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MIDLIFE FEMALE URINARY INCONTINENCE AND THE INTIMATE DYAD

by

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DISSERTATION

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DEDICATION

This work is dedicated to all the women and partners who generously shared with me their perceptions about living and coping with urinary incontinence as a couple. It is my sincere hope that their insights offer validation and support, and suggest solutions for others living with this condition.

This work is also dedicated to the two most important women in my life: my mother, Elaine Jean Cushman, who taught me about humility, integrity, compassionate work, and the value of planning; and my daughter, Rose Emily DuCharme, who challenged me to recognize when to let the plans go, engage in the creative joy of exploration, and persevere. I cherish you both.

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ABSTRACT

Urinary incontinence is a major health concern for midlife women, with demonstrated effects on self-concept, life-style, and sexual function. The purpose of this study was to explore the effect of midlife female urinary incontinence on the intimate dyad from a chronic illness perspective. The Corbin and Strauss Collaborative Chronic Illness Trajectory Model identifies biographical and relationship work engaged in when coping with a chronic health condition in the context of an intimate relationship. The specific aims of this study were to explore potential associations among urinary incontinence symptom severity, relationship satisfaction, biographical work factors (self-esteem, body image, depression, anxiety), and relationship work factors (relational ethics, sexual quality of life, incontinence-related communication) for insights into the impact of female urinary incontinence on the intimate dyad.

Community-based, purposive, snowball recruitment resulted in enrollment of 57 women and 43 partners who completed anonymous, mailed surveys. Quantitative data were collected through completion of established instruments chosen as operationalized measures of theoretically-derived concepts. Qualitative data were collected through open-ended questions.

No significant associations were found between urinary incontinence symptom severity and relationship satisfaction, measures of biographical work, or measures of relationship work. Women's biographical variables and relationship variables demonstrated moderate to strong correlations with each other (with the exception of self-esteem and incontinence-related communication) and with relationship satisfaction. Partners' incontinence-related communication scores demonstrated moderate to strong correlations with all women's biographical measures and all partners' relationship measures. Regression analyses demonstrated significant, unique contributions of relational ethics, sexual quality of life, and women's depression to the variance in relationship satisfaction scores. Women's and partners' scores on measures of the intimate relationship were not significantly different. Word frequency and themes identified in answers to open-ended questions demonstrated that the most frequently reported concerns by women and partners who scored in the distressed category for relationship satisfaction were women's avoidance of intimacy and loss of spontaneity in shared activities.

This study offers insights into the relative contributions of factors that may affect relationship satisfaction for couples coping with female urinary incontinence. Further research is needed to better understand interrelationships among biopsychosocial factors involved in urinary incontinence symptom management.

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CHAPTER 1: INTRODUCTION AND OVERVIEW

Introduction

Urinary incontinence is a major health concern for women aged 45-65, with reported incidence rates of 15-56.9% (Bradley, Kennedy, & Nygaard, 2005; Morrill et al., 2007; Nygaard et al., 2008). Urinary incontinence goes undisclosed by 10-50% of affected women (Davis, 2010; Dugan et al., 2001; Kinchen et al., 2003; Morrill et al., 2007). Urinary incontinence is a significant source of morbidity in the midlife and early-aging years among U.S. women, and can affect their physical, economic, and psychosocial health. Although the impact of incontinence symptoms on a woman's self-concept, body image, self-esteem, life-style, emotional health, and sexual function have been well documented, the effects of female urinary incontinence on the midlife intimate dyad remain underexplored. Because psychosocial factors have the potential to significantly affect interpersonal relationships, an assessment of the effects of female urinary incontinence on the interpersonal experiences of the intimate dyad is warranted.

Statement of the Research Problem

The purpose of this study was to explore the effects of female urinary incontinence on the midlife woman's relationship with her intimate partner. Quantitative data were collected from women experiencing urinary incontinence regarding their incontinence symptom severity and relationship satisfaction. Additional quantitative data were collected from women with urinary incontinence on psychological variables (self-esteem, body image, emotional health) and interpersonal variables (emotional nurturing, physical intimacy, and communication) to ascertain the potential for these variables to contribute mediating effects to a predicted association between symptom severity and relationship satisfaction. Data on relationship satisfaction and interpersonal variables were also obtained from women's partners to assess levels of congruence in perspectives between women and partners. Open-ended questions asked of both women and their partners provided qualitative data regarding perceived changes in the relationship related to coping with midlife female urinary incontinence symptoms.

Overview of the Theoretical Framework

The effect of female incontinence on the intimate partnership of the midlife dyad was explored from a chronic illness perspective. Taking a chronic illness perspective in studying the ongoing psychosocial impact of urinary incontinence has been previously recommended by Roe (2000). Many women do not navigate this illness trajectory alone, however, and must manage their incontinence in the context of their intimate and social relationships. Corbin and Strauss' Collaborative Chronic Illness Trajectory Model incorporates "actions taken by various participants to shape or control" the course of a chronic condition (Corbin, 1998, p. 35) and discusses the work that intimate partners must attend to in order to sustain their relationship (Corbin & Strauss, 1984; 1988). According to Corbin and Strauss (1991a), "Due to the reciprocal nature of the relationship between illness, biography, and everyday life activities, the nurse should locate the client on all three of these dimensions – and look for any possible interactive effects among them" (p. 168). This study explored associations between incontinence symptom severity and select attributes of self-identity/biography and intimate interpersonal relationships.

The psychosocial need to maintain one's sense of self and the interpersonal need to nurture one's intimate relationship may operate at cross purposes and challenge the couple’s ability to adjust to the symptom demands (Corbin & Strauss, 1984; 1988) of female urinary incontinence. Breakdown in dyadic collaboration may compromise the quality of the intimate relationship and, consequently, the individual’s quality of life. The mediating effects of factors associated with biographical work and relationship work on the nature and extent of the impact of a chronic health condition on the quality of the intimate dyad are not well understood.

Chronic health conditions such as female urinary incontinence require *biographical work*, also known as identity work, in order to cope and achieve optimal quality of life (Corbin, 1998; Corbin & Strauss, 1991a). Biographical work is comprised of self-concept in the context of social/interpersonal roles, performance failure, and life stage/role transitions (Corbin & Strauss, 1988). In the context of an intimate dyad, a chronic condition also requires *relationship work* to maintain the health and functioning of the intimate relationship (Corbin & Strauss, 1984; 1988). Perceptions of interactional stance between partners, commitment to the relationship, and alignment of perspective or view have been proposed as factors potentially affecting perceived quality of the intimate dyadic relationship (Corbin & Strauss, 1988).

The Corbin and Strauss Theory of Collaborative Chronic Illness Trajectory (Corbin & Strauss, 1984; 1988), a review of the literature on the impact of chronic illness on the intimate dyad, and the extensive body of literature discussing the psychosocial impact of female urinary incontinence informed the choice of mediating factors to be evaluated in this study of the impact of incontinence symptom severity on the dyadic relationship (see Figure 1-1). Women’s perceptions of incontinence symptom severity, quality of their intimate dyadic relationship, and the mediating factors identified in Figure

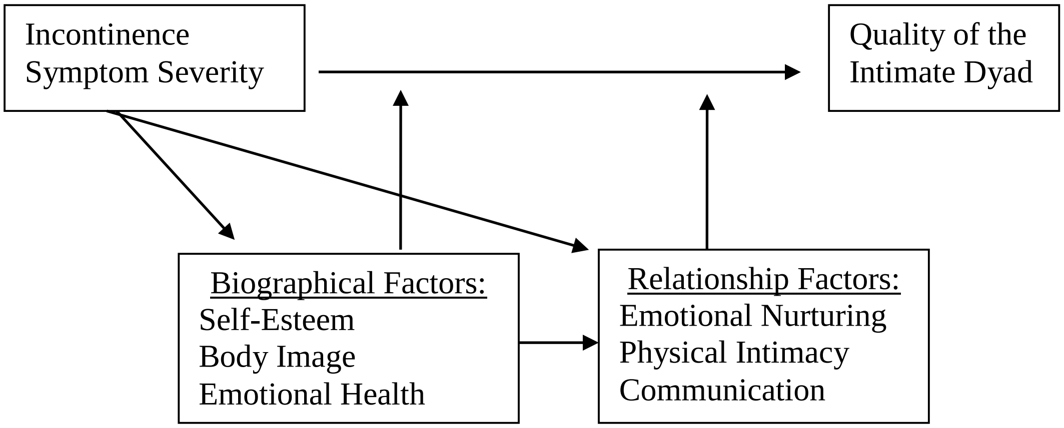

Figure 1-1. Constructs and relationships, as identified in the literature.

1-1 were analyzed based on the model of proposed relationships between these constructs. Select components of the model in Figure 1-1 were also explored from the partners' perspective. Partners' perceptions of the intimate dyadic relationship, in terms of quality and relationship work, were analyzed for congruence with the women's perceptions of these variables. Partners' perception of the relationship (quality of the intimate dyad, emotional nurturing, physical intimacy, and communication) were also examined for association with women's reported incontinence symptom severity and with woman's perceptions of biographical work factors.

Biographical work-related factors identified in the literature as significantly affected by living with urinary incontinence include the following threats to self-concept: *self-esteem* (Chiverton, Wells, Brink, & Mayer, 1996; Coyne, Margolis, Jumadilova, et al., 2007; Nicolson, Kopp, Chapple, & Kelleher, 2008), *body image* (Brown et al., 1998; Coyne, Margolis, Jumadilova, et al., 2007; Nilsson, Lalos, & Lalos 2009), and *emotional health* (Felde, Bjelland, & Hunskar, 2012; Melville, Delaney, Newton, & Katon, 2005). These three factors (*self-esteem*, *body image*, and *emotional health*) that are thought to contribute to the biographical work of living with midlife female urinary incontinence were assessed in this study. *Relationship work*-related factors identified in the literature as potential threats to the successful collaborative coping skills of intimate partners managing chronic illness symptoms or female urinary incontinence include the following interactional factors: *emotional nurturing* or empathy/trust/respect (Badr, Acitelli, & Taylor, 2007; Berg & Upchurch, 2007; Boland, Levack, Hudson, & Bell, 2012; Fekete, Stephens, Mickelson, & Druley, 2007; Goodwin, 1997), *sexual intimacy* (Barber, Dowsett, Mullen, & Viktrup, 2005; DuPont, 1996; Handa, Harvey, Cundiff, Siddique, &

Kjerulff, 2004; Hayder, 2012; Kralik, Koch, & Telford, 2001; Spring, Cudney, Weinert, & Winters, 2011; Yip et al., 2003), and *communication* or teamwork (Badr & Acitelli, 2005; Bediako & Friend, 2004; Checton, Greene, Magsamen-Conrad, & Venetis, 2012; Druley, Stephens, & Coyne, 1997; Garcia, Crocker, & Wyman, 2005; Hayder & Schnepp, 2010; Lal & Bartle-Haring, 2011; Spring et al., 2011). Relationship work-related factors explored in this study were chosen based on their ability to inform nursing interventions. The relationship dynamics that may be amenable to nurses' health promotion and patient education strategies include *emotional nurturing* of the relationship, maintaining the bonds of *physical intimacy*, and symptom-related *communication* patterns between intimate partners.

Aims of the Study

This descriptive, exploratory study examined the association between midlife female urinary incontinence symptom severity and the quality of the intimate dyadic relationship. This study also examined selected biographical work variables and relationship work variables for potential mediating effects in the predicted association between incontinence symptom severity and the quality of the intimate dyadic relationship. The findings are discussed in the context of the theoretical model proposed for this study.

Research Questions

To address the aims of this study, the following research questions were explored:

1a. To what extent is women's reported urinary incontinence symptom severity associated with women's perception of the quality of the intimate dyad?

1b. To what extent is women's reported urinary incontinence symptom severity associated with partners' perception of the quality of the intimate dyad?

2a. To what extent is women's reported urinary incontinence symptom severity associated with women's perceptions of biographical work variables?

2b. To what extent is women's reported urinary incontinence symptom severity associated with women's perceptions of relationship work variables?

2c. To what extent is women's reported urinary incontinence symptom severity associated with partners' perceptions of relationship work variables?

3a. To what extent are women's perceptions of biographical work variables associated with women's perceptions of relationship work variables?

3b. To what extent are women's perceptions of biographical work variables associated with partners' perceptions of relationship work variables?

4a. To what extent are women's perceptions of biographical and/or relationship work variables associated with women's perceptions of the quality of the intimate dyad?

4b. To what extent are women's perceptions of biographical work variables or partners' perceptions of relationship work variables associated with partners' perceptions of the quality of the intimate dyad?

5. To what extent do women's perceptions of biographical work variables and/or relationship work variables mediate the association between incontinence symptom severity and women's perception of the quality of the intimate dyad?

6a. To what extent is there congruence between women's and partners' perceptions of the quality of the intimate dyad?

6b. To what extent is there congruence between women and partners' perceptions of each of the relationship work variables?

7. What major themes are identified by women and their partners regarding changes in the relationship that they attribute to coping with female urinary incontinence?

Definition of Terms

The following definitions were used in this study:

Female Urinary Incontinence: involuntary loss of urine, by self-report. Stress incontinence, urgency incontinence, and mixed incontinence were all considered female urinary incontinence for the purposes of this study. Type of incontinence was identified by answers to Question 3 in the 3IQ (Brown, et al., 2006). Incontinence symptom severity was measured by the Incontinence Severity Index (Sandvik, Seim, Vanvik, & Huskaar, 2000).

Midlife Woman: a woman between the ages of 45-65, typically considered the post-childbearing years up to traditional retirement age. Age of the woman's partner was noted, but was not a factor for inclusion or exclusion in this study.

Intimate Dyad: a "woman and her partner" who have a self-defined committed romantic relationship and were currently co-habiting. The "woman" was the individual with urinary incontinence and "her partner" could have been either male or female. In this study, all women who participated identified their partners as male.

Quality of the Intimate Dyad: perceived satisfaction with the intimate dyadic relationship. The quality of the dyadic relationship was measured by the Couples Satisfaction Index-4 (Funk & Rogge, 2007).

Biographical Work: This construct was defined in this study as the process of integrating one's life story (past, present, and future) with the perceived changes wrought by symptom impact in order to create a sense of self as competent and whole. The following self-concept variables were considered components of biographical work:

Self-Esteem: the woman's current overall evaluation of her self-worth, as measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965).

Body Image: the woman's perception of the acceptability, normalcy, and satisfaction with the physical image of her body. This construct was measured by the Body Image Scale (Hopwood, Fletcher, Lee, & Al Ghazal, 2001) with language modified to apply to urinary incontinence, in a similar manner to what was done by Jelovsek and Barber (2006) for use with women with pelvic organ prolapse.

Emotional Health: presence of depressive symptoms or anxiety, as measured by the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983).

Relationship Work: This construct was defined as strategies that intimate dyads use to sustain and accommodate each other through the work of managing symptoms. The following interactional variables were considered components of relationship work:

Emotional Nurturing: a perception of balance in give-and-take, a sense of fairness, and trust that the relationship will offer a sense of justice or reciprocity in meeting the needs of both partners. The Relational Ethics Scale (Hargrave, Jennings, & Anderson, 1991) was used to measure the perceived level of emotional nurturing in the relationship.

Physical Intimacy: shared intimacy through physical contact designed to promote sexual pleasure within the relationship. Level of satisfaction with sexual intimacy was evaluated by the Sexual Quality of Life-Female (Symonds, Boolell, & Quirk, 2005) for the woman or the Sexual Quality of Life-Male (Abraham, Symonds, & Morris, 2008) for her male partner.

Communication: shared talk specifically about female urinary incontinence between the woman and her partner. Incontinence-related communication was assessed with a modified version of the Couples' Illness Communication Scale (Arden-Close, Moss-Morris, Dennison, Bayne, & Gidron, 2010).

Assumptions of the Study

The following assumptions were made for the study:

1. The theoretical framework was assumed to be an appropriate model in which to examine the phenomenon of interest.
2. Participants would accurately record their responses on the self-report measures.
3. Partners would independently complete their own self-report questionnaires.

Delimitations of the Study

The study was delimited by the following:

1. Only partnered midlife women were included.
2. Women participants determined whether or not they would agree to include their partner in the study. Each woman participating in the study was the sole person initiating possible inclusion of her partner in the study.
3. Data collection was delimited to participants living in the United States.
4. The study was delimited to self-report for the variables in this study.
5. The study design was delimited to a point-in-time analysis of participant perspectives and did not assess change over time.

Limitations of the Study

The study was most likely affected by unknown factors. Some of these factors are as follows:

1. Nonrandom sampling in this study limits the ability to generalize the findings.
2. It is not known if participants answered the questions without bias.
3. Women who were comfortable disclosing their incontinence may have been more likely to participate in this study.
4. Women who have disclosed their incontinence to their partner without negative consequence may have been more likely to seek inclusion of their partner in this study.
5. Partners who perceive high relationship satisfaction may have been more likely to consent to participate in this study.
6. It is not known what effect, if any, completion of the questionnaires had on subsequent responses to the open-ended questions.
7. Other confounding variables that could affect interpretation of the findings may have existed (e.g., testing effects, understanding of questions, response fatigue).

Significance of the Study

Although the negative effects of living with incontinence symptoms on a woman’s self-concept, body image, self-esteem, life-style, emotional health, and sexual function have been well documented, the impact of these factors on quality of the intimate dyadic relationship has not been sufficiently explored. Research on the impact of incontinence from the individual’s perspective has not resulted in substantial improvement in rates of incontinence symptom disclosure, care-seeking for incontinence concerns, or satisfaction with treatment options. Biographical and relationship factors involved in the trajectory of coping with urinary incontinence may affect the individual woman’s decision to disclose, seek care, or choose a treatment option. Biographical and relationship factors may also affect the individual woman’s self-efficacy in and adherence to health promotion strategies.

By the time a woman approaches a healthcare provider with concerns regarding urinary incontinence, she may have been living with symptoms for several years and may already be experiencing a significant impact on her quality of life. Improving quality of life may be more important to the woman (and her partner) than complete cure of the symptoms (Labrie, Fischer, & van der Vaart, 2012). Thus, an important assessment for the healthcare professional to make is of the impact of urinary incontinence on quality of life and treatment goals from the woman’s perspective (Srikrishna, Robinson, & Cardozo, 2009).

Current understanding of the lived experience of midlife female urinary incontinence emanates primarily from an individualistic perspective, without an understanding of how women manage symptoms within the context of their intimate relationships. Factors mediating successful interpersonal coping and incontinence management strategies in the context of the shared lives of an intimate dyad need to be more fully explored. This study offers a re-conceptualization of female urinary incontinence as a chronic condition requiring continual biographical and relationship work. A better understanding of the mediating effects of biographical work related to self-concept and relationship work related to intimate partners’ interactional patterns will help guide psychosocial health assessments of midlife women living with urinary incontinence. New strategies in offering support for midlife women presenting with urinary incontinence in the clinical setting may be suggested. The goal of this study was to support early identification, early intervention, and health promotion strategies for midlife women with urinary incontinence through a better understanding of the dyadic processes involved in urinary incontinence symptom management.

Overview of the Remaining Chapters

The second chapter presents an expansion of the theoretical framework for this study. Also presented in chapter 2 is the literature review, which describes the current state of knowledge regarding the physical and psychosocial effects of living with female urinary incontinence. Chapter 3 presents the study method and processes, including specific criteria for study inclusion, data collection, analysis, and storage. Chapter 4 presents the results of the data analysis. Chapter 5 presents a discussion of the findings of this dissertation research.

CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter presents a review of the literature pertinent to understanding the impact of midlife female urinary incontinence (UI) on the intimate dyad. The chapter is organized in the following manner. The first section presents a discussion of the etiology, prevalence, health consequences, risk factors associated with midlife female UI, and behavioral interventions for midlife female UI. The second section discusses midlife female UI as a chronic condition. This section reviews the impact of ongoing management of UI symptoms on the woman's quality of life. The third section presents the theoretical perspective and specific theoretical framework that informed this inquiry into the impact of midlife female UI on the intimate dyad. The fourth section reviews the literature on psychological and quality of life factors associated with female UI and symptom severity. This section focuses on identified biographical factors that may contribute to the adjustment of the midlife intimate relationship to female UI. The fifth and final section discusses current knowledge about the impact of midlife female UI on the intimate dyadic relationship. This section focuses on relationship factors that may contribute to the adjustment of the midlife intimate relationship to female UI. A summary of the key points informing the study design completes this chapter.

Midlife Female Urinary Incontinence

Etiology of Midlife Female Urinary Incontinence

Urinary incontinence has a varied etiology and pathophysiology. It may be a symptom of another condition, such as a urinary tract infection or bladder retention due to a spinal cord injury, or a sequelae or consequence of another progressive disorder, such as diabetes or multiple sclerosis (Cannon & Damaser, 2004; Doughty & Crestodina, 2006). Female urinary incontinence, as a condition not resulting from another illness process, also has a mixed symptom profile, etiology, and pathophysiology. Stress urinary incontinence is when women leak variable amounts of urine (typically small amounts) when intra-abdominal pressure suddenly increases (e.g., upon coughing, sneezing, laughing, jumping, and running) and is suggested to result from a relaxed pelvic floor support system, weakened urethral sphincter musculature, and/or pudendal nerve damage (Cannon & Damser, 2004; Diokno, Estanol, & Mallet, 2004; Wei & DeLancey, 2004). Urgency urinary incontinence is when women experience urgency symptoms and the inability to stop the flow of urine in time to reach a toilet. Urgency urinary incontinence is thought to be due to bladder muscle spasms and/or an irritated bladder wall (Diokno et al., 2004; Fitzgerald & Mueller, 2004). Women with urgency UI frequently report "latchkey urgency" or the sudden, uncontrollable urge to urinate as soon as they reach their front door, leading some to propose that some women with urgency UI may be experiencing a conditioned Pavlovian type of physiological response to environmental cues (O'Connell, Torstrick, & Victor, 2014). Some women also have a mixed presentation of both stress and urgency urinary incontinence symptoms, termed mixed urinary incontinence (Brown et al., 2006; Sampselle, 2000; 2003).

Prevalence of Midlife Female Urinary Incontinence

Urinary incontinence is a major health concern for midlife women (aged 45-65), with reported incidence rates ranging from 15-56.9% (Bradley, Kennedy, & Nygaard, 2005; Melville, Newton, Fan, & Katon, 2006; Morrill et al., 2007; Nygaard et al., 2008; Sampselle, Harlow, Skurnick, Brubaker, & Bondarenko, 2002; Wu et al., 2014), depending on study design (see Table 2-1). Estimating incidence of female UI has proven to be a challenge due to the discrepancies in diagnosis or identification of women with UI that occur between self-report, physical assessment, clinic-based symptom questionnaire, and anonymous questionnaire. Diagnosis of urinary incontinence is complicated by the sometimes poor correlation found between reported symptoms or degree of symptom bother and physical assessment (Davis, 2010). Sampselle (2003) suggested that as media attention to UI increases, in the form of televised advertisements of incontinence products normalizing urinary incontinence and also advertisements promoting pharmacologic treatment options, female UI becomes more recognized as a women's health concern and women may then be more likely to report those symptoms to their healthcare providers.

In spite of increased media attention, urinary incontinence symptoms often go undisclosed to healthcare providers or remain undiagnosed. Morrill et al. (2007) found that of the 4,291 women reporting UI only 61% had sought care while 39% had not disclosed their symptoms to their healthcare provider. Melville et al. (2006) reported that of the 1160 women who self-reported UI and had detailed responses to survey questions, 50% did not discuss their symptoms with their physician. Sampselle et al. (2002) found that only 12.2% of the 1,854 women with self-reported UI had reported the symptoms to their healthcare provider. Dugan et al. (2001) interviewed community-dwelling adult participants (N = 668, age $\geq$ 60 years) following their physician visits in a randomized, controlled trial designed to study the effects of incontinence practice guidelines on provider attitudes and behavior. Of the 149 participants who reported UI symptoms in a follow-up telephone survey, 103 (85% of whom were women) stated that they did not

Table 2-1

Reported Incidence Rates of Female Urinary Incontinence

Authors	Population & Sample Size	Means of Identifying UI	Findings
Sampselle et al. (2002)	Data from the Study of Women's Health Across the Nation (SWAN), a longitudinal study of perimenopausal women (age 42-52, mean age = 46.4) *N* = 3,302 women enrolled at baseline	Self-report of UI; Sandvik's Incontinence Severity Index (questionnaire)	Women participants reporting: Any symptoms of UI = 56.9% (White = 66%, Black = 49.5%, Hispanic = 41.5%) Mild UI = 32.1% Moderate UI = 14.6% Severe UI = 9.9%
Kinchen et al. (2003)	Sampled 250,000 households participating in the National Family Opinion Worldgroup (NFO) panels *N* = 24,581 women	National, cross-sectional mailed survey Second stage of study involved more detailed survey mailed to random sample of 2,310 women with UI	9,002 of 24,581 women respondents reported UI symptoms in past month = 37% of the female participant population
Bradley et al. (2005)	Data from one site participating in the Women's Health Initiative (WHI) Hormone Replacement Trial *N* = 297 postmenopausal women with an intact uterus	Questionnaire developed from modified questions on the Pelvic Floor Distress Inventory	Percentage of respondents reporting symptoms of UI: Symptoms of Stress UI = 51.2% Symptoms of Urgency UI = 49.2%
Melville et al. (2006)	Age-stratified random sample of women enrolled at a large health maintenance organization serving the state of Washington *N* = 3,536 women age 30-90	Mailed survey that included Sandvik's Incontinence Severity Index to identify women with at least monthly leakage of urine	42% (*n* = 1458) with self-reported UI Mild UI = 293 (9%) Moderate UI = 523 (15%) Severe UI = 624 (18%)
Morrill et al. (2007)	Data from the Kaiser Permanente Continence Associated Risks Epidemiology Study (KP CARES) *N* = 4,392 women age 25-84	Mailed survey that included the Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ)	29% of respondents considered positive for UI

Table 2-1 (continued)

Nygaard et al. (2008)	Data from the National Health and Nutritional Examination Survey (NHANES) from the year 2005-2006 *N* = 1,961 nonpregnant U.S. women	Participants interviewed in homes and completed Sandvik's Incontinence Severity Index to identify women with moderate to severe UI (score of ≥ 3)	Overall weighted prevalence of moderate to severe female UI = 15.7% (13.2-18.2) Ages: 20-39 = 6.9% (4.9-9.0) 40-59 = 17.2% (13.9-20.5) 60-79 = 23.3% (17.0-29.7) 80 and older = 31.7% (22.3-41.2) White = 16.0% (13.1-19.0) Black = 13.8% (10.5-17.1) Hispanic = 15.9% (11.1-20.7)
Wu et al. (2014)	Data from the National Health and Nutritional Examination Survey (NHANES) from the years 2005-2010 *N* = 8,368 nonpregnant U.S. women , (*N* = 7,142 with UI data)	Participants interviewed in homes and completed Sandvik's Incontinence Severity Index to identify women with moderate to severe UI (score of ≥ 3)	Overall weighted prevalence of moderate to severe female UI = 17.1% (15.8-18.4) Ages: 30-39 = 9.2% (7.5-11.2) 40-49 = 15.0% (12.7-17.6) 50-59 = 22.4% (19.1-26.1) 60-69 = 24.7% (21.0-28.8) 70-79 = 29.7% (26.0-33.6) 80 and older = 38.2% (33.7-43.0) Ethnicity: White = 18.2% (16.7-20.0) Black = 12.8% (11.3-14.4) Hispanic = 13.1% (10.8 – 15.9) Mexican American = 17.2% (14.9-19.6)

mention their symptoms to the physician because the physician did not ask them about symptoms or screen them for urinary incontinence. Kinchen et al. (2003) found, in a mailed survey of 1,970 self-identified incontinent women, that of the 38% who broached the topic of female UI with their physician, 85% reported having to raise the topic themselves.

Statistical analyses of potential factors associated with disclosure of UI to healthcare providers using data from large populations provides insights into which women might be more likely to report UI. Using logistic regression modeling, Melville et al. (2006) compared mailed responses from women who discussed UI with their physician to responses from women who did not discuss their UI symptoms with their physician. In the final model, the significant factors associated with women disclosing UI to their physician were *older age* (30-49 adjusted *OR* = 1 (referent); 50-69 adjusted *OR* = 1.5, 95% CI [1.1, 2.0], *p* = .009; 70-89 adjusted *OR* = 1.9, 95% CI [1.4, 2.7], *p* < .001), *experienced UI for a longer period of time* (less than 2 years adjusted *OR* = 1 (referent); 2-5 years adjusted *OR* = 1.9, 95% CI [1.3, 2.8], *p* = .001; more than 5 years adjusted *OR* = 2.8, 95% CI [2.0, 4.1], *p* < .001), and the *symptoms had worsened* (mild adjusted *OR* = 1 (referent); moderate adjusted *OR* = 1.1, 95% CI [0.8, 1.6], *p* = .574; severe adjusted *OR* = 1.7, 95% CI [1.2, 2.6], *p* = .006) with a resulting *increased impact on their daily lives* (affects daily activities not at all to only a little adjusted *OR* = 1 (referent); affects daily activities somewhat to extremely adjusted *OR* = 2.7, 95% CI [1.9, 3.8], *p* < .001). Similar findings were reported from a study of community dwelling patients age 60 and over (*N* = 314 women) living in the Netherlands: 66% of participants with more severe symptoms reported UI to their physician compared to only 42% of those with mild-moderate symptoms (Teunissen, van Weel, & Lagro-Janssen, 2005). In a population survey of 511 Swedish women who reported UI, only 71 of the women had sought care (Hägglund, Walker-Engström, Larsson, & Leppert, 2001). In addition, Hägglund et al. found that women with urgency UI were more likely to seek care than women with stress UI (41% vs. 10%, $p < 0.001$). Women who sought care also had significantly lower scores in seven out of eight dimensions on the Short Form-36 Quality of Life questionnaire (Hägglund et al., 2001). Care seeking for UI was not found, however, to be significantly correlated with marital status or education level (Dugan et al., 2001; Teunissen et al., 2005). Results from two other large population studies offer the same trends: women with more severe symptoms, who also report a greater impact on quality of life, tend to be more likely to disclose UI symptoms to their physicians (Kinchen et al., 2003; Morrill et al., 2007).

Qualitative data offer insights into women's reasons for not seeking care for UI and/or for not disclosing symptoms of UI to their physician. The following is a summary of themes identified through qualitative data analyses of women's reports of reasons for either not disclosing UI symptoms to providers or for not seeking care for UI. See Table 2-2 for a more detailed description of study designs and findings. Women who did not disclose UI symptoms reported that the symptoms were either not felt to be a big problem or were considered to be within the range of normal, or that women were not aware of treatment options (Hazewinkle, Sprangers, Taminiau-Bloem, Burger, & Roovers, 2010; Kang & Kim, 2009). Some women reported not wanting to be a burden to the physician (Li, Low, & Lee, 2007), or revealed that they had no health insurance to defray the cost of care (Kang & Kim, 2009). If they had multiple concerns, many women wanted to address one at a time (Shaw, Brittain, Tansey, & Williams, 2008), leaving UI not

Table 2-2

Qualitative Data on Women's Reasons for Not Seeking Care for UI

Authors	Participants	Method of Data Collection	Method of Analysis	Themes Identified
Peake et al. (1999)	*N* = 75 Australian women with UI age 40-60	Face-to-face interview	Narrative accounts, theme analysis	1. UI "normal" consequence of childbearing and/or aging 2. Ambiguity if UI a medical problem 3. Skeptical of physician response to care seeking for UI
Shaw et al. (2001)	*N* = 31 people living in England and being treated for UI *n* = 23 women (age 38-86)	In-depth interviews	Grounded theory: Line-by-line close reading of transcribed interview, iterative coding to develop a hierarchical coding frame	Reasons for seeking care: 1. Fear of serious underlying condition 2. Significant impact on quality of life Reasons for delay in seeking care: 1. Lack of awareness of the significance of the symptoms 2. Symptoms too trivial to discuss with MD 3. UI considered a normal part of life and aging
Teunissen & Lagro-Janssen (2004) Teunissen et al. (2005)	*N* = 314 women living in the Netherlands with self-reported UI	Open-ended questions on a mailed survey	Grounded theory: Iterative coding by 2 researchers	1. Symptoms not serious enough 2. UI an expected part of aging or childbirth 3. Poor patient-doctor relationship ("didn't ask"; "thinks I'm a fussy person"
Li et al. (2007)	*N* = 9 women living in Hong Kong purposively selected from first-time visitors to a continence clinic	Semi-structured interview	Content analysis: iterative process of identifying coding scheme	1. First discovery of UI – insidious onset 2. Perceived as not serious, normal part of aging 3. Fears: a) of others knowing, b) wasting physician's time, and c) worry about UI progression
Hägglund & Wadensten (2007)	*N* = 13 Swedish women with UI (age 37-52)	Face-to-face interview in participants' homes	Phenomenological hermeneutic method: Theme analysis until consensus between 2 researchers	1. Fear of humiliation 2. Living with shame 3. Altered sexual relationships 4. Distancing self from UI 5. Minimizing problem – private, related to childbearing, not a top priority 6. Expectations: a) provider should ask about UI and validate symptoms, and b) provider should be caring and understanding about problems

Table 2-2 (continued)

Shaw et al. (2008)	*N* = 33 people living in England and being treated for UI *n* = 15 women (age 46-89)	In-depth , unstructured interviews	Grounded theory: Close reading of the interview text, iterative coding, constant comparative technique between 2 researchers	1. Identification and acknowledgement of symptoms as a medical problem versus normal aging 2. Media publicity increased patient awareness 3. Appraisal of cost-benefit of treatment
Andersson et al. (2008)	*N* = 11 Swedish women with UI age 57-89	Face-to-face Interview	Phenomenological analysis of themes	1. Learned to live with it despite difficulties 2. Other illnesses are more important 3. Reluctance to seek care due to: a) difficulties developing a trusting relationship with physician b) who did not "make light" of UI or c) who responded to request for UI information or care
Kang & Kim (2009)	*N* = 59 Korean American women who self-reported UI and responded that they had not sought care	Open-ended questions on a survey	Description of responses to open-ended questions on a survey	1. UI a minor problem 2. Normal in old age 3. Lack of health insurance 4. Language barrier 5. UI might resolve
Hazewinkle et al. (2010)	*N* = 15 women living in the Netherlands reporting pelvic floor symptoms (including UI) following gynecological surgery for cancer and who had not reported symptoms to provider	Semi-structured interview	Content analysis: constant, iterative, comparative theme analysis by consensus between 2 researchers	1. Symptoms bearable in light of cancer 2. Specialists did not do anything about symptoms 3. Reluctant because of fear or embarrassment 4. Unaware of treatment options 5. Self-reliant

discussed during the short span of an annual wellness exam. Lack of knowledge of UI symptom progression and treatment options have also been given as reasons for non-disclosure (Hazewinkle et al., 2010; Li et al., 2007; Shaw, Tansey, Jackson, Hyde, & Allan; 2001).

It is difficult to assess whether women are not disclosing UI, or whether their queries are simply not noted, acknowledged, or acted upon by their healthcare provider (see Table 2-2). Many of the women discussed their perceptions that UI symptoms are not life-threatening and therefore are more of a nuisance factor or a trivial problem to either themselves or to their physician (Andersson, Johansson, Nilsson, & Sahlberg-Blom, 2008; Hazewinkle et al., 2010; Peake, Manderson, & Potts, 1999; Teunissen & Lagro-Janssen, 2004; Teunissen et al., 2005). Many of the women interviewed also reported that if they brought up the subject of UI symptoms, they had problems communicating effectively with their physician. Women reported that the physician either did not respond to mention of or questions about UI symptoms, or did not engage in a discussion of treatment or management of UI symptoms, leaving the women either too embarrassed to pursue the topic or feeling as if there was nothing to be done (Andersson et al., 2008; Hägglund & Wadensten, 2007; Hazewinkle et al., 2010; Kang & Kim, 2009; Peake et al., 1999; Shaw et al., 2001; Teunissen & Lagro-Janssen, 2004). Rutledge, Heckman, Qualls, Muller, and Rogers (2010) reported that, in a study of 108 gynecologic patients and 260 gynecologic cancer survivors, 40% of post-surgical gynecological cancer patients and 23% of women seeking routine well woman visits reported not being questioned by their physicians regarding their pelvic floor function, including urinary continence status.

Women reported a need for validation of symptom experience by having their physicians directly ask about symptoms and offer information about UI (Hazewinkle et al., 2010; Rutledge et al., 2010). Information seeking and confirming presence of symptoms, rather than treatment, was cited as motivation for disclosure of UI (Shaw et al., 2008). Women described the urodynamic diagnostic testing as stressful (because they were not able to follow the physician's instructions), painful, and degrading (Peake et al., 1999). Some avoided disclosure due to fear of invasive diagnostic or corrective procedures (Shaw et al., 2001; Shaw et al., 2008). Many women reported that they relied on self-care strategies to cope with UI rather than seek medical care (Hazewinkle et al., 2010). Some women reported that they felt alone, with nowhere to go for information or help (Hazewinkle et al., 2010). The self-imposed isolation and lack of disclosure of UI, even to other women, was motivated by fear of being judged or fear that their perceptions would be dismissed (Peake et al., 1999). For the reasons cited above, prevalence rates of female UI in any patient population are likely to be underestimated by clinicians.

