handout with the link to the survey (Appendix I). Online distribution included attaching the link to the online survey with a brief summary of what the research process entailed (Appendix I). This method of data collection is supported by the research of Riva, Teruzzi, and Anolli, which found that in relation to psychological components in utilizing online versus paper
methods, when factors such as validity and sample are evaluated and controlled properly, online questionnaire formats may serve as a plausible alternative to paper questionnaires. 27

Scoring

The EDE-Q

There are four subcategories within the EDE-Q 6.0; these include Restraint, Eating Concern, Shape Concern, and Weight Concern. Responses are designated with a point value based on the frequency an individual reports engaging in the noted behavior per question. Specific questions pertaining to each subcategory are grouped together. Items for these subscales are organized in Appendix J. Participants’ rating responses for the questions within the subcategory are added and then divided by the total amount of questions that the subcategory comprises. For example, if a participant responded with 3, 4, 2, 1, 5 respectively (no days=0, 1-5 days=1, 6-12 days=2, 13-15 days=3, 16-22 days=4, 23-27 days=5, every day=6) for the questions in the Restraint category, her score for the subcategory of Restraint would equate to 3. To calculate a global score, the calculated scores from the subcategories are added to one another and then this amount is divided by four, because there are four subcategories. Scores for each question, category, and global score may range from 0, indicating no occurrence of stated behavior, to 6, indicating frequent engagement in stated behavior. Scores from the subcategories
are analyzed by using means and standard deviations. Groupings of the questions into the subcategories are shown in Table 3.

Table 3
Categorization of Questions Used for Scoring Subscales of the EDE-Q

<table>
<thead>
<tr>
<th>Restraint</th>
<th>Eating Concern</th>
<th>Shape Concern</th>
<th>Weight Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?</td>
<td>7. Has thinking about food, eating, or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?</td>
<td>6. Have you had a definite desire to have a totally flat stomach?</td>
<td>8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following, a conversation, or reading)?</td>
</tr>
<tr>
<td>2. Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?</td>
<td>9. Have you had a definite fear of losing control over eating?</td>
<td>8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following, a conversation, or reading)?</td>
<td>12. Have you had a strong desire to lose weight?</td>
</tr>
<tr>
<td>3. Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td>19. Over the past 28 days, on how many days have you eaten in secret (i.e., furtively)? Do not count episodes of binge eating.</td>
<td>10. Have you had a definite fear that you might gain weight?</td>
<td>22. Has your weight influenced how you think about (judge) yourself as a person?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11. Have you felt fat?</td>
<td>23. Has your shape influenced how you think about (judge) yourself as a person?</td>
</tr>
</tbody>
</table>
20. On what proportion of the times that you have eaten have you felt guilty (felt that you’ve done wrong) because of its effect on your shape or weight? Do not count episodes of binge eating.

27. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?

24. How much would it have upset you if you had been asked to weigh yourself once a week (no more or less often) for the next four weeks?

21. Over the past 28 days, how concerned have you been about other people seeing you eat? Do not count episodes of binge eating.

28. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?

25. How dissatisfied have you been with your weight?

The BIQ

The BIQ was developed by Cash and its scoring includes utilizing “a mean of the item-by-item cross-products of discrepancy X importance ratings.” All discrepancy ratings in the “A” questions, with responses of 0 to -1, are gathered and then a calculation of cross-products is conducted. Last, the cross-products’ mean is calculated providing a total score. Total scores may
range from -3 to +9, with high scores exhibiting further self-idealization discrepancy with intensely kept physical idealizations, suggesting greater body dissatisfaction.  

Statistical Methods

All data utilized were analyzed through the Statistical Package for the Social Sciences (SPSS) Version 23. Frequencies were determined to group variables for descriptive analysis. Due to the limited sample size (n=46), non-parametric tests were performed and median ranks were assessed. Scatterplot testing and Spearman’s rho correlations were utilized to investigate the relationship between participants’ EDE-Q and BIQ scores and participants’ age, parity, weight changes, individual BMI, and time span post-delivery. Kruskal-Wallis tests were used to investigate relationships between EDE-Q global and subscale scores, BIQ scales, and categorical/nominal data such as race, education, marital status, nutrition education, exercise, BMI category, and the hospital where the mother delivered. Statistically significant values for tests included p<0.05 and p<0.01.
CHAPTER III

RESULTS

The purpose of this study was to determine associations between disordered eating behaviors and body satisfaction of women within different BMI categories during the postpartum period. Participant responses, demographic statistics, data categorization, instrument reliability, survey scores, hypotheses analysis, and additional findings are reported in the following section.

Participant Responses

Of the 66 mothers recruited, the final sample included 46 participants, 1 on a written copy and 45 online. There were 20 women who did not meet inclusion criteria as determined by reviewing screening criteria on the online survey. This constituted 30% of the initial recruited sample. Of these 20 potential participants, 15 did not fit time frame criteria of post-partum status; 1 did not complete the screening survey; 3 answered less than 10 questions, which would not provide enough responses for statistical significance; and 1 answered yes to prior ED/body image disorder history. Due to an error in response formatting for the BIQ portion of the online survey, 22 of the 46 responses for the BIQ were excluded from the results. The following 24 responses were entered and included after the response format was corrected. All 46 responses
were utilized in scoring for the EDE-Q, assessing demographic information and open-ended questions. In relation to BMI, seven individuals (15.2%) did not indicate enough information to calculate scores from this measure. These participants’ responses are included in the sample and listed as the unknown BMI category.

Demographic Characteristics of the Sample

Details of demographic variables are shown in Table 4. The majority fell into 29-33 years for maternal age. Ages ranged from 19 to 38 years old. Most participants were less than 4 to 6 months postpartum (N=17). The majority of participants were Caucasian (N=45), married (N=43), and had completed at least some college (N=32). More than half of participants responded that they received some nutrition education before, during, or after pregnancy (N=26). Just over half of the participants gave birth at Swedish American Hospital (N=24), which was the initial site for participant recruitment (see Table 4).
Table 4
Demographic Data of Postpartum Mothers

<table>
<thead>
<tr>
<th>Demographics/Open-ended Questions</th>
<th>Sample (N=)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19-23</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>24-28</td>
<td>15</td>
<td>32.6</td>
</tr>
<tr>
<td>29-33</td>
<td>19</td>
<td>41.3</td>
</tr>
<tr>
<td>34-38</td>
<td>10</td>
<td>21.7</td>
</tr>
<tr>
<td><strong>Months Postpartum</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1 mo-1.5 mos</td>
<td>15</td>
<td>32.6</td>
</tr>
<tr>
<td>&lt;2-3 mos</td>
<td>14</td>
<td>30.4</td>
</tr>
<tr>
<td>&lt;4-6 mos</td>
<td>17</td>
<td>37.0</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>45</td>
<td>97.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td>Married</td>
<td>43</td>
<td>93.5</td>
</tr>
<tr>
<td>Widowed</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>6</td>
<td>13.0</td>
</tr>
<tr>
<td>Trade School</td>
<td>8</td>
<td>17.4</td>
</tr>
<tr>
<td>College</td>
<td>32</td>
<td>69.6</td>
</tr>
<tr>
<td><strong>Nutrition Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>34.8</td>
</tr>
<tr>
<td>Some</td>
<td>26</td>
<td>56.5</td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>8.7</td>
</tr>
<tr>
<td><strong>Hospital of Delivery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unidentified</td>
<td>15</td>
<td>32.6</td>
</tr>
<tr>
<td>Swedish American</td>
<td>24</td>
<td>52.2</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>15.2</td>
</tr>
<tr>
<td><strong>Number of Children</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>17</td>
<td>37.0</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>43.5</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>13.0</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>4.3</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>“Do you exercise?”</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>15</td>
<td>32.6</td>
</tr>
</tbody>
</table>

(Continued on following page)
Table 4 Continued

<table>
<thead>
<tr>
<th>Favorite Food</th>
<th>Yes</th>
<th>20</th>
<th>43.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains/Starches</td>
<td>10</td>
<td>21.7</td>
<td></td>
</tr>
<tr>
<td>Meat/Protein</td>
<td>10</td>
<td>21.7</td>
<td></td>
</tr>
<tr>
<td>Pizza</td>
<td>8</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>Dessert</td>
<td>6</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td>Mexican Food</td>
<td>5</td>
<td>10.9</td>
<td></td>
</tr>
<tr>
<td>Fruit/Vegetables</td>
<td>4</td>
<td>8.7</td>
<td></td>
</tr>
<tr>
<td>Multiple Foods</td>
<td>2</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>“Anything I don’t have to cook.”</td>
<td>1</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>

Data Categorization

Responses were entered into Excel spreadsheets and scored based on instructions for each of the particular instruments. BMI was calculated based on the patient’s self-reported pre-pregnancy weight and height, as weight in kg/height in m$^2$. Based on BMI guidelines, women were placed into normal, overweight, and obese categories. Weight gained and lost was calculated through comparison of pre-pregnancy, pregnancy, and postpartum gains and weight loss. Women were also categorized by time since delivery by grouping responses to comprise similar numbers of participants. Once all of this data was collected and organized, responses were entered into the SPSS software and analyzed.