Female urinary incontinence is unfortunately perceived by many midlife women to be a normal consequence of pregnancy and old age (Hägglund & Wadensten, 2007; Kang & Kim, 2009; Li et al., 2007; Peake et al., 1999; Shaw et al.; 2001; Shaw et al., 2008; Teunissen & Lagro-Janssen, 2004; Teunissen et al., 2005). UI is therefore often thought of as a nuisance condition that either resolves at some point after delivery or portends the inevitable body deterioration and decline indicative of irreversible aging. Data on prevalence of female UI demonstrates a progressive increase in UI incidence among women throughout the women's lifespan (Nygaard et al., 2008; Wu et al., 2014). UI is both prevalent and occurs among otherwise healthy middle-aged women.

Health Consequences of Midlife Female Urinary Incontinence

Female urinary incontinence is a significant source of morbidity among middle-aged U.S. women, and can also affect the economic health of women and their families. Medical treatment for stress urinary incontinence currently accounts for an estimated financial burden in the United States of $12.4 billion annually, primarily arising from routine care of community-dwelling women (Wilson, Brown, Shin, Luc, & Subak, 2001). Much of the reported personal monetary costs of living with urinary incontinence are associated with the use of mini-pads, incontinence pads or briefs, and also an increased need for additional loads of laundry and/or dry cleaning (Subak et al., 2006). Depending on frequency, severity, and type of UI, the individual woman’s mean annual expenditures for managing capture and clean-up of urinary leaking range from $550 to $993 (Subak et al., 2006). These costs are generally not covered by medical insurance and so represent an out of pocket expense, making cost-effectiveness of the varying incontinence products a concern for many women (Yamasato, Kaneshiro, & Oyama, 2014). Yamasato et al. (2014) reported that briefs were the most cost-effective per volume of fluid loss, yet Subak et al. (2006) found that menstrual mini-pads were the most commonly reported product used to manage episodes of urinary leaking. This suggests that there are other personal costs to living with UI than simply monetary costs. In addition to the increased risk of skin breakdown and infection as a result of UI, the economic and personal costs of incontinence management strategies, pharmacologic treatment, physical therapy, and surgical treatment, there are significant sequelae of UI that include the following: loss of mobility and social contact, impaired social function and risk of isolation, body image issues, and effect on sexual health (Srikrishna, Robinson, & Cardozo, 2010). Indirect costs of UI are difficult to estimate, and may include lost productivity in the workforce (Sung & Hampton, 2009). In a study of 668 community-dwelling adults aged 60 and older (*n* = 230 with UI), Dugan et al. (2000) found that living with chronic urinary incontinence was significantly associated with moderate to severe depressive symptoms (Wilcoxon rank sum test: 43% of those with UI vs. 30% of those without UI, $p < .05$). Urinary incontinence, as a co-morbid condition with moderate to severe depression, carries an uncalculated personal, interpersonal and economic burden.

Female urinary incontinence has a significant impact on women and their overall health (see Table 2-3). UI is often a co-morbid condition with pelvic organ prolapse and fecal incontinence (Muller, 2010; Sung & Hampton, 2009). Women with UI tend to report poorer health and physical function than those women without the condition (Jamison, Weidner, Romero, & Amundsen, 2007; Milsom, Kaplan, Coyne, Sexton, & Kopp, 2012; Vandoninck et al., 2004). UI is associated with poorer reported mental health and activity restriction (Jamison et al., 2007; Vandoninck et al., 2004). More severe UI symptoms have been associated with poorer sexual function (Serenko, Morrison, & Suresky, 2010). One’s overall sense of well-being may also be compromised when living with UI (Srikrishna, Robinson, & Cardozo, 2009). More uncertainty regarding the symptom profile (as occurs with mixed incontinence) or in terms of what may trigger an incontinent episode tends to lower women’s perceptions of their quality of life (Coyne et al., 2012).

Other health-related challenges to coping with the symptom demands of female UI include nighttime urination to avoid incontinence in the bed, subsequent sleep disturbance, chronic sleep deprivation and subsequent daytime fatigue, all of which have

Table 2-3

Health-Related Factors Associated with UI

Authors	Study Population	Factors Studied	Results
Brown et al. (1998)	N = 65 women with urgency UI living in San Francisco Bay area Mean age = 62.4 ± 13.5	Focus group discussion of impact of urgency UI on functioning and well-being	Word frequency analysis revealed the following high frequency references (total word use): Bathroom availability (24%), Loss of control (14%), Fear/anxiety (11%), Tired/sleep disturbance (10%)
Sampselle et al. (2002)	Data from the Study of Women's Health Across the Nation (SWAN), a longitudinal study of perimenopausal women (age 42-52, mean age = 46.4) N = 3,302 women enrolled at baseline	Self-completed questionnaire including questions as indicators of daily life impact of UI about likelihood of discussing UI with physician, level of UI-related bother, and likelihood of nighttime voiding	Severity of UI strongly associated with the following: Seeking Care (for moderate UI OR = 1.99, 95% CI [1.34, 2.95]; for severe UI OR = 6.14, 95% CI [4.24, 8.87]) Level of Bother (for moderate UI OR = 3.61, 95% CI [2.84, 4.57]; for severe UI OR = 16.93, 95% CI [11.60, 24.70]) Nighttime Voiding (for moderate UI OR = 1.36, 95% CI [1.09, 1.69]; for severe UI OR = 1.99, 95% CI [1.49, 2.64])
Vandoninck et al. (2004)	N = 1071 married Dutch women responding to mailed survey Mean age = 56.9 (29-79)	Quality of Life (QoL): a) the BPH Impact Index (questions considered applicable for women's incontinence-related QoL) b) SF-12 for general QoL, physical component and mental component	a) more severe UI symptoms associated with more bothersome physical discomfort, more worry about overall health, more bothersome impact on social activity ($p < 0.01$) b) UI severe symptom score significantly correlated with lower QoL scores ($p < 0.001$)
Huang et al. (2006)	N = 603 women with weekly UI from the Reproductive Risks of Incontinence Study at Kaiser (RRISK) Mean age = 57 ± 9	Incontinence Impact Questionnaire (IIQ) with high scores indicating lower QoL and higher impact of UI on QoL	Women with IIQ scores in 75th percentile compared to those with lower scores: Less often identify health status as excellent (5% vs. 16%, $p < .01$) More often report coital incontinence (32% vs. 22%, $p < .01$, OR 1.9, 95% CI [1.1, 3.3]) More likely to report nighttime incontinence (90% vs. 78%, $p < .01$, OR 2.5, 95% CI [1.3, 4.9]) Only 42% sought treatment, in multivariate analysis increasing IIQ score (higher impact on QoL) was significant independent predictor for seeking care (OR 4.6, 95% CI [2.5, 8.4], $p < .01$)

Table 2-3 (continued)

Coyne, Margolis, Jumadilova, et al. (2007)	*N* = 34 women with urgency UI Mean age = 48.4 ± 12.9	a) Focus group discussion on sexual health Completion of the following questionnaires: b) Overactive Bladder Questionnaire (the OAB-q is a disease-specific QoL tool) with score range 0-100 and high scores indicating higher QoL c) Sexual Quality of Life Questionnaire-Female (SQoL-F) with score range 0-100 and high scores indicating higher sexual quality of life	a) Reports of impact on sexual health "ranging from reduced desire to avoidance of sexual activity" (p. 659). Also noted: fear of rejection by partner, increased time need for arousal, inability to relax b) OAB-q subscales with low mean scores, indicating lower QoL: Concern = 40.1 ± 27.6 Coping 48.0 ± 29.7 Sleep = 49.5 ± 32.4 Symptom bother = 56.6 ± 21.3 Social interaction = 65.3 ± 24.6 c) SQoL-F with low mean score = 45.6 ± 24 indicating lower levels of sexual quality of life
Jamison et al. (2007)	*N* = 1,520 women from the National Survey of Midlife Development in the U.S. completed telephone interview age 25-74	Physical functioning: a) SF-36 Health Survey Psychological health (depression & anxiety) & resilience: b) Composite International Diagnostic Interview Short form	a) All age groups of women with UI reported significantly lower levels of moderate activity than those without UI ($p \leq 0.01$) b) Depression associated with UI in the 25-39 and 40-49 age groups ($p \leq 0.05$) Anxiety associated with UI in the 25-39 age group ($p \leq 0.01$) Resilience significantly less present in all age groups of women with UI ($p \leq 0.04$)
Li et al. (2007)	*N* = 9 women with stress UI from an incontinence clinic in Hong Kong	Semi-structured interview, content analysis of themes	Major themes included 1) Fear of others knowing – psychological stress of concealing UI from others, embarrassment, and worry about being teased; Fear of wasting resources – not wanting to be seen as a nuisance by physician; Fear of worsening condition 2) Enduring Psychosocial Impacts – Avoiding activities, making excuses for UI episodes
Nicolson et al. (2008)	*N* = 10 women and 8 men with urgency UI from the UK	In-depth, semi-structured individual and group interviews	Themes identified: Fear and coping strategies r/t prevention of or hiding episodes of leaking; Anxiety about everyday living r/t intimate relationships, social activity, job performance, mentally mapping toilet locations; Depression and hopelessness; Embarrassment; Self-esteem, sexuality and embodiment

Table 2-3 (continued)

Srikrishna et al. (2009)	*N* = 29 English women with UI scheduled for pelvic floor reconstructive surgery Mean age = 61 (39-83)	QoL: a) King's Health Questionnaire (KHQ) b) in-depth, semi-structured interview	a) Highest scores on the KHQ (indicating higher levels of impact) found in the following 3 domains: QoL, physical limitation, and role limitation b)Theme analysis of interview: Role limitation and negative impact on physical activity, body image, sexual function, and social activities
Serenko et al. (2010)	*N* = 91 U.S. women with UI from gynecology and urology practices in Ohio Mean age = 41(22-54)	Sexual function: Pelvic Organ Prolapse/Urinary Incontinence Questionnaire (PISQ-12)	Significant weak to moderate negative relationship between scores on the PISQ-12 and UI symptom severity ($r = -0.267$, $p = 0.011$), indicating an association between poorer sexual function and more severe UI symptoms
Anger et al. (2011)	*N* = 33 women identified as having urgency UI by California urogynecology clinics Mean age = 67 (39-91)	Theme analysis of focus group discussions about perceptions of urgency UI symptoms treatments, and outcomes	Most impact of urgency UI was on travel away from home, interruption of activities to find a bathroom, and nighttime voiding resulting in chronic sleep deprivation and daytime fatigue
Wang et al. (2011)	*N* = 16 Taiwanese women with lower urinary tract symptoms, including UI	In-depth, individual interviews analyzed by grounded theory methods	Overall framework: "Doing the best to control" including the following subsections: Self-limited activities (e.g., avoid running, jumping, outdoor activities); Modify daily life (e.g., use of pads); Always looking for the toilet while outdoors; Feeling stress and uneasiness (e.g., embarrassed, feeling "filthy")
Milsom et al. (2012)	*N* = 10,584 women & 9,416 men from U.K., Sweden, and U.S. surveyed via internet as part of the Epidemiology of Lower Urinary Tract Symptoms (EpiLUTS) study	Health related QoL (HRQL): a) Overactive Bladder (OAB) short form HRQL scale b) Medical Outcomes Study short form c) Hospital Anxiety and Depression Scale (HADS)	a) Mean OAB HRQL scores significantly higher (indicating better HRQL) for adults with no/minimal UI symptoms vs. adults with urgency UI b) Mean Medical Outcomes Study short form scores significantly lower (indicating poorer HRQL) for adults with vs. adults without urgency UI c) Percent respondents with HADS scores ≥ 8 (indicating clinically relevant depression and/or anxiety) significantly higher among adults with vs. without urgency UI

Table 2-3 (continued)

Coyne et al. (2012)	*N* = 10,717 women from U.K., Sweden, and U.S. surveyed via internet as part of the EpiLUTS study	HADS SF-12 (physical component and mental component) HRQL subscale of OAB Questionnaire Short Form	a) Incidence of HADS ≥ 8 threshold significantly different among types of UI ($p < 0.0001$): Stress UI plus other UI = 49.7% Mixed UI = 49.1% Urgency UI plus other UI = 41.2% Other UI = 38.8% b) Depression highest in women with Stress UI plus other UI (34.9%) and Mixed UI (34.7%) compared to women with only Stress UI (16.8%) ($p < 0.0001$) c) Women with Mixed UI and UUI plus other UI also scored lower on overall physical health and HRQL ($p < 0.0001$)

been reported by women living with chronic UI (Anger et al., 2011; Brown et al., 1998; Wang, Chen, Jou, & Tsao, 2011). Waking to toilet in order to avoid bed-wetting is a contributing factor to poorer quality of life (Huang et al., 2006). Women report that UI not only affects physical functioning and the quality of their daily lives, but it also has a negative impact on their psychological well-being, sexuality, and interpersonal relationships (Coyne, Margolis, Jumadilova, et al., 2007; Li et al., 2007; Nicolson et al., 2008). In general, the more women consider UI to negatively affect their quality of life, the more likely they are to seek treatment (Huang et al., 2006; Sampselle et al., 2002).

Risk Factors for Developing Midlife Female Urinary Incontinence

A review of the literature identifies the major risk factors for developing female UI as including: a) factors related to history of vaginal deliveries and aging processes (Cannon & Damaser, 2004; Diokno et al., 2004), and also b) lifestyle or modifiable factors (Burgio, Newman, Rosenberg, & Sampselle, 2013). Though parity has long been associated with development of stress UI, the exact physiological processes (e.g., pudendal nerve trauma, pelvic ligament strain, compromise in pelvic muscle integrity) remains a topic of active investigation (Cannon & Damaser, 2004), and is not the focus of this study of midlife female UI. Reviews of the literature on female UI discuss the often reported association between age and development of UI (Davis, 2010; Sampselle, 2000; Tinelli et al., 2010). Increased age was found to be significantly associated with development of UI in two large population studies: Badalian and Rosenbaum (2010) (N = 2,197, 9.3% of women age 20-49 vs. 24% women age 50-85+, $p < 0.0010$; Morrill et al. (2007) (N = 4,392 women age 25-84, after controlling for other factors OR = 1.04 per year of age, 95% CI [1.02, 1.05]). Changes in the pelvic floor tissues as women age and transition through menopause are thought to be contributing factors to the weakening of the pelvic floor anatomy, thereby diminishing pelvic floor function (Wei & De Lancey, 2004). Steroid receptors on the pelvic floor musculature (levator ani) and the pelvic ligaments may respond to the change in hormonal profile of the woman transitioning through menopause (Tinelli et al., 2010).

As discussed in Sampselle's (2002) and Borello-France and Burgio's (2004) review of evidence for behavioral and non-surgical interventions for female UI, the levator ani muscles (the target muscle group for performing pelvic floor muscle exercises, also known as Kegel exercises) have both fast twitch fibers for rapid, strong contraction and slow twitch fibers for slow, sustained contractions, and that after menopause the relative proportion of fast twitch muscle fibers in the levator ani musculature supporting the pelvic organs decreases. Quartly, Hallam, Kilbreath, and Refshauge (2010) obtained pelvic muscle strength and endurance measurements on 28 women without UI (aged 19-58) by inserting a pressure sensor probe into the vagina and instructing women to contract their pelvic floor muscles. The researchers found a significant correlation between age and pelvic muscle endurance ($r = 0.38$, $p = 0.048$), but not maximum strength of pelvic muscles ($r = -0.31$, $p = 0.107$). No correlation was found, however, between pelvic muscle endurance and the maximum strength of the muscles or history of performing pelvic floor muscle exercises (Quartly et al., 2010).

Lower collagen III levels due to loss during normal aging processes may also contribute to development of female UI (Tinelli et al., 2010). Racial differences in female UI prevalence have also been reported (see Table 2-1, specifically Nygaard et al., 2008; Sampselle et al., 2002; Wu et al., 2014). Loss of tissue integrity due to parity or delivery history, possible genetic factors, and aging processes are currently considered non-modifiable risks to developing midlife female UI.

Lifestyle or modifiable factors that may contribute to the development of UI have also been studied. These modifiable risk factors for developing female UI may be amenable to nursing intervention. Sampselle et al. (2002) found that among 3,258 women (age 42-52), each unit of increased body mass index (BMI) was associated with a 5% increased odds of having UI. Wu et al. (2014) found that among 7,142 women (age 20-80+), being in the overweight category had an associated odds ratio of 1.3, 95% CI [1.1, 1.6] for also having UI, and being in the obese category had an odds ratio of 1.6, 95% CI [1.3, 2.0] for also having UI. Waetjan et al. (2009) found that in a large population study of 1,529 women (age 45.6 ± 2.6), developing female UI over the six year study period was associated with both a high BMI at baseline (hazard ratio = 1.02, 95% CI [1.01, 1.03]) and weight gain over the six year period (hazard ratio per pound increase = 1.04, 95% CI [1.02, 1.07]). Increased BMI has been so consistently associated with female UI across studies that Wu et al. (2014) recommend weight management as a first-line defense strategy in reducing incidence and severity of female UI.

Another potential risk for developing female UI is when women engage in a routine of high impact exercise with a resulting increase in intra-abdominal pressure and stretching of the pelvic ligaments, such as occurs with running and jumping (Bø, 2004; Burgio et al., 2013). Wei and DeLancey (2004) argue that as long as the pelvic floor muscles remain firm, intact, and strong the woman will remain continent even if stretching and compromise of the pelvic ligaments occurs. This may account for the inconsistent reports found in the literature associating high impact athletic activities with female UI (Bø, 2004).

Another modifiable risk factor for developing female UI, particularly urgency UI, may be dietary habits. Inflammation or chemical irritation of the bladder wall is thought to lead to normal filling volumes being perceived as uncomfortable, with a resulting urge to urinate (Fitzgerald & Mueller, 2004). Among 297 women, 15% of the coffee drinkers (caffeinated beverage) versus only 3% of the non-coffee drinkers had reduced bladder emptying and a weak urine stream ($p \leq 0.01$), with a concomitant significant trend associating urinary symptoms with increasing coffee consumption (Bradley et al., 2005). In addition to caffeine intake, other reported dietary sources of bladder irritation include carbonated drinks, alcohol, artificial sweeteners, citrus fruits and juices, and hot peppers (Burgio et al., 2013; Lukacz et al., 2011). Vitamin D receptors in muscle tissue may be responsive to serum vitamin D levels, possibly accounting for the 6% decrease in risk (*OR* 0.94, 95% CI [0.88, 0.99], $p = 0.043$, $N = 2{,}197$) of developing any pelvic floor disorder, including female UI, found with every 5 ng/ml increase in serum levels of vitamin D (Badalian & Rosenbaum, 2010). These modifiable risk factors for developing female UI may be targeted to promote lower urinary tract health, using the following strategies: exercising to maintain a normal body weight and decrease intra-abdominal stress, maintaining adequate vitamin D levels, and avoiding bladder irritants.

Behavioral Interventions for Midlife Female Urinary Incontinence

In addition to reducing the risk of developing female UI by working with women to maintain a healthy weight and bladder-friendly diet, nurses may also teach women behavioral interventions demonstrated to promote bladder health and alleviate or diminish female UI symptom severity. Behavioral interventions for prevention and treatment of UI include pelvic floor muscle training and bladder training (Sampselle, 2000; 2003). Behavioral interventions are recommended as the “first line of treatment” (Sampselle, 2000, p. 94) for female UI due to the less invasive approach than surgical or pharmacological options, and their demonstrated effectiveness for many women (Bø, 2004; Borello-France & Burgio, 2004; Burgio et al., 2013; Lukacz et al., 2011; Sampselle, 2000).

Pelvic floor muscle therapy (PFMT), also known as Kegel exercises, involve conscious, inward and upward contraction of the pelvic floor muscles (levator ani) held for 10 seconds with a 10 second rest between contractions (Sampselle, 2000; 2003). Recommendations for number and frequency of repetitions of PFMT varies widely (Borello-France & Burgio, 2004), however Sampselle (2000) advises 30 repetitions a day as a workable routine for most women. Meta-analysis of randomized controlled trials of PFMT as an intervention for female UI resulted in the following findings: a) PFMT is an effective treatment option for women of all ages who are experiencing UI, though young women with stress UI experience the most relief, and b) PFMT should involve at least 24 contractions per day for at least 6 weeks, whereas more than this does not offer more of a benefit (Choi, Palmer, & Park, 2007). Reviews of the literature on behavioral interventions for female UI (Borello-France & Burgio, 2004; Sampselle, 2003) note the potential for over-use and fatigue of the pelvic floor muscles that might result in pain or spasms. Borello-France and Burgio (2004) recommend tailoring the PFMT routine to the individual woman’s needs.

Ever since Dr. Arnold Kegel introduced pelvic muscle contraction exercises to address “the problems of a lax perineum” (Kegel, 1948, p. 238) following vaginal delivery, PFMT has been recommended for preventing UI or lessening symptoms of UI during pregnancy and during the postpartum period. Kegel (1952) reported that, of the 212 women with urinary stress incontinence who performed his exercise regimen (which included use of a pneumatic device inserted into the vagina to train the woman to contract the correct muscles and to increase the strength of the contraction), 84% became continent and stopped wearing pads.

PFMT is also effective in alleviating or lessening UI symptoms in older women. In a randomized controlled study of 109 women (mean age 48.3-49.4 ± 11.4-12.2), significant improvements were demonstrated in both pelvic muscle function (determined by assessor-blinded physical exam) and morphology (determined by 3-Dimensional ultrasonagraphy) following six months of supervised PFMT (Braekken, Majida, Engh, & Bø, 2010a; 2010b). Two classic studies of the effectiveness of PFMT for older, non-pregnant women with UI support Dr. Kegel’s original work. A single blind, randomized control trial compared pelvic muscle strength and pad weights (estimating urinary leakage) among 107 women with stress UI (mean age 49.5, range 24-70) who were assigned to either a PFMT, vaginal electrical stimulation, weighted cones, or control group (Bø, Talseth, & Holme, 1999). After six months, women in the group performing PFMT had significantly reduced UI symptoms compared with any other group (Kruskal-Wallis test for between group comparison: mean change in leakage index for control = 0.1, 95% CI [-0.1, 0.3]; for electrical stimulation = -0.2, 95% CI [-0.4, 0]; for weighted cones = -0.3, 95% CI [-0.5, -0.1]; for PFMT = -0.9, 95% CI [-1.1, -0.7]; $p < 0.001$), and

14 of the 25 assigned to PFMT reported complete resolution of stress UI symptoms (Bø et al., 1999). Burgio et al. (1998) also utilized a randomized controlled trial design to compare the efficacy of PFMT (supported by one or two sessions of anorectal biofeedback to ensure contraction of the correct muscle group), drug therapy (oxybutynin chloride, an antispasmodic medication), and placebo interventions for treating 197 women aged 55-92 with urgency UI. The authors found that PFMT was significantly more effective in alleviating urgency UI symptoms (accidents per week) than was drug therapy (80.7% vs. 68.5% improvement, $p = 0.04$) or placebo (80.7% vs. 39.4% improvement, $p < 0.001$). Although pharmacological (and surgical) therapies have evolved since 1998, the approximately 80% reduction in UI symptoms achieved by simply following a noninvasive, affordable exercise program (that may, incidentally, be taught by nurses) offers women of all ages an impressive urinary health promotion tool.

A major factor to consider in a PFMT education session is whether or not the woman can identify and contract the correct muscles. Sometimes women bear down instead of pulling up with their pelvic floor muscles – a situation that would be counterproductive to maintaining continence (Sampselle 2000). Sometimes women are not able to identify the correct muscles and initiate a contraction (Bø, 2004), engaging abdominal or gluteal muscles instead (Davis, 2010). The woman may evaluate her technique and effectiveness of contractions by self-palpation of the perineum or by self-digital exam of the vagina during a contraction (Herbert, 2010).

Some studies have reported that PFMT, as a therapeutic intervention, suffers from low continuation rates (e.g., 26% dropout from study participation reported by Liebergall-Wischnitzer et al. [2009]). Burgio et al. (1998) found, however, in their randomized controlled trial comparing PFMT to drug therapy for urgency UI, that 96.5% of the women in the PFMT group reported that they were comfortable enough with performing PFMT and with the results of therapy that they would continue the practice, with only 14% requesting another form of treatment. Conversely, only 54.7% of the women in the drug therapy group stated that they wished to continue, while 75.5% asked to receive another form of treatment. It is worth noting that the PFMT study group was offered anorectal biofeedback to ensure that they were correctly contracting the levator ani muscles (Burgio et al., 1998).

For women who have difficulty isolating the pelvic floor muscles and performing effective contractions, optimal support for effective PFMT and adherence to PFMT may involve an interdisciplinary approach. Although PFMT alone improved patient outcomes scores, adding electrical stimulation to the vaginal wall (interferential therapy) to PFMT improved symptoms, sexual function, and quality of life scores over PFMT alone ($p < 0.05$) in a randomized controlled trial of 102 women (Patil, Nagrale, & Ganvir, 2010). Bendaña et al. (2009) also found that women ($n = 23$) who were given both electrical stimulation and transvaginal biofeedback with PFMT resulted in significant improvement in both urgency symptoms (VAS scores pre-intervention = 5.96, post-intervention = 3.52, $p < 0.001$) and effect on daily life scores (VAS score pre-intervention = 6.30, post-intervention = 3.74, $p < 0.001$) at the three month follow-up visits. PFMT re-education with biofeedback did not show a significant quantitative improvement among 28 women with stress UI, though qualitatively 100% of the participants reported satisfaction with the method (Zaccardi, Wilson, & Mokrzycki, 2010). Tsai and Liu (2009) reported that providing interpersonal support (weekly phone calls) along with examiner digital vaginal palpation (monthly) to women with mild to moderate stress UI resulted in a significant decrease in leaking by pad test ($n = 50$, change in pad weight from baseline = -0.07 [-2.05, 0.15], $p < 0.001$), whereas providing pamphlets with instructions for PFMT exercises did not ($n = 49$, change in pad weight from baseline = 0.05 [-.50, 0.40], $p = 0.514$). Performing PFMT exercises with confirmation of muscle contraction by a physical therapist and supplemented with a home DVD instruction tool did significantly improve symptoms of UI (Braekken et al., 2010a).

The second major behavioral intervention used in treating female UI is bladder training. Bladder training involves conditioning the bladder to void at regular, reasonably spaced intervals so that the woman is able to maintain activities of daily living without intrusive urges to urinate that result in an episode of incontinence or disruption of normal activity. Sampselle (2000) describes the process as beginning with a diary detailing the frequency of urination, and then voiding at regular intervals and gradually increasing periods between voiding by 15 minute increments using relaxation and distraction techniques and 2-3 pelvic floor muscle contractions to quiet the urge to void early. Roe, Ostaszkiewicz, Milne, and Wallace (2006) performed a systematic review of the literature on the effectiveness of bladder training as an intervention for managing UI and found that the most commonly reported, significantly improved patient outcome was a reduction in the frequency of incontinence episodes. The authors concluded that there was support for bladder training as an effective intervention, though long-term benefits had yet to be demonstrated (Roe et al., 2006). Bladder retraining may be combined with PFMT to support continence and lessen episodes of UI (Davis, 2010; Lukacz et al., 2011).

The goal of treatment for female urinary incontinence is to restore control of urination, thereby improving the quality of a woman's life. As previously discussed, women are more likely to seek care for urinary incontinence after they develop severe symptoms that significantly affect their quality of life (Hägglund et al., 2001; Huang et al., 2006; Kinchen et al., 2003; Melville et al., 2006; Sampselle et al., 2002; Teunissen et al., 2005). Improving quality of life is the primary indication for surgical treatment for UI (Lowenstein & Bitzer, 2009). Mixed outcomes temper enthusiasm for surgical remedy alone. Previously discussed non-modifiable tissue aging-related risk factors, along with the denervation and muscle or faschia disruption resulting from surgical intervention, may contribute to the short-term or disappointing results of female pelvic floor reconstructive surgery (Tinelli et al., 2010), and may lessen the effectiveness of PFMT in subsequently improving UI (Bø, 2004). Improving quality of life may be more important to the woman than complete cure of the symptoms (Labrie et al., 2012). Thus, an important assessment for the healthcare professional to make is of the impact on quality of life and treatment goals from the woman's perspective (Srikrishna et al., 2009). Equally important is to screen adult women for female UI and offer behavioral interventions early, as effective, non-invasive treatment options for preventing and treating UI (Burgio et al., 2013). It is, therefore, of grave concern that, in a large population study of women with UI, only one third reported receiving any kind of care for UI from their healthcare provider (Melville et al., 2006).

Much work has been done exploring the impact of incontinence from the individual woman's perspective without resulting in improved rates of disclosure or care-seeking for incontinence concerns. Social and interpersonal factors involved in the trajectory of coping with urinary incontinence may affect the individual’s decision to disclose, seek care, or choose a treatment course. Social and interpersonal factors may also affect the individual’s self-efficacy in and adherence to health promotion strategies. By the time women approach a healthcare provider with concerns regarding incontinence, they tend to have been living with symptoms for several years and are already experiencing a significant impact on their quality of life. Exploring the social and interpersonal factors that affect midlife women as the incontinence symptoms progress rather than after significant impairment occurs may result in improved patient outcomes as well as improved nursing interventions designed to promote positive experiences with continence care and treatment.

Midlife Female Urinary Incontinence: A Chronic Health Condition

The impact of midlife female urinary incontinence on a woman’s biopsychosocial health may be best understood from a chronic illness perspective. Female UI has many attributes of a chronic illness including an often ambiguous, indeterminate onset followed by an uncertain progression and/or pattern of symptom severity requiring ongoing management efforts that affect the woman’s daily life (Skoner & Haylor, 1993; Strauss et al., 1984). Often women cannot recall when symptoms of UI first began, as onset of UI may be indeterminate with an erratic symptom profile of sometimes mild and sometimes more noticeable episodes (Li et al., 2007). Symptoms may persist for years before they are addressed with a healthcare professional. In fact, women who eventually sought care for UI reported living with symptoms for an average of more than seven years (Beji, Yalcin, Erkan, & Kayir, 2005; Berglund, Eisemann, Lalos, & Lalos, 1996). For these reasons, female UI fits the profile of a chronic condition.

In spite of the long term nature of female UI symptoms, women living with UI tend to describe themselves as otherwise healthy (Bradway & Strumpf, 2008), thus not presenting as chronically ill to the medical community. Empirical confusion persists regarding symptom severity, symptom pattern, and even symptom presence (Peake & Manderson, 2003) so that UI remains poorly understood as a chronic health condition. Urodynamic testing may objectively confirm the physiological condition at a point in time and suggest appropriate treatment or management options, yet the symptom profile and psychosocial impact of UI is often less easily captured and evaluated.

Unlike other chronic health conditions, female UI is often considered to be a common or even a normal body condition that is simultaneously an embarrassing hygiene issue to be managed privately by the woman and a medical diagnosis to be evaluated and treated by specialists (Peake & Manderson, 2003). “Legitimizing” UI as a medical condition validates care seeking (Garcia et al., 2005, p. 40). Understanding the impact of UI as a chronic physical condition that affects psychosocial health broadens the perspective in care management.

The symptom profile of UI, as occurs with other chronic health conditions, presents a significant burden to women as symptoms are managed to lessen the impact of the health condition on quality of life. Chronic illnesses create an economic burden as people manage symptoms (Bovberg et al., 2009; Strauss et al., 1984), and female UI is no exception. Medical treatment for stress urinary incontinence currently accounts for an estimated financial burden in the United States of $12.4 billion per year (Wilson et al., 2001). This does not include the personal expense of incontinence pads, altered clothing to hide episodes, and cleaning costs to bedding and clothing. Linder and Nygaard (1998), in their book *Void Where Prohibited: Rest Breaks and the Right to Urinate on Company Time*, chronicled the history of workplace rest breaks, timed restroom breaks for women employees, and the consequences of female UI on employment. Unknown costs to missed work or missed opportunities for employment as a result of trying to hide UI symptoms, as well as unknown costs to emotional health and relationship struggles are likely to contribute to the economic burden of female UI. The interaction between psychosocial costs and economic costs of female UI remain underexplored. The very real economic and health-related costs of living with UI suggest that this condition should be considered a major chronic health risk for women.

Chronic illnesses such as UI require ongoing, often psychosocially intrusive management that is often borne silently by people trying to maintain a level of quality and control in their lives. In her seminal work *Negotiating Health Care: The Social Context of Chronic Illness*, nurse researcher Sally Thorne (1993) offered the stories of people living with the “invisible” differences (p. 68) of chronic illness as testimony to the frustrations experienced when they felt they had to justify or demonstrate the impact that the illness symptoms had on their quality of life. It is often embarrassing enough for women to describe their UI symptoms, let alone to keep diaries of voiding patterns and complete symptom “bother” questionnaires.

Women cope with UI in much the same way that people cope with other chronic conditions. Maintaining control over symptoms through personalized, daily routines was a predominant theme across studies (Anger et al., 2011; Bradway, 2005; Hayder & Schnepp, 2010; Roe, 2000; Wang et al., 2011). Pelvic floor exercises were viewed as a way of doing something on one’s own to control symptoms and lessen the impact of UI on their lives, including impact on sexual activity (Hayder & Schnepp, 2010). Often dietary therapy was used to control symptoms of UI (Hale, Grogan, & Willott, 2009). As managing symptoms becomes part of everyday life, female UI becomes normalized and part of the woman's identity as an otherwise healthy, competent adult (Bradway, 2005; Doshani, Pitchforth, Mayne, & Tincello, 2007; Roe, 2000).

The second predominant theme of coping with female UI was hiding the condition from others (Talbot, 1994). Hiding symptoms by use of incontinence pads or sanitary napkins provides the "illusion of body competence" (Peake & Manderson, 2003, p. 42). Incontinence pads were seen as the most reliable means of controlling symptoms (Anger et al., 2011). Talbot (1994) reported that some women told her that they would try to hide the telltale, incriminating odor of urine through dietary means such as ingestion of charcoal, white willow bark, and/or chlorophyllin copper tablets. Women tried to identify and avoid factors that brought on an episode of incontinence (Li et al., 2007). Women with UI often control symptoms by toileting prior to any social activity (Anger et al., 2011), keeping their bladders empty at all times (Li et al., 2007), restricting fluid intake, and carrying a change of clothing or underwear when leaving their home (Talbot, 1994). Women with UI developed mental maps of public toileting facilities, and restricted social activities to maintain easy access to such facilities (Nicolson et al., 2008; Talbot, 1994). Accessibility to bathrooms was reported by some women during interviews to have affected job seeking (Brown et al., 1998) and vacation travels (Hayder & Schnepp, 2010). Family members, particularly daughters, reported that the woman's symptoms limited the range of activities participated in and a major focus of the activity became mapping locations of bathroom services (Coyne, Matza, & Brewster-Jordan, 2009). Women with urinary incontinence go to great lengths to manage the challenges that this condition brings to their daily lives.

The subjective nature of living with UI has led continence nurse educators to advocate a patient-oriented assessment policy: the experience and perception of urinary incontinence is whatever the woman says it is (Doughty & Crestodina, 2006). This strategy removes the burden of proving UI and offers women the dignity of owning their own symptom profile. Consideration of female UI as a chronic health condition with a significant biopsychosocial impact offers nursing a framework to improve care and identify management strategies. By identifying female UI as a chronic health condition, nursing care may be framed in a more holistic manner that addresses the ongoing needs of symptom management in the context of daily life and interpersonal relationships.

Chronic Illness and the Intimate Dyad

Chronic health conditions, such as incontinence, affect not only the individuals manifesting the condition, but also their intimate partners (DesRozier, Catanzaro, & Piller, 1992; Farrell & Markides, 1985; McPheters & Sandberg, 2010; Steiner, Bigati, Hernandez, Lydon-Lam, & Johnston, 2010; Yorgason, Booth, & Johnson, 2008). Wright (2005) challenges nurses to incorporate attention to the impact that the illness of one partner has on an intimate dyad. She argues that the negative effects on partners, or couples as a unit, of feeling "ignored or … invisible" (p. 345) may be ameliorated by nurses offering themselves as "compassionate witnesses … in the context of a therapeutic conversation" (p. 347), thereby promoting family healing. Whyte (1997) echoes this perspective of nursing in partnership with an intimate couple by beginning her first chapter of *Explorations in Family Nursing* with a powerful story of how failure to care for the marital dyad in the face of severe illness of one spouse contributed to poor outcomes for the husband, the wife, and the marriage. As family nurse scholars, Wright and Whyte both asserted the necessity of considering the interaction between physical health and the health of the relationship when caring for an individual member of this intimate family dyad.