As directed by the procedures for scoring EDE-Q responses, responses were included if at least 50% of questions in the subscales were answered (N=13). No BIQ responses were missing. However, due to an error in the posting of options for answering the “B” items in the original online version of the survey, N=22 participants’ BIQ responses were excluded from data.
analysis. Some participants also did not provide enough information to determine BMI but were still included in the sample and listed under the “unknown” BMI category.

Instrument Reliability

The EDE-Q included 28 items separated into four subscales. Responses gathered information on the frequency of engaging in disordered eating behaviors. Higher scores represented greater frequencies of disordered eating behaviors. To test for internal consistency of this instrument, Cronbach’s coefficient alpha was measured. Research shows acceptance of Cronbach’s coefficient alpha with results from 0.70 to 0.95.\textsuperscript{30} Cronbach’s coefficient alpha indicated reliability of the data (alpha= 0.906). Cronbach’s coefficient alpha for the subscales Restriction, Eating, Shape, and Weight Concern are respectively a=0.668, a=0.700, a=0.899, and a=0.845, which range from just below acceptable to acceptable.\textsuperscript{30} Listwise deletion was performed for missing variables and variables with no variance.

The same test was utilized to measure internal consistency of the BIQ. Cronbach’s coefficient alpha indicated good reliability of the data (alpha=0.773). The BIQ included 22 items that measured discrepancies of the ideal self versus one’s current self. Higher scores on the BIQ indicated greater discrepancy between one’s ideal self and one’s present self, indicating greater body dissatisfaction. Listwise deletion was performed for missing variables and variables with no variance.
Score Summary

Due to the small sample size, medians were used as a measure of comparison between scores. A total of 46 participants completed the EDE-Q. Global EDE-Q scores ranged from 0-3.44, the subscale scores of Restriction, Eating Concern, Shape Concern, and Weight Concern ranged from 0-3, 0-2, 0-6, and 0-5.20 respectively, where possible instrument scores may range from 0-6. The higher the score, the greater the frequency of eating disorder behaviors. A total of 46 participants completed the BIQ; however, 22 responses were excluded due to a misformatting error in the transfer of the original questions to the online survey. The “A” item response options were transferred as the same for the “B” items. Instead of both responses indicating a range of “exactly as I am to very unlike me” as appropriate for “A” items, the “B” item responses should have read as a range of importance from “not important to very important.”

Therefore, after correction of this error, scores of 24 participants ranged from 0.09 to 2.82. Total possible instrument scores may range from -3 to 9. The greater the score, the greater body dissatisfaction. These results are shown in Table 5. Scores from the present research fall below the typical average scores for both the EDE-Q and the BIQ; this is likely due to the small sample size of the study. 29, 31
Table 5
Summary of Instrument Scores

<table>
<thead>
<tr>
<th></th>
<th>EDE-Q N=46</th>
<th>Restriction N=46</th>
<th>Eating Concern N=46</th>
<th>Shape Concern N=46</th>
<th>Weight Concern N=46</th>
<th>BIQ N=24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Median</td>
<td>0.8573</td>
<td>0.3000</td>
<td>0.000</td>
<td>1.4375</td>
<td>1.2000</td>
<td>0.9100</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.09</td>
</tr>
<tr>
<td>Maximum</td>
<td>3.44</td>
<td>3.00</td>
<td>2.00</td>
<td>6.00</td>
<td>5.20</td>
<td>2.82</td>
</tr>
</tbody>
</table>

*Minimum EDE-Q Global/Subscale score is 0. Maximum possible EDE-Q Global/Subscale score is 6.0. Higher scores indicate increased frequency of disordered eating behaviors.

The first hypothesis predicted a relationship between disorder behaviors and body dissatisfaction, specifically, a positive correlation between eating disorder behaviors and body dissatisfaction. A scatterplot was completed to show the correlation between global EDE-Q scores and BIQ scores (see Figure 1). Since the scatterplot indicated a positive relationship between these variables, a Spearman’s rho correlation test was also performed. Using n=24 to equivocate the sample sizes in EDE-Q and BIQ scores, results indicated that there was a
statistical significance (p<0.01) found between EDE-Q and BIQ scores as p= 0.03, rho= 0.583. Statistical significance (p<0.01) was found between 3 of the 4 EDE-Q subscale scores and BIQ scores using Spearman’s rho: restriction p= 0.002, rho=0.61; eating concern (non-significant) p= 0.68, rho 0.379; shape concern p= 0.003, rho=0.580; and weight concern p=0.008, rho=0.525.

Figure 1. Scatterplot of EDE-Q and BIQ scores.
Hypothesis 2

The second hypothesis predicted that women with pre-pregnancy BMIs within the overweight and obese categories will report more disordered eating behaviors and higher levels of body dissatisfaction during the postpartum period than women who are within the normal-weight BMI range pregnancy. Using a Kruskal-Wallis analysis, BMI, EDE-Q global and subscales scores and BIQ scores were not found to be statistically significant. Mean ranks, however, indicated that women with BMIs within the normal weight category had higher scores on the EDE-Q and its subscales and the BIQ than those with BMIs in the overweight and obese categories. Results for this hypothesis are represented in Table 6.

Table 6
EDE-Q and BIQ Responses Based on BMI Mean Ranks

<table>
<thead>
<tr>
<th>Sample</th>
<th>N=7</th>
<th>N=16</th>
<th>N=14</th>
<th>N=9</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>Unknown</td>
<td>Normal</td>
<td>Overweight</td>
<td>Obese</td>
</tr>
<tr>
<td>EDE-Q</td>
<td>22.07</td>
<td>26.78</td>
<td>21.29</td>
<td>22.22</td>
</tr>
<tr>
<td>Restriction</td>
<td>24.64</td>
<td>26.13</td>
<td>21.93</td>
<td>20.39</td>
</tr>
<tr>
<td>Eating Concern</td>
<td>22.07</td>
<td>25.19</td>
<td>23.46</td>
<td>21.46</td>
</tr>
<tr>
<td>Shape Concern</td>
<td>22.43</td>
<td>26.78</td>
<td>20.57</td>
<td>23.06</td>
</tr>
<tr>
<td>Weight Concern</td>
<td>22.07</td>
<td>26.91</td>
<td>21.54</td>
<td>21.61</td>
</tr>
<tr>
<td>BIQ</td>
<td>11.13</td>
<td>14.94</td>
<td>11.86</td>
<td>10.60</td>
</tr>
</tbody>
</table>
Summary of Open-Ended Questions

Open-ended questions included number of children, exercise, and favorite food. No statistical significance was found between number of children and EDE-Q and BIQ scores, BMI, and weight gained or lost. Figures 2, 3, and 4, describing specifically the open-ended questions, may be found in Appendix E. Kruskal-Wallis tests were used to compare differences between the three self-reported exercise behaviors (no, yes, and some) and EDE-Q and its subscales’ scores and BIQ scores. Results indicated an overall statistical significance (p<0.05) between exercise and the EDE-Q subscale restriction as p=0.011.