Theoretical Perspectives Informing Dyadic Health Care

Several perspectives on what it means to live with a chronic illness and social construction of the health experience may be considered useful in exploring the impact of UI on the woman and her intimate partner. Studying chronic conditions, such as UI, from a medical anthropology framework values gathering information on the individual's subjective symptom experience as well as influences on the experience of illness from cultural, social, and environmental contexts (Bradway & Strumpf, 2008). The family systems perspective approaches health issues from the context of how the partners in an intimate dyad are affected by the condition as individuals and as a couple "unavoidably influencing each other" (Coyne, 1995, p. 103). A dyadic perspective, in contrast with an individualistic study approach, explores how couples jointly create meaning and cope together to maintain or restore well-being as individuals, as a team, and in relation to a wider social sphere (Berg & Upchurch, 2007). In an intimate dyad, "each partner's reality is shaped by perceptions of the other's feelings, thoughts, and behaviors" (Cannon & Cavanaugh, 1998, p. 406). Interpersonal and social context are key factors necessary to understanding an individual's illness experience, and UI is no exception.

Support provision and interactions regarding symptom management carried out within the intimate dyad involve patterns in emotional responsiveness and reciprocal exchange that are transactional and bidirectional (Fekete et al., 2007). Other transactional factors affected by and affecting the illness experience include patterns of dyadic coping, emotional relating, and reciprocal communication (Cannon & Cavanaugh, 1998). Social scientists studying the impact of a chronic illness on the perceived quality of the intimate dyadic relationship must also explore for potential mediating factors between partner support and psychosocial adjustment (Fekete et al., 2007), or for example, between symptom severity and dyadic satisfaction (as was investigated in this dissertation study on the impact of a woman’s UI on the intimate dyad). Dyadic appraisal and dyadic coping processes affect the ability of couples to adjust to the stressors of a chronic illness (Berg & Upchurch, 2007). Identifying significant factors contributing to these transactional processes of coping with chronic illness, symptom impact on dyadic functioning, and impact of symptom management on the intimate partner are key elements necessary to understanding the meaning of living with a chronic illness and designing effective nursing interventions (Cannon & Cavanaugh, 1998).

The assumption in a transactional framework is that interactional work (dyadic coping) affects the perceived success of the dyad as a unit (dyadic adjustment) and is also affected by how the couple views itself as a successful unit (Berg & Upchurch, 2007). Factors that affect dyadic coping or dyadic adjustment as couples work with a chronic illness may also be affected by dyadic coping or adjustment in a bidirectional manner; for example, dyadic satisfaction may both enhance coping and be enhanced by coping with the illness experience (Berg & Upchurch, 2007). Given that illness work is taking place in the context of a close, intimate relationship, Coyne (1995) argues that the factors that influence and are influenced by the work of that relationship should be explicitly and systematically evaluated. Dyadic coping strategies and satisfaction with dyadic adjustment during chronic illness work are likely to be multifactorial processes that also work at the level of the dyad as the unit of analysis (Berg & Upchurch, 2007). Understanding the processes of how dyadic coping and dyadic adjustment interplay with chronic illness work may offer suggestions for successful interventions in health promotion and maintenance.

Key to using a transactional, family systems theoretical framework of dyadic illness work is to explore “how the illness is situated in the relationship itself” (Berg & Upchurch, 2007, p. 940). Not enough is known about how couples cope together with illness symptoms and emotional stressors (Boland et al., 2012). Interventions designed to improve social support and individual coping skills will prove disappointing if the illness work of each individual in the intimate dyad, as well as the couple as a unit, are not better understood (Coyne, 1995). From a transactional perspective it follows that: “Aspects of biological, psychological, and social functioning of one partner interact with these aspects of the other partner to create the dynamic context” (Cannon & Cavanaugh, 1998, p. 406) of the intimate dyad. This approach requires reframing the research question to include partner perceptions as an integral component of illness work and not relegating the partner solely to a supporting role in the ill partner’s individual illness work (Berg & Upchurch, 2007).

Much remains to be explored regarding: a) how intimate partners co-create the meaning of the chronic illness to themselves as individuals and as a couple, b) how couples cope as partners with the impact of the chronic illness on themselves as individuals and as a couple, and c) the perceived success of the couple’s adjustment to the chronic illness (Berg & Upchurch, 2007). Badr and Acitelli (2005) discuss the need for exploring these interpersonal effects of chronic illness work demands and analyzing coping strategies for effect on sustainability of the partnership. The purpose of this dissertation study was to examine the interactional processes of female UI symptoms, chronic illness work, and quality of the midlife intimate dyad from a family systems perspective.

Corbin and Strauss' Collaborative Chronic Illness Trajectory

Social science and nursing science have contributed greatly to the body of knowledge regarding the impact of chronic illness on people's lives. Two influential scholars, Juliet Corbin (Nursing) and Anselm Strauss (Sociology), collaborated through years of extensive research to produce their seminal text, *Unending Work and Care: Managing Chronic Illness at Home* (Corbin & Strauss, 1988). Their theoretical framework was grounded in extensive qualitative inquiry of coping with a variety of chronic illnesses. Corbin and Strauss' model of chronic illness work processes was chosen to guide this inquiry into the coping processes of the midlife intimate dyad working with chronic female UI.

Corbin and Strauss (1991b) assert that "a central feature of *any* chronic illness, unless the symptoms are really nonintrusive, is that people have to *live* with those illnesses…and the impact of these on their identities and their lifestyles, is part of the work of their kin, their significant others, and health professionals" (p. 247). Chronic illness work carried out in the context of an intimate dyad involves individual as well as interactional coping strategies (Corbin & Strauss, 1988). Chronic illness work is manifested through a trajectory of action to shape the course and impact of the illness

(Corbin, 1998) on the lives of the intimate partners. Roe and May (1999) propose Corbin and Strauss' Chronic Illness Trajectory model as a useful one to examine the lived experience of UI.

Corbin and Strauss' (1984; 1988) Collaborative Chronic Illness Trajectory model proposes that intimate partners are individually and jointly engaged in *biographical work, social work, economic work,* and the *work of everyday living*. It is an interactional model describing partners' movements, or trajectory of action, through chronic illness management. One of the main purposes of this model is to call attention to the issues and difficulties that intimate partners may encounter as they must negotiate and coordinate coping strategies required by the condition's symptom profile and impact on these four major work domains (Corbin & Strauss, 1984). Corbin and Strauss' Collaborative Chronic Illness Trajectory model was used to guide this inquiry into the impact of a woman's UI on the intimate dyad.

One key point of breakdown in the collaborative illness trajectory is the biographical work that each partner must necessarily engage in to incorporate the illness into their life story (Corbin & Strauss, 1984). Biographical work is identity work, or a combining of one's life story and self-concept into an integrated whole (Corbin & Strauss, 1991a). Biographical work is simultaneously an individual, an interpersonal, and a social process. It is important to note that in biographical work, as has been demonstrated among people living with multiple sclerosis, "performance fails according to his or her own standard" (Boeiji, Duijnstee, Grypdonck, & Pool, 2002, p. 885). It is also important to keep in mind that role performance and identity work occur in social and interpersonal context, that is, "part of the process necessarily entails receiving validation from others" (Corbin & Strauss, 1988, p. 82). Thus, the biographical work required when coping with a chronic health condition is both individual and interpersonal work that is affected by the ability of intimate partners to coordinate and collaborate on expectations and actions (Corbin & Strauss, 1984). Successful biographical work contributes to successful chronic illness work.

Biographical work may be difficult or thwart successful collaborative chronic illness coping (Corbin & Strauss, 1984; 1988). Corbin and Strauss (1988) identify three major ways that a breach in biographical work may result in self-interpretations of body failure and a disrupted self-image. Body conceptions may suffer when the actions or appearance of the body contribute to actual or perceived *performance failure*. *Self-concept* may be compromised as the illness affects social roles. Intimate partners may "put on performances of their own" (p. 60) as they cope with a mate's illness in terms of their own biographical needs. A breakdown in biographical work may also cause a crisis in a person's biographical timeline, or *life stage/role* transition points: "who I am now and will be is not who I was and thought I would be" (Corbin & Strauss, 1988, p. 61). Because biographies of partners in an intimate dyad are both shared and separate (Corbin & Strauss, 1984), getting stuck in the biographical work of living with a chronic illness may compromise the intimate relationship (Corbin & Strauss, 1988). Assessing for difficulties in managing biographical work is a key factor contributing to successful chronic illness work.

Illness work processes (i.e., biographical, social, economic, and daily work) go on in each partner of the intimate dyad, independently and jointly. In the context of living with a chronic illness as a partner in an intimate dyad, coping successfully with the necessary interactional work of the relationship is also a critical factor to consider when assessing how someone with a chronic illness is functioning (Corbin & Strauss, 1984; 1988). Although some intimate partners respond to a mate's chronic illness by drawing more closely together and working collaboratively, others become more and more distant and threaten dissolution of the relationship (Stuifbergen, 1987). One significant outcome of successful relationship work, therefore, is relationship satisfaction that promotes sustainability of the intimate dyad (Corbin & Strauss, 1988).

Corbin and Strauss (1988) proposed several factors as mediators in successful relationship work, as evaluated by successful dyadic adjustment to the stressors of collaborative chronic illness work. One factor is the level of *commitment*, or the degree to which illness work, biographical work, and daily work are carried out to benefit each other. Corbin and Strauss suggest that a lack of reciprocity in commitment changes the relationship from love to duty. Motivation to stay in a committed relationship stays high when there is some sort of emotional pay-off (Corbin & Strauss, 1988). A sense of give-and-take or reciprocity based in fairness and trust (i.e., *relational ethics*) has been identified by the contextual family therapist Boszormenyi-Nagy as critical to satisfaction in interpersonal relationships (Boszormenyi-Nagy, 1997; Boszormenyi-Nagy & Krasner, 1986). Commitment to this sense of reciprocal responsibility to emotionally nurture each other has been demonstrated to be a significant contributing factor to dyadic satisfaction and adjustment to health problems (Grames, Miller, Robinson, Higgins, & Hinton, 2008).

A second factor affecting successful dyadic adjustment when couples are faced with a chronic illness is the degree of *alignment* (Corbin & Strauss, 1988). Couples whose actions do not fit together or whose perceptions and/or coping styles are not congruent are at risk for poor outcomes in dyadic adjustment. Misalignment may occur through internal contingencies such as power struggles, misunderstandings, or misperceptions. Misalignment may also occur through external contingencies such as changes in the illness work required to cope with a changing illness trajectory or biographical work required to cope with the illness (Corbin & Strauss, 1988). Perceived negative partner coping strategies, such as withdrawing from the loved one or ignoring the stressors of the illness, are associated with depression, anger, frustration, and relationship dissatisfaction (Bediako & Friend, 2004; Lal & Bartle-Haring, 2011; Spring et al., 2011).

Berg and Upchurch (2007) discuss the possibility that a decrease in shared social or intimate activities due to illness may compromise the feelings of connectedness and intimacy necessary for effective communication and integrated coping strategies. Social withdrawal by people living with a chronic illness includes a reduction in shared, pleasurable activities including activities that promote emotional and physical intimacy with a partner (Revenson & Majerovitz, 1991). Symptoms of a chronic illness can intrude on and alter everyday expression of sexuality, thereby altering participation in shared sexual activity (Kralik et al., 2001). An association between avoiding intimacy and increased symptom severity has been reported in the literature (Druly, Stephens, & Coyne, 1997). Higher levels of perceived intimacy, on the other hand, were associated with reports of better personal coping with symptom management and less perceived stress (Trief, Himes, Orendorff, & Weinstock, 2001). Promoting *alignment* in the relationship by maintaining the bonds of physical intimacy is a necessary component of effective relationship work when coping with chronic illness.

The third factor in successful relationship work, or dyadic adjustment to chronic illness, is the *interactional stance* of each partner (Corbin & Strauss, 1988). This complex construct is comprised of several concepts related to partner perceptions of self as individual versus couple as a unit: a) shared knowledge of the condition, b) projections of the other into one's own biography, c) awareness and interpretation of the partner's actions or reactions, and d) responses to the partner. The interactional stance also has to do with "the number and types of selves 'contained' in their respective biographies" (Corbin & Strauss, 1988, p. 135). In other words, the interactional stance concerns issues of whether the partners view themselves as more of a unit or more independently and the degree to which partners openly share, problem-solve, and cope together as a team (Corbin & Strauss, 1984; 1988).

Chronic illness challenges coping skills and communication skills. Often when people report feeling misunderstood regarding their illness experience, they are not able to explain exactly what they mean by feeling misunderstood by their partner (Bediako & Friend, 2004). Disclosure of concerns and sharing confidences must be done in a way that considers the safety needs of both partners individually and the relationship as a unit (Cannon & Cavanaugh, 1998). The ability to communicate openly and effectively about personal concerns is thought to be indicative of healthy adjustment to challenges facing a couple (Druley et al., 1997). In an on-line forum of rural women who live with a chronic illness the topic of problem-solving difficulties in maintaining open communication with intimate partners was considered critical to maintain the health of the relationship (Spring et al., 2011). Open communication patterns indicative of a healthy interactional pattern may lessen the negative impact of chronic illness work on the intimate dyad.

In summary, this study explored the impact of biographical work and relationship work on successful dyadic coping in intimate partners living with female UI. Factors proposed as contributing to a breakdown in coping with biographical work, or having a negative impact on self-concept were explored. Factors proposed to contribute to perceptions of successful relationship work were also examined. How these factors have affected the lives of people negotiating UI symptom management and impact is discussed in the sections to follow.

Biographical Work of Midlife Female Urinary Incontinence

The impact of UI on women's biographical work in terms of everyday work and quality of life is subjective and does not happen outside of interpersonal and social relationships. The challenges that performance failure of body systems pose to women coping with UI symptoms threaten the ability to effectively carry out biographical work. Images of a negatively affected life include descriptions of living with the shame of a taboo condition and self-induced social distancing (Hägglund & Wadensten, 2007; Kralik et al., 2001; Shaw et al., 2001). Incontinence conceptualized as a normal part of aging led to feelings of being old and losing control – factors increasing the likelihood of feeling a need to hide evidence of incontinence (Peake et al., 1999). Davis, Kumar, and Wake (2010) found a tendency to self-blame for incontinence due to the perceived stigma of real or suggested risk factors such as obesity or history of being sexually assaulted.

Living with UI as a potentially stigmatizing condition may compromise a woman's sense of self-worth (Nicolson et al., 2008). Women's bodies and bodily function are often contextualized and confounded with reproductive function from both a social and a medical perspective (Peake et al., 1999). Female UI may be normalized as another form of leaking bodily fluids at a life stage when it is more socially acceptable for women to leak body fluids, for example by marketing incontinence pads as controlling fluid leaks similar to pads for menstruation (Peake & Manderson, 2003). As Peake and Manderson note, advertisement for incontinence pads often depict youthful women engaged in active lifestyles. Contextualization of UI as part of the stigmatized self that the woman must reframe in order to remain acceptably “normal” is consistent with Corbin and Strauss’ concept of biographical work (Skoner & Haylor, 1993).

For women living with UI, fear of visibility of symptoms is the major contributing factor to perceived stigmatization (Elstad, Taubenberger, Botelho, & Tennstedt, 2010) and fuels their desire to normalize the condition. Women living with UI attempt to normalize the condition by independently managing symptoms to lessen the impact on daily activities (Hale et al., 2009; Roe, 2000; Skoner & Haylor, 1993). In the case of UI, “visibility” also includes the tell-tale odor of urine (Elstad et al., 2010; Li et al., 2007; Nilsson, Lalos, & Lalos, 2009). Fear of an incontinent episode was just as concerning as an actual episode, with embarrassment or fear of embarrassment being hallmark features of life with UI (Nicolson et al., 2008). Women living with incontinence feel the taboo and stigma of the public visibility of their private symptoms of frequency and urgency as much as actual episodes of incontinence (Brown et al., 1998; Elstad et al., 2010). Such publically visible symptoms of frequent, sudden trips to the toilet were more embarrassing than private, hidden incontinent episodes (Coyne et al., 2009; Elstad et al., 2010; Talbot, 1994). Middle-aged women are expected, however, to maintain control of bodily functions, and UI threatens their sense of “social legitimacy” (Peake et al., 1999). “Incontinence is about being wet when one is expected to be dry” (Isaksen, 2002, p. 802), uncontrolled when one is expected to be controlled. Inability to hide this evidence of UI may cause a crisis in biographical work.

Recasting biography requires some sense of control over life's events and meanings (Corbin & Strauss, 1988). The concern regarding control over the symptoms of female UI is a concern regarding one's social place (Peake et al., 1999). Physiological control of incontinence symptoms has top priority, yet women with UI experience psychosocial consequences if they are unable to control their symptoms and keep them secret (Li et al., 2007; Talbot, 1994). Such lack of control over elimination is expected among infants and confers stigma to adults who break this social taboo and make body waste a public experience (Garcia et al., 2005; Hägglund & Ahlström, 2007; Peake et al., 1999). Loss of continence control is equivalent to loss of adult status (Brown et al., 1998).

Peake et al. (1999) also noted that social etiquette places expectations on women for worth as a female: "'nice" girls are supposed to 'smell nice'…girls who wet themselves – who are unable to control bodily functions – are 'naughty'" (p. 277). Incontinence is also associated with obesity (Jamison et al., 2007; Malmstrom et al., 2010; Melin, Falconer, Rössner, & Altman, 2008) – another stigmatizing condition linked in social consciousness with loss of self-control (Isaksen, 2002; Peake et al., 1999). Women's bodies and bodily functions are subject to cultural expectations that incontinence threatens (Peake & Manderson, 2003), thus threatening successful biographical coping.

Perceiving successful management of UI is essential to maintaining a sense of self-worth and competency (Peake & Manderson, 2003). Common themes across studies of the emotional consequences of perceiving failure at coping with UI symptoms include: self-blame and feeling weak-willed (Anger et al., 2011); powerlessness, shame, and social alienation (Hägglund & Ahlström, 2007); and loss of dignity and sense of self identity (Isaksen, 2002). Thus, the key to understanding the impact of UI on women's lives is to understand the psychosocial component of body performance failure that occurs with UI.

Threats to Self-Esteem

Women's biographical work with midlife UI is performed in the social and cultural context of what it means to be female and what it means to be an aging female (Bradway, 2005; Peake & Manderson, 2003; Peake et al., 1999; Talbot, 1994). Women's biographical work with midlife UI is also performed in the context of what it means to lose control of bodily functions. As one woman noted, "Loss of bladder control undermines my sense of competence and freedom in the world" (Kralik et al., 2001, p. 185). Continence is a social expectation for adults, and incontinence or fear of incontinence, or "dirtying" one's body, "is a symbolic and literal negation of social personhood" (Isaksen, 2002, p. 803). In focus groups, women (N = 61, age range = 31-80; approximately one-third White, Black, and Hispanic participants) described their perceptions of social stigmatization of UI, which Elstad et al. (2010) interpreted as conveying the message of "a kind of bodily pollution and shirking of social/moral responsibility" (p. 2466). Human waste is considered dirty and its odor considered "bad" – associations that may have had a protective benefit in the past for warning people of the potential for danger in contamination and disease (Isaksen, 2002). These socially and culturally negating messages inform the woman's self-image as a competent, socially acceptable adult who happens to live with UI. Ascertaining the meaning of UI to a woman's self-concept is complicated by the lack of public discourse and socially acceptable dialogue regarding bodily functions, as well as a lack of words that adequately convey the symptom experience in relation to self-identity (Isaksen, 2002). Much work remains to understand the threat that UI poses to a woman's biographical work and self-concept.

The impact of UI on self-esteem has not been explicitly studied, though low self-esteem has been identified as a major theme in interviews with 10 women (mean age = 65.8, range = 55-82) living with overactive bladder (Nicolson et al., 2008). Negative self-concept and withdrawal from social situations were reported by 10% and 7% respectively of respondents to a Michigan survey (*N* = 163 women with UI, mean age = 59.87, range = 40-95) when answering Likert-style questions that asked about the psychosocial impact of UI (Fultz & Herzog, 2001). Although the majority of the respondents in this study did not report negative effects on their psychosocial health, among women who did report an impact there was a significant moderate association found between negative self-concept and withdrawal from social activities ($r = 0.43$, $p < 0.001$). Bradway and Strumpf (2008) interviewed 17 women (mean age = 65, 35% African-American) who had UI for longer than 5 years and found that women who sought care for their symptoms were more likely to report a negative impact of symptoms on their self-concept (9 of 13 participants reported feeling bad about herself = 69.2%) than those who did not seek care (1 of 4 participants reported feeling bad about herself = 25%). When a woman approaches a healthcare provider with concerns about UI, her self-esteem may already be in jeopardy.

Studies of the psychosocial impact of UI suggest that feelings of self-worth may be compromised as women cope with symptoms. Qualitative research has contributed much to the understanding of the impact of UI on a woman's feelings of self-worth as it is manifested in altered social activity and altered presentation of self. Worry and embarrassment about being incontinent in public caused some women with UI to not only restrict their social movements and interpersonal activities (Hägglund & Ahlström, 2007 [*N* = 14, age range = 34-52]), but to also alter their appearance to wearing baggy, dark clothing when going outside the home (Hale et al., 2009 [*N* = 20, mean age = 61, range = 50-79]; Nicolson et al., 2008; Zeznock, Gilje, & Bradway, 2009 [*N* = 17, age range = 33-86]). Controlling UI symptom impact by hiding may damage self-esteem.

Talbot (1994) reviewed the literature on coping strategies for managing UI and reported the following trends in social withdrawal: a) fear of discovery leads some women to limit their laughter in public places, thus compromising social relationships, b) some women self-isolate with a simple head cold due to fear of an incontinent episode with sneezing or coughing. In interviews, five of 29 women with chronic UI (mean age = 61, range = 39-83) reported a negative interference with their job performance or relationships with colleagues, even though the average symptom "bother" score in this study was "moderate" rather than "severe" in relation to social limitations (Srikrishna et al., 2009). Nilsson et al. (2009) found that among 109 women with UI (mean age = 52, range = 25-74), 56% of those who worked outside the home reported that symptom management had a negative impact on their work. Employment outside the home was problematic for maintaining secrecy and several women (*N* = 65, mean age = 62, range = 37-86) reported in a focus group setting that the symptom impact of UI led them to alter their work performance, give up outside employment, or seek early retirement to protect their self-image (Brown et al., 1998). Coping with UI by avoiding others, compromising productivity in the workplace, and limiting joyful activities such as laughing or wearing light, colorful clothing is counterproductive to self-esteem and may compromise the woman's ability to effectively engage in the necessary biographical work of living with UI. An exploration of the possible association between level of self-esteem and female UI symptom severity is warranted.

Threats to Body Image

Middle-aged women (*N* = 81, ages 30-51) living with a chronic illness revealed in letters to the researcher that "a beautiful, sexual body was a body without illness" (Kralik et al., 2001, p. 182). As a result of living with chronic UI, women described feeling diminished as a person, unfeminine (Coyne, Margolis, Jumadilova, et al., 2007), and unattractive (Brown et al., 1998; Nilsson et al., 2009). When asked on open-ended questionnaires about the impact of UI in the previous 4 weeks on whether they felt attractive, only 29.8% of 104 Swedish women (mean age = 52, range = 25-74) responded "Often" or "Always," whereas 47% responded "Occasionally" or "Seldom" (Nilsson et al., 2009). In focus groups of women with UI who lived in the San Francisco Bay Area (*N* = 65, mean age = 62.4), 52% of the words used were related to feelings (Brown et al., 1998). Among the women under the age of 70, 12% of the feelings-related words were associated with feeling unattractive compared to only 2% of the feelings-related words used by women 70 and older (Brown et al., 1998).

Qualitative analysis of focus group (ten women, eight men living with overactive bladder symptoms) and individual interviews (five women, one man living with overactive bladder symptoms) among participants recruited from general practice clinics in England (mean age = 63, range = 51-85) revealed that embodiment of the urinary symptoms into a negative body image compromised the participants' self-esteem, sexual function and intimate relationships (Nicolson et al., 2008). When directly asked if UI affected her body image, one woman responded: "Aye, oh aye. Because you don't even bother dressing up. I wouldn't say I was vain but I liked to dress nice and get my hair done. I don't bother now" (Nicolson et al., 2008, p. 353). Coyne, Margolis, Jumadilova, et al. (2007) also reported that in focus groups of U.S. women with urgency UI, 17 of 23 (73.9%) who participated described a loss of self-confidence in their body's femininity and attractiveness, with quoted phrases such as "it's withering…it's diminishing," "like spraying a carnation with a rose scent," and "Why does my body hate me?" (p. 662).

One of the major goals for incontinence-related surgery, as reported by 33 women (mean age = 64.2, range = 42-85), was to improve their body image from that of an "old smelly woman" (Srikrishna et al., 2010, p. 1506) to restoring their confidence in their bodies. Even two years following surgical repair, the women in this study took a long time to recover a positive view of self as being feminine and sexually desirable, with a positive body image. The percentage of women who received surgical intervention for urinary incontinence that reported meeting their goal of improved body image was 22% at six weeks, 25% at six months, 38% at one year, and 42% at two years post-operatively. In contrast, the goal of symptom relief was met by 70.1% of the women at six weeks, 82.7% at one year, and 94.1% at two years post-operatively (Srikrishna et al., 2010). No studies were found elucidating the process of developing poor body image as UI progresses or leading up to the decision to undergo surgical repair of the pelvic floor.

Threats to Emotional Health

When healthcare professionals work with women living with UI, the emphasis tends to be on symptom management and impact on daily activities rather than the emotional impact of UI (Perry, McGrother, & Turner, 2006). Psychological assessment is not routine practice when women seek care for UI (Yip & Cardozo, 2007). It is important to consider that social and interpersonal withdrawal due to altered perceptions of self-worth stemming from chronic symptoms may increase the risk of depression (Corna & Cairney, 2005). Inability to predict or control symptoms may also increase the risk of developing anxiety. Ineffective biographical work processes may lead to emotional disorders as a comorbidity of female UI.

The association between female UI and depressive symptoms or clinical depression has been well documented (e.g., Bradley et al., 2012; Chiverton et al., 1996; Felde et al., 2012; Fultz & Herzog, 2001; Malmstrom et al., 2010; Melville et al., 2005; Melville et al., 2002; Milsom et al., 2012; Nicolson et al., 2008; Perry et al., 2006; Sung et al., 2009; van der Vaart, Roovers, de Leeuw, & Heintz, 2007; Yip & Cardozo, 2007). A significant increase in depressive symptoms as severity of incontinence symptoms increased has also been demonstrated (Felde et al., 2012; Melville et al., 2005; Stoffel et al., 2009; Sung et al., 2009). Women with UI were also more likely to report concurrent anxiety than were women without UI (Coyne et al., 2012; Felde et al., 2012; Milsom et al., 2012; Perry et al., 2006). Women with UI who have both depression and anxiety reported a higher impact of UI on their quality of life than did women who had only one of the two conditions (Melville et al., 2002). See Table 2-4 and Table 2-5 for a description of studies documenting association between UI, depression, and/or anxiety.

Table 2-4

Studies Reporting an Association between Female UI and Depression

Authors	Participants	Data Collected	Results
Bradley et al. (2012)	N = 1004 women veterans: 183 w/stress UI, 191 w/urge UI, 334 w/o UI Mean age = 38.7 (20-52)	Composite International Diagnostic Interview-Short Form for Major Depression (CIDI-SF)	Prevalence of Depression: 32.8% women w/stress UI 43.5% women w/urgency UI 23.7% women w/o UI (UI vs. no UI, $p = 0.03$, $p < 0.0001$)
Chiverton et al. (1996)	N = 58 women with female UI (66% stress UI, 3% urge UI, 26% mixed UI) Mean age = 58 (27-90)	Beck Depression Inventory (BDI)	22% of participants clinically depressed (compared to 6% in general population)
Fultz & Herzog (2001)	N = 206 women with UI Mean age = 59.87 (40-95) 1,116 women w/o UI Mean age = 56.56 (40-95)	Questionnaire: "Did you feel depressed much of the time during the past week?"	14.37% continent women answered "yes" to feeling depressed 20.59% women with UI answered "yes" to feeling depressed $\chi^2 = 5.18$, $df = 1$, $p < 0.05$
Malmstrom et al. (2010)	N = 841 African-American men and women, n = 102 w/UI Mean age = 59.3± 4.3	Center for Epidemiologic Studies Depression Scale (CES-D-11)	Prevalence of Depression: 38.8% of those w/UI 20.9% of those w/o UI $p < 0.001$
Melville et al. (2005)	N = 3,536 women in Washington n = 1,458 w/UI Mean age = 53.4 (30-90)	Patient Health Questionnaire (PHQ-9)	Prevalence of Depression: 2.2% of women w/o UI 6.1% of women w/UI 4.7% of women w/stress UI 6.6% of women w/urgency UI $p < 0.001$ Association with UI Severity ($p < 0.001$): 2.1% of women w/mild UI 5.7% of women w/moderate UI 8.3% of women w/severe UI
Moghaddas, Lidfeldt, Nerbrand, Jernström, & Samsioe (2005)	N = 6,917 Swedish women 31% with UI Mean age = 53.4 (50-64)	Self-report of "feeling down and blue"	Self-reported depression associated with UI: *OR* 1.37, 95% CI [1.23, 1.52], $p < 0.001$
Nicolson et al. (2008)	N = 18 people with overactive bladder (10 women, 8 men) Mean age of women = 65.8 (55-82)	Focus groups, individual interview	Major themes identified included: *Depression and hopelessness* regarding the chronic nature of the condition. Quotes from individual women included: "It actually got me so depressed that it made me ill" (p. 350) "When I had the accident I stood up and it destroys you" (p. 351)

Table 2-4 (continued)

Stoffel et al. (2009)	N = 437 women surgically treated for stress UI Mean age = 57.5 ± 13.3	PHQ-9	22% w/moderate-severe depression Symptom severity associated with depression score ($p < 0.001$), odds of depression nearly doubling with each 10 point increase in symptom severity (*OR* 1.93, 95% CI [1.41, 2.65])
Sung et al. (2009)	N = 338 women with UI who were overweight or obese Mean age = 50.7-53.5 ± 10.1-10.3	BDI	30% of women with UI reported significant depression Depression associated with higher number of UI episodes ($p = 0.005$)
van der Vaart et al. (2007)	N = 2042 women from the Netherlands n = 1048 women with UI Mean age = 46.5 ± 13.1	CES-D	Prevalence of Depression: 27.8% of women w/o UI 42.8% of women w/UI (*OR* 1.9, 95% CI [1.6, 2.3])

Table 2-5

Studies Reporting an Association between Female UI and Scores on the Hospital Anxiety and Depression Scale (HADS, Zigmond & Snaith, 1983)

Authors	Participants	Depression	Anxiety
Coyne et al. (2012)	*N* = 10,717 women with UI Age $\geq$ 40 Mean age = 55-59.6 depending on type of UI	Prevalence of Depression: 16.8% women w/stress UI 17.8% women w/urgency UI 34.7% women w/mixed UI	Prevalence of Anxiety: 30.4% women w/stress UI 30.2% women w/urgency UI 49.1% women w/mixed UI
Felde et al. (2012)	*N* = 5,321 Norwegian women (*n* = 1,398 with UI) Mean age = 42 (40-44)	Prevalence of Depression: 7.2% women w/o UI 11.8% women w/UI ($p < 0.001$) 9.0% women w/stress UI 11.7% women w/urgency UI 16.9% women w/mixed UI Association with UI Severity ($p = 0.009$): 9.0% of women w/mild UI 14.3% of women w/moderate UI 15.5% of women w/severe UI	Prevalence of Anxiety: 17.6% women w/o UI 25.8% women w/UI ($p < 0.001$) 22.9% women w/stress UI 28.1% women w/urgency UI 32% women w/mixed UI Association with UI Severity ($p = 0.111$) 23.9% of women w/mild UI 27.3% of women w/moderate UI 33.8% of women w/severe UI
Milsom et al. 2012	*N* = 7,057 women 64.6% w/overactive bladder (OAB) Mean age = 55.6-57.9 ± 11.1 depending on degree of symptoms	Prevalence of Depression: 10% of women w/o OAB 19% of women w/OAB, no bother 37% of women w/OAB + bother	Prevalence of Anxiety: 17% of women w/o OAB 31% of women w/OAB, no bother 49% of women w/OAB + bother
Perry et al. (2006)	*N* = 1,851 women with urgency UI Mean age = 62 (52-74) 10.272 women without UI Mean age = 57 (48-68)	Prevalence of Depression: 17% of women w/o urgency UI 34% of women w/urgency UI 27.5% of women w/stress UI 39% of women w/mixed UI ($\chi^2 = 29.9$, $p < 0.001$)	Prevalence of Anxiety: 13% of women w/o urgency UI 48.9% of women w/urgency UI 48.6% of women w/stress UI 59.8% of women w/mixed UI ($\chi^2 = 32.1$, $p < 0.001$)

The association between female UI and depression is likely to be better understood as an interactional, multifactor process rather than as a direct relationship. In a study of 58 women with UI (mean age = 58, range = 27-90), depression level (measured by the Beck Depression Inventory [Beck, Weissman, Lester, & Trexler, 1974]) was significantly negatively correlated with both self-esteem (measured by the Rosenberg Self-Esteem Scale [Rosenberg, 1965]) and quality of life (measured by the Life Satisfaction Index-Z [Wood, Wylie, & Sheafor, 1969]): $r = -0.62$ and -0.45, $p < 0.01$, respectively (Chiverton et al., 1996). Multiple regression analysis revealed that women living with UI who scored higher on mastery (measured by the Mastery Scale [Folkman, Lazarus, Gruen, & DeLongis, 1986]) and self-esteem also scored lower on depression, accounting for 53% of the variance in depressive symptom scores among women with UI. Mastery, but not depression or self-esteem, explained a significant percentage of variance in quality of life scores in this sample of 58 women with UI (Chiverton et al., 1996). This study supports analyses from qualitative work indicating that a sense of control over the symptoms of UI affects the emotional health of women.

Type of symptoms (e.g., stress vs. urgency incontinence) may also result in differing effects on emotional well-being (Yip et al., 2003), with anxiety and depression reportedly higher among women with mixed incontinence than among women with either stress or urgency incontinence (Coyne et al., 2012). Age may also be a factor, with UI associated with a higher incidence of depression and anxiety among younger women (ages 25-49 and 25-39, respectively) than older women (Jamison et al., 2007). Race was not found to be a significant predictor of depression in women with UI (Fultz & Herzog, 2001).

Other factors have mixed evidence for contributing to an association between female UI and emotional health. Female UI has been associated with both depressive symptoms and obesity (Moghaddas et al., 2005). Sung et al. (2009), however, did not find a significant association between depressive symptoms in 338 women with UI and being overweight, obese, or severely obese ($p = 0.30$). Nocturia was significantly associated with UI symptoms and clinical depression (*OR* 2.0, 95% CI [1.3, 3.2], $p < 0.05$) in a study of 1048 women with UI living in the Netherlands (van der Vaart et al., 2007). Felde et al. (2012), on the other hand, have demonstrated a relationship between UI and both anxiety and depression, even when controlling for nocturia and body mass index by logistic regression.

Fultz and Herzog (2001) found significant odds ratios ($p < 0.25$) on logistic regression for the following variables among women with UI who answered “yes” to feeling depressed much of the time in the past week: self-assessed health (*OR* 0.33; 95% CI [0.16, 0.68]), education (*OR* 0.80; 95% CI [0.69, 0.91], age (*OR* 0.95; 95% CI [0.92, 0.98]), frequency of urine loss (*OR* 1.03; 95% CI [1.00, 1.06]), functional impairment (*OR* 1.18; 95% CI [1.00, 1.40]), urgency symptoms (*OR* 1.81; 95% CI [0.79, 4.65]), and quantity of urine loss (*OR* 2.04; 95% CI [0.85, 4.64]). Another factor that needs to be more fully explored as a potential contributor to the documented association between female UI and emotional health is sexual dysfunction (Worly, Gopal, & Arya, 2010).

The direction of relationship between UI and aspects of emotional well-being, such as anxiety and/or depression, is also not well understood (Coyne et al., 2012). Data from a longitudinal study suggested that women with a depressive disorder at baseline were more likely to develop UI (Melville, Fan, Rau, Nygaard, & Katon, 2009). Women with depressive disorder are more likely to report a higher impact of UI symptoms on quality of life (Melville et al., 2005; Sung et al., 2009). Teasing out temporal relationships between female UI and depression would help to understand this documented comorbidity, as well as offer evidence to guide clinical practice (Chiverton et al, 1996; Goldacre, Abisgold, Yeates, Voss, & Seagroatt, 2006; Melville et al., 2009; Stoffel et al., 2009).