As a result of this significance, follow-up analyses were performed (Mann-Whitney tests) to assess for pairwise differences with groups of responses. No significant differences were found between the “some” and “yes” groups, whereas “no” and “yes” groups were found to have a statistical significance (p<0.01), as p=0.004 and the “no” and “some” groups were found to have a statistical significance (p<0.05) as p=0.042. Frequencies for this question are shown in Appendix E (Figure 3). Given the non-specific nature of the item, the responses for favorite food were not analyzed for statistical significance. Frequencies for this question are shown in Appendix E (Figure 4).
Additional Findings

Results of women’s weight gain above recommendations were associated with higher total scores of disordered eating and higher levels of body dissatisfaction. The majority of women (43.5%) gained over recommendations for pregnancy weight gain based on their pre-pregnancy BMI. According to Spearman rho’s analysis, a statistically significant relationship (p<0.01) was found between pre-pregnancy BMI and weight gained during pregnancy (p =0.00, rho=0.720) (see Table 7 below). Statistically significant (p<0.05, p<0.01) results were found between the EDE-Q global score and the subscale of restriction and weight gained during pregnancy as p= 0.047, rho= 0.295 and as p=0.004, rho= 0.412 respectively. No significance was found between weight gain and BIQ scores, p=0.194. Results for these findings are represented in Table 7 and Table 8. Additionally, Spearman rho’s analysis, indicated a significant correlation (p<0.05) between weight gained during pregnancy and weight lost during the postpartum period as p= 0.016, rho= 0.358 (see Table 7 below).

Table 7
Weight Gain Compared to BMI, EDE-Q Scores, and Weight Loss

<table>
<thead>
<tr>
<th>Weight Gain and EDE-Q Global Score</th>
<th>Weight Gain and EDE-Q Subscale of Restriction</th>
<th>Weight Gain and BMI</th>
<th>Weight Gain and Weight Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=46, rho= 0.295&lt;sup&gt;a&lt;/sup&gt;</td>
<td>N=46, rho=0.412&lt;sup&gt;b&lt;/sup&gt;</td>
<td>N=46, rho=0.720&lt;sup&gt;b&lt;/sup&gt;</td>
<td>N=45, rho=0.358&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

a. Significance at the 0.05 level.
b. Significance at the 0.01 level.
The descriptive statistics of pre-pregnancy BMI, weight gained during pregnancy, and postpartum weight loss are represented in Table 8. Most women fell into the normal weight category (BMI 18.5-24.9) for pre-pregnancy BMI (34.8%). However, median BMI was 24.75, which falls on the higher end of the normal weight category. Median weight loss since delivery ranged from 16-25 lbs, with the majority (47.8%) also in this range of weight loss.

In addition, time frame or number of months postpartum was found to have statistical significance (p<0.05) when compared to EDE-Q (p=0.23, rho=0.334), but not the BIQ as p=0.405, rho=0.178. No statistical significance was found comparing the amount of weight lost compared to the postpartum time frame in months. Kruskal-Wallis tests were used to compare demographic categorical responses and EDE-Q global scores or BIQ scores; no other statistically significant results were found.
Table 8

Weight Status Prior to, During, and Post-Pregnancy

<table>
<thead>
<tr>
<th>Weight Status</th>
<th>Sample (N=)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-pregnancy BMI</strong></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
</tr>
<tr>
<td>Normal (18.5-24.9)</td>
<td>16</td>
</tr>
<tr>
<td>Overweight (25-29.9)</td>
<td>14</td>
</tr>
<tr>
<td>Obese (30+)</td>
<td>9</td>
</tr>
<tr>
<td><strong>Weight Gained During Pregnancy Based on Recommendations</strong></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>7</td>
</tr>
<tr>
<td>Less than recommended</td>
<td>3</td>
</tr>
<tr>
<td>Equal to recommended</td>
<td>16</td>
</tr>
<tr>
<td>Over recommended</td>
<td>20</td>
</tr>
<tr>
<td><strong>Weight Gained During Pregnancy by Pounds</strong></td>
<td></td>
</tr>
<tr>
<td>≤20 lbs</td>
<td>8</td>
</tr>
<tr>
<td>21-25 lbs</td>
<td>4</td>
</tr>
<tr>
<td>26-30 lbs</td>
<td>8</td>
</tr>
<tr>
<td>31-35 lbs</td>
<td>11</td>
</tr>
<tr>
<td>36-40 lbs</td>
<td>5</td>
</tr>
<tr>
<td>41+ lbs</td>
<td>4</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
</tr>
<tr>
<td>Weight Lost</td>
<td>1</td>
</tr>
<tr>
<td><strong>Postpartum Weight Loss by Pounds</strong></td>
<td></td>
</tr>
<tr>
<td>≤5 lbs or gained weight</td>
<td>1</td>
</tr>
<tr>
<td>5-15 lbs</td>
<td>7</td>
</tr>
<tr>
<td>16-25 lbs</td>
<td>22</td>
</tr>
<tr>
<td>26-35 lbs</td>
<td>7</td>
</tr>
<tr>
<td>36-45 lbs</td>
<td>3</td>
</tr>
<tr>
<td>46-55 lbs</td>
<td>3</td>
</tr>
<tr>
<td>56-65 lbs</td>
<td>1</td>
</tr>
<tr>
<td>66-75 lbs</td>
<td>1</td>
</tr>
</tbody>
</table>
CHAPTER IV

DISCUSSION

The purpose of the research was to determine associations between pre-pregnancy BMI and postpartum eating behaviors and body satisfaction. The following section discusses demographics, comparison of eating behaviors and body satisfaction, hypotheses including the comparison of BMI, eating behaviors, and body satisfaction, and weight gain beyond recommendations and eating behaviors. This section also examines additional findings, limitations, participant responses, and implications for future research.

Demographic Statistics

Initially participants were primarily to be included in the study if they delivered through the Swedish American Health System; however, due to limited participation via face-to-face recruitment, delivery location expanded. However, the majority of participants (N=24) still had delivered at Swedish American Hospital. A recent study through Swedish American Health System indicated that 30-35%, the majority, of total patients have a high school diploma as the highest level of education completed. This research also reported that the highest percentage of total patients are Caucasian, followed by African American. This differed from the present
research in that the majority of participants had completed a college degree or had completed some college. However, this research was similar to the current research in that the majority of participants were Caucasian.\textsuperscript{32}

Eating Behaviors and Body Satisfaction

Disordered eating behaviors and body dissatisfaction are important issues to address with women in the postpartum period for several reasons. Results of this research indicated that disordered eating behaviors and body dissatisfaction were positively correlated as hypothesized. This explains that those with more disordered eating behaviors have higher levels of body dissatisfaction. Previous research with patients with a history of disordered eating may explain the reasoning for this connection to be a result of the individuals’ attempt to cope with stress.\textsuperscript{33}

BMI, Eating Behaviors, and Body Satisfaction

However, contrary to the hypothesis that women with overweight and obese pre-pregnancy BMIs would report more disordered eating behaviors and have higher levels of body dissatisfaction during the postpartum period, normal pre-pregnancy BMI participants had higher EDE-Q scores, although these findings were not statistically significant.

This is unlike the research of Sperry, which found that the greater the individual’s BMI, the more eating, shape, and weight concerns and global EDE-Q scores the individual had.\textsuperscript{4} Similar to Sperry, this research did not find significance in BMI and body image issues.\textsuperscript{4}
However, there was also an uneven distribution among BMI categories in the present research, which may have influenced results (N=7 unknown BMI, N=16 normal weight, N=14 overweight, and N=9 obese).

In relation to BMI and disordered eating, research has found that women with diagnosed disordered eating have larger BMI elevations throughout pregnancy and less weight loss over the initial six months of the postpartum period. After three years from delivery, those with anorexia nervosa were found to have transitioned from the underweight BMI category during pre-pregnancy to the normal weight BMI category after delivery. These factors may suggest that prior ED diagnosis and time since delivery may play a role in weight status of mothers. Weight status may then correlate with increased risks for other psychological conditions. Research has also indicated that women in the overweight category are more likely to experience greater anxiety during the fourth month of the postpartum period and depression during the fourth and fourteenth months of the postpartum period. Depression in turn may then correlate with weight and shape concern, when stress is not included as a varying factor.

Additional Findings

Weight Gain Beyond Recommendations and Eating Behaviors

Whereas Olson, Strawderman, Hinton, and Pearson did not find a significant difference in weight gained beyond recommendations, this research results were concurrent with the research of Rothberg, Magriples, Kershaw, Rising, and Ickovics, which indicated that the more
overweight a person is prior to pregnancy, the greater likelihood that they may gain more than what is recommended, which could be related to previous lifestyle behaviors. Herring et al. also found that a majority of women gained more than recommendations. Perhaps women are gaining more than recommendations because of the preconceived idea of the need to “eat for two,” when typically this is not true. This information may suggest that these women may require further nutrition education on healthy food options to help weight gain increase slowly within recommendations, while the increased feelings of hunger are still satisfied with healthy foods they enjoy.

Furthermore, the more weight gained during pregnancy, the higher the EDE-Q global and restriction scores, equating to increased disordered eating behaviors. This may be a result of women comparing their eating behaviors to current eating behaviors. They may have reported eating more like their pre-pregnancy self, but considered it less than what they had been eating for the last several months. Although no correlation was found with the BIQ and weight status in this research, Hodgkinson et al. found that women use a social constructive ideal to help cope with their weight changes from pregnancy. Other research has found that those with binge eating disorder (BED) who acknowledge increased anxiety were found to have greater increases in weight throughout pregnancy. Similarly, Siega-Riz et al. found an increased occurrence of weight gain beyond recommendations with those who have BN and BED. These studies suggest the potential that binge eating during pregnancy may promote anxiety that may lead to restrictive eating behaviors in the postpartum period.

However, the question remains, if they gained more during pregnancy and are coping with their weight gain, why do these women have more restrictive eating behaviors? Potentially,
this may be related to the women’s sense of control. They may not be upset about their weight because they understand its purpose in having helped their child develop, but they may still want to reduce it to obtain a returned sense of normalcy. They may then find that they have the power to do this through changing their eating habits.

Also, the BIQ compared current self and the ideal self. As a result, there is potential that a woman’s ideal self did not equate to her pre-pregnancy self, so she may engage in these restrictive eating behaviors to reach that ideal self. Another potential influencing factor for this result may have been postpartum interaction from health care providers and media and social influence to slim down. Postpartum visits may include discussions between health care providers and these women related to weight loss and encouraging a change in eating behaviors. Additionally, it may not be the women’s body dissatisfaction driving their eating behaviors, but cultural pressure to reduce their weight and alter their shape by reducing their intake.

**Exercise and Eating Behaviors**

Another means of weight reduction encouraged by health professionals and cultural forces is exercise. Research of Olson, Strawderman, Hinton, and Pearson included participants up to one year postpartum and found significance with weight loss and eating and exercising during this time frame. Although the present research only included mothers through six months postpartum, significance was also found between exercise and eating restriction. Sperry also found association between higher EDE-Q scores and engaging in exercise behaviors. This suggests that women may already understand the role of exercise and reduced intake in
promoting weight loss but may insinuate a need to ensure that the exercise and reduced intake occur in a fashion that promotes maternal and infant health.

Weight Gain, Weight Loss, and Time Since Delivery

In addition, those who gained the most weight lost the most weight in the postpartum period. This, at a glance, appears logical in the premise that the more weight one has to begin with, the more one has to lose. However, those who gained the most also had higher reports of disordered eating behaviors, suggesting that potentially the restrictive eating behavior likely resulted in this weight loss.

In addition, time since delivery should also be considered as well, as the weight status of new mothers often changes at varying times since giving birth. EDE-Q scores were higher among those in the two to three months postpartum time frame. This is supported through research which found that disordered eating behaviors among pregnant women rose in the three-month postpartum period. After the three months of the postpartum period, disordered eating behaviors among pregnant women began to even out throughout the following six months. However, weight concern still rose up to the six-month analysis, yet shape concern declined. Women participating in the research indicated education focused on coping skills with eating, weight, and shape may have been beneficial.42

Furthermore, results of Stein and Fairburn’s research and the present research may be due to adjusting to the mothers adjusting to their new roles as mothers and being able to focus more
on themselves and their bodies. This may also be related to the timing of the women’s return to work (6-12 weeks postpartum) in the postpartum period and include the notion that they may not be faced with having easy, convenient access to food as they may have had at home. This may also be a point in time in which they begin to feel societal pressures to lose weight. This is supported through the research of Sperry, which indicated that sociocultural forces are associated with disordered eating behaviors.

With the time frame since delivery indicating restrictive eating behaviors of mothers in the two to three months category, this provides health professionals support to provide nutrition education and interventions at a point in time that may be most effective in helping the new mothers with disordered eating behaviors. Since exercise and restrictive eating behaviors also were associated in this research and in the research of Olson et al., it is important to understand other lifestyle factors such as these in addressing postpartum weight loss and body satisfaction.

Limitations

There were several limitations to this research that may have influenced results. First, the limited sample size of n=46 did not meet the predetermined sample size. This small sample size reduced generalizability towards the population. For example, in this sample the distribution of the women’s BMI did not align with the average percentages: 54% of the sample was comprised of normal-weight women, whereas normal-weight women generally comprise closer to 36% of the population. This sample also lacked variety in demographics such as race, education level,
and marital status, which may limit the results to only pertain to this specific group of participants’ race, education level, and marital status. Economic status was not included in this research either, which may affect results, potentially due to food availability and its impact on the weights of participants.

Furthermore, the response goal of 110 participants was not met. Participant response may have been low due to several reasons. The time in which face-to-face interaction at clinics occurred did not maximize potential responses. Pediatric clinics were not sought out for recruitment. Potential participants on social media did not wish to complete the survey due to personal reasons. There was limited extension on social media.

Additionally, the online survey in 22 of the participants’ responses were excluded from results. If responses to the questions were typed correctly, these responses may have been utilized to further obtain relevant data. This data may have indicated significant results between body image satisfaction and categorical variables such as race, place of delivery, marital status, and nutrition education, for example, and may have provided data indicating a greater degree of significance between disordered eating and body image scores.

Finally, weight and height information was gathered through self-reported data. With the use of self-reported data there is also increased risk of miscalculation. This is supported through the research of Herring et al., which found that those who misconceived their weight had greater weight gain during pregnancy beyond recommendations, despite BMI, but those who were in the higher BMI categories and misinterpreted their weight as lower had the most increases in weight.38
Implications for Future Research

This research is important for health care professionals to take note of within the population of postpartum mothers, as eating behaviors influence the mothers’ and infants’ well-being. Closer monitoring of these mothers’ nutritional health and body satisfaction may help with prevention efforts to limit disordered eating behaviors that may impact the nutritional status of these women’s children.

While this research did not consider other factors that may play a role in postpartum eating behaviors, body satisfaction, and weight, several merit consideration. These factors include breastfeeding, delivery type, mental health, incidence of twins, and socioeconomic status. For example, Jarlenski, Bennett, Bleich, Barry, and Stuart found that exclusive breastfeeding for a minimum of three months postpartum led to slightly higher levels of weight loss than non-exclusive breastfeeding mothers. In addition, Franko and Blais et al. found that disordered eating during pregnancy may impact method of delivery and mental health by increasing the chance of caesarian delivery and postpartum depression.

For future studies, these topics should be acknowledged in conjunction. Also, a prospective study investigating eating behaviors and body satisfaction before, during, and after pregnancy may reveal further information on risk factors for disordered eating behaviors and body dissatisfaction among women and reveal at what point these women have the greatest risk of developing disordered eating behaviors and low body satisfaction.
Summary

Maternal eating behaviors and weight status are important in promoting fetal and infant health and growth and preventing disease in children’s lives. Results of this research found that disordered eating behaviors and body dissatisfaction were positively correlated. Although no statistically significant difference was indicated between the BMI groups, results of this study suggest that BMI may make a slight difference in eating behaviors and body image due to higher mean ranks of normal-weight pre-pregnancy mothers compared to pre-pregnancy overweight and obese mothers, whereas others, such as Sperry, suggest that BMI does significantly correlate with eating behaviors. This could potentially be related to small sample size and BMI sample sizes that do not match the general population. Results also indicate that the amount of weight gained during pregnancy, the time frame since delivery, and exercise are associated with eating and body-related health issues.