Of particular concern for guiding care for women with UI was the finding (on review of hospital records in England from 1963-1999) that higher rates of both clinical depression and hospitalizations for self-harm were more prevalent among women with UI than among women without UI (Goldacre et al., 2006). Important to providing care for women with UI is an assessment of their emotional health upon presentation of symptoms and following treatment. Innerkofler et al. (2008) documented a significant reduction in depression at 8 weeks following surgical repair ($N = 32$; mean age = 59.8, range = 37-78; mean score HADS –Depression change from 4.1 ($SD = 3.6$) to 2.3 ($SD = 3.5$), $p < 0.05$), but no significant reduction in depression was found following a pelvic floor muscle training program ($N = 21$; mean age = 54.5, range = 38-68; mean score essentially unchanged from 4.2 ($SD = 2.7$) to 4.2 ($SD = 3.2$), $p > 0.05$). Significant reductions in anxiety have also been reported following three different treatment programs: a) *surgical repair* resulted in a mean change in HADS-Anxiety score from 5.0 ($SD = 3.5$) to 2.6 ($SD = 2.4$), $p < 0.05$, among 32 women (Innerkofler et al., 2008); b) *medication* resulted in a mean change in HADS-Anxiety score from 8.3 ($SD = 4.0$) to below clinical anxiety levels of 8 (actual value not reported; $p < 0.04$) among 201 women (mean age = 49, $SD = 12$) taking tolterodine for overactive bladder (Rogers et al., 2008);

and c) participation in a *pelvic floor muscle exercise program* resulted in a reduction from 43.8% of 32 women (mean age = 52.1 ± 3.5) with clinically significant anxiety scores on the HADS-Anxiety subscale to 28.1% ($p < 0.01$) (Lara et al., 2012). The association between depression and female UI symptoms is more likely to persist after surgery if UI symptoms do not completely resolve: the odds of having clinically significant depressive symptoms approximately doubled with each 10-point rise in UI symptom severity (Stoffel et al., 2009). Women who have been living with UI symptoms for long periods of time may take a long time to recover following treatment or may never fully recover from the damage to their emotional health.

It is, therefore, critical for healthcare professionals to be aware of and assess for psychological co-morbidities associated with female UI (Felde et al., 2012). Working with female UI from a chronic illness perspective means that healthcare professionals need to assess the impact of symptoms on emotional health, due to the long term nature and risk to self-concept of chronic illness symptom management. The psychosocial impact of chronic UI needs to be more fully explored in order to meet the health needs of women living with this condition (Sinclair & Ramsay, 2011). Breakdown in biographical work leading to compromised emotional well-being is likely to severely hamper a woman’s ability to successfully engage in relationship work. As discussed below, successful biographical work is essential to promoting successful relationship work.

Midlife Female Urinary Incontinence and the Intimate Dyadic Relationship

Urinary incontinence may challenge a woman’s ability to be a full participant in social events and intimate relationships. Most women who live with UI report a negative impact on social activities (Hayder & Schnepp, 2010; Jamison et al., 2007; Li et al., 2007; Nilsson et al., 2009; Srikrishna et al., 2009; Zeznock et al., 2009). Secrecy was often maintained even from intimate partners as women tried to cope alone with managing symptoms of UI (Hale et al., 2009). How the family or intimate partners cope with female UI symptoms, and whether or not the woman feels supported, may affect the level of distress reported by women who live with UI (Corna & Cairney, 2005).

Shame regarding visible symptoms of UI was also felt within the family unit, with the result that often UI was hidden from intimate partners and close family members (Hägglund & Ahlström, 2007). Intimate family members may protect themselves from association with the woman’s incontinence by emotionally distancing themselves (Isaksen, 2002). The loss of the intimate personal sphere of social support has been reported as psychologically distressing to women living with UI (Li et al., 2007).

How intimate partners jointly cope with a woman’s UI symptom management and symptom impact on the dyad is not well understood. The vast majority of research has been directed toward individual coping strategies of managing UI and impact of symptoms on the woman. Much work remains to elucidate the contribution of relationship work to the impact of UI on women, their partners, and the intimate dyad as a unit.

Midlife Female Urinary Incontinence and Quality of the Intimate Dyad

Studies on the impact of a woman’s UI on the quality and adjustment of the intimate dyad are scant. Nilsson et al. (2009) collected semi-structured questionnaire data from urology clinic participants living in Sweden. When asked about the impact of female UI (stress incontinence, urgency incontinence, or mixed incontinence) on their relationship, approximately one-third of women (41 of 107; mean age = 52, range = 25-

74) and their partners (35 of 109; mean age = 55, range = 27-78) reported a negative impact on the relationship (Nilsson et al., 2009). Written responses to open-ended questions about the impact of female UI on the relationship included partners' comments that "she does not want or does not dare to…do other fun things…not always in the best humor…not willing to join in" (p. 979). Women responded that "I become nervous and cannot actually relax…I lose interest and joy in whatever we do" (p. 978 – 979). The data from Nilsson et al. (2009) provide support for the impact of female UI on the intimate dyad.

Qualitative evidence exists for lack of congruence in marital strain resulting from female UI. Coyne et al. (2009) studied transcripts from three focus groups of men and women with overactive bladder (continent or incontinent), three focus groups of their partners, and three focus groups of other family members ($N = 45$). Coyne et al. reported that while most of the patients denied an impact on the relationship, most of the family members expressed concerns about the strain that symptom management caused in the relationship. When partner focus groups were specifically asked about relationship strain, the response was varied. Some partners felt the strain and others had coped with the changes that symptom management brought to the relationship. One husband cited arguments with his wife as a result of UI symptom impact. Another male partner stated, "She denies having a problem…this could be the downfall of the relationship" (Coyne et al., 2009, p. 973).

Yip et al. (2003) explored the impact of both stress and urgency incontinence on the marital relationship and found a negative association between female UI and overall marital satisfaction. Using the Dyadic Adjustment Scale (Spanier, 1976) as a measure of the quality of the marital relationship, Yip et al. (2003) found significantly poorer marital relationships (Kruskal-Wallis test, $p < 0.001$) among women patients in a urogynecology clinic in Hong Kong who were diagnosed with stress incontinence ($n = 36$; median total score = 100.5; range = 87.3-118; mean age = 49, range = 44-53) or urgency incontinence ($n = 29$; median total score = 88; range = 77.5-108.5; mean age = 43, range = 39-47) as compared to women patients without incontinence ($n = 26$; median score = 117.5; range = 103-125.5; mean age = 50, range = 41-54). A review of studies found that total Dyadic Adjustment Scale scores below 92-107 were able to discriminate distressed from non-distressed couples (Sabourin, Valois, & Lussier, 2005). The data from Yip et al. (2003) support the assertion that female UI jeopardizes the intimate relationship.

The impact of female UI on the intimate dyad may influence the success of UI-related interventions. Using the Dyadic Adjustment Scale subscale for Cohesion, Chen and Tzeng (2009) explored the relationship between being in a perceived cohesive relationship and performing pelvic floor muscle exercises. The participants were women ($N = 106$; mean age = 48.63, range = 24-89) from two university-based hospital clinics in Taiwan who were instructed to perform pelvic floor muscle exercises by a nurse clinician or physical therapist. Dyadic cohesion was found to be a significant contributor to a woman's perceived self-efficacy in performing pelvic floor muscle exercises (path coefficient = 0.26, $p < 0.01$), but not in adherence to a pelvic floor exercise program (Chen & Tzeng, 2009). Chen and Tzeng found that self-efficacy, in turn, demonstrated significant effects on adherence to a pelvic floor exercise program (untrimmed model path coefficient = 0.51, $p < 0.001$; trimmed model path coefficient = 0.59, $p < 0.001$). Though preliminary studies are intriguing, a larger body of evidence is needed to understand the role that a partner plays in facilitating or blocking recommended interventions for female UI.

Nilsson, Lalos, Lindkvist and Lalos (2011b) suggested that couples willing to participate in a research study may be more satisfied with their dyadic functioning than couples who do not participate. Over-sampling of satisfied couples underestimates the need for considering dyadic function as a contributor to successful UI-related interventions. The impact of progressive, chronic female UI on the satisfaction with and subsequent sustainability of the intimate dyad remains under-examined.

Threats to Emotional Nurturing

Does female UI affect the ability of partners to emotionally nurture their relationship? This question has not been explicitly addressed in the literature. Complicating analysis of dyadic studies of the impact of female UI on the quality of the intimate dyad is the observation that many women with UI hide symptoms from their partner. Qualitative research on the woman's lived experience of UI provides insights into the possible connections between symptom management, emotional nurturing of the intimate dyad, and quality of the intimate dyad.

In interviews with older spouses caring for their incontinent partner (five husbands, three wives), several spouses reported a sense of acceptance of incontinence as an unpleasant condition (Cassells & Watt, 2003). One husband referred to the incontinence as an "it" (p. 611) that the beloved wife had and not part of her identity. One husband even reported that managing the incontinence together made the relationship a closer one (Cassells & Watt, 2003). Not all partners cope well with the symptom demands of incontinence. From interviews with 30 people who were living with urinary incontinence (22 women, 10 men), Hayder (2012) described how one woman's therapist had to explain to her husband that UI was a physiological condition before he was able to empathize and provide emotional support.

Emotional support from the partner may be a key component in the impact of female UI on the quality of the intimate dyad. In two separate studies utilizing interviews, women with UI reported that expressions of warmth and affection from their partners gave them comfort (Berglund et al., 1996 [N = 45 women with stress UI, mean age = 50, range = 34-62]; Coyne, Margolis, Jumadilova, et al., 2007 [N = 34 women with overactive bladder, mean age = 48.4 ± 12.9]). In a qualitative study of 14 dyads living with overactive bladder, some husbands expressed empathy, support, and a willingness to "put up with" the symptoms out of love for their wife (Coyne et al., 2009, p. 974). In these relationships, the partner's perception was that the woman was trying her best to reduce the impact of UI on the couple's daily life (Coyne et al., 2009). In a large study of 206 women with UI and 109 partners, women whose partners did not participate in the study were not as likely to perceive receiving demonstrations of warmth and affection from their partner ($p < 0.05$; Nilsson et al. 2009). The role of reciprocity in emotional nurturing when coping with female UI needs to be further explored as a factor in perceived quality of the intimate dyad.

Intimate partners may not successfully cope together as UI symptom burden increases. While some dyads cope together and maintain their emotional bonds, several studies provide evidence for a potential breakdown in emotional nurturing between partners. Coyne et al. (2009) found that although some partners empathized with UI symptom management (as discussed above), other partners reported feeling that the symptoms negatively affected the relationship. Nilsson et al. (2009) found that a substantial proportion of 109 couples (20% of women with UI and 17% of male partners) felt that warmth and affection had diminished following the onset of symptoms. The loss was more keenly felt among the couples in the age ranges of 25-49 than among those 50-74 ($p < 0.05$). Maintaining emotional intimacy is a vital component of effective relationship work. This factor needs further exploration among intimate couples living with UI.

One possible connection between UI symptom management and quality of the intimate dyadic relationship is the documented trend toward self-isolation (see previous discussion on threats to emotional health). Withdrawal from social activities may place a strain on a woman’s ability to share in the emotional bonding that maintains the health of the dyad. That is to say, is there trust between partners that each will engage in the give-and-take required to nurture joint activities? Or, is there a breakdown in this trust between partners that ultimately damages the intimate dyad?

Research evidence supports the negative impact of female UI on couples’ joint activities. In interviews with 45 women receiving surgical treatment for stress UI and 38 husbands, Berglund et al. (1996) reported that women with UI sometimes perceived more of a reduction in joint activities than did their husbands. Nilsson et al. (2009) found that half of the women with UI and one-third of their partners reported a negative impact on joint social and recreational activities. Some women reported in interviews that the daily impact of coping with symptom management on social activities was more of a source of friction between them and their partner than actual incontinence episodes occurring during moments of sexual intimacy (Coyne, Margolis, Jumadilova, et al., 2007). From some husbands' reports, urinary frequency had a more negative effect on daily life and joint activities than did the possibility of an incontinence episode (Coyne et al., 2009). Embarrassment about UI symptoms and frequent visits to the restroom were cited as reasons male partners no longer wanted to engage in joint social activities (Coyne et al., 2009). Other male partners denied any impact on social activities beyond planning for access to a nearby restroom (Coyne et al., 2009).

The dyadic coping strategy of mentally preparing for the social environment is an example of successful relationship work (Talbot, 1994). This strategy was evidenced in two qualitative studies. As one woman explained, "I used to avoid going out, my husband is so sweet, first thing he would do is try and find out where the toilets were, and we would sit next to the toilet" (Doshani et al., 2007, p. 588). Other women note the loss of joint social activities, such as dining out together, due to worry about managing UI symptoms in public, and felt that this loss of enjoyable social time had a negative effect on intimacy (Bradway & Strumpf, 2008).

Difficulties coping with biographical work and resulting negative impact on emotional health may play a role in the impact of female UI on the ability of partners to emotionally nurture each other. The previously noted association between UI and depression may be buffered by the emotional support an intimate partner offers, thereby encouraging the woman to maintain her social activities (Corna & Cairney, 2005). The impact of female UI on the emotional health of the male partner remains, however, underexplored (Nilsson et al., 2009). By self-report, some husbands felt a significant negative emotional impact that they attributed to living with their wife's UI (Coyne et al., 2009). Fultz et al. (2005) found in a survey of 4,987 heterosexual couples (mean age women = 64.2, mean age men = 65.3) that husbands whose wives had UI reported significantly more depressive symptoms (based on scores on the Center for Epidemiologic Studies-Depression scale; Radloff, 1977) than husbands whose wives did not have UI (unadjusted Incidence Rate Ratio = 1.13, 95% CI [1.02, 1.25]). However, this association was no longer significant when other demographic or health factors were controlled. Among couples living with UI, the major predictor of one spouse's depressive symptoms was the other spouse's depressive symptoms (Fultz et al., 2005).

Symptoms of UI, such as nighttime voiding and subsequent sleep disturbance, may challenge partners' ability to emotionally nurture each other. Some partners of women with UI reported an adverse physical impact on their own sleep patterns and consequent fatigue (Coyne et al., 2009). Long term effects of chronic incontinence reported in interviews with eight elderly partners included sleeping in separate rooms to cope with nocturia, when the couple previously had slept together for decades (Cassells & Watt, 2003). As Cassells and Watt (2003) note, the significance to intimate partners of separating bedrooms cannot be underestimated.

Of concern when exploring the psychosocial impact of female UI on the intimate dyad is the possible association of UI with intimate partner violence. In a survey of 825 women visiting a gynecology clinic in England, stress urinary incontinence was significantly more often reported by women who also reported emotional abuse by someone close to them (14 of 198) than by women who reported no emotional abuse (19 of 627) ($\chi^2 = 6.3$, $p < 0.01$; Johnson et al., 2007). Other significant associations with emotional abuse that were found were seeking pregnancy termination, abnormal cervical Papanicolaou smear, and worry about cancer. No significant associations were found between emotional abuse and dyspareunia, abdominal pain or discomfort, or bowel symptoms (Johnson et al., 2007). Though associations between UI and partner violence or history of abuse have been reported, the temporal relationship is unknown.

In a survey of 243 women visiting a gynecology clinic in Germany, Jundt et al. (2007) found that reporting a history of physical (non-sexual) or sexual abuse was nearly twice as prevalent for women with urgency incontinence (26 of 85 = 30.6%) than for women with stress incontinence (18 of 101 = 17.8%) or no incontinence (10 of 57 = 17.5%). This difference was significant by Chi-square ($p < 0.05$). Also of concern was the finding that 79.4% of the women with urgency incontinence who reported physical or sexual abuse were abused more than once, whereas 30.7% of women with stress incontinence who reported abuse noted that the abuse had happened more than once, and none of the women without incontinence reported more than one prior abusive episode (Jundt et al., 2007).

Brown, McDonald, and Krastev (2008) reported the following data from the Maternal Health Study in Australia ($N = 1{,}507$): fear of an intimate partner during the woman's first pregnancy increased her likelihood of also having a) experienced urinary incontinence (*OR* adjusted for maternal age and BMI = 1.64, 95% CI [0.9, 3.1]), and b) experienced increased severity of incontinence (mild UI *OR* = 2.02, 95% CI [1.1, 3.8]; moderate UI *OR* = 1.87, 95% CI [0.7, 5.1]; severe UI *OR* = 8.02, 95% CI [2.1, 30.5]). Of 968 U.S. women veterans (mean age = 38.7, range = 20-52), those women who reported a history of sexual assaults (51.1%) were more likely to also report UI (two or more prior assaults *OR* = 1.8, 95% CI [1.2, 2.9]; one prior assault *OR* = 0.85, 95% CI [0.48, 1.5]; $p < 0.01$) (Bradley et al., 2012). Emotional, physical, and/or sexual abuse severely damage relationships through a breakdown in trust and emotional nurturing between partners. The relationship between female UI and emotional, physical, and/or sexual abuse within the intimate dyad remains underexplored (Bradway & Strumpf, 2008).

Threats to Physical Intimacy

Midlife female urinary incontinence and sexual function.

Because female urinary incontinence involves the same anatomic region as the vagina, UI has often been associated with sexual dysfunction (Lowenstein et al., 2009). Although results are somewhat mixed, presence of UI has demonstrated a significant negative association with women’s reported overall sexual function, as determined by a variety of assessment tools (see Table 2-6). Ozkan, Ogce, and Cakir (2011) were unable to demonstrate an association between UI symptom severity and sexual dysfunction. Liebergall-Wischnitzer et al. (2011) were unable to demonstrate a correlation between urine loss measured by pad tests and sexual function.

One condition-specific assessment tool has been developed for assessing sexual function in women with pelvic floor disorders such as UI: the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ) original (Rogers, Kammerer-Doak, Villarreal, Coates, & Qualls, 2001), the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire, IUGA-Revised (PISQ-IR; Rogers et al., 2013), and short form (PISQ-12) (Rogers, Coates, Kammerer-Doak, Khalsa, & Qualls, 2003). Table 2-7 presents study results utilizing the PISQ. PISQ sexual function scores have been found to be associated with severity of UI symptoms (Brubaker et al., 2009). The preponderance of evidence supports a negative association between UI and a woman’s sexual function.

Table 2-6

Studies of Female UI and Sexual Function

Authors	Instrument	Participants	Results
Beji et al. (2005)	Sexual History Form	2 groups of women from Turkey: *n* = 32 women w/UI (19 w/stress UI, 13 w/mixed UI) Mean age = 43.4± 6.1 *n* = 60 women w/o UI Mean age = 42.5± 6.5	UI vs. no UI ***Significant difference in desire stage*** (embarrassed, guilty, anxious): $\chi^2 = 8.59$, $p < 0.05$) ***Significant difference in arousal stage*** (less responsive): $\chi^2 = 8.7$, $p < 0.05$) ***Higher number with dyspareunia***: $\chi^2 = 6.35$, $p < 0.05$) ***Less satisfied with sex life***: $\chi^2 = 8.01$, $p < 0.05$) Logistic analysis: Increased likelihood of premature ejaculation for men whose wives had leakage during intercourse (*OR* = 3.09, 95% CI [1.11, 8.61]) Increased likelihood of less satisfaction for women if leak during intercourse (*OR* = 4.73, 95% CI [1.45, 15.44])
Bekker et al. (2010)	Golombok Rust Inventory of Sexual Satisfaction (GRISS) Higher scores indicate poorer function	2 groups of women from the Netherlands: *n* = 81 sexually active women with UI (34 w/stress UI, 8 w/urgency UI, 35 w/mixed UI, 4 unidentified UI) Mean age = 50.8 ± 11.9 *n* = 108 sexually active women w/o UI Mean age = 44.6 ± 15.0	Total GRISS scores (mean ± *SD*): With UI = 6.76 ± 1.93 Without UI = 5.90 ± 1.83 ***Significant difference in overall sexual function between women with and without UI*** ($p = 0.02$ [0.049 corrected for age]; one-way ANOVA) ***Significant differences found in GRISS subscale scores for Infrequency and Avoidance*** ***No significant differences found in GRISS subscale scores for Anorgasmia, Vaginismus, Nonsensuality, and Dissatisfaction*** ***Significant difference in Problems with Communication*** ($p = 0.036$) ***did not remain significant when corrected for age*** ($p = 0.779$)
Dean et al. (2008)	Sexual Function Questions based on GRISS	Survey of 4214 Australian women (2765 responded to sexual function questions) at 6 years following initial participation in a 3 month postpartum survey: *n* = 1305 women with UI *n* = 1460 women w/o UI	***Significantly poorer responses in UI vs. no UI in all sexual function domains*** ($p < 0.001$): Desire Arousal Orgasm Satisfaction Pain

Table 2-6 (continued)

Ozkan et al. (2011)	FSFI	3 groups of 142 women withUI from Turkey based on symptoms severity: Mild UI n = 61 Moderate UI n = 47 Severe UI n = 14 Mean age = 44.76 ± 6.87 Mean BMI = 27.27 ± 4.30	***No significant differences between groups*** on total FSFI scores or on any of the subscale scores (desire, arousal, lubrication, orgasm, satisfaction, pain)
Sen et al. (2006)	Female Sexual Function Index (FSFI) Higher scores indicate better function	2 groups of women from Turkey: *n* = 153 women with UI (41 w/stress UI, 20 w/urgency UI, 92 w/mixed UI) Mean age = 46.63 (26-81) *n* = 89 women w/o UI Mean age = 45.34(32-64)	Total FSFI scores (mean ± SD): Stress UI = 22.01 ± 5.56 Urgency UI = 20.70 ± 5.69 Mixed UI = 19.71 ± 6.50 No UI = 22.97 ± 6.95 ***No significant differences between stress UI and no UI on total and subscale scores.*** ***No significant differences between urge UI and no UI on total and subscale scores.*** ***Significant differences between mixed UI and no UI on all subscale and total FSFI scores*** (*p* = 0.002)
Yip et al. (2003)	Derogatis Sexual Functioning Inventory (DSFI): Satisfaction and Drive subscales Higher scores indicate better function	3 groups of women from Hong Kong: *n* = 36 women w/stress UI Mean age = 49(44-53) Mean BMI = 24.8(21.3-27.1) *n* = 29 women w/urgency UI Mean age = 43(39-47) Mean BMI = 21.3(19.2-25.7) *n* = 26 women w/o UI Mean age = 50(41-54) Mean BMI = 24(20.4-26.8)	No significant difference between groups for BMI (*p* = .264, Kruskal-Wallis) Sexual Satisfaction median scores: Stress UI = 8 (7-9) Urgency UI = 6 (4-7) No UI = 8 (6.8-9) ***Urgency UI significantly poorer sexual satisfaction*** (*p* = 0.002, Kruskal-Wallis) Sexual Drive median scores: Stress UI = 7 (4-10) Urgency UI = 6 (3-9.8) No UI = 9 (6-11) ***No significant difference between groups in sexual drive*** (*p* = 0.231, Kruskal-Wallis)

Table 2-7

Studies of Female UI and Sexual Function Using the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ), Short or Long Form

Authors	Instrument	Participants	Results
Brubaker et al. (2009)	PISQ-12	*N* = 450 sexually active women with stress UI presenting for surgery in the U.S. (332 White, 28 Black, 43 Hispanic) Mean age = 49.5 ± 9.5	Preop PISQ-12 scores: Mean score = 31.6 ± 7.0 PISQ-12 scores significantly associated w/ UI symptom severity (*p* < 0.02, t-test) The 38 women who were no longer sexually active at 2yr f/u had baseline PISQ-12 of 27.5 ± 6.9
Coksuer et al. (2011)	PISQ-12	*N* = 118 women from Turkey with UI (41 w/stress UI, 38 w/urgency UI, 39 w/mixed UI) Mean age = 44.2 ± 3.2, 44.6 ± 3.0, 45.5 ± 3.3	Mean score stress UI = 22.3 ± 2.8 Mean score urgency UI = 24.9 ± 3.3 Mean score mixed UI = 19.6 ± 2.6 Significant difference between groups (*p* < 0.001)
Coyne, Margolis, Brewster-Jordan et al. (2007)	PISQ-31	*N* = 128 U.S. women with urgency UI (100 White, 14 Black, 8 Hispanic) Mean age = 55.6 ± 12.0	Mean score = 85.1 ± 16.5 (range 30-114)
Komesu, Rogers, Kammerer-Doak, Barber, & Olsen (2007)	PISQ-31	*N* = 102 sexually active women with UI presenting for surgery in the U.S., 73 completed 3-6 month f/u PISQ-31 (34 White, 23 Hispanic)	Preop PISQ-31 scores: Mean score = 88.5 ± 12.7 and 89.6 ± 12.2 for women electing different surgeries (*p* = 0.72) Baseline scores for women who completed f/u were significantly higher than scores for women who did not complete f/u Mean score = 92 vs. 87 (*p* = 0.02)
Liebergall-Wischnitzer et al. (2011)	PISQ-12	*N* = 187 Israeli women with stress UI Mean age = 46.6 ± 8.8	Mean score = 36.9 ± 5.9 (range 14-47, median 38)
Melin et al. (2008)	PISQ-12	*n* = 166 Swedish women with UI who were obese and *n* = 149 Swedish women with UI who were non-obese Mean age = 45 ± 12	Women with UI who were obese scored significantly lower on the PISQ-12 than women with UI who were not obese (values not given, *p* < 0.001)
Rogers et al. (2001)	PISQ-31	*n* = 83 U.S. women w/UI or pelvic organ prolapse (POP) Mean age = 50 ± 12.4 *n* = 56 U.S. women w/o UI or POP Mean age = 39.1 ± 1.6	Women w/UI or POP Mean score = 92.6 ± 13.5 w/o UI or POP Mean score = 100.1 ± 8.8

Table 2-7 (continued)

Rogers et al. (2008)	PISQ-31	*N* = 411 women with urgency UI randomly assigned to tolterodine treatment or placebo control Mean age tolterodine group = 49 ± 12 Mean age placebo group = 47 ± 12	Tolterodine group Mean score = 88.7 ± 13.9 Placebo group Mean score = 88.9 ± 14.2
Rogers et al. (2006)	PISQ-31	*N* = 102 U.S. women who had surgery for UI and/or POP Mean age = 47.1 ± 11	Preop PISQ-31 Mean score = 89.4 ± 12.3
Serenko et al. (2010)	PISQ-12	*N* = 91 U.S. women with UI Mean age = 41 ± 7	Mean score = 36.84 ± 5.99 (17-48) Premenopausal women with UI: more severe symptoms correlated with lower PSIQ-12 (*r* = -0.267, *p* = 0.011)
Thakar, Chawla, Scheer, Barrett, & Sultan (2008)	PISQ-31	*N* = 35 women in England who had surgery for UI and/or POP Mean age = 50.6 ± 9.2	Preop PISQ-31 scores Mean score = 84.14 ± 12.8
Urwitz-Lane & Özel (2006)	PISQ-12	*N* = 178 U.S. women with UI (50 w/stress UI, 50 w/urgency UI, 48 w/mixed UI) Mean age = 46-47	Stress UI Mean score = 25.4 (*SD* 8.4) Urgency UI Mean score = 26.1 (*SD* 8.2) Mixed UI Mean score = 25.9 (*SD* 8.2) ***No significant differences between groups***

Note. The PISQ-12 (0-48) may be multiplied by 2.58 to convert to PISQ-31 score (0-124). Higher scores indicate better sexual function. The mean score in healthy populations (sexually active women without a pelvic floor disorder) was 40 for PISQ-12 and 94 for PISQ-31 (Kammerer-Doak, 2009).

Developing a coherent picture of the impact of UI on a woman's sexual function was challenging due to the use of multiple assessment tools reported in the literature and the likelihood that multiple variables mediate the association between UI and sexual function, such as qualities of the intimate partnership, body image, self-concept, and co-morbidities (Brubaker et al., 2009; Lowenstein & Bitzer, 2010: Shaw, 2002; Tannenbaum, Corcos, & Assalian, 2006). Women may not have shared their concerns with the researcher or may not have chosen to disclose true perceptions regarding the very private nature of their physical intimacy practices (Shaw, 2002). It is also possible that some instances of UI are the result of sexual dysfunction, rather than that the sexual dysfunction resulted from the impact on sexuality of living with UI (Shaw, 2002).

Incontinence during sexual intercourse is a concern reported by women living with UI that may contribute to a decrease in sexual activity or a decrease in the ability to enjoy sexual activity (Coyne, Margolis, Brewster-Jordan, et al., 2007). Leakage may happen either during penetration or during orgasm (Nilsson et al., 2011a). Frequency of urinary leaking during sexual activity ranges from 10-60% of women with UI (Beji et al., 2005; Jha, Strelley, & Radley, 2012; Nilsson et al., 2011a; Shaw, 2002). Coping strategies for managing incontinence during sexual activity include urinating before, during, and after sexual intercourse (Coyne, Margolis, Jumadilova, et al., 2007; Nilsson, et al., 2011a); padding the bed with towels and avoiding certain positions known by personal experience to trigger urine leakage (Nilsson et al., 2011a); and avoiding orgasm (Coyne, Margolis, Jumadilova, et al., 2007). Urinary leaking during intercourse resulted in less sexual satisfaction and less desire for sexual activity (Beji et al., 2005). Some women with UI who leak during sexual activity also report that they are less responsive, take longer to orgasm, may not achieve orgasm, or may have pain during intercourse (Beji et al., 2005; Coyne, Margolis, Jumadilova, et al., 2007). Women reportedly felt embarrassed and anxious, but also felt guilty for the adverse effect of incontinence during sexual activity on their willingness to engage in sexual intimacy (Beji et al., 2005).

Mixed results have been reported on the specific impact of female UI and UI subtype on sexual function (Shaw, 2002). In one study, no significant differences were found in overall sexual function (Jha et al., 2012; Urwitz-Lane, & Özel, 2006), libido or interest in sexual activity between types of UI (Yip et al., 2003). Others found that women with decreased libido or compromised sexual function were more likely to have stress rather than urgency incontinence (Coksuer et al., 2011; Pace, Silvestri, Gualá, & Vicentini, 2009). Mixed incontinence had the strongest association with sexual function, but mostly in the physical and not the emotional domains (Coksuer et al., 2011). Those who reported more difficulties achieving orgasm were more likely to have urgency incontinence than stress incontinence (Pace et al., 2009).

Mixed and conflicting results have been reported across studies regarding the relationships between sexual function, female UI, and other variables. In one study, by self-report, 53% of 127 women with UI felt that their sexual life, ability to enjoy orgasm, and sexual desire was “more or less spoiled” by UI (Nilsson et al., 2011a, p. 623). Women with UI felt that their sexuality was negatively affected by the lack of spontaneity that symptom management demanded (Brown et al., 1998; Hayder, 2012). Others reported constant worry about odor and the effect of their condition on their desirability as a sexual partner (Roe & May, 1999). Some sexual positions that once brought pleasure were no longer possible (Hayder, 2012).

In another study, the majority of women participants (64.1%) reported that they did not worry about engaging in sexual intercourse because of their UI symptoms. Instead, a significant association between incontinence-related quality of life and sexual function was found, but quality of life explained only 6.4% of the variance in sexual function scores (Liebergall-Wischnitzer et al., 2011). Sexual frequency was negatively associated with UI, but sexual desire, satisfaction or non-vaginal sexual activity was not associated with UI (Rogers, Kammerer-Doak et al., 2001). Women who reported maintaining active sexual relationships in spite of UI tended to be under the age of 50, had a lower body mass index, and less measured urine loss with incontinence episodes (Brubaker et al., 2009). Lukacz et al. (2007) also reported that, when controlling for other variables, sexual satisfaction was not significantly associated with UI. Satisfaction was only associated with lack of libido, presence of pain, or menopause. Postmenopausal women were more likely to have UI and were also more likely to experience less frequent sexual activity (Serenko et al., 2010). A woman's menopausal status was not, however, found to be associated with sexual distress (Knoepp et al., 2010).

Quality of life measures have demonstrated a correlation with the effect of women's UI symptoms on sexual function (Jha et al., 2012). A negative association between incontinence-related quality of life and orgasm was found in one study, but no significant correlations were found between quality of life and desire, arousal, or satisfaction (Ozkan et al., 2011). Obesity has been implicated as a comorbid condition with stress incontinence and with sexual dysfunction, as well as potentially confounding the relationship between female UI and sexual function (Melin et al., 2008; Pace et al., 2009). Others have reported that no association was found between sexual function with

UI and age or body mass index (Brubaker et al., 2009; Nilsson et al., 2011a). Interestingly, nocturia and household income were found to explain 11% of the variance in sexual function scores among women with UI (Liebergall-Wischnitzer et al., 2011).

Midlife female urinary incontinence and sexual intimacy.

Sexuality is another component of biographical work significant to coping with a chronic condition (Roe & May, 1999). Sexuality is more than sexual intercourse; it is described as feelings, desires, expression of self, and relation to others (Kralik et al., 2001; Roe & May, 1999). Scant literature is available to explore relationships between sexuality and female UI (Bradway & Strumpf, 2008). Female UI is associated with feeling unattractive and is associated with concerns about odor and leaking during sexual intercourse (Nilsson et al., 2011a; Srikrishna et al., 2009). Hiding the symptoms of UI by wearing dark clothing and pads may have a negative impact on a woman’s sense of sexuality, as clothing is an outward expression of self (Roe & May, 1999). If women struggle with their self-concept and body image due to UI symptoms, it may affect their sexuality and willingness to engage in the kind of revealing of self that is required when engaging in intimacy with a partner.

Female UI has a demonstrated negative impact on frequency and satisfaction with sexual activity in an intimate dyad (Brown et al., 1998; Brubaker et al., 2009; Coyne, Margolis, Jumadilova, et al., 2007; Nilsson et al., 2011b; Patel et al., 2006; Sand, Goldberg, Dmochowski, McIlwain, & Dahl, 2006). The loss of pleasurable sexual intimacy was keenly felt as a strain on the intimate relationship (Coyne, Margolis, Jumadilova, et al., 2007). Some women report that the motivation for performing pelvic floor muscle exercises was to improve their sexual function (Hayder, 2012). Quality of sexual intimacy, however, is defined by multiple influences from both individual factors and relationship factors. Nilsson et al. (2011a) found that among women with UI, sexual desire was associated with sexual satisfaction in their intimate relationships. The impact of UI on the woman's sexual function has been fairly well studied. The impact of a woman's UI on sexual relationship work within the intimate dyad is not well understood. The process and characteristics of relationship work in the area of physical intimacy for couples coping with female UI has been investigated almost exclusively from the woman's perspective.

Information is available about the impact of incontinence during sexual activity on dyadic physical intimacy. Urinary incontinence during sexual activity, either during penetration or as a result of orgasm, has been reported by many women with UI (Barber et al., 2005; Bradway & Strumpf, 2008; Coyne et al., 2009; Hayder, 2012; Peake & Manderson, 2003; Sand et al., 2006). Some women were so embarrassed and devastated by the possibility of leaking during sexual activity that they avoided reaching climax, tried to hurry the activity along, or avoided engaging in sexual activity altogether (Barber et al., 2005; Coyne, Margolis, Jumadilova, et al., 2007; Hayder, 2012; Knoepp et al., 2010; Peake & Manderson, 2003; Talbot, 1994). Others forged ahead and padded the bedding with towels or made frequent interruptions to use the toilet (Bradway & Strumpf, 2008; Talbot, 1994).

Women with UI reported the inability to relax enough to enjoy sexual intimacy and, as a result, felt that they had more difficulty achieving orgasm (Coyne, Margolis, Jumadilova, et al., 2007; Nilsson et al., 2011b). Women with UI may lose interest in and/or avoid sexual activity due to the negative symptom impact on sexual function

(Coyne, Margolis, Jumadilova, et al., 2007; Sand et al., 2006) and body image (Hayder, 2012; Tannenbaum, et al., 2006). Sexual intimacy requires exposing and surrendering the self to another (Peake & Manderson, 2003). Women with UI discuss feeling unattractive due to symptoms or wearing pads at night (Coyne, Margolis, Jumadilova, et al., 2007; Shaw, 2002). For women who leaked during intercourse, the most prevalent coping strategy was to try to hide the symptoms from their partner and the second most prevalent coping strategy was to avoid sexual activity altogether (Beji et al., 2005), including avoiding oral sex (Coyne, Margolis, Jumadilova, et al., 2007). In fact, women with overactive bladder who experience episodes of incontinence report less frequent intercourse than do women who are able to remain continent despite having an overactive bladder (Coyne, Margolis, Jumadilova, et al., 2007).