Further research is needed to address BMI, eating behaviors, and body satisfaction while addressing other aspects such as mental health, socioeconomic status, and breastfeeding practices. As a result of new mothers having multifactorial associations with eating behaviors, it is justifiable that nutrition professionals thoroughly complete the nutrition care process in entirety to provide these women with preventative care. Since overweight women are gaining weight beyond recommendations, this is also a relevant area for nutrition professionals to intervene and promote safe weight gain and postpartum weight loss practices.
In evaluating and promoting postpartum health, it is important for nutrition professionals and other health care providers to assess women during pregnancy and the postpartum period for disordered eating and body dissatisfaction by investigating their lifestyles and eating behaviors and their weight histories.
REFERENCES


APPENDIX A

REVIEW OF LITERATURE
This review presents analysis of factors related to disordered eating behaviors and increased body dissatisfaction among women prior to pregnancy, throughout the period of pregnancy, and also during the postpartum period. The following topics will be presented in this review. Some of the influential factors to consider pertaining to women’s health and pregnancy may include the updated guidelines for weight gain during pregnancy that provide data related to postpartum weight and BMI. Other components may include weight retention post-pregnancy, the mother’s desire to return to pre-pregnancy weight, socioeconomic status, race/ethnicity, and social support/influences pre-pregnancy and pregnancy eating behaviors and body satisfaction levels during the postpartum period. Overall, the importance of these factors may be associated with and supported by the Life Course Framework that details associations between biological, behavioral, psychological, and socioenvironmental components that may prevent or increase risks related to an individual’s health over his or her existence.¹

Pregnancy and Weight Status

In relation to weight gain during pregnancy, Bagheri et al. investigated associations in weight gain and body satisfaction in pregnant women, including just over 360 participants divided into two groups based on level of weight gained during their pregnancies. The women
were categorized as mothers who gained above levels for recommendations for pregnancy weight gain and those who appropriately fit the Institute of Medicine’s weight gain recommendations. Each participant was within the 35-41 weeks gestational period and attended the Shahid Akbarabadi Hospital for Medical Services. The Body Image Assessment for Obesity (BIA-O) provided a means for collecting body size satisfaction levels of the women prior to pregnancy and comparing these results to their amount of weight gained during pregnancy. Overall, results indicated that women with fondness towards thinner body sizes had amounts of weight gain that exceeded the IOM’s recommendations. Bagheri et al. suggested further research may be required to gather information on associations with alterations in women’s beliefs about their body sizes and if they could influence the number of women who gain weight during pregnancy over the recommended levels.²

However, in consideration of pregnancy weight gain and postpartum weight status, Gjerdingen, Fontaine, Crow, McGovern, Center, and Miner completed an analysis of a randomized, controlled prospective longitudinal study with over 500 women to assess mothers’ unhappiness in relation to their bodies over the postpartum period up to 9 months after giving birth. Participants in this research took part in completing surveys at 0-1 and 9 months postpartum. Postpartum alterations in body discontent as well as weight were analyzed via paired t tests, whereas predictors of body dissatisfaction post-birth were categorized by stepwise multiple regression analysis. Results indicated that women lost an average of 10 lbs at 9 months after birth, but their weight at this time was still an average of just over 5 lbs heavier than their pre-pregnancy weights, suggesting perhaps that there may be additional barriers to weight loss as
time progresses. Some of these barriers may hold psychological relevancy, as research has indicated that women in the overweight category were more likely to experience greater anxiety during the fourth month of the postpartum period and depression during the fourth and also fourteenth months of the postpartum.4

Specifically, in regards to weight retention, Shrewsbury, Robb, Power, and Wardle completed research on weight status pertaining to socioeconomic standing of over 950 women during a period of approximately 8 months after giving birth. Self-report questionnaires were utilized to collect participant information and ANOVA/Kruskal-Wallis H tests, independent samples t tests/Mann-Whitney U tests, ANCOVA tests, and chi-square linear-by-linear statistics were utilized to analyze results from participants’ reports. Results found that greater levels of weight retention occurred in women of middle to lower SES (socioeconomic standing), despite that these women had similar weight increases during pregnancy.5

Additionally, Walker and Freeland-Graves conducted research comparing results from 207 women at the 4-month period after giving birth through the analysis of survey responses sent to participants via non-electric mail. Results found that when differentiating between the weight statuses of new mothers who bottle feed versus breastfeed, one particular feeding group did not significantly associate with postpartum weight gain. Of the mothers who did have higher levels of weight gain from pregnancy, weights were associated with less physical activity patterns among the new mothers.6 Overall, BMI and weight status of new mothers may be associated with weight retention, eating behaviors, physical activity, and body image dissatisfaction and may be influenced by SES factors, but may not necessarily be influenced by the mother’s
breastfeeding patterns, providing support for the inclusion of such variables into the present research.

Sociocultural and Socioeconomic Factors

Notably, there are various sociocultural and socioeconomic factors that may influence women in the postpartum period, which may include race and ethnicity, socioeconomic standing (SES), and adjusting to new roles as a mother. In relation to race and ethnicity, the National Academy of Sciences did not find variances in weight gain throughout pregnancy between mothers of various races and ethnicities or birth consequences related to pregnancy. However, Shoim, Hetherington, Rudolf, and Feltbower utilized a five-part questionnaire in researching self-esteem, body perception, and eating behaviors among 110 pregnant women in Israel and the United Kingdom. The specific questionnaires utilized within this research were sociodemographic data, the Rosenberg Self-Esteem Questionnaire, Dutch Eating Behaviour Questionnaire, Stunkard Figure Rating Scale (Body Image Scale), and Body Image Disturbance Questionnaire. Results from such questionnaires were analyzed using regression modelling. The results suggested body image and BMI correlations among Israeli women, in that those with higher BMIs, had greater levels of body dissatisfaction.

In regards to SES, Shrewsbury, Robb, Power, and Wardle found that women with greater SES levels have been shown to participate more in examining their weights and felt that they were able to reach their pre-pregnancy weight, but SES did not show significance in body dissatisfaction and the number of women trying to lose weight. This suggests that women with
higher SES felt that they were better educated on weight and pregnancy but that the desire to change may not differ from women in other SES groups. Yet, it may also be important to consider risk for disordered eating of postpartum women with lower SES standing and that these women may not have the education related to nutrition and they also may not have access to healthful foods. This re-emphasizes the need for research into the importance of providing education to this population.

In regards to social roles, Hodgkinson, Smith, and Wittkowski noted that women have reported that they feel that the physical changes in the role of a new mother vary differently than that of a spouse or a career woman. This may hold significance, as the mothers may change their behaviors to adapt to new responsibilities that the role of mother involves, while possibly having to maintain the role of the spouse as well, which may create added stress that the mother then has to cope with somehow. Perhaps, this may occur through eating less or more than she normally would anteceding her pregnancy. These factors are significant to consider in any research, as there are wide ranges that are found within the population that may contribute to specific results related to self-identified cohorts that may require additional assistance or resources to increase health and well-being of the mothers and infants.

Furthermore, reports vary on the timing of interest with maternal weight status and eating behaviors. Sperry suggested to extend investigations of sociocultural forces, body image, eating disturbance and mood across the final stages of pregnancy through the postpartum period into later motherhood, whereas Shoim et al. suggested to investigate more upon the demographic that includes woman classified in the categories of overweight or obese to assess
self-image concerns. The added social responsibilities of motherhood may prompt new mothers to reprioritize their behaviors, but as a whole, research reports that rates of weight gain during pregnancy are not related to race or ethnicity, but SES may influence the level of weight monitoring by mothers during the postpartum period and body dissatisfaction levels during this period are not influenced by SES.