Some women with UI discussed the impact of incontinence on physical intimacy in terms of their concern about their partner's satisfaction (Coyne, Margolis, Jumadilova, et al., 2007). Men whose partners had UI were less satisfied with their sexual relationship than men whose partners were continent (Bekker et al., 2010). Some male partners described the incontinence as "a turn off" (Cassells & Watt, 2003, p. 613) and "disgusting" (Berglund et al., 1996), words similar to those that women with UI also use to describe themselves (Nilsson et al., 2011b). For other women, their male partners interpreted the wetness due to UI as a sign of sexual desire (Peake & Manderson, 2003). Often, male partners were more concerned with the woman's emotional well-being than with the interruptions caused by leakage (Nilsson et al., 2011b). The majority of male partners in another study did not worry or care about leaking during sexual activity, however, because they were unaware of this symptom of UI (Nilsson et al., 2011b). The communication barriers resulting from compromised self-concepts made it difficult for couples to work on their sexual relationship (Hayder, 2012).

The primary complaint by male partners was the frequent interruption of sexual activity by women with UI leaving to toilet (Coyne et al., 2009). Nocturia was also often cited as a reason for anger and tension between the partners (Coyne et al., 2009). Nocturia and volume of urine loss, but not frequency of incontinent episodes, was associated with decreased frequency of sexual activity among couples with female UI (Tannenbaum et al., 2006).

A significant relationship has been demonstrated between female sexual function and erectile dysfunction within intimate dyads living with female UI (Bekker et al., 2010; Serenko et al., 2010). Premature ejaculation was more common for couples in which the women had episodes of incontinence during intercourse (Beji et al., 2005). Male partners of women with UI report feeling rejected when they attempted to initiate sexual intimacy (Coyne et al., 2009; Hayder, 2012). As women with UI reported more avoidance of sexual activity and difficulty communicating their sexual needs, their male partners were less and less satisfied with the sexual relationship (Bekker et al., 2010). However, the decrease in sexual satisfaction for couples coping with UI did not translate into a decrease in satisfaction with the relationship (Nilsson et al., 2011b).

Some women attributed hurtful sexual experiences such as rape, rough intercourse, or forced anal sex to current incontinence symptoms (Bradway & Strumpf, 2008). Healthcare professionals must consider the sexuality issues raised by recommended management therapies, the potential embarrassment regarding an area of the body associated with sexuality, and the memories of past experiences that may impede successful biographical work and physiological interventions (Roe & May, 1999).

Women living with UI reported that their sexual relationships and self-image as a sexually desirable woman suffered as a result of UI symptoms (Coyne, Margolis, Jumadilova, et al., 2007; Hayder, 2012). Female UI, depression, and difficulty sleeping have been associated with each other and with sexual dysfunction (Worly et al., 2010). Women who view UI as part of who they are were more likely to express confidence and self-respect in sexual relationships (Hayder, 2012). Health care professionals are urged to assess women with UI for sexual concerns which may include shame, guilt, frustration, and low self-esteem (Bekker et al., 2010).

Threats to Communication

Midlife women tend to manage UI symptoms independently in order to routinize the work (Skoner & Haylor, 1993), to be stoic and not succumb to the condition (Hale et al., 2009), and to keep the condition secret (Talbot, 1994). Although this strategy may increase a sense of competency and normalization of the symptoms (Skoner & Haylor, 1993), this leaves the woman to grieve the loss of her former role in the family without the comfort of her intimate partner (Kralik et al., 2001). For some women with UI, primarily those who were in long term, sexually active relationships, communication was reported to be “fairly open” and relationships were satisfying (Nilsson et al., 2009; Nilsson et al., 2011b). For many partnered women living with UI, however, concerns about UI symptom management and especially the impact of UI on sexual needs were felt to be difficult to communicate to the intimate partner (Bekker et al., 2010; Coyne, Margolis, Jumadilova, et al., 2007; Hayder, 2012; Nilsson et al., 2009; Nilsson et al., 2011b). Women with UI reported wishing that their partner understood and accepted the changes in sexual needs as a result of UI symptom impact, as well as wishing that their partner would not take these changes as a personal slight (Hayder, 2012; Hayder & Schnepp, 2010).

Female UI symptom impact on body image and self-concept represents a breakdown in biographical work, with a subsequent breakdown in relationship work. Both partners reported feeling “injured” (Hayder, 2012) by the impact of UI on their intimacy, yet open communication was more likely to heal the emotional wounds and result in a satisfying relationship (Hayder & Schnepp, 2010). Effective relationship work between partners in the intimate dyad may ameliorate the negative effects of UI symptom impact on the woman’s biographical work.

Although many women with UI reported feeling reassured by their partner’s commitment to the relationship, those who were not partnered were hesitant to begin an intimate relationship (Coyne, Margolis, Jumadilova, et al., 2007; Talbot, 1994). Often male partners are not aware of any significant effects of UI on the relationship due to the private management of symptoms (Coyne et al., 2009). Many women, however, report that they wish they could discuss UI and coping strategies more openly with their partners (Hayder, 2012). There may also be lack of congruence between partners regarding the perceived openness in communication. Bekker et al. (2010) found that partnered women with UI (N = 81, mean age = 50.8 ± 11.9) perceived significantly more problems with communication than did their male partners (N = 81, mean age = 50.8 ± 11.9). Mean scores on the Problems with Communication subscale of the Golombok Rust

Inventory of Sexual Satisfaction were 5.20 ± 1.77 for the women versus 4.34 ± 1.77 for their male partners (*p* = 0.002, one-way ANOVA).

Little is known in the healthcare community about collaborative coping strategies for couples living with UI. Yet, as Coyne et al. (2009) point out, partner characteristics and social context in which a person must respond to the stresses of UI symptom management must be considered when working with women who seek advice and care for this chronic condition. The studies discussed in this section provide insight into the difficulties of communicating with partners regarding UI symptom management (see Table 2-8), however none of these studies were specifically designed to explore the role of communication with an intimate partner in adjusting to UI.

Summary

The literature supports the utility of Corbin and Strauss' Collaborative Chronic Illness Trajectory model as a theoretical framework for exploring the effectiveness of both biographical work and relationship work in ameliorating the impact of midlife female urinary incontinence symptoms on the intimate dyad. Factors proposed to create points of disruption in biographical work and those thought to contribute to effective relationship work need further investigation to identify significant mediating factors in the impact of symptom severity on the quality of the intimate relationship of midlife couples living with female urinary incontinence. In the next chapter, these factors will be operationalized for assessment and a method for investigating their relative effects on the proposed relationship between female UI symptom severity and quality of the midlife intimate dyad will be presented.

Table 2-8

Study Results Germane to UI-related Communication Patterns between Partners

Authors	Participants	Data Collected	Results
Skoner & Haylor (1993)	*N* = 8 women with UI, *n* = 7 living with partner Mean age = 39 (31-50) U.S., White	1+ hour interview Grounded Theory	Themes identified include: *Being vigilant* and independently in control of symptom management *Smooth functioning* or effective self-management
Hale et al. (2009)	*N* = 20 women with UI Mean age = 61 (50-79) England	50-90 minute interview Theme analysis	Themes identified include: *The Pressure to Cope* on one's own and hide symptoms from others
Talbot (1994)	Literature review	Synthesis of findings on coping strategies of adults living with UI	Coping strategies identified include: Control or conceal symptoms of UI to maintain secrecy
Coyne, Margolis, Jumadilova et al. (2007)	*N* = 34 women with urgency UI: *n* = 11 continent, *n* = 23 with incontinence Mean age = 48.4 (SD 12.9) U.S., 76.5% White 79.4% partnered	Focus groups Content analysis Questionnaires	Few continent participants discussed sexuality concerns with partner Many in incontinent group reported: *Gratitude/comfort* from partner staying in relationship Both groups reported: *Fear of rejection* by the partner or fear of beginning a new relationship
Hayder (2012)	*N* = 22 women (14 partnered) and 10 men (5 partnered) with UI Mean age = 54.8 (38-83) Germany	Approximately 1 hr interview Grounded theory	Some participant reported not talking with partner about the impact of UI on sexual function. Some participants reported open communication allowed for continuing satisfying sexual relations and for understanding the partner's perspective. Many participants reported a desire for more open communication to avoid loss of the relationship.
Hayder & Schnepp (2010)	*N* = 22 women (14 partnered) and 10 men (5 partnered) with UI Mean age = 54.8 (38-83) Germany	Approximately 1 hr interview Grounded theory	Themes identified included: *A Life Determined by Incontinence* and the expressed desire for the partner to accept issues that result from UI. Open communication was seen as the key to adjustment and maintaining the relationship *Forming a Circle of Trust* after keeping symptoms of UI secret for months or years. The partner is seen as a critical member of an inner circle, still requiring trust to engage in openness about UI

Table 2-8 (continued)

Nilsson et al. (2009)	$N = 170$ partnered women with UI or urgency/frequency Mean age women = 52 (25-74) 109 male partners Mean age men = 55 (27-78) Sweden	Questionnaires with open-ended questions	Results from intact dyadic data: Openness in the partner relationship and Openness regarding the woman's urinary problems: Yes, totally = 72-73% of women, 80% of men Yes, partially = 25-26% of women, 17-18% of men No = 2% of women and 2-3% of men Openness regarding sexual life: Yes, totally = 63% of women, 72% of men Yes, partially = 33% of women, 22% of men No = 4% of women, 6% of men Half of women whose partners did not participate in the study reported that they were unable to communicate openly with partner ($p < 0.05$).
Nilsson et al. (2011b)	Subgroup of 48 sexually active women with UI whose partners did not participate in the study (vs. 99 intact dyads) Mean age = 51 (34-73) Sweden	Questionnaires with open-ended questions	Reported less open communication with partner than women whose partners participated in the study ($p < 0.007$) Length of relationship shorter ($p < 0.004$), fewer married ($p < 0.036$) Comments: "not informed him…I do not want to tell [him]…hard to describe why and to get an understanding man" (p. 1279)
Bekker et al. (2010)	$N = 81$ women with UI and their male partners Mean age women 50.8 ± 11.9 Netherlands	Golombok Rust Inventory of Sexual Satisfaction	Mean scores on the subscale Problems with Communication: Women with UI = 5.20 ± 1.77 vs. their male partners = 4.34 ± 1.77 ($p = 0.002$)

CHAPTER 3: METHODS

Introduction

The purpose of this descriptive, exploratory study was to examine the association between midlife female urinary incontinence symptom severity and the quality of the intimate dyadic relationship. The specific aims of this study were to explore: a) the association between midlife female incontinence symptom severity and relationship satisfaction in the intimate dyad, b) the potential mediating effects of select psychosocial factors and relationship dynamics on the association between incontinence symptom severity and relationship satisfaction, and c) the woman and her partner's perceptions of the impact of midlife female urinary incontinence on the intimate relationship. Participant responses and scores on questionnaires and responses to open-ended questions comprised the data analyzed. Statistical analysis, theme analysis, and content analysis were used to address the research questions.

This chapter presents a description of the research methods and design. The following sections are addressed: a) research questions; b) description of the sampling strategy for enrollment in the study; c) the variables for analysis including choice of instruments, demographic variables, and latent constructs for analysis of open-ended responses; d) the methods of data analysis; and e) the logistics of the study design including data collection, data handling, and protection of human subjects.

Research Questions

The research questions of this study were:

1a. To what extent is women's reported urinary incontinence symptom severity associated with women's perception of the quality of the intimate dyad?

1b. To what extent is women’s reported urinary incontinence symptom severity associated with partners’ perception of the quality of the intimate dyad?

2a. To what extent is women’s reported urinary incontinence symptom severity associated with women’s perceptions of biographical work variables?

2b. To what extent is women’s reported urinary incontinence symptom severity associated with women’s perceptions of relationship work variables?

2c. To what extent is women’s reported urinary incontinence symptom severity associated with partners’ perceptions of relationship work variables?

3a. To what extent are women’s perceptions of biographical work variables associated with women’s perceptions of relationship work variables?

3b. To what extent are women’s perceptions of biographical work variables associated with partners’ perceptions of relationship work variables?

4a. To what extent are women’s perceptions of biographical and/or relationship work variables associated with women’s perceptions of the quality of the intimate dyad?

4b. To what extent are women’s perceptions of biographical work variables or partners’ perceptions of relationship work variables associated with partners’ perceptions of the quality of the intimate dyad?

5. To what extent do women’s perceptions of biographical work variables and/or relationship work variables mediate the association between incontinence symptom severity and women’s perception of the quality of the intimate dyad?

6a. To what extent is there congruence between women’s and partners’ perceptions of the quality of the intimate dyad?

6b. To what extent is there congruence between women and partners' perceptions of each of the relationship work variables?

7. What major themes are identified by women and their partners regarding changes in the relationship that they attribute to coping with female urinary incontinence?

Description of Participants and Setting

The target population consisted of midlife women with urinary incontinence and their intimate partners with whom they were currently cohabiting. Women who were between the ages traditionally considered post-childbearing and pre-retirement, and who report involuntary leaking of urine, met criteria to participate in the study. Using purposive, convenience/snowball sampling, community-dwelling women aged 45-65 who reported symptoms of stress incontinence, urgency incontinence, or mixed incontinence and were in a self-described committed cohabiting relationship with an adult partner were invited to participate in the study. Women participants were offered the opportunity to invite their partner to participate as well.

Participants received a $15 gift card for their time in completing the questionnaires and were entered into a lottery for a chance (approximately 1:25) to receive a $100 gift card. It was anticipated that there would be more individual women enrolled in the study than intact dyads consisting of women plus their partners. The issues of threats to validity resulting from the difficulties of enrolling a representative sample of women who are living with a sensitive health condition such as incontinence and a representative sample of partners of women living with urinary incontinence are discussed in Chapter 5.

Inclusion criteria were as follows: a) women aged 45-65; b) self-reported symptoms of female urinary incontinence (stress urinary incontinence, urgency urinary incontinence, mixed urinary incontinence); c) cohabiting with an intimate partner; and d) able to read and write in English. Partners (male or female) of enrolled women were able to participate if they also were able to read and write in English.

Exclusion criteria were as follows: a) urinary incontinence secondary to disease process (e.g., multiple sclerosis, spinal cord defect, gynecological cancer); and b) current acute life-threatening illness or condition, or serious exacerbation of chronic condition for the woman or her partner. Women and their partners experiencing stable chronic health conditions (e.g., hypertension, arthritis) were eligible for participation. Women who were pregnant or trying to conceive were excluded; this included exclusion of the dyad if pregnancy or trying to conceive applied to a female partner.

After receiving approval from the University of New Mexico Health Sciences Center Human Research Review Committee, recruitment began November 1, 2013 and ended December 1, 2014. Recruitment fliers (see Appendix A) were placed in the following locations in the Denver, Colorado area: two private OB/GYN offices, one private family practice office, one women’s health clinic, one alternative women’s health practice, four physical therapy offices (one specializing in pelvic floor disorders), and three hospital staff lounges. In the community, recruitment fliers were posted in three community centers, five senior/active adults’ community centers, two recreation centers, one public notice board adjacent to a community park, a community board at a community college, and one library. Recruitment fliers were also posted in two work lounges, nine Laundromats, one thrift store, and one enclosed flea market. Nearly one hundred fliers were handed out over a weekend at a large, outdoor flea market. Fliers were also shared with four women's social groups (one general, one book club, and two church groups). Recruitment notices were placed in a local Denver weekly magazine (*Westword*) and posted online at Denver-area Craigslist. In Albuquerque, New Mexico, recruitment fliers were posted in the University of New Mexico urogynecology and women's clinic, as well as being posted online at Albuquerque-area Craigslist. Recruitment fliers were placed in the Monday health section of the newspaper *Albuquerque Journal* and in two issues of *Sage*, a quarterly magazine produced by the *Albuquerque Journal* and targeted to women aged 55 and older. Word of mouth also resulted in recruiting women to participate in this study. People met at conferences and other professional colleagues took fliers home to share. A recruitment flier was posted on Facebook that was then shared by others.

Partners had to be invited by enrolled women in order to participate in the study. Recruitment flyers, notices, and advertisements were targeted for women with urinary incontinence who were cohabiting with a partner. No targeted recruitment of partners of women with urinary incontinence occurred. No partners of women with urinary incontinence were enrolled in the study without having been invited by a woman participant. Women and their partners were instructed per recruitment flyer, advertisement, word of mouth, or letter of introduction to contact Lori Saiki (and only Lori Saiki) for details about participating in the study, to answer any questions about the study, and to enroll in the study. All other practitioners or persons who allowed placement of recruitment flyers in their facilities were not otherwise involved in the recruitment process.

Recommendations for sample size to support a path analysis for exploring mediating effects of proposed factors in a model of relationships between variables are varied, but at least 5-10 per estimated parameter is considered acceptable (Suhr, 2008); 10 participants per path parameter is preferable (Garson, 2012; Hair, Black, Babin, & Anderson, 2010). With 15 proposed parameters in the path model of women's perceptions of psychosocial factor effects on the proposed association between symptom severity and relationship satisfaction, target sample size for this study was 150 women, with 75 women being an acceptable sample for an exploratory path analysis if community-based recruitment proved challenging. G*Power analysis (Faul, Erdfelder, Lang, & Buchner, 2007) of sample size for correlation analysis (80% power, medium effect size, two-tailed) was 82; for comparing women and partner scores by paired-samples t-test was 34. Target enrollment of intact dyads for this study was 40 couples.

The decision was made to move forward with the study after 13 months of extensive recruitment and no further enrollment in a one month period. Of the 77 women who initiated contact regarding their interest in the study, 12 did not meet criteria. Two did not have urinary leaking in the past three months, four were not in a partnered relationship, four were either younger or older than the 45-65 age range, and one did not read and write in English. One woman decided to seek treatment due to her concern that the urinary leaking was secondary to another disease process, and therefore decided not to participate in the hopes that her leaking would resolve. Of the 65 women who met criteria, wanted to participate in the study, and were mailed a study packet, one later phoned to decline participation due to time constraints, three had packets returned by mail for invalid address (all three had responded to Craigslist recruitment), and three did not return the study packet for unknown reasons. A total of 57 women and 43 male partners returned completed study packets and were enrolled in the study.

This study utilized a confidential mailed survey that was completed in the home setting and returned to the investigator without any personally identifiable information included. Participants were recruited and enrolled following UNM HSC IRB guidelines.

Variables and their Measurement

The Corbin and Strauss Collaborative Chronic Illness Trajectory (1984; 1988) and the extensive body of literature on the impact of female urinary incontinence on the individual woman informed the choice of variables to explore in this study (see Literature Review, Chapter 2). The primary outcome variable in this proposed study was *Quality of the Intimate Dyad*. The application of the model to this study suggested examination of variables comprising *Biographical Work* and *Relationship Work* as mediating factors in the impact of *Incontinence Symptom Severity* (primary predictor variable) on *Quality of the Intimate Dyad*.

Urinary Incontinence Symptom Severity

The Incontinence Severity Index

The Incontinence Severity Index (Sandvik et al., 2000) is a 2-item Likert-style instrument that asks both how often (1 = less than once a month; 2 = one or more times/month; 3 = one or more times/week; 4 = every day or night) and how much (1 = drops; 2 = small splashes; 3 = more) urine is lost involuntarily (Appendix B). Item responses are multiplied and result in scores ranging from 1-12, with increased numerical value indicating increased symptom severity (1-2 = Slight; 3-6 = Moderate; 8-9 = Severe; 10-12 = Very Severe) (Sandvik et al., 2000).

The Incontinence Severity Index may be used as a criterion-referenced instrument (Sandvik et al., 2000), therefore, Cohen's kappa may be computed as a reliability estimate of the consistency in classifying a group of women to the same incontinence severity categories on two separate occasions (Waltz, Strickland, & Lenz, 2010). Test-retest reliability of the Incontinence Severity Index was evaluated in a study of 237 Scottish women living with urinary incontinence (Hanley, Capewell, & Hagen, 2001). The study included community-dwelling women with stable/no treatment incontinence ($M = 76$, $SD = 12$, $n = 79$), women participating in nonsurgical treatment for incontinence (mean age = 50, $SD = 14$, $n = 75$), and surgical consult candidates (mean age = 50, $SD = 12$, $n = 83$). Cohen's kappa 4-day test-retest reliability estimates of the Incontinence Severity Index were considered to be good for severity category ($\kappa = 0.78$, $p < 0.001$), question 1 ($\kappa = 0.69$, $p < 0.001$), and question 2 ($\kappa = 0.83$, $p < 0.001$). According to Landis and Koch (1977), kappa values of 0.61-0.80 indicate substantial agreement and kappa values of 0.81-1.00 indicate "almost perfect" agreement (p. 165).

Content validity refers to the degree to which the researcher may have confidence that the instrument is measuring the attribute of concern within a particular group of people (Streiner & Norman, 2008). Content validity of the Incontinence Severity Index has been established by correlating scores with pad-weighing tests. Weighing incontinence pads worn over a 24-hour period has been a widely used method of obtaining an estimate of the amount of involuntary urine loss during a typical day at home, and was used to establish the validity of the initial Incontinence Severity Index developed for epidemiological studies (Sandvik et al., 1993). On initial development of the instrument, Sandvik et al. (1993) obtained 24-hour pad-weights from 116 Norwegian women (mean age = 48; range 15-83), along with Incontinence Severity Index Scores. Significant correlations were found between item 1 (how often) and pad-weights ($r = 0.32$, $p < 0.001$) and between item 2 (how much) and pad-weights ($r = 0.37$, $p < 0.001$). A significant correlation was found between overall severity index and pad-weights ($r = 0.48$, $p < 0.001$) (Sandvik et al., 1993).

Quality of the Intimate Dyad

The Couples Satisfaction Index-4.

The Couples Satisfaction Index-4 (Funk & Rogge, 2007), comprised of four items with Likert-style response options, was used to measure the quality of the intimate dyad. Scores on the Couples Satisfaction Index range from 0-21. Higher scores indicate more satisfaction with the relationship (Appendix C). The distress cut point for this instrument was determined to be at a score of 13.5 for identifying couples at risk for dissolution (Funk & Rogge, 2007).

The Couples Satisfaction Index was developed by Funke and Rogge (2007) as a 32-item scale with 16- and 4-item scale options to reduce item burden in surveys without sacrificing reliability or validity. Initial reliability estimates for the Couples Satisfaction Index were high with Cronbach's $\alpha = 0.98$ for the 32- and 16-item versions and $\alpha = 0.94$ for the 4-item version (Funke & Rogge, 2007). Reliability estimates for the Couples Satisfaction Index over a short period of use since publication of the original instrument have remained consistently high, with a mean α of 0.94 across five studies (Graham, Diebels, & Barnow, 2011). The Couples Satisfaction Index-4 has demonstrated good reliability estimates (Cronbach's $\alpha = 0.82\text{-}0.967$) in several studies of relationship satisfaction (Boyle, 2012; Cunningham, 2010; Mitchell, 2010; Shulman, Gotta, & Green, 2012).

Validity of the Couples Satisfaction Index is primarily based on its development. Funk and Rogge (2007) compiled the items from the most widely used instruments in research on relationship satisfaction and performed an item response theory analysis based on responses from completed surveys by 5,315 on-line participants. Items were tested by principal components analysis and removed for redundancy. Funk and Rogge (2007) also took care to remove items that were "heavily confounded with variance from the construct of communication" (p. 577). A graded response model was applied to remaining items, generating item information curves. Those items with low areas under the curve were removed from the item pool; items demonstrating large areas under the curve were retained. The Couples Satisfaction Index, is thus a composite of the best performing items from previously developed, oft-used instruments designed to assess the quality of the intimate relationship. The Couples Satisfaction Index-4 is a short form of the top four performing items based on item response analysis (Funk & Rogge, 2007).

Convergent and construct validity of the Couples Satisfaction Index were supported by correlation analysis of the Couples Satisfaction Index with other measures of relationship quality (Funk & Rogge, 2007). Correlations with the other previously developed measures of relationship quality ranged from 0.90-0.96 ($p < 0.001$) (Funk & Rogge, 2007). The Couples Satisfaction Index maintains the validity of its parent instruments while eliminating less informative or potentially conceptually confounding items.

Though the Couples Satisfaction Index and two short forms (16-item and 4-item) are relatively new instruments in relationship studies, they have been recommended as showing promise for finer analysis of modern-day relationship dynamics (Graham et al., 2011).

Biographical Work

The following instruments were used to measure the biographical work variables of self-esteem, body image, and emotional health:

The Rosenberg Self-Esteem Scale.

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure the woman's self-esteem. The Rosenberg Self-Esteem Scale was designed to measure global self-esteem rather than situation-specific self-esteem or self-efficacy (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995). Rosenberg (1965) defined self-esteem as self-respect, a perception of one's worth, and recognizing one's limitations but with an expectation of growth and improvement. Rosenberg considered low self-esteem to be indicative of "self-rejection, self-dissatisfaction, self-contempt" (p. 31). The Rosenberg Self-Esteem Scale is a 10-item Likert-style questionnaire (3 = strongly agree, 2 = agree, 1 = disagree, 0 = strongly disagree) with scores ranging from 0-30 (Appendix D). Higher scores indicate better self-esteem.

The Rosenberg Self-Esteem Scale has been widely used as a measure of global self-esteem (Sinclair et al., 2010). Though it was originally developed for use with an adolescent population (Rosenberg, 1965), the instrument has been found useful in a wide variety of adult populations (Huang & Dong, 2012). Reliability estimates across 53 countries and 16,998 participants (mostly college students or adults from the community) averaged Cronbach’s α = 0.81 (Schmitt & Allik, 2005). In this study, the United States sample (*N* = 2782; 996 men, 1786 women) demonstrated a Cronbach’s α = 0.88 and a Guttman’s split-half reliability = 0.80 (Schmitt & Allik, 2005). Analysis of the performance of the Rosenberg Self-Esteem Scale across subgroups (based on age, gender, race/ethnicity, and employment/income level) of 503 adults living in the United States, internal consistency reliability estimates were Cronbach’s α = 0.91 overall and a range of 0.84-0.95 (Sinclair et al., 2010).

Rosenberg developed the items for the Self-Esteem Scale based on face validity and associations between levels of self-esteem and self-reports of other characteristics such as anxiety, shyness, desire to please, participation in extracurricular activities, assuming group leadership, and likeability (Rosenberg, 1965). Convergent validity of the Rosenberg Self-Esteem Scale was supported by significant associations between scores on the instrument with scores on measures of depression ($r = -0.62$, $p < 0.001$), anxiety ($r = -0.47$, $p < 0.001$), stress ($r = -0.52$, $p < 0.001$), and overall mental well-being ($r = 0.51$, $p < 0.001$) among several different demographic groups living in the United States (Sinclair et al., 2010). Discriminant validity of the Rosenberg Self-Esteem Scale was supported by the small correlation with scores on measures of a positive and negative Model of Other ($r = 0.07$-0.09, $p < 0.001$) and a larger correlation with a positive and negative Model of Self ($r = 0.35$-0.38, $p < 0.001$) in a sample of participants from the United States (Schmitt & Allik, 2005).

The Body Image Scale.

The Body Image Scale (Hopwood et al., 2001) was modified for use in assessing the level of impact of incontinence on the woman’s body image. The modified Body

Image Scale is an 8-item, Likert-style instrument developed to assess affective (e.g., feeling attractive), behavioral (e.g., avoiding people), and cognitive (e.g., dissatisfaction with appearance) manifestations of issues with body image resulting from symptoms or treatment (Hopwood et al., 2001). Scoring ranges from 0-24; higher scores indicate poorer body image. The Body Image Scale was modified for use with female urinary incontinence by replacing the words “disease or treatment” with “leaking urine” (see Appendix E).

Hopwood et al. (2001) reported that initial reliability estimates were good, at Cronbach’s α = 0.78 from the responses of 276 participants (75% women, 25% men) representing a range of cancers (58% breast, 13% bowel, 14% testicular, 14% gynecological, and 1% lymphoma). Among women with breast cancer, reliability estimates were Cronbach’s α = 0.85. One month test-retest reliability estimates were significantly correlated ($N = 94$; rho = 0.70; $p = 0.001$) and no significant change in scores was demonstrated by Wilcoxon signed ranks test ($p = 0.51$) (Hopwood et al., 2001). In the second round of testing of the performance of the Body Image Scale with a sample of 682 women with breast cancer living in England, Cohen’s α = 0.93 (Hopwood et al., 2001).

The Body Image Scale was previously modified for use in women with pelvic organ prolapse, and has demonstrated good reliability ($\alpha = 0.89$) in a study of 54 women (mean age = 62.5 ± 14.7) fitted for pessary (Patel, Mellon, O’Sullivan, & LaSala, 2010). Patel et al. (2010) reported significant improvement ($p < 0.001$) in Body Image Scale scores from initial fitting ($M = 6.06$, $SD = 4.82$) to the 3 month follow-up visit ($M = 3.42$, $SD = 3.81$).

Items on the Body Image Scale were developed from an exploration of the literature regarding body image, input from health professionals, and extensive interviews with women diagnosed and treated for breast cancer (Hopwood et al., 2001). Validity of the Body Image Scale was further supported by field testing items and subsequent interviews with people recently diagnosed and treated for various cancers in Manchester, England. Discriminant validity of the Body Image Scale scores was supported by significant differences ($p < 0.001$, Mann-Whitney test) between median scores of women who had lumpectomy ($n = 254$; median score = 3) versus mastectomy ($n = 202$; median score = 13). The Body image Scale was also responsive to change over time. Scores for 56 women treated for breast cancer significantly increased from 2 weeks to 4 months postoperatively (Wilcoxon $z = -5.08$, $P < 0.001$), indicating more negative body image perceptions over time as women incorporated the meaning of treatment into their self-concept (Hopwood et al., 2001).

The Hospital Anxiety and Depression Scale.

The Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) was used to evaluate the woman's emotional health in terms of depressive symptoms and level of anxiety. The Hospital Anxiety and Depression Scale is a 14-item Likert-style questionnaire with seven items assessing level of anxiety and seven items assessing level of depression (Appendix F). Scores range from 0-21 on each subscale. Higher scores on either subscale indicate increased symptoms: 0-7= normal, 8-10 = mild, 11-14 = moderate, 15-21 = severe (Zigmond & Snaith, 1983).

The Hospital Anxiety and Depression Scale was developed to assess the degree of depressive symptoms and/or anxiety present in people coping with a physical illness

(Zigmond & Snaith, 1983). The instrument has been used extensively, and in a wide variety of settings and illness conditions (Bjelland, Dahl, Haug, & Neckelmann, 2002). In a review of published studies utilizing the Hospital Anxiety and Depression Scale, Bjelland et al. (2002) found that published reliability estimates ($N = 15$) were acceptable to good for both subscales: Cronbach's $\alpha = 0.68$-0.93 ($M = 0.83$) for the Anxiety subscale; Cronbach's $\alpha = 0.67$-0.90 ($M = 0.82$) for the Depression subscale.

Zigmond and Snaith (1983) offered support for the validity of the Hospital Anxiety and Depression Scale by finding a significant correlation between scores on the questionnaire and interviewer psychiatric ratings of 100 patients from a general medical clinic ($r = 0.70$ for depression, $r = 0.74$ for anxiety; $p < 0.001$). Bjelland et al. (2002) reviewed the literature and found strong support for the validity of the Hospital Anxiety and Depression Scale, with sensitivities and specificities of approximately 0.80 for both subscales, and a median cut point of 8 for identifying "caseness" of either depression or anxiety (Bjelland et al., 2002). Concurrent validity of the Hospital Anxiety and Depression Scale was supported by medium to strong correlations ($r = 0.60$-0.80) with other measures of emotional health (Bjelland et al., 2002).

Relationship Work

The following instruments were used to measure the relationship work variables of emotional nurturing, physical intimacy, and communication:

The Relational Ethics Scale.

The Relational Ethics Scale (Hargrave et al., 1991) was used to measure perceptions of emotional nurturing within the intimate relationship. The Relational Ethics Scale was developed to assess the level of trustworthiness and justice (give-and-take) within the family, both between children and adults (vertical subscale) and between peers such as intimate adult partners (horizontal subscale) (Hargrave et al., 1991). The horizontal subscale was used in this study.

The horizontal subscale of the Relational Ethics Scale is comprised of 12 items with Likert-style responses (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree). Total subscale score ranges from 12-60 (Appendix G). Negatively worded items (e.g., “I do not trust this individual to look out for my best interests”) are reverse scored. Higher scores indicate higher levels of perceived trustworthiness and justice in the relationship (Hargrave et al., 1991).

The following reliability estimates for the Relational Ethics Scale (horizontal) have been reported, all using Cronbach’s α as an indication of the level of the internal consistency of scores within the study’s population at a point in time. The initial reliability estimate, based on results from pilot testing of items by 290 participants, was α = 0.96 (Hargrave et al., 1991). Participant demographics included the following: mean age 38.4 (range 21-88, *SD* = 12.38); 85.2% European-American, 7.6% African-American, 6.9% Hispanic, 0.3% Asian-American; 72.4% married, 12.4% divorced, 11.4% single, 3.8% widowed; 68% female, and participants representing a variety of “blue-collar” and professional occupations. Reliability estimates for the final items comprising the horizontal Relational Ethics Scale were α = 0.94, based on the results from 80 partnered participants (Hargrave et al., 1991).

Face validity of the Relational Ethics Scale was supported by review of items by Dr. Boszormenyi-Nagy, who developed the concept of relational ethics as a component of contextual family therapy (Boszormenyi-Nagy, & Krasner, 1986), and by a panel of eight experts in contextual therapy for families and/or couples (Hargrave et al., 1991). Hargrave et al. (1991) evaluated the final Relational Ethics Scale for predictive validity to determine if the scores would discriminate between 39 well-adjusted families and 41 dysfunctional families, as identified by marriage or family therapists. Two-tailed *t*-tests demonstrated a significant difference ($t = 4.39$, $p < 0.001$) between the scores of the well-adjusted participants ($M = 46.9$, $SD = 6.48$) and the dysfunctional participants ($M = 32.7$, $SD = 10.97$). Construct validity was supported by significant correlations between the horizontal Relational Ethics Scale and both the Dyadic Adjustment Scale ($r = 0.93$, $p < 0.05$), developed by Spanier (1976) as a measure of relationship quality, and the spousal subscale of the Personal Authority in the Family System Questionnaire ($r = 0.93$, $p < 0.05$), developed by Bray, Williamson, and Malone (1984) which includes the constructs of intimacy and individuation. The construct validity study was performed with a sample of 36 married individuals (mean age = 35.4; 22 female, 14 male) who were students, faculty, or staff at the university (Hargrave et al., 1991).

The Sexual Quality of Life-Female and Sexual Quality of Life-Male.

The Sexual Quality of Life-Female (Symonds et al., 2005) or the Sexual Quality of Life-Male (Abraham et al., 2008) questionnaires were used to measure satisfaction with the physical/sexual intimacy component of maintaining the physical bonds of the intimate dyadic relationship. The Sexual Quality of Life-Female questionnaire has 18 items with Likert-style response options (0 = completely agree, 1 = moderately agree, 2 = slightly agree, 3 = slightly disagree, 4 = moderately disagree, 5 = completely disagree). Items 1, 5, 9, 13, and 18 are reverse scored (Appendix H). Scores range from 0-90 with higher scores indicating a better quality of life (Symonds et al, 2005). The Sexual Quality of Life-Male has 11 items with similar 6-point Likert-style response options (Appendix I). Scores range from 11-66 with higher scores indicating a better quality of life (Abraham et al., 2008).

Initial testing of the Sexual Quality of Life-Female questionnaire among 730 women (age 18-65, 14% postmenopausal) with several chronic health conditions demonstrated high reliability estimates, with Cronbach's α = 0.95 (Symonds et al., 2005). A second smaller study (*N* = 25; mean age = 33, range 18-58) using a two week retest time frame resulted in an intraclass correlation coefficient of 0.85, supporting the stability of the instrument and good reliability (Symonds et al., 2005).

The Sexual Quality of Life-Male questionnaire was evaluated on four groups of men: those with premature ejaculation (*n* = 149), erectile dysfunction (*n* = 338), both conditions (*n* = 205), and no known dysfunction (*n* = 101) (Abraham et al., 2008). Reliability estimates ranged from Cronbach's α = 0.82-0.93. In a 1-2 week test-retest design, intraclass correlation coefficients for the Sexual Quality of Life-Male ranged from 0.77-0.90 (Abraham et al., 2008). As a final stage in the development of the Sexual Quality of Life-Male questionnaire, the instrument was tested on a third study group of 808 men with premature ejaculation with Cronbach's α = 0.92 (Abraham et al., 2008). Among 118 men reporting no change in sexual function, a 4-week test-retest demonstrated an intraclass correlation coefficient of 0.82 (Abraham et al., 2008).

Content validity of the Sexual Quality of Life-Female questionnaire was established using the following methods. Extensive interviews were performed by psychologists with 82 women, ages 19-65, from seven countries (six European countries plus the United States) and included women with (*n* = 22) or without (*n* = 66) a clinical diagnosis of sexual dysfunction (Symonds et al., 2005). A review of the literature regarding the effect of sexual function on quality of life suggested additional items. A multidisciplinary panel of experts reviewed the resulting items and recommended 19 items for factor analysis. Factor analysis criteria for inclusion in the final scale were eigenvalue > 1.0, factor loading > 0.4, and correlation > 0.3 and resulted in the final 18-item Sexual Quality of Life-Female questionnaire (Symonds et al., 2005).