Eating Disorder Behaviors and Pregnancy

Not only are the mothers’ body satisfaction and eating behaviors relevant to their health and well-being after pregnancy, the women’s preconception diets and body attitudes prior to pregnancy and during pregnancy are important as well. Results of the research of Easter et al. indicated that through pregnancy, just under 8% of pregnant women were diagnosable with disordered eating, over 20% of women indicated elevated weight and shape concern, almost 9% encouraged binge eating, and just over 2% reported engaging in disordered eating behaviors. In relation to perception and psychological concerns, Patel, Lee, Wheatcroft, Barnes, and Stein used qualitative research from 21 mothers at varying levels on the eating disorder continuum as a means of categorizing data in the form of a survey connected to eating attitudes and behaviors and interviews regarding eating behaviors, body shape, and weight. Results revealed that mothers with disordered eating behaviors were more likely to view external environments negatively and hold higher criticism levels of themselves. Results also showed that those with less or no eating disorder behaviors were better enabled to discuss how alterations in
their body shapes impacted them, how they felt about the loss of their previous selves, and that they were better enabled to put the child’s needs before the needs of their body satisfaction, as with breastfeeding. Mental conditions may influence perceptions related to pregnancy, and mothers with disorders of the mind are often left without treatment and may not even receive a diagnosis for their condition. This information supports the great need for assessment of mothers’ well-being in order to potentially help prevent health complications during pregnancy.

Not only does disordered eating influence the mother, but it also affects the infant in that women with disordered eating are found to have infants with reduced birth weights. However, the research of Hoffman, Bentley, Hamer, Hodges, Ward, and Bulik, which involved a non-randomized cohort, in which 50 participants, half of which had prior eating disorder behaviors, found dissimilar information that may support that mothers’ disordered eating patterns may not affect the infant’s weight, in regards to infant feeding practices after birth. Data for this research was gathered through the self-report measures of the Infant Feeding Styles Questionnaire and a variation of the Toddler Diet Questionnaire based on a previous WIC (Women, Infants, and Children) questionnaire. The results of this data suggested that mothers who had previous eating-related issues had lower scores on a restrictive feeding gauge than those who did not have prior eating issues and that the diets of their children were not significantly different than those who did not have eating issues. However, these individuals did have increased tendencies of using a particular restrictive technique, like restricting processed foods, yet, these results may have been due to a lower sample size. These findings may then be supported by the findings of Patel and
others that the child’s needs for these women may be placed above their own disordered eating behaviors.\textsuperscript{12, 15}

Conversely, other research has indicated that mothers with disordered eating behaviors in the postpartum period are more likely to have children with lower weights than those not engaging in disordered eating during this time. Elevated levels of discord at meals and increased distress of the mothers over their shape were also associated with lower infant weights.\textsuperscript{14, 16}

On the other hand, in relation to the continuation of disordered eating behaviors, specifically the research of Lee et al., found that if an individual has disordered eating prior to becoming pregnant, she is more likely to continue that disordered eating behavior to the postpartum period, especially in association with bulimia nervosa (BN).\textsuperscript{17} As a whole, this research may exhibit data that prior and continued disordered eating behaviors throughout pregnancy have been shown to increase risks for continued disordered eating after pregnancy as well and may influence the child’s weight and the child’s feeding practices, which may affect the overall well-being and health of the mother and the child.

Coping Mechanisms, Body Perceptions, and Body Satisfaction

Also, investigating women’s perception of their weight gain is valuable, as if a woman is enabled to identify a particular reason for the increase in weight that is acceptable, then she may not have reduced levels of body satisfaction. This may be supported by the work of Hodgkinson, Smith, and Wittkowski, who reviewed over 20 different studies that included a postpartum
period through a mixed qualitative fashion and found reports that, having feelings of lost control of the physical self during pregnancy and in order to cope with body dissatisfaction in the postpartum period, women will distinguish between “fatness” and weight gain as an effect of the pregnancy. This coping mechanism has been supported through a social constructive ideal to recognize that women will differentiate this as a means of protecting their level of content with their body image.\(^9\) Coping mechanisms are relevant to the present research, as an inability to cope with stressful factors places individuals at greater risk for disordered eating.

As such, this coping mechanism may then not pertain to all women and even though women are aware of body changes related to pregnancy, they may often have body discontent during the postpartum period. This may be exemplified through the work of Sperry, which suggested that mothers with higher post-pregnancy BMIs have more eating, shape, and weight concerns and general eating disorder symptoms, even though BMI did not necessarily relate to dietary restraint.\(^10\) However, Sperry also reported that BMI, perceived stress, and physical activity level contributed to predictions in the various differences in the levels of the results.\(^10\) Likewise, Walker and Freeland-Graves suggested that being able to emotionally cope was negatively associated to the new mothers’ postpartum body image discontent despite whether they breast or bottle fed their children.\(^6\)

Comparably, Knoph et al. evaluated 77,807 pregnant women who participated in the Norwegian Mother and Child Cohort Study and utilized the DSM-IV criteria to determine the type of disordered eating and predisposing and perpetuating factors that contribute to eating disorders experienced by the mothers. The results indicated that BMI and mental stressors have
been associated with the progression of binge eating disorder (BED) that may create a connection between eating habits, weight retention, and BMI. Similarly, Von Soest and Wichstrøm evaluated associations with being a mother and eating complications of just over 1,200 Norwegian women in a longitudinal study over a six-year time frame. Through assessment of the data by a growth curves analysis, Von Soest and Wichstrom discovered that women with children exhibited less issues with eating, but content in self-appearance was found to be less prevalent among mothers, which may then potentially affect eating behaviors of mothers.

In further connection to the body satisfaction of new mothers, the work of Sperry, Walker and Freeland-Graves supported the notion that body satisfaction among new mothers may be multifaceted and changes based upon the individual mother, yet Gjerdingen, Fontaine, Crow, McGovern, Center, and Miner’s research supports that time may also play a role in the body dissatisfaction of new mothers. Gjerdingen, Fontaine, Crow, McGovern, Center, and Miner discovered that levels of body dissatisfaction of new mothers rose significantly from the one to nine months after birth. Body dissatisfaction in the postpartum period up to 9 months also displayed links with excessive eating, reduced appetite, increased weight, lower mental well-being, race (excluding African Americans), bottle feeding, having a single marital status, and having fewer children. The works of Sperry, Walker and Freeland-Graves, and Gjerdingen et al. suggested a necessity to gather data at different intervals of the postpartum period and include a variety of physical, sociocultural, and economical components in assessing the body satisfaction of new mothers during the postpartum period.
Summary

In summation, this review of current research suggested that women’s weight status prior to, throughout, and after pregnancy; BMI; and sociocultural and socioeconomic factors, as well as prior eating disorder history, ability to cope with bodily changes, and perception of their bodies, may all influence mothers’ eating habits and body satisfaction levels. It may be hypothesized that women with elevated pre-pregnancy BMIs may exhibit disordered eating behaviors and lower levels of body satisfaction during the postpartum period than women who are within the normal BMI range. In other words, it may be hypothesized that women who have higher levels of body dissatisfaction may be more likely to engage in disordered eating behaviors during the postpartum period. The present research considered factors related to disordered eating behaviors post-pregnancy, pre-pregnancy and post-pregnancy BMI and weight status, body satisfaction, perceived body size, and the mothers’ desire to lose weight.
REFERENCES


APPENDIX B

SCREENING SURVEY
Screening Survey

Screening Questionnaire for Eating Behaviors and Body Satisfaction Research

This information will be utilized as research in a dietetic graduate student’s thesis research at Northern Illinois University and will only be utilized for research purposes. Although the completion of these questions is highly appreciated, you are not obligated to answer them and may stop completing the questionnaire at any time. Completion of this document will serve as consent to take part in this study. Thank you for your consideration and participation.

Are you enrolled in the Swedish American Health System/Did you give birth at the Swedish American Hospital?
Yes  No  Currently Enrolling  Other (Please indicate where you gave birth) ______________

What is your child’s birthday?

Did you turn at least 18 before your child was born?

Are you comfortable reading and speaking English?

Has a health care professional ever told you that you have an Eating Disorder or a Body Image Disorder?

What was your pre-pregnancy weight?

What was your weight at the time of delivery (or the last month of pregnancy)?

Please list your current weight (in pounds) and height (in feet).

*If you have any questions, comments, or concerns about this research, please contact Erika Oltmanns at (815) 218-3365, Dr. Beverly W. Henry at (815) 753-6157, or the NIU Office of Research Compliance at (815) 753-8588 for more on subjects’ rights.
APPENDIX C

IRB APPROVALS
June 30, 2016

Erika Oltmanns
162 Prairie Moon Drive
Davis Junction, IL

RE: IRB APPROVAL OF PROPOSED STUDY

Dear Ms. Oltmanns:

Please be advised that the SwedishAmerican Hospital Institutional Review Board approved your request for research at its meeting on this date. A one year approval has been granted to your protocol, “Eating Behaviors and Body Image of Women During the Postpartum Period”.

In this interim period of approval, you are reminded that any changes in research activity or changes in approved research may not be initiated without IRB approval. Any adverse reactions encountered in this study are to be reported immediately to the IRB.

This study will be reviewed in June of 2017. A progress report, or final report must be provided to the IRB via Anna Frank in the Office of Clinical Research no later than the last week of May, 2017, or at the end of the study if it precedes that date. Failure to provide this update will result in termination of study approval.

This signature certifies that the information contained in this IRB notice is true and correct as verified by the minutes and records of the SAH IRB. It also certifies that the SAH IRB is in full compliance with the FDA Code of Federal Regulations, GCP Guidelines and ICH Guidelines. Thank you for presenting this interesting protocol.

If you have any questions, please feel free to contact me.

Sincerely,

Anna Frank, Research Coordinator
SwedishAmerican Hospital

3405 Fair Street, Rockford, Illinois 61104-2315 Phone (815) 964-4400 www.swedishamerican.org
A Teaching Hospital Affiliated With The University Of Illinois College Of Medicine At Rockford

"Through excellence in healthcare and compassionate service, we care for our community."
Exempt Determination

29-Jun-2016
Erika Oltmanns
Family, Consumer and Nutrition Sciences

RE: Protocol # HS16-0230  "Eating behaviors and body image of women during the postpartum period"

Dear Erika Oltmanns,

Your application for institutional review of research involving human subjects was reviewed by Institutional Review Board #2 on 29-Jun-2016 and it was determined that it meets the criteria for exemption, as defined by the U. S. Department of Health and Human Services Regulations for the Protection of Human Subjects, 45 CFR 46.101(b), 2.

Although this research is exempt, you have responsibilities for the ethical conduct of the research and must comply with the following:

Amendments: You are responsible for reporting any amendments or changes to your research protocol that may affect the determination of exemption and/or the specific category. This may result in your research no longer being eligible for the exemption that has been granted.

Record Keeping: You are responsible for maintaining a copy of all research related records in a secure location, in the event future verification is necessary. At a minimum these documents include: the research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to participants, all correspondence to or from the IRB, and any other pertinent documents.

Please include the protocol number (HS16-0230) on any documents or correspondence sent to the IRB about this study.

If you have questions or need additional information, please contact the Office of Research Compliance and Integrity at 815-753-8588.
APPENDIX D

APPROVAL OF USE OF INSTRUMENTS
EDE Q 6.0 Approval

From:  Erika Oltmanns <z1608505@students.niu.edu>
Date:  Friday, 4 March 2016 at 19:46
To:  "christopher.fairburn@psych.ox.ac.uk" <christopher.fairburn@psych.ox.ac.uk>
Subject:  Approval for use of the EDE-Q 6.0

Hello Professor Fairburn,

My name is Erika Oltmanns. I am a graduate student and dietetic intern at Northern Illinois University. I am currently working on my thesis and am interested in exploring disordered eating behaviors and body satisfaction levels among mothers during the postpartum period. I was interested in utilizing the EDE-Q 6.0 as an instrument in my research and was wondering how I might go about obtaining approval for the usage of this questionnaire and methods for scoring results. Any information or help would be greatly appreciated. I look forward to hearing from you.

Thank you very much,

Erika Oltmanns
Northern Illinois University Dietetic Intern

Christopher Fairburn <highwall@medsci.ox.ac.uk>  Mar 10

That’s fine – Please see our website.

*******************************************************************************

Professor Christopher G Fairburn, FMedSci, FRCPsych
Centre for Research on Eating Disorders at Oxford
Warneford Hospital
Oxford OX3 7JX
UK
credo-oxford.com

*******************************************************************************
BIQ Approval

Your Body Image Assessment (BIQ)

From: Body Images body-images@comcast.net
To: Erika Oltmanns;
body-images@comcast.net; 2/23/2016

BIQ Manual.pdf119 KB BIQ Questionnaire.pdf10 KB
2 attachments (128 KB)

Dear Erika,

I thank you for your order of the body-image assessment(s) indicated below on your invoice. These materials are attached as one or more viewable/printable "pdf" (Adobe Acrobat) files. If needed, download Adobe Acrobat Reader free from http://www.adobe.com/products/acrobat/readstep.html.

Your purchase of this individual user's license grants you permission to use the materials in your research for a period of 2 years with a total of no more than 1000 administrations (e.g., 1000 participants completing the assessment on one occasion; 500 participants completing the assessment on two occasions; etc.). Materials may not be provided to other researchers for their use.

Commercial use (for ultimate profit) is prohibited, as it requires a commercial license.


Finally, for your consideration, I'd like to make you aware of the peer-reviewed scientific journal "Body Image: An International Journal of Research." For more information, see the journal's website at http://www.elsevier.com/locate/bodyimage.

My best wishes in your body-image research.

Sincerely,
Thomas F. Cash, Ph.D.
Body-Images Research Consulting
Naples, Florida
email: [body-images@comcast.net]body-images@comcast.net
APPENDIX E

OPEN-ENDED QUESTIONS: PIE CHARTS
Figure 2. How many children do you have?

Figure 3. Do you exercise?
Figure 4. What is your favorite food?
The EDE-Q 6.0

The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all of the questions. Thank you.

On how many of the past 28 days…..

<table>
<thead>
<tr>
<th></th>
<th>No Days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15 days</th>
<th>16-22 days</th>
<th>23-27 days</th>
<th>Every Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Have you had a definite desire to have a totally flat stomach?</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Has thinking about food, eating,</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>


or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)? 0  1   2  3  4  5  6

8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following, a conversation, or reading)? 0  1   2  3  4  5  6

9. Have you had a definite fear of losing control over eating? 0  1   2  3  4  5  6

10. Have you had a definite fear that you might gain weight? 0  1   2  3  4  5  6

11. Have you felt fat? 0  1   2  3  4  5  6

12. Have you had a strong desire to lose weight? 0  1   2  3  4  5  6

For the following questions, please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).

13. Over the past 28 days, how many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)?

____________________________

14. On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)?

____________________________

15. Over the past 28 days, on how many days have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)?

____________________________

16. Over the past 28 days, how many times have you made yourself sick (vomit) as a means of controlling your shape or weight?
17. Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?

18. Over the past 28 days, how many times have you exercised in “driven” or “compulsive” ways as a means of controlling your weight, shape or amount of fat, or to burn off calories?

Please circle the appropriate number. Please note that for these questions the term “binge eating” means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

<table>
<thead>
<tr>
<th>Days</th>
<th>No Days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15 days</th>
<th>16-22 days</th>
<th>23-27 days</th>
<th>Every Day</th>
</tr>
</thead>
</table>

19. Over the past 28 days, on how many days have you eaten in secret (i.e., furtively)? Do not count episodes of binge eating.

20. On what proportion of the times that you have eaten have you felt guilty (felt that you’ve done wrong) because of its effect on your shape or weight? Do not count episodes of binge eating.

21. Over the past 28 days, how concerned have you been about other people seeing you eat? Do not count episodes of binge eating.

Please circle the appropriate number on the right. Remember that the questions only refer to the past four weeks (28 days).

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Slightly</th>
<th>Moderately</th>
<th>Markedly</th>
</tr>
</thead>
</table>

22. Has your weight influenced how you think about (judge) yourself as a person?

23. Has your shape influenced how you think about (judge) yourself as a person?
24. How much would it have upset you if you had been asked to weigh yourself once a week (no more or less often) for the next four weeks?

25. How dissatisfied have you been with your weight?

26. How dissatisfied have you been with your shape?

27. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?

28. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?
APPENDIX G

THE BIQ
The BIQ

For the next several questions, think about how you would describe yourself as you actually are. Then think about how you wish you were. On Part A of each item, rate how much you resemble your personal physical ideal circling a number from 0 to 3. On Part B of each item, rate how important your ideal is to you by circling a number on the 0 to 3 scale.