Construct validity of the Sexual Quality of Life-Female questionnaire was supported in the following ways. Symonds et al. (2005) found that among the 730 participants in the British mailed survey study there was a significant difference in scores between women with depression and those without depression (M = 87.4 vs. 94.8, p = 0.042); a significant correlation between number of sexual function symptoms and scores on the Sexual Quality of Life-Female (r = -0.42, p = 0.0001); and significant positive correlations between scores on the Sexual Quality of Life-Female and reported satisfaction with sex life (r = 0.48, p < 0.0001) and satisfaction with the dyadic relationship (r = 0.32, p < 0.0001). Symonds et al. (2005) then replicated the analyses among three groups of U.S. women: 69 women with spinal cord injury (mean age = 44.5), 65 women with a clinical diagnosis of sexual dysfunction (mean age = 38.5), and 60 women without known sexual dysfunction (mean age = 37). There was a significant difference in scores on the Sexual Quality of Life-Female questionnaire among the three groups (M = 63.3, 59.0, 90.1, respectively; p < 0.05), as well as significant positive correlations (r = 0.25-0.66, p < 0.04-0.001) between all aspects of sexual function (e.g., pain, arousal, orgasm) and Sexual Quality of Life scores (Symonds et al., 2005).

The content validity of the Sexual Quality of Life-Male questionnaire was supported by exploratory factor analysis of the 18 items included in the Sexual Quality of Life-Female (item 4 reworded to replace the word “woman” with “man”) with a participant group of British men seeking treatment for premature ejaculation (*n* = 149, mean age = 42.1) or erectile dysfunction (*n* = 338, mean age = 52.6) (Abraham et al., 2008). Using the same criteria for item inclusion in the final instrument as outlined above, Abraham et al. (2008) found support for 11 items in the final Sexual Quality of Life-Male questionnaire. Construct validity for the Sexual Quality of Life-Male questionnaire was demonstrated in the following way. The instrument was able to discriminate scores between men with premature ejaculation (*n* = 60; *M* = 34.83, *SD* = 22.46) and those without (*n* = 32; *M* = 80.13, *SD* = 18.72) at a $p < 0.001$ significance level (Abraham et al., 2008).

The Couples’ Illness Communication Scale.

The Couples’ Illness Communication Scale (Arden-Close et al., 2010) was used to measure perceptions regarding shared talk or communication specifically about female urinary incontinence. The Couples’ Illness Communication Scale is comprised of four items with Likert-style responses (1 = disagree strongly, 2 = disagree, 3 = undecided, 4 = agree, 5 = agree strongly) and is worded either from the perspective of the partner with the illness or the partner without the illness (Appendix J). Items 1 and 3 are reverse scored. Scoring ranges from 4-20, with higher scores indicating increased perceived ability to communicate about the illness with one’s partner. Items were modified to replace “illness” with “leaking urine.”

Reliability estimates on scores from the Couples' Illness Communication Scale from a sample of 124 women with ovarian cancer and 102 participating partners was good for both patients (Cronbach's $\alpha = 0.84$) and partners (Cronbach's $\alpha = 0.80$) (Arden-Close et al., 2010). Cronbach's α estimates of internal consistency were also good among 64 partnered people living with multiple sclerosis ($\alpha = 0.80$). Test-retest reliability estimates from the study of partnered women living with ovarian cancer were reported for 3-6 months from baseline and were considered acceptable, given the time span and the severity of the illness ($\alpha = 0.71$, $n = 52$ patients; $\alpha = 0.75$, $n = 40$ partners) (Arden-Close et al., 2010).

Convergent validity of the Couples' Illness Communication Scale was supported by the high correlation of scores on the Couples' Illness Communication Scale with the communication subscale of the ENRICH Marital Satisfaction Scale (Evaluation and Nurturing Relationship Issues, Communication and Happiness; Fowers & Olson, 1993) (Arden-Close et al., 2010). Among women with ovarian cancer ($n = 124$) and their partners ($n = 102$), correlation coefficients between scores on the two scales were $r = 0.78$ ($p < 0.001$) for the women and $r = 0.69$ ($p < 0.001$). Among couples living with multiple sclerosis ($N = 64$), the Couples' Illness Communication Scale was highly correlated with a brief (4-item) version of the Dyadic Adjustment Scale (Sabourin et al., 2005). The overall correlation coefficient was $r = -0.63$ ($p < 0.001$) (Arden-Close et al., 2010).

Construct validity of the Couples' Illness Communication Scale was supported by correlations with scores on instruments measuring constructs proposed to be related to effective couples' communication patterns (Arden-Close et al., 2010). In the study of partnered women with ovarian cancer, the scores on the Couples' Illness Communication Scale were associated with scores on social/family well-being ($r = 0.46$, $p < 0.01$), intrusive thoughts ($r = -0.27$, $p < 0.01$), and emotional impact of the illness ($r = -0.22$, $p < 0.05$, two-tailed). In the study of couples living with multiple sclerosis, scores on the Couples' Illness Communication Scale were associated with psychological distress ($r = -0.25$, $p < 0.05$, two-tailed) (Arden-Close et al., 2010).

"Before and After" Questions

Questions were developed to assess participants' memories of their relationship prior to the onset of UI, or before UI symptoms worsened. These questions were scaled to provide a quantitative assessment of perceived changes in the relationship. Language used in these questions was derived from definitions of the major constructs of interest (see Appendix K).

There were also three open-ended questions to allow participants to elaborate on the perceived impact of urinary incontinence on their relationship with their intimate partner (see Appendix L). These open-ended questions were as follows:

1. What changes in your relationship with your partner have you noticed since the urinary leakage, or the possibility of a leak, started?
2. What effects have urinary leaks, or the possibility of a leak, had on your relationship?
3. How have you and your partner dealt with the possibility of a leak?

Sexual Function

An assessment of incontinence-related sexual function was included for descriptive analysis of the women participants.

The Prolapse/Urinary Incontinence Sexual Function Questionnaire.

The Prolapse/Urinary Incontinence Sexual Function Questionnaire (PISQ) is the only validated condition-specific measure of sexual function in women with pelvic floor disorders (Rogers, Villarreal, Kammerer-Doak, & Qualls, 2001). The PISQ-short form (PISQ-12) has demonstrated good correlation with the long form and good to excellent reliability on test-retest (Rogers et al., 2003). In a review of the use of the PISQ and its short form, the PISQ-12, Kammerer-Doak (2009) reported that among sexually active women without a pelvic floor disorder (such as urinary incontinence), mean PISQ-12 scores have been demonstrated to be approximately 40 (citing a poster presented at the American College of Obstetrics and Gynecology 56th Annual Clinical Meeting of a twin study by Ashkenazi et al. [2008], in which the mean age of the study population was not reported).

Demographic and Condition-Specific Variables

Demographic variables assessed in this study included age, length of intimate partnership, relationship status, who live in the home, race/ethnicity, religious affiliation, approximate joint annual income, work status, and educational level. Condition-specific variables of interest included length of time lived with urinary incontinence, previous treatment for urinary incontinence, disclosure of urinary incontinence to health care provider, disclosure of urinary incontinence to intimate partner, history of leaking urine during sexual activity, number of times wake at night to urinate, and height and weight (to calculate body mass index). Presence of other pelvic floor disorders such as fecal incontinence and pelvic organ prolapse were evaluated using questions 35, 43, and 44 from the Epidemiology of Prolapse and Incontinence Questionnaire (EPIQ; Lukaz et al., 2005). Information was also collected from partners on partner characteristics, namely the partner’s gender, age, race/ethnicity, religious affiliation, work status, educational level, and presence or absence of partner’s lower urinary tract symptoms. See Appendix N for the women’s version of the demographic questionnaire and Appendix O for the partner’s version of the demographic questionnaire.

Type of Urinary Incontinence

The 3 Incontinence Questions.

The 3 Incontinence Questions (3IQ), developed by Brown et al. (2006) as a screening tool for primary care physicians, was used to identify type of urinary incontinence (stress, urgency, mixed) during the screening interview. On initial development of this instrument, sensitivities and specificities of the 3IQ were 0.75 and 0.77 for urgency incontinence and 0.86 and 0.60 for stress incontinence (Brown et al., 2006). This modest ability to classify type of urinary incontinence was sufficient for the purposes of this study, was a noninvasive screening tool suitable for a community-based questionnaire, and did not pose a significant item burden on the participants during screening. The 3IQ was presented in the public domain by the authors with the intention that it be used as a screening tool for type of incontinence. The three questions comprising the 3IQ are as follows:

1. During the last 3 months, have you leaked urine (even a small amount)?
2. During the last 3 months, did you leak urine: (Identify all that apply)
    a. When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?

   b. When you had the urge or the feeling that you needed to empty your bladder, but you could not get to the toilet fast enough?
   c. Without physical activity and without a sense of urgency?

3. During the last 3 months, did you leak urine <u>most often</u>: (Pick only one of the following)
   a. When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?
   b. When you had the urge or the feeling that you needed to empty your bladder, but you could not get to the toilet fast enough?
   c. Without physical activity and without a sense of urgency?
   d. About equally as often with physical activity as with a sense of urgency?

Item Burden for Study Participants

The time required for individual participation in the study was limited to the time it took to complete the survey. Survey completion was estimated to take approximately 60 minutes for women (115 closed-ended questions and 3 open-ended questions) and 30 minutes for partners (44 closed-ended and 3 open-ended questions). See Table 3-1 for the number of items per component of the questionnaire packets. Participants completed the study packets on their own time and at home.

Treatment of the Data

Quantitative Data Analysis

Data were entered for statistical analysis by the investigator and following pre-established codebook guidelines. Descriptive statistics, Cohen’s α reliability estimates, and inferential statistical analyses were performed using the Statistical Package for the

Table 3.1

Instruments and Item Burden by Participant

Instrument	Women (no. items)	Partner (no. items)
Incontinence Severity Index	X (2)	
Couples Satisfaction Index	X (4)	X (4)
Self-Esteem Scale	X (10)	
Body Image Scale	X (8)	
Hospital Anxiety and Depression Scale	X (14)	
Relational Ethics Scale	X (12)	X (12)
Sexual Quality of Life	X (18)	X (11)
Couples' Illness Communication Scale	X (4)	X (4)
Subtotal of Items in Instruments	**72**	**31**
"Before and After" questions	X (6)	X (6)
Demographic/Condition-Specific Questions	X (25)	X (7)
Sexual function	X (12)	
Open-ended questions	X (3)	X (3)
Total Number of Items in Study Packet	**118**	**47**

Note. X indicates inclusion in the study packet.

Social Sciences-22 (SPSS-22©) and the associated Amos-22 program for path analysis. See Figure 3-1 for the mediational model tested by path analysis. Due to sample size constraints, the exploratory path analysis was broken down into two analyses, one for the biographical variables and one for the relationship variables.

Statement of Null Hypotheses

The following null hypothesis statements were tested in statistical analyses of the quantitative data, with α set at 0.05 (two-tailed):

1. There will be no significant association between incontinence symptom severity and women's relationship satisfaction.
2. There will be no significant difference between women's scores and their partners' scores on relationship satisfaction and measures of relationship work variables.
3. There will be no significant associations among women's scores on biographical work variables and their scores on relationship work variables.
4. Neither scores on biographical work variables nor scores on relationship work variables will have a significant mediating effect on the proposed association between incontinence symptom severity and the woman's relationship satisfaction scores.

Qualitative Data Analysis

An exploratory qualitative theme analysis was performed on the answers to open-ended questions. All responses to the three open-ended questions were consolidated verbatim into one text document for women with incontinence, one text document for partners, one text document for distressed dyads, and one text document for non-

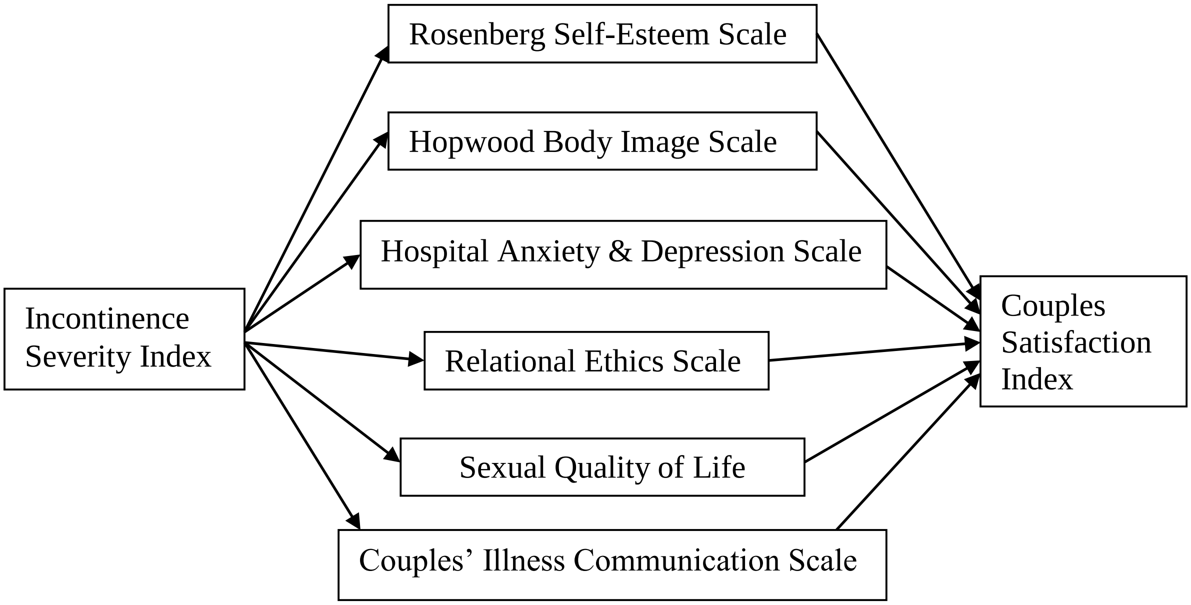

Figure 3-1. Overall model for path analysis of women's variables.

distressed dyads. Participant answers to the open ended questions were analyzed for themes using descriptive and *in vivo* coding methods, as discussed by Saldaña (2009). Methods of content analysis were applied to the text documents to explore for both manifest and theoretically proposed latent concepts (Krippendorff, 2004). The computer aided textual analysis (CATA) software programs Yoshikoder© and *wordle.net* were utilized to analyze the word frequencies found in responses to the open-ended questions. Calculation of *z*-scores was performed utilizing the internet site *socscistatistics.com*, in order to determine the significance level of differences found in the proportional use of words in response to the open-ended questions. *Z*-score analysis of word choice frequencies were analyzed for significant differences between women and partner responses to the open-ended questions, as well as for differences in word choice between distressed and non-distressed couples ($p \leq 0.05$).

Study Methods

Once a potential participant responded to a recruitment flyer and contacted the investigator, the potential participant was thanked for her interest in the study and a screening interview took place over the phone or by email to determine if the woman met criteria for the study. Women were offered the opportunity to have their phone call returned by the investigator to avoid any fees associated with cell phone or long distance service. The contact phone number for women living in the Denver, Colorado area was a Colorado area code, and a second phone number with an Albuquerque area code was offered to women living in the Albuquerque, New Mexico area. The purpose and process of the study was described along with the expectations and time frame of participation in the study. Questions were answered, and the informed consent was reviewed (see Appendix P).

Women who met criteria and agreed to participate were asked the gender of their partner for inclusion of a sealed gender-specific partner study packet in the woman's study materials. The opportunity for the woman to invite her partner to participate was discussed. Women were informed at the initial interview that the sealed Partner Study Packet would be included with their study materials. It was the woman's choice whether or not to invite her partner into the study. The woman was advised that her participation in the study was not affected by whether or not she invited her partner to participate, nor was her participation affected by whether or not her partner chose to participate. Participation in the study was voluntary and not contingent upon enrolling the partner.

Women did not have to make the decision on whether or not to invite their partner to participate in the study at the time of the initial interview. All study packets contained a sealed Partner Study Packet. A letter explaining the process of partner participation was included in the study packet. Women participants were given a letter of introduction and a copy of the survey consent form to give to their partner with contact information for Lori Saiki if the partner had questions about the study. Women who were interested in having their partner participate were instructed to provide the partner with the sealed partner study packet with the investigator's contact information.

During the initial interview, and upon verbal consent to participate in the study, the following information was collected: woman's name, partner's gender, and contact information (address and phone or email). Contact information was documented on a log that was kept separate from other study materials, in a locked cabinet in the investigator's home office. No identifiers were collected for the partners of women participants.

A list linking the woman's name with the dyad's participant ID# was kept in a locked cabinet in the investigator's home office, separate from all other study materials and data. This list, being the only link between personal identifiers and data, was destroyed by shredding upon completion of the data analysis. The partner's gender (all partners were male in this study) was noted in the log linking the participant ID# with the dyad, and entered as data under the participant's ID#. The type of urinary incontinence reported by women during the screening interview was also entered as data under the participant's ID#. No other information obtained during the screening interview was entered as data in the study. Screening interview worksheets did not have the study ID# or participant ID# on them that would link them to completed questionnaires. Screening interview worksheets were kept in a locked cabinet in the investigator's home office, separate from the log linking participant name with participant ID#.

Study packets were then mailed to the participant. Study packets were mailed at the expense of the investigator and included a stamped, addressed return envelope for returning completed questionnaires. Participants were advised that they did not need to complete the entire packet in one sitting. They had time to complete the study packet on their own time and in the privacy of their homes. They were advised that participation in the study would not affect their medical care, treatment options, participation in personal healthcare practices or their relationship with their healthcare providers. Return of the completed study packet to the investigator, Lori Saiki, constituted agreement to participate in the study. All women and all partners who chose to participate in the study by completing a study packet and returning it to the investigator were enrolled in the study.

Participants were advised that if the study packet was not returned within two weeks, a reminder letter would be sent to complete the study. If the study packet was not received two weeks after the reminder letter, a second, final reminder letter was sent. No reminder letters were sent for partner participation.

Completion of the questionnaires was done at a time of the participants' choosing and therefore should not have interfered with work or other activities. However, the questionnaires were of a sensitive nature and may have taken up to approximately 60 minutes for women to complete and 30 minutes for their partners to complete. A $15 gift card was mailed to all study participants to help defray any incidental costs and to compensate participants for their time and inconvenience. In addition, random drawings were held for $100 gift cards (one random drawing was held for approximately every 25 participants enrolled) as a thank-you for sharing views on a topic of a sensitive nature. Because no identifying information was collected on partners, partner gift cards were mailed using the woman's contact information.

A separate log of participants' ID# was kept to track the date of initial contact, receipt of the participants' completed questionnaires by the investigator, documentation of partner enrollment, choice of merchants for the $100 gift card drawing, reminder notices sent, date that $15 gift cards were sent, date that lottery drawings were performed with results of the drawings, and date that the $100 gift cards and/or thank-you cards were sent. This log was kept in a second locked cabinet, separate from the link to personal identifiers, in the investigator's home office.

The $15 gift card was mailed within 2 weeks of receipt of the study packet by the investigator. Upon enrollment in the study, participants were notified that the $100 gift card drawings would take place upon study completion. Random drawings for the $100 gift cards were held after groups of approximately 25 participants returned their completed study packets to the investigator. The Random Number Generator (Urbaniak & Plous, 2013) available through Research Randomizer (*http://www.randomizer.org/*) was used to generate the winning participant ID#s in each group. Study participants were notified of the random drawing results with either a thank-you card or thank-you note with an enclosed $100 gift card.

Study packets consisted of:

1. Survey Consent Form for the participant to keep, including investigator contact information.
2. Description of invitation to partner for participation in the study.
3. Debriefing Letter.
4. The woman's questionnaires stapled together for ease of return, and presented in the following order: General Instructions including marking choice of $100 gift card merchant if Participant ID# was chosen from random drawing, Demographic Questions, Condition-Specific Questions, Study Questionnaires, "Before and After" Questions, Open-Ended Questions, and PISQ-12.
5. Stamped, addressed envelope for returning the questionnaire packet.
6. Partner Study Packet containing the following:
    a. Letter of introduction to the study with investigator contact information and Survey Consent Form attached to outside of the sealed envelope.

b. The sealed Partner Packet contained:
    i. Survey Consent Form for the participant to keep, including investigator contact information.
    ii. Debriefing Letter.
    iii. Questionnaire packet stapled in the following order: General Instructions including marking choice of $100 gift card merchant if Study ID# is chosen from random drawing, Demographic Questions, Study Questionnaires, “Before and After” Questions, and Open-Ended Questions.
    iv. Stamped, addressed return envelope.

On the General Instruction page, participants were informed that there are no correct answers to the questionnaires, that every person’s intimate relationships are unique, and that their perspective offers a valuable contribution to understanding the impact of urinary incontinence on intimate partnerships.

After the General Instructions page, the instruments were in the following order:

1. The Questionnaire packet began with the Demographic Questions followed by the Condition-Specific Questions.
2. The first two instruments, in order of presentation, were the Incontinence Severity Index and the Couples Satisfaction Index, as these are measurements of the primary predictor and outcome variables.
3. The instruments measuring Relationship Variables (Relational Ethics Scale, Sexual Quality of Life, and the Couples’ Satisfaction Index) and the instruments measuring Biographical Variables (Self-Esteem Scale, Body

Image Scale, and Hospital Anxiety and Depression Scale) were presented as two sets in order to keep similarly focused questionnaires together (i.e., questions about the relationship were clustered and questions about the woman's self-concept were clustered). This clustering of instruments was chosen to lessen confusion regarding the focus of the questions. The order of presentation of the two sets, however, was randomized so as to lessen bias related to priming or to response fatigue. The Random Number Generator (Urbaniak & Plous, 2013) available through Research Randomizer (*http://www.randomizer.org/*) was used to determine the order in which each set of instruments is presented (Biographical or Relationship).

4. Within each set of instruments (the Relationship set and the Biographical set), the order of presentation was also randomized, in order to decrease bias from priming or response fatigue. The Random Number Generator (Urbaniak & Plous, 2013) available through Research Randomizer (*http://www.randomizer.org/*) was used to determine the order of instruments presented within each set (Biographical [SES, BIS, HADS] or Relationship [RES, SQoL, CICS]).
5. The "Before and After" Likert-style questions followed the instruments.
6. The Open-Ended Questions were then presented.
7. The PISQ-12, to assess the woman's sexual function.

Data Management

This study utilized a descriptive, exploratory survey design analyzing associations among variables. Variables of interest to the research question were measured using

established Likert-style instruments and three open-ended questions. Instruments used in this study have been validated and demonstrated to be reliable in other populations.
All data entry, formatting, and data cleaning were performed by the investigator, Lori Saiki. All data were entered using the participant ID# and no other identifiers. Quantitative data (participant responses to the Likert-style questionnaires, demographic data, and condition-specific questions) from returned study packets were entered into SPSS file format using only the ID# as the participant identifier. Descriptive statistics were used to analyze quantitative data for errors and patterns in missing data. Qualitative data were transcribed and stored in Word document files and reformatted as rich text files for computer aided textual analysis.

All data were entered and stored on the investigator's personal, locked computer. Computerized data files did not contain any participant identifying information, other than the study and participant ID#. The link between participant ID# and participant name and contact information were stored on a paper log, which was kept in a locked cabinet in the investigator's home office, separate from the completed questionnaires and study materials, which were kept in a separate locked cabinet in the investigator's home office. The list linking participant ID# with participant identifiers (name and contact information) was destroyed by shredding at the completion of the data analysis.

Withdrawal of Subjects

Participants had the right to discontinue participation at any time. Participants had the right to not answer any question or questions, without coercion or consequence. Women had the right to refuse to invite their partner to participate. Women's participation in the study was not dependent on inviting their partner to participate.

Partners had the right to refuse participation or discontinue participation at any time, even after women may have approached their partner for potential enrollment in the study.

Risks to Subjects

No more than minimal risk to participation was foreseen in this study. Minimal risks to subjects in this study included potentially heightened attention to feelings raised by responding to questions about psychosocial issues and relationship concerns related to urinary incontinence.

There was the potential for loss of confidentiality. Study packets may have been inadvertently seen by the partner or someone else, thereby informing that person of the participant's enrollment in a study about urinary incontinence or presenting an opportunity for seeing the participant's responses to questions of a personal nature. Completed questionnaires could have been potentially lost in the mail or stolen from the investigator's home office.

Women participants chose freely and without coercion or consequences to provision of health care whether or not to inform their partners about their urinary incontinence, the purpose of this study, or their participation in the study. Participants may have chosen to share their responses with each other or not to share their responses with each other. Either choice may have resulted in negative feelings or emotions.

There were no anticipated risks of injury in relation to this study. Any provision of healthcare sought during the course of this study or following this study was the financial responsibility of the participant. This was stated clearly in the screening interview and written in the consent form and debriefing letter enclosed in the study packet.

There were no anticipated costs associated with participation in this study, other than access to phone, email, or travel to postal services. Stamped return envelopes were provided. The investigator offered to return study-related phone calls to help defray any costs associated with placing a call to the investigator or per minute charges.

Confidentiality

Confidentiality was maintained in the following manner. Codes were assigned to each individual participating in the study. No names appeared on study packets, demographic sheets, or questionnaires. Only the study# and participant ID# were noted on all pages of the study packet. No other participant identifiers were on the study packet that was to be returned to the investigator when completed. Participants were advised not to write their name on the questionnaires or envelope. Return, stamped envelopes had the investigator's address in both the "To: ____" and "From: ____" sections of the envelope.

A written log containing the link between study/participant ID# and women participants' personal identifiers and contact information was kept in a separate locked box from the locked cabinet containing the completed study packets and all other study materials. The log containing the link between study/participant ID# and women participants' name and contact information was destroyed by shredding upon completion of data analysis.

All completed questionnaires were handled and entered for analysis by the investigator. All study materials were kept confidential, with contents of an individual's study packet shared only between that individual participant and the investigator. Individual data and study results were not shared with participants, their partners, or their healthcare providers. Once the completed study packet was received by the investigator, only the investigator had access to the data. The investigator was unable, however, to prevent participants from sharing their own responses with each other or prevent someone other than the participant from inadvertently learning of the participant's participation in the study by seeing study materials in the participant's home environment or overhearing the screening interview.

Partner participation or non-participation and answers to questions were kept confidential by the investigator from the women participants.

Protection of Human Subjects

Urinary incontinence is a personal, potentially embarrassing condition that requires sensitivity to confidentiality when communicating with potential participants. Posted recruitment fliers had a detachable tab and wallet-sized notepads to allow for unobtrusive removal of study information, so that a woman interested in the study may contact the investigator in a more private setting of her choice. Study details, enrollment criteria, and informed consent were discussed by telephone, in person, or by email depending on the woman's preference. Only the investigator discussed study details with potential participants.

Study packets consisting of the written informed consent, demographic data sheet, and questionnaires were mailed to the women with an enclosed, stamped, return envelope. Women's study packets included a sealed partner packet so that women were able to offer enrollment in the study to their partner. The partner had the option of contacting the researcher through phone, mail, or email for questions about the study details. The partner study packet consisted of the written informed consent, partner-specific questionnaires, and an enclosed, stamped, return envelope. Instructions on the study packet included language designed to increase feelings of safety and security in answering the study questions.

Participants had the right to discontinue participation at any time, without consequence. Participants had the right to not answer any question or questions without coercion or consequence. Women had the right to refuse to approach their partner for potential enrollment. Women's participation was not dependent on partner participation. Partners had the right to refuse participation or discontinue participation at any time.

Summary

This chapter presented the methods of this dissertation research. This study was approved by the University of New Mexico Human Research Review Committee, Human Research Protections Office, on October 30, 2013 (Study ID# 13-513). This study was granted Exemption and a waiver of consent documentation. Initial recruitment period was approved to June 1, 2014. On July 11, 2014 the University of New Mexico Human Research Review Committee, Human Research Protections Office approved a request for study modification to extend recruitment until July 1, 2015. Enrollment in the study ended on December 1, 2014 (and final gift cards were disbursed) when the target sample size for participating intact dyads was reached, and one month of further recruitment had not resulted in enrolling more women participants. This study was funded in part by the Sigma Theta Tau International Gamma Sigma Chapter. The next chapter, Chapter 4, presents the results of data analysis.

CHAPTER 4: RESULTS

Introduction

The results of the data analysis are presented in this chapter. The study participants are described, followed by the presentation of quantitative and qualitative findings.

Description of the Study Participants

A total of 57 women and 43 partners returned completed study packets and were enrolled in the study. All of the partners in this study were male.

Women Participants

On average, women in this study were 55 years of age (*n* = 57; *M* = 54.93; range = 45-65; *SD* = 5.86) and had been living with their partner for 21 years (*n* = 53; *M* = 21.29; range = 1-45; *SD* = 12.26). The demographic characteristics of the women participants are presented in Table 4-1. Women's responses to the condition-specific questions are presented in Table 4-2.

The women who participated in this study were mostly married and either lived alone with their partner or with their partner and their children. Two-thirds of the women worked outside the home. Annual joint family incomes were fairly evenly distributed across categories, with approximately 40% of the women reporting joint family incomes of less than $75,000 per year. The women in this study predominantly described themselves as White (71.9%) or Hispanic/Latina (21.1%). The majority of women identified their religious affiliation as some form of Christianity, including 31.6% Catholic.

Table 4-1

Demographic Characteristics of Women Participants (n = 57)

Variable	Mean (*SD*)	Min-Max
Age in years	54.93 (5.86)	45-65
Years lived with partner[a]	21.29 (12.26)	1-45
	#	**%**
Relationship status[a]		
Married	47	82.5
Living together	9	15.8
Education completed		
Less than high school	3	5.3
High school/GED	10	17.5
Associate/Technical	11	19.3
4-year College	12	21.1
Graduate/Professional	21	36.8
Joint annual income ($)		
≤ 25,000	6	10.5
26-50,000	10	17.5
51-75,000	7	12.3
76-100,000	13	22.8
101-150,000	10	17.5
> 150,000	11	19.3
Work outside home[a]		
Yes/No	37/18	67.3/32.7
Occupants in home[a]		
Couple only	23	40.4
Child(ren)	26	45.6
Other	6	10.9
Race/Ethnicity		
Hispanic/Latina	12	21.1
White	41	71.9
Other	4	7.0

Table 4-1 (continued)

Religious Affiliation		
Catholic	18	31.6
Protestant	11	19.3
Evangelical Christian	10	17.5
Other	8	14.0
No affiliation	10	17.5
State of Residence		
Colorado	31	54.4
New Mexico	14	24.6
Other (AK, CA, IL, MS, NE, NY, OH, WA, WV)	12	21.1

[a] Missing data.

Table 4-2

Women's Responses to Associated Condition-Specific Questions (n = 57)

Variable	Mean (*SD*)	Min-Max
Years lived with UI symptoms[a]	7.9 (7.1)	1-30
Number of times wake to void	2.0 (1.4)	0-6
	#	**%**
Type of UI reported		
Stress	29	50.9
Urgency	15	26.3
Mixed	13	22.8
BMI category (BMI)[a]		
Normal weight (18.5-24.9)	19	35.8
Overweight (25-29.9)	19	35.8
Obese (≥ 30)	15	28.3
Discussed UI with partner?		
Yes/No	42/15	73.7/26.3
Discussed UI with provider?		
Yes/No	32/25	56.1/43.9
Provider discussed treatment options?		
Yes/No	24/33	42.1/57.9
Treatment received for UI?		
Yes/No	11/46	19.3/80.7
History of hysterectomy?[a]		
Yes/No	9/47	16.1/83.9
History of pelvic organ prolapse?		
Yes/No	10/47	17.5/82.5
History of fecal incontinence (solid stool)?[a]		
Yes/No	6/50	10.7/89.3
Sexually active in past 6 months?		
Yes/No	44/13	77.2/22.8
Ever leaked urine during sexual activity?[a]		
Yes/No	39/17	69.6/30.4
Currently taking antidepressant?		
No	39	68.4
Yes, when started:	18	31.6
Before UI symptoms started[a]	11	61.1
After UI symptoms started[a]	4	22.2

Note. UI = Urinary Incontinence.

[a] Missing data

A little over half the women reported that their primary form of urinary leaking was stress urinary incontinence (*n* = 29; 50.9%), followed by urgency urinary incontinence (*n* = 15; 26.3%) and mixed urinary incontinence (*n* = 13; 22.8%). On average the women in the study reported living with symptoms of urinary incontinence for 8 years (*M* = 7.895; range 1-30 years; *SD* = 7.06). Women's reports of height and weight demonstrated a fairly even distribution among the three categories of body mass index (normal, overweight, and obese). Women reported waking up and getting out of bed an average of twice during the night to urinate. Most of the women had discussed the urinary leaking with their partner.

A little over half of the women had discussed urinary incontinence with their healthcare provider (56.1%). Fewer had discussed treatment options (42.1%), and 80.7% of the women participants had not received any treatment for urinary incontinence. Nearly 18% of the women in this study reported symptoms of pelvic organ prolapse and nearly 11% reported fecal incontinence of solid stool. The majority of the women had been sexually active in the previous six months (77.2%).

Women's scores on the short form of the Prolapse/Urinary Incontinence Sexual Function Questionnaire (PISQ-12) averaged 31.5, 95% CI [29.43, 33.57], thereby falling outside the mean score and standard deviation of PISQ-12 scores of 40 ± 4.2 found in a study group of sexually active women without pelvic floor disorders (*N* = 557, age range unreported) (Ashkenazi et al., 2008). The women in this study, therefore, demonstrated statistically significantly poorer sexual function than might be expected for the general population. Nearly 70% reported having experienced urinary leaks during sexual activity. Reliability estimates for the PISQ-12 in this study were good (Cronbach's $\alpha = 0.823$).

Women with Partners Who Did Not Participate in the Study

Fourteen of the 57 women participants (24.6%) either chose not to invite their partner to participate in the study, or their partner declined participation. When compared to women whose partner participated in the study, women whose partner did not participate in the study demonstrated no significant differences in attributes (see Table 4-3 and Table 4-4), with the exception that fewer had discussed their symptoms of urinary incontinence with their partner: 50% of women whose partner did not participate discussed symptoms versus 81.4% of women whose partner participated in the study.

Partner Participants

Demographic characteristics of the partners are presented in Table 4-5. Partners who participated in the study averaged around the same age as the women participants (partner mean age = 55.95 years; *SD* = 8.44; women mean age = 54.93 years; *SD* = 5.86), though individual couples were comprised of women whose partners were older or younger than themselves. Partners also reported getting up during the night to urinate (*M* = 1.3; *SD* = 1.15), though less often than the women reported getting up to urinate (*M* = 2.2; SD = 1.5). This difference was significant ($t = 3.11$, $p = .004$). The majority of the partners reported neither urinary incontinence nor benign prostate hypertrophy.

Compared with the women in the dyad, partners more often reported no religious affiliation (30.2% vs. 18.6% of the women, $\chi^2 = 140.26$, $p < .001$). Although fewer of the partners reported having completed graduate or professional school (18.6% vs. 39.5% of the women) and more had not completed beyond high school level of education (30.3% vs. 13.9% of the women), the differences among educational levels between the women and their partners were not significant ($\chi^2 = 25.402$, $p = .384$).

Table 4-3

Comparison of Women with Partners Who Participated in the Study (n = 43) to Women with Partners Who Did Not Participate (n = 14) in the Study: Demographic Traits

	Women with Participating Partner		**Women without Participating Partner**		**Test for Differences**	
Variable	**Mean**	***SD***	**Mean**	***SD***	***t***	***p***
Age in years	55.3	5.8	53.9	6.1	-.785	.436
Years lived together[a]	21.1	12.7	21.9	8.2	.186	.853
	#	**%**	**#**	**%**	χ^2	***p***
Relationship status[a]					.733[b]	.693
Married	36	83.7	11	78.6		
Living together	6	14.0	3	21.4		
Education completed					9.38[b]	.153
Less than high school	1	2.3	2	14.3		
High school/GED	5	11.6	5	35.7		
Associate/Technical	10	23.3	1	7.1		
4-year College	10	23.3	2	14.3		
Graduate/Professional	17	39.5	4	28.6		
Joint annual income ($)					5.51[b]	.357
Less than 25,000	4	9.3	2	14.3		
26-50,000	8	18.6	2	14.3		
51-75,000	6	14.0	1	7.1		
76-100,000	12	27.9	1	7.1		
101-150,000	7	16.3	3	21.4		
More than 150,000	6	14.0	5	35.7		
Work outside home[a]					.000[b,c]	1.00
Yes	28	66.7	9	69.2		
Occupants in home[a]					6.58[b]	.362
Couple only	19	44.2	4	28.6		
Child(ren)	18	41.9	8	57.1		
Other	4	9.8	2	14.3		

Table 4-3 (continued)

Race/Ethnicity					4.05[b]	.399
Hispanic/Latina	9	20.9	3	21.4		
White	31	72.1	10	71.4		
Other	3	7.0	1	7.1		
Religious Affiliation					11.52[b]	.242
Catholic	15	34.9	3	21.4		
Protestant	6	14.0	5	35.7		
Evangelical Christian	8	18.6	2	14.3		
Other	6	14.0	2	14.3		
No affiliation	8	18.6	2	14.3		

[a] Missing data. [b] Violates assumption of ≥ 5 per cell. [c] Yates' Correction for Continuity.

Table 4-4

Comparison of Women with Partners Who Participated in the Study (n = 43) to Women with Partners Who Did Not Participate (n = 14) in the Study: Condition-Specific Variables

	Women with Participating Partner		**Women without Participating Partner**		**Test for Differences**	
Variable	**Mean**	***SD***	**Mean**	***SD***	***t***	***p***
How long lived with UI?[a]	7.9	7.3	7.8	6.4	-.088	.937
Number times wake to void	2.2	1.5	1.6	1.3	-1.25	.218
	#	**%**	**#**	**%**	**χ^2**	***p***
BMI category[a]					.651[b]	.722
Normal weight (18.5-24.9)	14	35.9	5	35.7		
Overweight (25-29.9)	15	38.5	4	28.6		
Obese (≥ 30)	10	25.6	5	35.7		
Discussed UI with partner?					3.87[c]*	.049
No	8	18.6	7	50		
Discussed UI with provider?					.71[c]	.399
No	17	39.5	8	57.1		
Provider discuss treatment?					.06[c]	.806
No	24	55.8	9	64.3		
Treatment received for UI?					.025[c]	.875
No	34	79.1	12	85.7		
Hysterectomy?[a]					1.1[c]	.294
No	37	88.1	10	71.4		
Pelvic organ prolapse?					.001[c]	.972
No	36	83.7	11	78.6		
Fecal incontinence (solid)?[a]					.000[c]	1.00
Yes	5	11.9	1	7.1		
Sexually active past 6 mo.?					.000[c]	1.00
No	10	23.3	3	21.4		
Taking antidepressant?					.51[c]	.475
No	31	72.1	8	57.1		
Yes, when started:	12	27.9	6	42.9		
Before UI symptoms[a]	7	58.3	4	66.7		
After UI symptoms[a]	3	25.0	1	16.7		

Note. UI = Urinary Incontinence; BMI = Body Mass Index.
[a] Missing data. [b] violates assumption of ≥ 5 per cell. [c] Yates' Correction for Continuity.
* Significant at the 0.05 level (two-tailed).

Table 4-5

Characteristics of Partners (n = 43)

Variable	**Mean (*SD*)**	**Min-Max**
Age in years[a]	55.95 (8.44)	39-73
Number of times wake to void[a]	1.3 (1.15)	0-5
	#	**%**
Education completed:		
Less than high school	2	4.7
High school/GED	11	25.6
Associate/Technical	7	16.3
4-year College	15	34.9
Graduate/Professional	8	18.6
Race/Ethnicity:		
Hispanic/Latino	7	16.3
White	32	74.4
Other	4	9.3
Religious affiliation:		
Catholic	13	30.2
Protestant	8	18.6
Evangelical Christian	6	14.0
Other	3	7.0
No affiliation	13	30.2
Reports urinary incontinence		
Yes	8	18.6
No	35	81.4
Reports Benign Prostate Hypertrophy[a]		
Yes	5	12.2
No	28	68.3
Don’t know	7	17.1

[a] Missing data.

Descriptive Statistics of the Study Instruments

Upon inspection of the data, a small number of missing values was noted for the following instruments: Self-Esteem Scale (SES), Hospital Anxiety and Depression Scale (HADS-A anxiety and HADS-D depression subscales), Relational Ethics Scale (RES), the Sexual Quality of Life-Female (SQLF) and the Sexual Quality of Life-Male (SQLM). Due to the sample size constraints of this study, the decision was made to impute missing values if one or two items were missing from a ten or more item scale. Single missing item values for six women's scores (one SES, one RES, and four SQLF) were replaced with the mean value of the woman's scored items on the instrument. Single missing item values for four men (one partner RES, three SQLM) were also replaced with the mean value of the scored items on the instrument. One partner had two missing items on the RES and those two were both replaced with the mean value of the ten scored items on this 12-item scale. Missing items were not imputed for two women who left two or three items on the 7-item HADS-A or HADS-D blank, nor were missing items imputed for the partner who did not score two items on the 4-item Couples' Illness Communication Scale (CICS). One woman did not complete the Body Image Scale (BIS) and one did not complete the CICS. One partner did not complete the Couples Satisfaction Index (CSI) and one did not complete the SQLM. Therefore, this data analysis includes imputed values for six women's instrument scores and five partners' instrument scores. Missing data remains for four women's instrument scores and three partners' instrument scores.

Two outliers were found and investigated. One woman's score on the BIS was at the upper limit. The second outlier was a woman with a relatively high score on the HADS-D who had started taking antidepressant medication therapy after her urinary incontinence developed. No outliers were identified among the partners' scores. The scale items of the two outliers were entered correctly into the database as marked on the questionnaire. The outlying scores, therefore, were retained in the data analysis.

The instruments performed well, demonstrating good internal consistency in this study. Because the two items of the Incontinence Severity Index (ISI) are designed as a measure of two different factors involved in determining the severity of urinary incontinence (how much, how often), a Cronbach's alpha coefficient was not considered an appropriate measure of the reliability of this symptom severity assessment tool. Reliability estimates for the remainder of the instruments were good to high (see Table 4-6). The lower Cronbach's alpha coefficient values for the CICS by partners, as compared with the other instruments used in this study, are still considered good to acceptable for a small (< 10-item) scale (Pallant, 2013).

The tests for normality for the instruments used to measure the variables of interest in this study are presented in Table 4-7. For all of the instruments the skewness statistic fell within the range of -1 to +1 and the normal Q-Q plots approximated a straight line, supporting an assumption of reasonably normal distributions. Even with the limitations of sample size in this study, the Kolmogorov-Smirnov statistic was not significant for nearly half of the instruments. Thus the assumption of normal distribution was reasonably met and parametric tests for associations between variables were utilized in data analyses.

The descriptive statistics for the instruments used to measure the variables of interest in this study are presented in Table 4-8. The average score on the ISI fell in the moderate symptom severity category (M = 5.75, 95% CI [4.92, 6.59]), and though the

Table 4-6

Reliability Estimates for the Instruments

Instrument	***n***	**Cronbach's α**
CSI	57	.970
Partner CSI	42	.935
SES	57	.908
BIS	56	.894
HADSA	55	.867
HADSD	55	.825
RES	57	.910
Partner RES	43	.930
SQLF	57	.959
SQLM	42	.932
CICS	56	.841
Partner CICS	42	.781

Note. CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale

Table 4-7

Instrument Tests for Normality

Instrument	**Skewness**	***SE* Skewness**	**Kurtosis**	***SE* Kurtosis**	**Kolmogorov-Smirnov Statistic**	***df***	**Sig.**
ISI	.672	.316	-.380	.623	.185	57	.000
CSI	-.738	.316	-.173	.623	.148	57	.003
Partner CSI	-.722	.365	-.619	.717	.149	42	.020
SES	-.232	.316	-1.008	.623	.122	56	.034
BIS	.845	.319	-.100	.628	.164	56	.001
HADSA	.174	.322	-.635	.634	.098	55	.200
HADSD	.957	.322	1.447	.634	.156	55	.002
RES	-.337	.316	-1.104	.623	.111	57	.077
Partner RES	-.662	.361	-.360	.709	.120	43	.131
SQLF†	-.201	.316	-1.147	.623	.121	57	.038
SQLM†	-.334	.365	-.899	.717	.136	42	.050
CICS	-.026	.319	-.496	.628	.075	56	.200
Partner CICS	.106	.365	-.596	.717	.101	42	.200

Note. ISI = Incontinence Severity Index; CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale

†standardized

Table 4-8

Descriptive Statistics for the Instruments

		95% CI for Mean			
Instrument	**Mean**	**Lower Bound**	**Upper Bound**	**Median**	***SD***
ISI	5.75	4.92	6.59	6	3.14
CSI	13.63	12.26	15.00	15	5.17
Partner CSI	13.90	12.16	15.65	15.5	5.60
SES	21.98	20.50	23.47	21.0	5.59
BIS	8.98	7.40	10.56	7.5	5.91
HADSA	7.80	6.70	8.90	8	4.07
HADSD	4.75	3.76	5.74	4	3.66
RES	45.33	42.73	47.94	47	9.83
Partner RES	47.12	44.11	50.12	49	9.76
SQLF†	60.51	53.20	67.82	58.89	27.55
SQLM†	65.93	57.94	73.93	70.91	25.66
CICS	13.11	12.05	14.16	13	3.94
Partner CICS	12.76	11.54	13.99	12	3.93

Note. CI = Confidence Interval; ISI = Incontinence Severity Index; CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale

†standardized

distribution of the ISI scores was skewed (skewness = .672; *SD* = .316), each symptom severity category was fairly well represented for the sample size (*n* = 57, see Table 4-9).

For the women participants, although the average score on the CSI was just above the cut point of 13.5 for non-distress (*M* = 13.63; *SD* = 5.17) and the scores on the CSI were negatively skewed (skewness = -.738), nearly 44% of the women scored below the cut point and were categorized as distressed (Table 4-10). Partner CSI scores demonstrated the same trends: mean slightly above the distress cut point (*M* = 13.90; *SD* = 5.60), negatively skewed (skewness = -.722), and nearly 42% of partners scored in the distressed category (Table 4-10).

Women's scores on the biographical variables of interest (see Table 4-8) tended toward higher self-esteem (*M* = 21.98; *SD* = 5.59) and fairly good body image (*M* = 8.98; *SD* = 5.91). Women's scores on the HADS-A were distributed across all categories of symptom severity for anxiety (see Table 4-11), and the mean was slightly above normal (*M* = 7.8; *SD* = 4.07; Median = 8) for anxiety level among this group of women living with urinary incontinence. Women's scores on the HADS-D were almost exclusively within the normal or mild symptom category (see Table 4-12).

Women's and partners scores on the relationship variables of interest (see Table 4-8) tended toward a positive perception of relational ethics (women's score *M* = 45.33, *SD* = 9.83, Median = 47; partners' score *M* = 47.12, *SD* = 9.76, Median = 49). Inspection of the histograms of sexual quality of life scores demonstrated a fairly broad distribution pattern across the possible range of scores for both women and partners. Communication about urinary incontinence was reported to be only fair on average by both women (*M* = 13.11; *SD* = 3.94; Median = 13) and partners (*M* = 12.76; *SD* = 3.93; Median = 12).

Table 4-9

Distribution of Incontinence Severity Index (ISI) Scores by Category of Symptom Severity (n = 57)

Symptom Severity (ISI score)	**Frequency**	**Percent**
slight (1-2)	7	12.3
moderate (3-6)	32	56.1
severe (8-9)	11	19.3
very severe (12)	7	12.3

Table 4-10

Participants by Couples Satisfaction Index (CSI) Distress Categories (n = 57 women, 42 partners)

Relationship Distress Category (total CSI score)	**Frequency**	**Percent**
Women not distressed (CSI > 13.5)	32	56.1
Women distressed (CSI ≤ 13.5)	25	43.9
Partners not distressed (CSI > 13.5)	24	55.8
Partners distressed (CSI ≤ 13.5)	18	41.9

Table 4-11

Categories of HADS-Anxiety Scores (n = 55)

Level of anxiety (total HADSA score)	**Frequency**	**Percent**
normal (0-7)	25	45.5
mild (8-10)	17	30.9
moderate (11-14)	9	16.4
severe (15-21)	4	7.3

Table 4-12

Categories of HADS-Depression Scores (n =55)

Level of depression (total HADSD score)	**Frequency**	**Percent**
normal (0-7)	40	72.7
mild (8-10)	13	23.6
moderate (11-14)	1	1.8
severe (15-21)	1	1.8

Analysis of the Women's Responses to the Study Instruments

UI Symptom Severity and Relationship Satisfaction

Research question 1a: To what extent is women's reported urinary incontinence symptom severity associated with women's perception of the quality of the intimate dyad?

The relationship between UI symptom severity (as measured by the ISI) and the perceived quality of the intimate dyadic relationship (as measured by the CSI) was investigated using the Pearson product-moment correlation coefficient. In addition, ISI scores were categorized into levels of severity and one-way ANOVAs were performed to determine if differences in CSI scores could be demonstrated across categories of urinary incontinence symptom severity.

For women's scores on the CSI, the direction of the association with ISI scores was negative, indicating that as symptom burden increased the relationship satisfaction decreased. The test for association between ISI and CSI, however, was not significant ($n = 57$; $r = -.127$, $p = .348$). The scatterplot showed good variability in CSI scores across ISI scores, supporting the assumption of homoscedasticity.

A one-way ANOVA for differences in women's CSI scores across the four levels of urinary incontinence symptom severity was also not significant: F (3, 53) = .841, $p = .477$. Levene's test supported the assumption of homogeneity of variance (Levene statistic = .367, $p = .777$). Mean scores for the four categories revealed an interesting, though not statistically significant, pattern of relationship satisfaction above the distress cut point of 13.5 for the mild and severe groups, and below the distress cut point for the moderate and very severe symptom severity groups (see Table 4-13 and Figure 4-1).

Table 4-13

Women's Mean CSI Scores for Different Levels of UI Symptom Severity

Category of Incontinence Severity	***n***	**Mean CSI**	***SD* CSI**
Slight (ISI = 1-2)	7	15.57	4.24
Moderate (ISI = 3-6)	32	12.88	5.40
Severe (ISI = 8-9)	11	15.00	5.53
Very Severe (ISI = 12)	7	13.00	4.32
Total	57	13.63	5.17

Note. ISI = Incontinence Severity Index; CSI = Couples Satisfaction Index

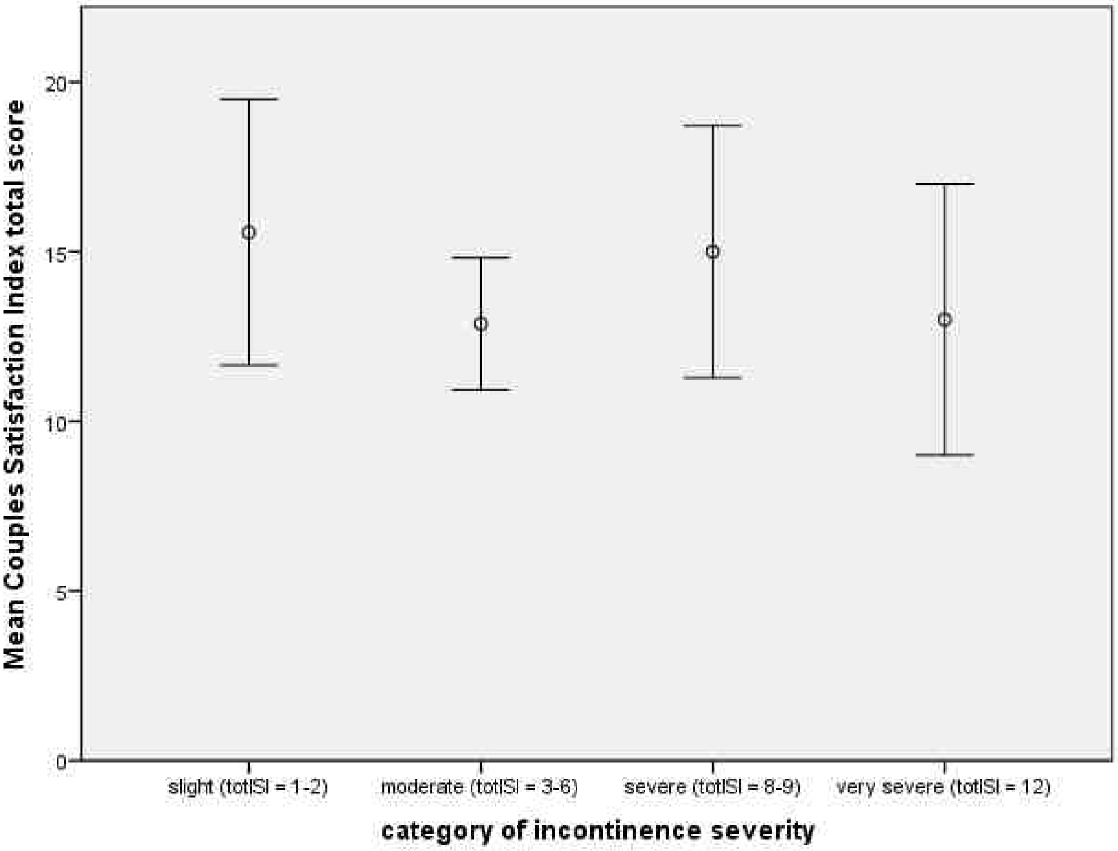

Figure 4-1. Chart of one-way ANOVA: mean CSI scores by ISI category. Error bars represent 95% Confidence Intervals.

UI Symptom Severity, Biographical Work, and Relationship Work

Research questions 2a and 2b: To what extent is women's reported urinary incontinence symptom severity associated with women's perceptions of biographical work variables? To what extent is women's reported urinary incontinence symptom severity associated with women's perceptions of relationship work variables?

Urinary incontinence symptom severity (as measured by the ISI) was tested for significant associations with each of the following: self-esteem (as measured by the SES), body image (as measured by the BIS), emotional health (anxiety and depression as measured by the HADS-A and HADS-D), relational ethics (justice and trustworthiness in the relationship as measured by the RES), sexual quality of life (as measured by the SQLF), and communication about UI (as measured by the CICS). The results of the Pearson's product-moment correlation matrix are presented in Table 4-14. Inspection of the scatterplots from the correlation analyses supported the assumption of homoscedasticity.

No significant relationships were found between ISI and women's biographical work variables or relationship work variables (Table 4-14). Excluding the two previously identified outliers (one BIS score and one HADS-D score) from the correlation analyses between ISI and the biographical variables and relaxing the criteria for committing a Type 2 error by setting alpha ≤ 0.10 (to address the issue of a slightly under-powered sample size in this study) suggested an association between incontinence symptom severity and body image, with a small effect size ($r = .247$, $p = .069$; see Table 4-15).

In addition, one-way ANOVA tested for differences in measures of biographical work and relationship work among the categories of UI symptom severity. Levene's test

Table 4-14

Pearson Product-Moment Correlations between ISI and Measures of Women's Biographical Variables and Women's Relationship Variables

ISI:	**SES**	**BIS**	**HADSA**	**HADSD**	**RES**	**SQLF**	**CICS**
Pearson Correlation	-.048	.189	.085	.179	-.138	-.136	.050
Sig. (2-tailed)	.723	.163	.537	.190	.307	.314	.713
n	57	56	55	55	57	57	56

Note. SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale

Table 4-15

Pearson Product-Moment Correlations between ISI and Measures of Women's Biographical Variables with Two Outliers Excluded from the Analysis

	SES	**BIS**	**HADSA**	**HADSD**
Correlation with ISI	-.048	.247†	.085	.199
Sig. (2-tailed)	.723	.069	.537	.149
n	57	55	55	54

Note. SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression

†Correlation is significant at the 0.10 level (2-tailed).

for homogeneity of variances from the ANOVA analyses were all non-significant (> .05), and supported the assumption of homogeneity of variances. One-way ANOVA results demonstrated a significant difference among incontinence severity groups in SES scores: F (3, 53) = 6.63, p = .001; and in CICS scores: F (3, 52) = 3.14, p = .033. No significant differences were found among UI severity categories for scores on the BIS: F (3, 52) = .73, p = .538; the HADS-A: F (3, 51) = 1.71, p = .176; the HADS-D: F (3, 51) = 1.72, p = .174; the RES: F (3, 53) = .58, p = .645; and the standardized SQLF: F (3, 53) = .82, p = .486. Because of the potential for a weak association existing between ISI and BSI identified by correlation analysis, the mean BIS score in each ISI severity category was explored for insights (see Figure 4-2).

Post-hoc comparisons using the Tukey HSD test indicated a significant difference in mean SES scores between severe (M = 27.18, SD = 2.79) and moderate (M = 20.41, SD = 5.49) incontinence as well as between severe and very severe (M = 18.86, SD = 4.91) incontinence. The effect size was calculated by calculating eta squared as follows:

$$\text{Eta squared} = \frac{\text{Sum of squares between groups}}{\text{Total sum of squares}} = \frac{477.913}{1750.982} = 0.27$$

Even though the calculated eta squared was large using Cohen’s (1988) criteria, the pattern of the SES mean score differences between the groups of women with varying degrees of incontinence symptom severity was difficult to interpret (see Figure 4-3).

Post-hoc comparisons with Tukey HSD test indicated a significant difference in mean CICS scores between slight (M = 9.43, SD = 3.55) and moderate (M = 13.81, SD = 3.27) incontinence (see Figure 4-4). The calculated eta squared (131.168/855.357 = .15) represented a large effect of symptom severity on perceptions of the quality of UI-related communication.

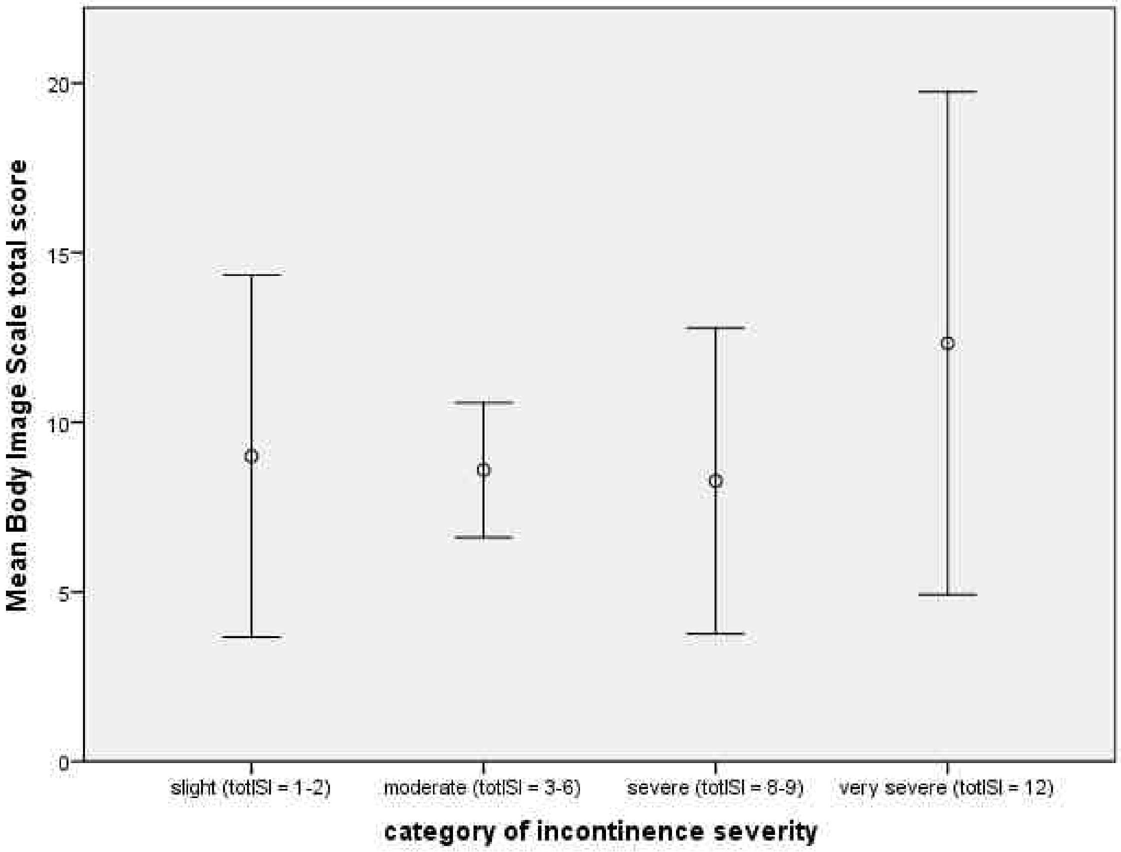

Figure 4-2. Chart of one-way ANOVA depicting BIS scores by ISI category (*n* = 56). Error bars represent 95% Confidence Intervals.

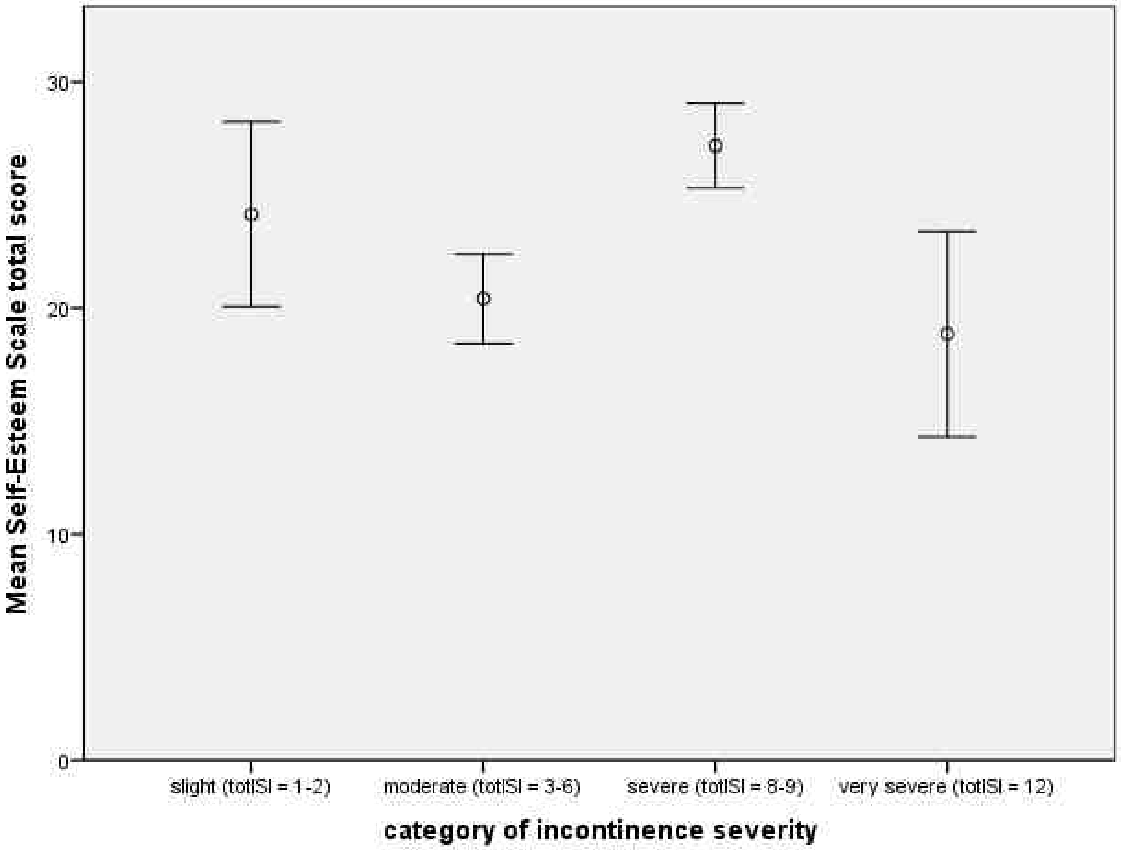

Figure 4-3. Chart of mean SES scores by UI symptom severity category (*n* = 57). Error bars represent 95% Confidence Intervals.

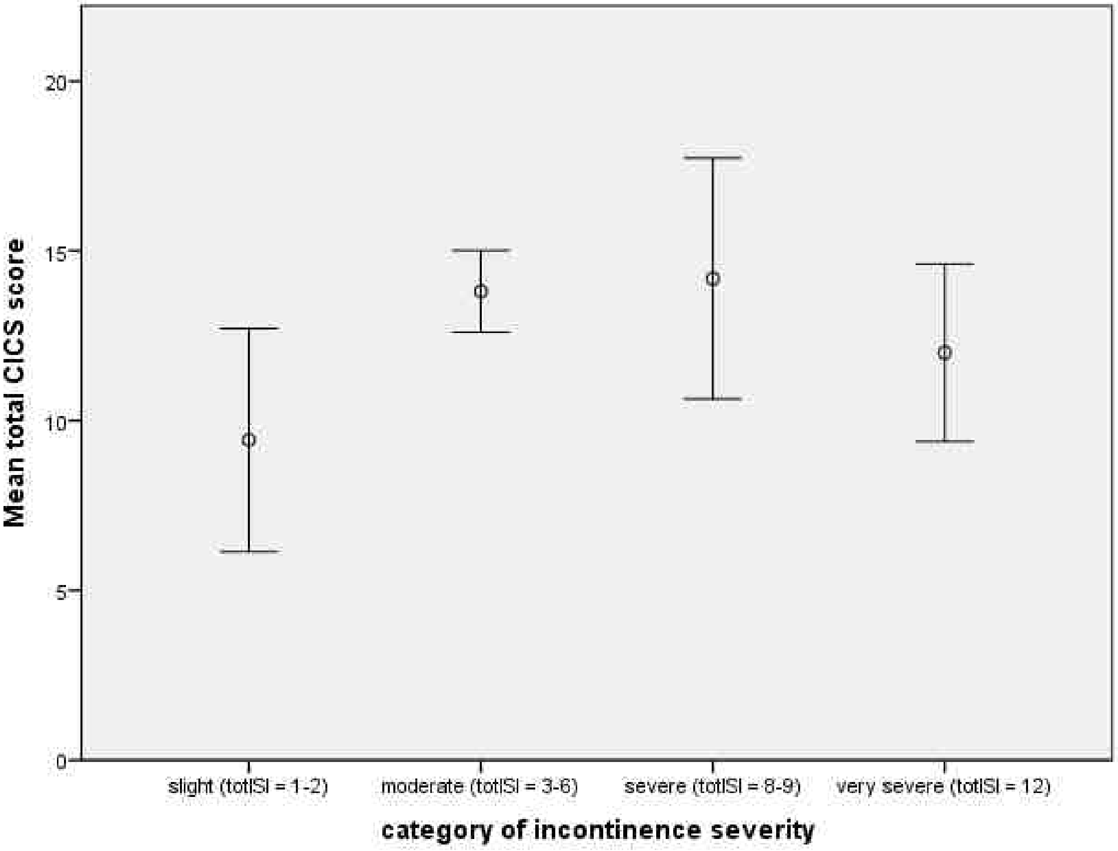

Figure 4-4. Chart of mean CICS scores by UI symptom severity category (*n* = 56). Error bars represent 95% Confidence Intervals.

Biographical Work and Relationship Work

Research question 3a: To what extent are women's perceptions of biographical work variables associated with women's perceptions of relationship work variables?

The Pearson product-moment correlation coefficient was utilized to explore for significant associations in variance among women's scores on measures of biographical variables of interest in this study and their scores on relationship variables of interest in this study (see Table 4-16). Cohen's (1988) guidelines were used to determine the strength of significant relationships between two variables (small = *r* of .10-.29; medium = *r* of .30-.49; large = *r* of .50-1.0).

As presented in Table 4.16, statistically significant relationships ($p < .01$, two-tailed) were found between all of the variables, with the exception of the relationship between CICS and SES ($r = .152$, $p = .265$). The CICS did demonstrate medium strength relationships with the variables BIS, HADS-A, HADS-D and RES and a large relationship strength with SQLF. Large relationship strengths were also found between SQLF and BIS, HADS-A, HADS-D and RES. The RES demonstrated large relationship strengths with the HADS-D and SQLF. Of the 20 significant relationships found in this study between biographical and relationship variables, 9 were of medium strength and 11 were large in strength.

Biographical Work, Relationship Work, and Relationship Satisfaction

Research question 4a: To what extent are women's perceptions of biographical and/or relationship work variables associated with women's perceptions of the quality of the intimate dyad?

Table 4-16

Pearson Product-Moment Correlations among Measures of Women's Biographical Variables and Women's Relationship Variables

	SES	**BIS**	**HADSA**	**HADSD**	**RES**	**SQLF**	**CICS**
BIS	**-.431*****	-					
Sig.	.001						
n	56						
HADSA	**-.713*****	**.548*****	-				
Sig.	< .001	< .001					
n	55	54					
HADSD	**-.692*****	**.577*****	**.703*****	-			
Sig.	< .001	< .001	< .001				
n	55	54	55				
RES	**.480*****	**-.387****	**-.464*****	**-.614*****	-		
Sig.	< .001	.003	< .001	< .001			
n	57	56	55	55			
SQLF	**.411****	**-.544*****	**-.552*****	**-.600*****	**.709*****	-	
Sig.	.002	< .001	< .001	< .001	< .001		
n	57	56	55	55	57		
CICS	**.152**	**-.395****	**-.378****	**-.461*****	**.347****	**.508*****	-
Sig.	.265	.003	.005	< .001	.009	< .001	
n	56	55	54	54	56	56	

Note. SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). ***Correlation is significant at the 0.001 level (2-tailed).

All of the women's biographical work variables and relationship work variables were significantly correlated with women's relationship satisfaction, as measured by the CSI (see Table 4-17). The women's scores on the CSI demonstrated a large relationship strength with their scores on the HADS-D, RES, and SQLF. Medium strength relationships were demonstrated between the women's scores on the CSI and their scores on the SES, BIS, HADS-A, and CICS.

Potential Mediating Effects of Biographical and Relationship Work

Research question 5: To what extent do women's perceptions of biographical work variables and/or relationship work variables mediate the association between incontinence symptom severity and women's perception of the quality of the intimate dyad?

To address this research question, exploratory path analyses were performed using SPSS AMOS (version 22). Due to the small sample size of women participants (*n* = 57), the potential mediating effects of the biographical variables (SES, HADS-A, HADS-D, and BIS) were analyzed in one model (Figure 4-5) and the potential mediating effects of the relationship variables (RES, SQLF, and CICS) were analyzed in a second model (Figure 4-6). The following goodness-of-fit indices were investigated: a) Chi-square, which should not be statistically significant ($p < .05$); b) CMIN/DF, which should not exceed 2-3, otherwise too many paths are missing from the model; c) CFI (the tested model compared to an independence model of all possible paths), which should be close to the value of 1; and d) the RMSEA (an index of the extent to which a model does not fit the data per degree of freedom), which should not demonstrate a value greater than 0.1 (Wuensch, 2013). Neither model demonstrated a good fit to the data (Table 4-18).

Table 4-17

Pearson Product-Moment Correlations between CSI and Measures of Women's Biographical Variables and Women's Relationship Variables

	SES	**BIS**	**HADSA**	**HADSD**	**RES**	**SQLF**	**CICS**
Correlation with CSI	.356**	-.370**	-.330*	-.593***	.869***	.667***	.313*
Sig. (2-tailed)	.007	.005	.014	< .001	< .001	< .001	.019
n	57	56	55	55	57	57	56

Note. SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). ***Correlation is significant at the 0.001 level (2-tailed).