1. A. My ideal height is:

   0     1     2     3
   Exactly As I Am  Almost As I Am  Fairly Unlike Me  Very Unlike Me

   B. How important is your ideal height?

   0      1      2      3
   Not Important  Somewhat Important  Moderately Important  Very Important

2. A. My ideal skin complexion is:

   0      1      2      3
   Exactly As I Am  Almost As I Am  Fairly Unlike Me  Very Unlike Me

   B. How important is your ideal skin complexion?

   0      1      2      3
   Not Important  Somewhat Important  Moderately Important  Very Important

3. A. My ideal hair texture and thickness are:

   0      1      2      3
   Exactly As I Am  Almost As I Am  Fairly Unlike Me  Very Unlike Me

   B. How important is your ideal hair texture and thickness?

   0      1      2      3
   Not Important  Somewhat Important  Moderately Important  Very Important
4. A. My ideal facial features (eyes, nose, ears, facial shape) are:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me

B. How important to you are your facial features?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important

5. A. My ideal muscle tone and definition is:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me

B. How important to you is your ideal muscle tone and definition?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important

6. A. My ideal body proportions are:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me

B. How important to you are your ideal body proportions?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important

7. A. My ideal weight is:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me
B. How important to you is your ideal weight?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important

8. A. My ideal chest size is:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me

B. How important to you is your ideal chest size?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important

9. A. My ideal physical strength is:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me

B. How important to you is your ideal physical strength?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important

10. A. My ideal physical coordination is:

0 1 2 3
Exactly As I Am Almost As I Am Fairly Unlike Me Very Unlike Me

B. How important to you is your ideal physical coordination?

0 1 2 3
Not Important Somewhat Important Moderately Important Very Important
11. A. My ideal overall physical appearance is:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Exactly As I Am</td>
<td>Almost As I Am</td>
<td>Fairly Unlike Me</td>
<td>Very Unlike Me</td>
</tr>
</tbody>
</table>

B. How important to you is your overall physical appearance?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not Important</td>
<td>Somewhat Important</td>
<td>Moderately Important</td>
<td>Very Important</td>
</tr>
</tbody>
</table>
APPENDIX H

SOCIODEMOGRAPHIC INFORMATION SURVEY
Sociodemographic Information Survey

This information will be utilized as research in a dietetic graduate student’s thesis research at Northern Illinois University and will only be utilized for research purposes. Although the completion of these questions is highly appreciated, you are not obligated to answer them and may stop completing the survey at any time. Thank you for your participation.

Please fill in the following questions.

**How old did you turn on your last birthday?**

**What is the highest degree of school you have completed?**

- High school graduate diploma or GED
- Trade/technical/vocational training
- College degree
- I would prefer not to answer

**What is your marital status?**

- Single, never married
- Married or Domestic Partnership
- Widowed
- Divorced
- Separated
- I would prefer not to answer

**Please indicate which race/ethnicity that you identify yourself as:**

- African American/Black
- Caucasian/White
Hispanic/Latina
Native American/American Indian
Asian/Pacific Islander
Other
I would prefer not to answer

**Have you received nutrition education from a health care professional (such as a doctor, nurse, or dietitian) prior to pregnancy, during pregnancy, and/or post pregnancy?**

No- I did not receive nutrition education prior to pregnancy, during pregnancy, and/or post pregnancy

Yes- I received nutrition education at some point before, during, or after pregnancy

Yes- I received nutrition education before pregnancy, during pregnancy, and post pregnancy
APPENDIX I

RECRUITMENT FLYERS AND SOCIAL MEDIA POSTS
Eating Behaviors and Body Image Research

The purpose of this research is to explore eating behaviors and body image satisfaction of new mothers during the postpartum period up through the six month period. This information will be utilized as research in a dietetic graduate student’s thesis research at Northern Illinois University and will only be utilized for research purposes only. Although the completion of these questions is highly appreciated, participation in this study is completely voluntary, you may stop completing the questions at any time, without penalty. There are no foreseeable risks expected for participants taking part in this study. This study may benefit women’s health by gathering information of new mother’s eating behaviors and body image. Participants’ responses to the questions asked in this research will remain confidential and will only be utilized in presenting research findings as a whole. By going to the following link and completing the screening survey, these actions serve as your consent to take part in this study. Full completion of the surveys may take an estimated 30-45 minutes.

Thank you for your consideration and participation.

**Step 1:** Click on the following link:
https://qtrial2016q3az1.az1.qualtrics.com

**Step 2:** Complete a brief screening survey for eligibility into the study.

**Step 3:** Complete the survey questions related to eating behaviors.

**Step 4:** Complete the survey questions related to body image.

**Step 5:** Complete the sociodemographic survey.

Thank you again and have a great day!

If you have any questions or problems accessing the link, please send an e-mail to eford@niu.edu for more information. If you have any questions, comments, or concerns about this research, please contact Erika Oltmanns at (815) 218-3365, Dr. Beverly W. Henry at (815) 753-6157, or the NIU Office of Research Compliance at (815) 753-8588 for more on subject’s rights.
Facebook Posts

- Hello Mommas out there. If you have given birth at Swedish American Hospital in the past six months, I would appreciate your help in answering some questions for my thesis project for NIU. The survey is completely voluntary and you can stop at any point. The questions pertain to eating behaviors and body image. No worries, because your answers will remain completely confidential! Spread the word to family and friends! Check it out at:

- Hello again! I am now opening my survey up to new mommas that have given birth within the past six months to Winnebago County that includes Swedish American Hospital, Rockford Memorial Hospital, and OSF St. Anthony's Hospital. Please share with family and friends! All responses will remain confidential and the survey is completely voluntary, meaning you can stop at any time. On average, it has taken people less than 20 minutes to complete. I would appreciate your consideration and time! Thanks!!!!!!!

- Hello All! Sorry to be a bother again, but I updated my survey for my thesis. If you have already completed it, I would greatly appreciate it, if you wouldn't mind filling it out again. Opening up to all new mothers that have delivered in the past 6 months at any hospital in Northern Illinois! If you haven't completed it, please consider doing so or sharing it with friends and family. It takes less than 20 mins and answers remain anonymous. It is related to eating behaviors and body image of new mothers. Thanks again!

- If you haven't seen this yet, please share with friends and family! I still need several participants. I highly appreciate all the help that many of you have offered and done! Hello Mommas out there. If you have given birth at Swedish American Hospital in the past six months, I would appreciate your help in answering some questions for my thesis project for NIU. The survey is completely voluntary and you can stop at any point. The questions pertain to eating behaviors and body image. No worries, because your answers will remain completely confidential! Spread the word to family and friends! Check it out at!

- Hello All! My survey is open to all Mommas with little ones that are 6 months or younger that were delivered in Northern Illinois! The survey closes in less than one week! If you haven't completed it, please consider doing so or sharing it with friends and family. It takes less than 20 mins and answers remain anonymous. It is related to eating behaviors and body image of new mothers. Thanks again!
APPENDIX J

EDE-Q SUBSCALE ITEMS
EDE-Q Subscale Items

Restraint

1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?

2. Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?

3. Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?

4. Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?

5. Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?

Eating Concern

7. Has thinking about food, eating, or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?

9. Have you had a definite fear of losing control over eating?

19. Over the past 28 days, on how many days have you eaten in secret (i.e., furtively)? Do not count episodes of binge eating.

20. On what proportion of the times that you have eaten have you felt guilty (felt that you’ve done wrong) because of its effect on your shape or weight? Do not count episodes of binge eating.

21. Over the past 28 days, how concerned have you been about other people seeing you eat? Do not count episodes of binge eating.
Shape Concern

6. Have you had a definite desire to have a totally flat stomach?

8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following, a conversation, or reading)?

10. Have you had a definite fear that you might gain weight?

11. Have you felt fat?

23. Has your shape influenced how you think about (judge) yourself as a person?

26. How dissatisfied have you been with your shape?

27. How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?

28. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?

Weight Concern

8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following, a conversation, or reading)?

12. Have you had a strong desire to lose weight?

22. Has your weight influenced how you think about (judge) yourself as a person?

24. How much would it have upset you if you had been asked to weigh yourself once a week (no more or less often) for the next four weeks?

25. How dissatisfied have you been with your weight?