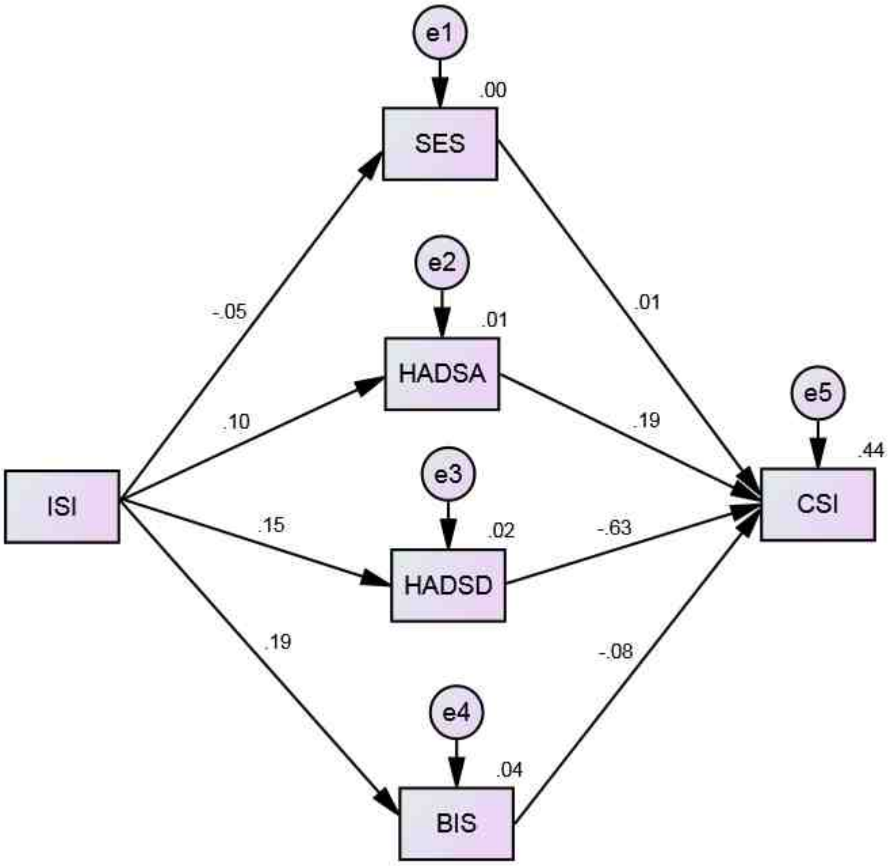

Figure 4-5. Model 1: Path analysis of potential mediating effects of biographical variables. ISI = Incontinence Severity Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; CSI = Couples Satisfaction Index

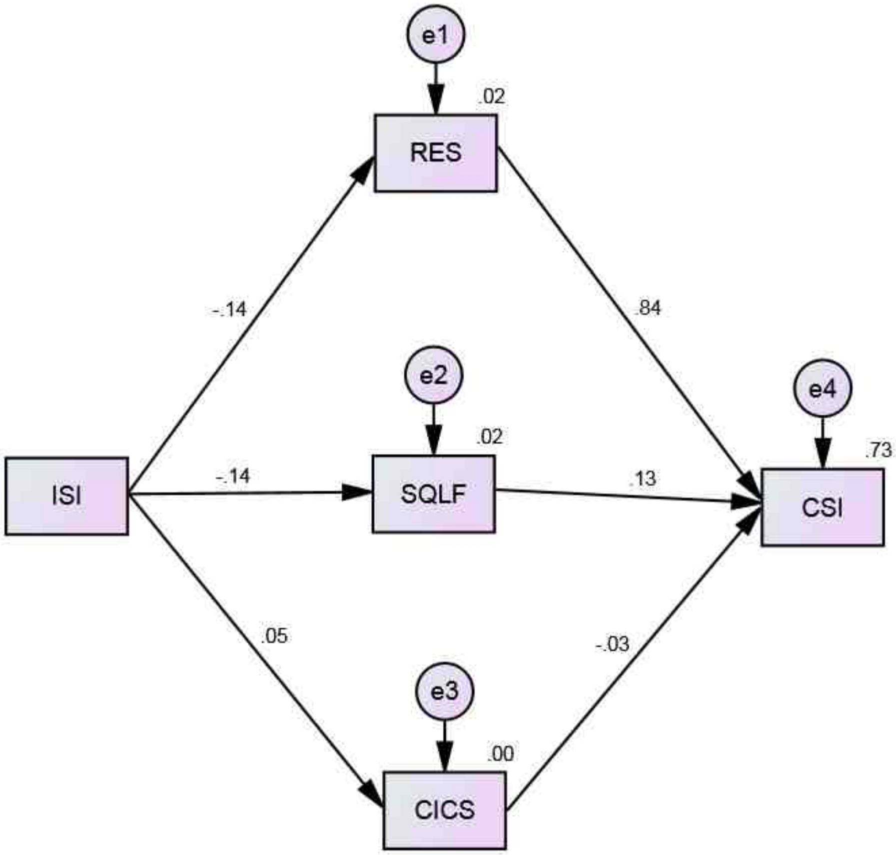

Figure 4-6. Model 2: Path analysis of potential mediating effects of relationship variables. ISI = Incontinence Severity Index; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale; CSI = Couples Satisfaction Index

Table 4-18

Goodness-of-Fit Indices for Path Analyses in Model 1 and Model 2

	X^2	*df*	*p*	**CMIN/DF**	**CFI**	**RMSEA**
Model 1	106.847	7	< .001	15.264	.128	.505
Model 2	55.48	4	< .001	13.870	.580	.479

Note. CMIN/DF = Chi-square minimum discrepancy/degrees of freedom; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation.

Analysis of Partners' Responses to the Study Instruments

Women's UI Symptom Severity and Partners' Relationship Satisfaction

Research question 1b: To what extent is women's reported urinary incontinence symptom severity associated with partners' perception of the quality of the intimate dyad?

Partners' scores on the CSI showed no significant relationship with the women's ISI scores (n = 42; r = .037, p = .818, two-tailed). Inspection of the scatterplot supported the assumption of homoscedasticity. One-way ANOVA demonstrated that partners' scores on the CSI showed no significant relationship with the women's incontinence symptom severity category: F (3, 38) = .354, p = .787. Levene's test supported the assumption of homogeneity of variance (Levene statistic = .808, p = .497).

Women's UI Symptom Severity and Partners' Relationship Work

Research question 2c: To what extent is women's reported urinary incontinence symptom severity associated with partners' perceptions of relationship work variables?

The Pearson product-moment correlation coefficient was utilized to explore for significant associations in variance between women's scores on the ISI and partners' scores on measures of relationship work. No significant correlations were found between women's ISI scores and partners' scores on relationship variables (Table 4-19). Inspection of the scatterplots supported the assumption of homoscedasticity. One-way ANOVA demonstrated no significant differences among incontinence severity categories for partner RES scores: F (3, 39) = .374, p = .772; SQLM scores: F (3, 38) = 1.358, p = .270; and partner CICS scores: F (3, 38) = 1.011, p = .399. Levene's test for homogeneity of variances from the ANOVA analyses were all non-significant (> .05), supporting the

Table 4-19

Pearson Product-Moment Correlations between ISI and Measures of Partners' Relationship Variables

	partner RES	**SQLM**	**partner CICS**
Correlation with ISI	-.106	.018	.104
Sig. (2-tailed)	.498	.910	.512
n	43	42	42

Note. ISI = Incontinence Severity Index; RES = Relational Ethics Scale; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale assumption of homogeneity of variances.

Women's Biographical Work Variables and Partners' Relationship Work

Research question 3b: To what extent are women's perceptions of biographical work variables associated with partners' perceptions of relationship work variables?

The Pearson product-moment correlation coefficient was utilized to explore for significant associations between the scores on biographical variables of women whose partner participated in the study versus their partners' scores on relationship variables of interest in this study. Cohen's (1988) guidelines were used to determine the strength of significant relationships between two variables (small = *r* of .10-.29; medium = *r* of .30-.49; large = *r* of .50-1.0).

No significant relationships were found between women's scores on the biographical variables and partners' scores on the RES and the SQLM, with the exception of a significant medium strength relationship between the HADS-D and the partners' scores on the RES and the SQLM (Table 4-20). Significant large relationships were found between partners' scores on the CICS and women's scores on the SES ($r = .506$, $p < .01$), HADS-A ($r = -.583$, $p < .01$), and HADS-D ($r = -.601$, $p < .01$); and a significant medium relationship was found between partners' scores on the CICS and women's scores on the BIS ($r = -.364$, $p < .05$).

Partners' scores on the relationship variables were significantly correlated (Table 4-20). Of note, partners' scores on the RES were strongly and positively associated with SQLM ($r = .635$, $p < .01$). There were significant medium relationships with partners' CICS and both the SQLM ($r = .465$, $p < .01$) and the partners' RES ($r = .406$, $p < .01$).

Table 4-20

Pearson Product-Moment Correlations among Measures of Women's Biographical Variables and Partners' Relationship Variables

	SES	**BIS**	**HADSA**	**HADSD**	**PRES**	**SQLM**	**PCICS**
PRES	**.264**	**-.182**	**-.213**	**-.489*****	-		
Sig.	.087	.242	.182	.001			
n	43	43	41	41			
SQLM	**.278**	**-.256**	**-.217**	**-.336***	**.635*****	-	
Sig.	.074	.101	.178	.034	< .001		
n	42	42	40	40	42		
PCICS	**.506*****	**-.364***	**-.583*****	**-.601*****	**.406****	**.465****	-
Sig.	.001	.018	< .001	< .001	.008	.002	
n	42	42	40	40	42	41	

Note. SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; PRES = partner Relational Ethics Scale; SQLM = Sexual Quality of Life Male; PCICS = partner Couples' Illness Communication Scale

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). ***Correlation is significant at the 0.001 level (2-tailed).

Women's Biographical Work, Partners' Relationship Work, and Partners' Satisfaction with the Relationship

Research question 4b: To what extent are women's perceptions of biographical work variables or partners' perceptions of relationship work variables associated with partners' perceptions of the quality of the intimate dyad?

Women's biographical variables were significantly associated with partners' relationship satisfaction (Table 4-21). Partners' CSI had a moderate strength correlation with the women's HADS-D (r = -.498, p < 01) and the women's BIS (r = -.316, p < .05). Significant associations were also found between partner's relationship satisfaction and the partners' relationship variables of interest in this study (Table 4-21). Partners' CSI had strong associations with partners' RES (r = .811, p < 01) and SQLM (r = .544, p < 01), and a medium strength association with partners' CICS (r = .361, p < 05).

Women's and Partners' Scores: Tests for Congruence and Non-Independence

Research questions 6a and 6b: To what extent is there congruence between women's and partners' perceptions of the quality of the intimate dyad? To what extent is there congruence between women's and partners' perceptions of the quality of each of the relationship work variables?

Paired samples *t*-tests analyzed congruence between women and partners on the CSI, RES, standardized SQL scales, and CICS (p < .05, two-tailed). Results from the paired samples *t*-tests demonstrated that women's scores were not significantly different from their male partners' scores on the CSI, the RES, the SQLM and the CICS (Table 4-22).

Table 4-21

Pearson Product-Moment Correlations between Partners' CSI and Measures of Women's Biographical Variables and Partners' Relationship Variables

	SES	**BIS**	**HADSA**	**HADSD**	**PRES**	**SQLM**	**PCICS**
Correlation with Partner CSI	.276	-.316*	-.231	-.498***	.811***	.544***	.361*
Sig. (2-tailed)	.076	.041	.151	.001	< .001	< .001	.020
n	42	42	40	40	42	41	41

Note. CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; PRES = partner Relational Ethics Scale; SQLM = Sexual Quality of Life Male; PCICS = partner Couples' Illness Communication Scale

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). ***Correlation is significant at the 0.001 level (2-tailed).

Table 4-22

Paired-Samples t-Tests for Congruence between Women and Partners

				Paired Differences					
		Women	Partners			95% CI			
Instrument	*n*	Mean (*SD*)	Mean (*SD*)	Mean	*SD*	Lower	Upper	*t*	*p*
CSI	42	14.1 (5.1)	13.9 (5.6)	.143	3.552	-.964	1.250	.261	.796
RES	43	46 (9.5)	47.1 (9.8)	-1.116	7.102	-3.302	1.069	-1.031	.309
SQLF/M	42	59.2 (28.7)	65.9 (25.7)	-6.724	28.328	-15.552	2.103	-1.538	.132
CICS	41	13.5 (3.6)	12.9 (3.8)	.537	3.494	-.566	1.639	.983	.331

Note. CI = Confidence Interval; CSI = Couples Satisfaction Index; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale

Pearson product-moment correlation analysis tested for non-independence of women’s and partners’ scores. Women’s scores and their partners’ scores on the CSI, RES, SQLF/SQLM, and the CICS were all significantly correlated (Table 4-23), demonstrating non-independence of scores within dyads. Inspection of the scatterplots supported the interpretation of a correlation between women and their partners and also supported the assumption of homoscedasticity.

One-way ANOVA demonstrated interesting, though not statistically significant patterns in women’s and partners’ CSI scores among the categories of UI symptom severity (Table 4-24). The mean CSI scores for women with very severe UI symptoms fell below the cut point for relationship distress, whereas the partners’ mean CSI score in this category did not. There were only four couples in this category, however, so this observation would require further investigation. Also of interest was the finding that both women and their partners in the moderate UI symptom severity category had mean CSI scores that were at or below the cut point for relationship distress.

Additional Findings from the Quantitative Data

In addition to the study instruments chosen to answer the study questions by operationalizing the constructs in the model, the participants answered other questions regarding possible effects of female UI on their relationship. Analyses of these additional data are provided below.

Responses to the “Before” and “After” Questions

Women and partners were asked five questions to rank their perceptions of the relationship before UI symptoms began and their perceptions of the relationship as it was at the time of the study. Table 4-25 presents the women’s responses and Table 4-26

Table 4-23

Pearson Product-Moment Correlation Statistics between Women and Partners

	n	**Pearson *r***	**Sig. (two-tailed)**
Couples Satisfaction Index	42	.784***	< .001
Relational Ethics Scale	43	.728***	< .001
Sexual Quality of Life	42	.462**	.002
Couples' Illness Communication Scale	41	.561***	< .001

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). ***Correlation is significant at the 0.001 level (2-tailed).

Table 4-24

Comparison of Mean Couples Satisfaction Index (CSI) Scores among Levels of UI Symptom Severity (ISI) between Women and Partners

Category of Incontinence Severity	***n***	**Mean Partner CSI**	**SD of Partner CSI**	**Mean Woman CSI**	**SD of Woman CSI**
slight (ISI = 1-2)	5	15	3.39	14.6	4.56
moderate (ISI = 3-6)	24	13.1	5.77	13.5	5.13
severe (ISI = 8-9)	10	14.7	6.46	15.5	5.56
very severe (ISI = 12)	4	15.3	5.68	12.0	5.29
Total	**43**	**13.9**	**5.60**	**13.6**	**5.11**

Table 4-25

Women's Responses to the Questions about Their Relationship Before and After Urinary Incontinence Developed

Before vs. After UI symptoms developed:	***n***	**Mean Before/After**	***SD* Before/After**	***SE* of Mean Before/After**
Relationship meets emotional needs	53	4.00/3.38	1.33/1.72	.18/.24
Trust that partner has good intentions	53	4.42/4.09	.87/1.36	.12/.19
Share satisfying physical intimacy	52	4.35/2.77	.97/1.92	.13/.27
Communicate about body's needs	52	4.06/2.96	1.04/1.79	.14/.25
Feel valued and respected by partner	52	4.40/3.71	.91/1.71	.13/.24

Table 4-26

Partners' Responses to the Questions about Their Relationship Before and After Urinary Incontinence Developed

Before vs. After UI symptoms developed:	***n***	**Mean Before/After**	***SD* Before/After**	***SE* of Mean Before/After**
Relationship meets emotional needs	38	4.05/3.71	1.41/1.59	.23/.26
Trust that partner has good intentions	38	4.42/4.08	.98/1.28	.16/.21
Share satisfying physical intimacy	38	4.29/3.29	1.11/1.61	.18/.26
Communicate about body's needs	38	3.61/3.21	1.46/1.61	.24/.26
Feel valued and respected by partner	38	4.34/3.87	1.02/1.61	.17/.26

presents the partners' responses to the five questions. Mean score on all questions regarding the relationship prior to the onset of UI were all higher than the mean score on perceptions of the relationship now. This trend was evident for both women and partners.

Paired-samples *t*-tests were used to test for significant differences ($p < .05$, two-tailed) in women's perceptions of the relationship before UI developed compared to now (Table 4-27), as well as testing for differences in partners' perceptions of the relationship before UI developed compared to now (Table 4-28). Significant differences were found in mean scores on all questions for women and for partners (with the exception of "meets emotional needs") in terms of how they rated their perceptions of the relationship prior to the onset of UI compared to now. The largest mean difference was found for women's responses to the questions about sharing satisfying physical intimacy (mean difference = 1.6, $p < .001$) and about their ability to communicate with their partner about their body's needs (mean difference = 1.1, $p < .001$); whereas for partners the mean difference was largest for sharing satisfying physical intimacy (mean difference = 1.0, $p < .001$).

Women's responses regarding their perceptions about their relationship before UI developed were compared with partners' responses to perceptions about their relationship before UI developed with paired-samples *t*-test (Table 4-29). Women's ability to communicate satisfactorily about their body symptoms was reported to be significantly higher by the women than by their partners (mean difference = .54, $t = 2.37$, $p = .023$, two-tailed) before UI developed. No other factors were significantly different between women and their partners before the UI developed. Table 4-30 presents the results of the paired-samples *t*-tests comparing women and partner perceptions of the relationship at the time of the study. No significant differences were found between women and partner

Table 4-27

Paired-Samples t-Tests for Women's Perceptions about the Relationship Before and After Urinary Incontinence (n = 52-53)

Before vs. After UI symptoms developed:	Paired Differences						
			95% CI				
	Mean	*SD*	Lower	Upper	*t*	*df*	*p*
Relationship meets emotional needs	.623	1.417	.232	1.013	3.198**	52	.002
Trust that partner has good intentions	.321	1.123	.011	.630	2.080*	52	.042
Share satisfying physical intimacy	1.577	1.742	1.092	2.062	6.529***	51	< .001
Communicate about body's needs	1.096	1.718	.618	1.574	4.601***	51	< .001
Feel valued and respected by partner	.692	1.462	.285	1.099	3.414***	51	.001

Note: CI = Confidence Interval.
*Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

Table 4-28

Paired-Samples t-Tests for Partners' Perceptions about the Relationship Before and After Urinary Incontinence (n = 38)

Before vs. After UI symptoms developed:	Paired Differences						
			95% CI				
	Mean	*SD*	Lower	Upper	*t*	*df*	*p*
Relationship meets emotional needs	.342	1.097	-.019	.703	1.922	37	.062
Trust that partner has good intentions	.342	.938	.034	.650	2.248*	37	.031
Share satisfying physical intimacy	1.000	1.375	.548	1.452	4.482***	37	< .001
Communicate about body's needs	.395	.974	.075	.715	2.499*	37	.017
Feel valued and respected by partner	.474	1.224	.071	.876	2.385*	37	.022

Note: CI = Confidence Interval.
*Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

Table 4-29

Paired-Samples t-Tests Comparison of Women's and Partners' Perceptions about the Relationship before Urinary Incontinence (n = 37 dyads)

Women vs. Partners before UI symptoms developed:	Paired Differences						
			95% CI				
	Mean	*SD*	Lower	Upper	*t*	*df*	*p*
Relationship meets emotional needs	.189	1.244	-.225	.604	.925	36	.361
Trust that partner has good intentions	.162	.986	-.167	.491	1.000	36	.364
Share satisfying physical intimacy	.216	.787	-.046	.478	1.672	36	.103
Communicate about body's needs	.541	1.386	.078	1.003	2.372*	36	.023
Feel valued and respected by partner	.189	.967	-.133	.512	1.190	36	.242

Note: CI = Confidence Interval

*Significant at the 0.05 level (2-tailed).

Table 4-30

Paired-Samples t-Tests Comparison of Women's and Partners' Perceptions about the Relationship after Urinary Incontinence (n = 37 dyads)

Women vs. Partners after UI symptoms developed:	Paired Differences						
			95% CI				
	Mean	*SD*	Lower	Upper	*t*	*df*	*p*
Relationship meets emotional needs	-.189	1.198	-.589	.210	-.961	36	.343
Trust that partner has good intentions	.081	1.140	-.299	.461	.433	36	.668
Share satisfying physical intimacy	-.378	1.479	-.871	.115	-1.557	36	.128
Communicate about body's needs	-.297	1.808	-.900	.306	-1.000	36	.324
Feel valued and respected by partner	-.108	1.329	-.551	.335	-.495	36	.624

Note: CI = Confidence Interval

perceptions of the relationship, as evidenced by their responses to the five "Now" questions at the time of the study.

Urinary Incontinence and Women's Sexual Function

UI symptom severity was not found to be significantly associated with the women's scores on the PISQ-12 (*n* = 56, *r* = -.147, *p* = .281, two-tailed), a measure of UI-related sexual function. How long the women had lived with UI symptoms was, however, significantly correlated with the scores on the PISQ-12 (*n* = 54, *r* = -.268, *p* = .05, two-tailed) and the CSI (*n* = 56, *r* = .449, *p* = .001, two-tailed).

Exploring Length of Time Lived with UI as a Factor in Relationship Satisfaction

One aspect of living with a chronic condition, in addition to the potential for an increasing severity of symptoms profile, is the length of time the woman and the couple have had to cope with the symptoms together. Of note, the length of time lived with UI was not significantly correlated with UI symptom severity (*r* = .216, *p* = .112, *n* = 55). The following additional questions were considered for further exploration:

1. To what extent is the length of time lived with urinary incontinence associated with women's and partners' perception of the quality of the intimate dyad?
2. To what extent is the length of time lived with urinary incontinence associated with women's perceptions of biographical work variables and/or relationship work variables? With partners' relationship work variables?

A weak relationship was suggested between how long women had lived with urinary incontinence and women's CSI scores (*r* = -.251, *p* = .06, two-tailed), but not with partners' CSI scores (*r* = -.137, *p* = .39, two-tailed). No significant relationships were found, however, between how long women had lived with urinary incontinence and any of the biographical work variables, relationship work variables (Table 4-31), and partner variables (Table 4-32).

Biographical and Relationship Variables as Predictors of Relationship Satisfaction

Standard multiple regression was used to assess for possible unique contributions of the biographical variables and the relationship variables to the variance in scores on the Couples Satisfaction Index. Preliminary analyses supported no violation of multicollinearity. Inspection of the correlation matrix of women's scores on the biographical and relationship variables, as potential predictors of women's scores on relationship satisfaction, demonstrated statistically significant correlations of > 0.3 (range = .313-.869) for all of the predictor variables, with only one variable with a correlation of > 0.7 (RES: $r = .869$, $p < .001$). All Tolerance values were > 0.1 (range = .304-.629).

Inspection of the correlation matrix of women's scores on the biographical variables and partners' scores on relationship variables, as potential predictors of partners' scores on relationship satisfaction, demonstrated that the women's SES scores and the women's HADS-A scores did not have correlations > 0.3 (SES $r = .276$, $p = .038$; HADS-A $r = -.231$, $p = .075$). Only the partners' RES had a correlation of > 0.7 with the partners' CSI (partner RES: $r = .811$, $p < .001$). All Tolerance values were > 0.1 (range = .255-.553). The decision was made to include all seven predictor variables in the standard regression analyses and also to perform standard regression analyses with the RES removed. R^2 values are reported below for ease of interpretation. Adjusted R^2 values are reported due to the small participant population ($n = 57$ women; $n = 43$ partners).

Table 4-31

Pearson Product-Moment Correlations between How Long Women Lived with UI Symptoms and Measures of Women's Satisfaction with the Relationship, Biographical Variables and Relationship Variables

	CSI	**SES**	**BIS**	**HADSA**	**HADSD**	**RES**	**SQLF**	**CICS**
Correlation with length of time lived with UI	-.251	.215	.040	-.029	-.089	-.126	-.187	-.099
Sig. (2-tailed)	.064†	.115	.773	.837	.528	.359	.171	.478
n	55	55	55	53	53	55	55	54

Note. CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale

†Correlation is significant at the 0.10 level (2-tailed).

Table 4-32

Pearson Product-Moment Correlations between How Long women Lived with UI Symptoms and Measures of Partners' Satisfaction with the Relationship and Relationship Variables

	PCSI	**PRES**	**SQLM**	**PCICS**
Correlation with length of time lived with UI	-.137	-.085	.041	.223
Sig. (2-tailed)	.388	.588	.797	.155
n	42	43	42	42

Note. PCSI = partner Couples Satisfaction Index; PRES = partner Relational Ethics Scale; SQLM = Sexual Quality of Life Male; PCICS = partner Couples' Illness Communication Scale

For the women’s regression model with seven predictors (women’s scores on the SES, BIS, HADS-A, HADS-D, RES, SQLF, and CICS) for women’s scores on the CSI, the total variance explained was 80%, F (7, 46) = 26.331, $p < .001$ ($R^2 = .80$, adjusted $R^2 = .77$). Two variables made a significant, unique contribution to the variance in women's CSI scores: 1) the RES (*beta* = .760, $p < .001$, semipartial correlation coefficient = .491), explaining 24% of the variance explained in the model that was not explained by the other variables; and 2) the HADS-D (*beta* = -.282, $p = .022$, semipartial correlation coefficient = -.156), explaining 2% of the variance that was not explained by the other variables in the model (Table 4-33).

With the RES removed from the regression model predicting variance in women’s CSI scores, the total variance explained was 55.9%, F (6, 47) = 9.930, $p < .001$ ($R^2 = .559$, adjusted $R^2 = .503$). Two variables in this model made a significant, unique contribution to the explained variance in CSI scores: 1) the SQLF (*beta* = .600, $p < .001$, semipartial correlation coefficient = .432), explaining 18.7% of the variance explained in the model that was not explained by the other variables; and 2) the HADS-D (*beta* = -.517, $p = .004$, semipartial correlation coefficient = -.295), explaining 8.7% of the variance that was not explained by the other variables in the model (Table 4-34).

For the partners’ regression model with seven predictors (women’s scores on the SES, BIS, HADS-A, and HADS-D; and the partners’ scores on the RES, SQLM, and CICS) for partners’ scores on the CSI, the total variance explained was 69%, F (7, 32) = 10.198, $p < .001$ ($R^2 = .69$, adjusted $R^2 = .623$). One predictor variable made a significant, unique contribution to the explained variance in the model: the partners’ RES (*beta* =

Table 4-33

Standard Regression Model of 7 Predictor Variables with Women's CSI Scores as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B		Corr	
Predictors:	B	Std. Error	Beta	*t*	*p*	Lower Bound	Upper Bound	Semi partial	Tol
(Constant)	-2.398	4.340		-.553	.583	-11.134	6.337		
SES	-.110	.101	-.118	-1.085	.283	-.313	.094	-.072	.364
BIS	-.023	.076	-.026	-.303	.764	-.177	.131	-.020	.571
HADS-A	.257	.141	.202	1.825	.074	-.026	.540	.120	.354
HADS-D	-.399	.169	-.282	-2.363*	.022	-.738	-.059	-.156	.304
RES	.400	.054	.760	7.454***	< .001	.292	.508	.491	.418
SQLF	.026	.021	.140	1.268	.211	-.015	.068	.084	.356
CICS	-.090	.109	-.069	-.826	.413	-.309	.129	-.054	.629

Note. CI = Confidence Interval; CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale

*Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

Table 4-34

Standard Regression Model of 6 Predictor Variables with Women's CSI Scores as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B		Corr	
Predictors:	B	Std. Error	Beta	*t*	*p*	Lower Bound	Upper Bound	Semi partial	Tol
(Constant)	8.398	6.014		1.396	.169	-3.701	20.496		
SES	.005	.147	.005	.034	.973	-.290	.300	.003	.373
BIS	.046	.111	.053	.413	.682	-.178	.270	.040	.579
HADS-A	.386	.205	.303	1.879	.066	-.027	.799	.182	.360
HADS-D	-.730	.239	-.517	-3.050**	.004	-1.211	-.249	-.295	.326
SQLF	.113	.025	.600	4.458***	< .001	.062	.163	.432	.518
CICS	-.126	.160	-.096	-.785	.436	-.447	.196	-.076	.630

Note. CI = Confidence Interval; CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; SQLF = Sexual Quality of Life Female; CICS = Couples' Illness Communication Scale

*Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

.747, $p < .001$, semipartial correlation coefficient = .503), explaining 25.3% of the variance that was not explained by the other variables in the model (Table 4-35).

With the RES removed from the regression model predicting variance in partners' CSI scores, the total variance explained was 43.8%, F (6, 33) = 4.286, $p = .003$ (R^2 = .438, adjusted R^2 = .336). Two variables in this model made a significant, unique contribution to the explained variance in partners' CSI scores: 1) the SQLM (*beta* = .435, $p = .007$, semipartial correlation coefficient = .376), explaining 14% of the variance explained in the model that was not explained by the other variables; and 2) the HADS-D (*beta* = -.554, $p = .021$, semipartial correlation coefficient = -.316), explaining 10% of the variance that was not explained by the other variables in the model (Table 4-36).

Analysis of the Women's and Partners' Responses to the Open-Ended Questions

Research Question 7: What major themes are identified by women and their partners regarding changes in the relationship that they attribute to coping with female urinary incontinence?

Participant answers to the open-ended questions were analyzed for themes using first cycle coding methods, as discussed by Saldaña (2009). Descriptive Coding was used to first summarize the basic topic of the participant's response and *In Vivo* descriptors were added in order to "honor the participant's voice" (p. 74). The themes identified were then explored in the context of the relationship constructs salient to the Corbin and Strauss Collaborative Chronic Illness Model (Corbin & Strauss, 1984; 1988): *Maintaining the Bonds of Physical Intimacy*, *Maintaining a Sense of Connectedness*, and *Communication about Female Urinary Incontinence*.

Table 4-35

Standard Regression Model of 7 Predictor Variables with Partner CSI Scores as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B		Corr	
Predictors:	B	Std. Error	Beta	*t*	*p*	Lower Bound	Upper Bound	Semi partial	Tol
(Constant)	-4.858	6.679		-.727	.472	-18.462	8.746		
SES	-.004	.162	-.004	-.024	.981	-.334	.326	-.002	.402
BIS	-.154	.120	-.169	-1.280	.210	-.399	.091	-.126	.553
HADS-A	.094	.217	.070	.434	.667	-.349	.537	.043	.369
HADS-D	-.130	.282	-.090	-.461	.648	-.705	.445	-.045	.255
SQLM	.006	.030	.026	.184	.855	-.056	.067	.018	.501
Partner RES	.429	.084	.747	5.109***	< .001	.258	.600	.503	.453
Partner CICS	-.038	.199	-.027	-.193	.848	-.444	.367	-.019	.498

Note. CI = Confidence Interval; CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; RES = Relational Ethics Scale; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale

*Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

Table 4-36

Standard Regression Model of 6 Predictor Variables with Partner CSI Scores as the Dependent Variable

	Unstandardized Coefficients		Standardized Coefficients			95% CI for B		Corr	
Predictors	B	Std. Error	Beta	*t*	*p*	Lower Bound	Upper Bound	Semi partial	Tol
(Constant)	13.443	7.480		1.797	.081	-1.775	28.661		
SES	-.133	.212	-.127	-.626	.535	-.565	.299	-.082	.412
BIS	-.017	.155	-.019	-.109	.914	-.333	.299	-.014	.582
HADS-A	.205	.287	.153	.714	.480	-.379	.789	.093	.372
HADS-D	-.803	.331	-.554	-2.424*	.021	-1.476	-.129	-.316	.326
SQLM	.095	.033	.435	2.884**	.007	.028	.162	.376	.749
Partner CICS	-.040	.264	-.028	-.151	.881	-.577	.497	-.020	.498

Note. CI = Confidence Interval; CSI = Couples Satisfaction Index; SES = Self Esteem Scale; BIS = Body Image Scale; HADSA = HADS Anxiety; HADSD = HADS Depression; SQLM = Sexual Quality of Life Male; CICS = Couples' Illness Communication Scale

*Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

Two women chose not to respond to the open-ended questions about the effect of female urinary incontinence on their relationship. Of the 55 women who responded to the open-ended questions, 20 (36%) reported that their UI had no effect on their relationship with their partner. Seven partners chose not to respond to the open-ended questions about the effect of female urinary incontinence on the relationship. Of the 36 partners who responded to the open-ended questions, 18 (50%) reported that the woman's UI had no effects on the relationship.

Maintaining the Bonds of Physical Intimacy

Women's themes related to physical intimacy.

Twenty-four of the women (43.6%) reported that UI affected their ability to engage in sexual activity and find enjoyment in sexual activity with their partner. They reported avoidance strategies and hesitancy to engage in physically intimate relations with their partner. Many discussed losing the spontaneity in physical intimacy that used to nourish their relationship prior to developing urinary incontinence. Loss of enjoyment or spontaneity was attributed to worry about hygiene and/or leaking, such that sex was interrupted or the woman's orgasm was deferred. Some women mentioned the loss of oral sex in their relationship. Many reported embarrassment about UI affecting their intimate relationship. Two women specifically reported that their sexual relationship was not affected by the urinary incontinence. One woman reported that the leaking increased her partner's arousal. Four women reported that the quality of their sexual relationship had declined due to other reasons (e.g., vaginal dryness, medication side effects, partner's illness, or emotional distance unrelated to UI).

In vivo codes that were identified in the women's responses as being related to maintaining the bonds of physical intimacy included: "*No sex*"/"*No intimacy*"; "*Keep myself private, away*"; "*Avoiding spontaneous love making*"; "*I am embarrassed*"; and "*Lack of sexual satisfaction*."

Partners' themes related to physical intimacy.

Seven of the partners (19%) reported an effect of female UI on sexual activity: sex occurring less often, difficulty staying aroused if leaking occurs, and problems with oral sex. One wrote about his concern that he did not want his wife to feel that he was not interested in her. Another wrote about his feeling distanced from his wife due to her time spent in the bathroom being longer than her time with him. Three partners attributed the changes in physical intimacy to issues other than female UI.

In vivo codes identified in the partners' responses as being related to maintaining the bonds of physical intimacy included: "*Hard to finish anything we start*" and "*Less intimacy*."

Maintaining a Sense of Connectedness

Women's themes about sense of connectedness.

Twelve of the women reported that coping with UI affected their relationship in terms of reducing the amount of social activities they engaged in with their partner. They reported less spontaneity and less enjoyment in the things they used to do with their partner in social settings.

In vivo codes identified in the women's responses related to maintaining a sense of connectedness included: "*Less relaxing together*"; "*We stay home a lot*"; "*Guarded in everything I do*."

Partners' themes about sense of connectedness.

Four of the partners wrote about how the reduction in shared social activities and the need to keep track of toileting facilities when away from home was having an effect on the relationship. Three partners mentioned that the woman's embarrassment or self-consciousness negatively affected their time together.

In vivo codes identified in the partners' responses related to maintaining a sense of connectedness included: "*We stay home*"; "*Distant and unaffectionate.*"

Communication about Female Urinary Incontinence

Women's themes about UI communication.

Ten of the women responded to the open ended questions by reporting that they did not discuss UI or their symptoms with their partner. Ten of the women reported that they had discussed their symptoms with their partner and felt that their partner was understanding and supportive. Four of these women who had discussed UI with their partner reported using humor when broaching the subject or if an incontinent episode was experienced.

In vivo codes identified in women's responses related to communication about UI included: "*I hide it from him*"; "*We talk about it*"; and "*We laugh about it*."

Partners' themes about UI communication.

Nine of the partners reported that problems with communicating about female UI had a negative impact on the relationship. They wrote of the UI as having "distanced us" and felt that the woman did not want to talk about the issues with them. One wrote that he ignored the incontinence; another wrote that he had been previously unaware of the incontinence. Six of the partners reported open communication and commitment to their partner to handle any issues surrounding the UI together as a team. One reported using humor to ease the woman's concern.

In vivo codes identified in partners' responses related to communication about UI included: "*Not much talking*"; and "*Going through this together*."

Women's Themes Related to Biographical Factors

Women's feelings about self.

Twelve of the women reported feelings of embarrassment, humiliation, and/or lowered self-esteem. One woman wrote that the feelings she had about having urinary incontinence affected her to the point where she felt that incontinence "*drives a wedge between us*."

In vivo codes identified in women's responses related to the women's sense of self included: "*feel undesirable*" and "*not as feminine*."

Women's description of self-care strategies.

Twenty-three of the women described self-care strategies to manage their symptoms. These strategies included the use of some form of pad (e.g., incontinence pad, thin menstrual pad, tissue, towels during intercourse), bathroom "mapping" for access to public toilets with frequent preventative use, carrying a change of clothing, and doing more laundry.

The *in vivo* code identified in women's responses as being reflective of the impact of UI on self-care was, "*More of a nuisance than a hindrance*."

Additional Analyses of the Qualitative Data

The responses to the open-ended questions were cleaned, formatted, and entered into single files for a content analysis of word choice by women and by partners. The 43 women wrote 2,523 words in answer to the open-ended questions and 36 of the partners responded with 1,309 words in answer to the open-ended questions. Word clouds depicting word frequencies by font size were generated by the website *wordle.net* and are presented in Figure 4-7 (women) and Figure 4-8 (partners).

Z-score analysis, available for calculation on the internet site *socscistatistics.com*, was used to test for significant differences in the proportions of content-laden words used by women and their partners to describe the effects of the woman's urinary incontinence on the relationship (Table 4-37). Although women more often used words related to activities, avoidance, and spontaneity while partners more often used words related to distance, arousal, and time, a significant difference in word choice was found only in the use of words related to sexual arousal (z-score = -2.44, p = .014, two-tailed). Partners also proportionally used more than twice as many "none" or "nothing" words (z-score = -4.36, p < .001, two-tailed) in describing the effects of the woman's urinary incontinence on the relationship. Women used proportionally more "I" words (z-score = 4.42, p < .001, two-tailed) and partners used proportionally more "she" words (z-score = -5.26, p < .001, two-tailed).

Distress in the relationship was determined by using the cut point of 13.5 on women's scores on the Couples Satisfaction Index (Funk & Rogge, 2007). The responses to the open-ended questions were formatted into two documents, one for distressed dyads and one for non-distressed dyads. A comparison of word choice by distressed dyads versus non-distressed dyads was performed. Word clouds depicting word frequencies by font size were generated by the website *wordle.net* and are presented in Figure 4-9 for distressed dyads and Figure 4-10 for non-distressed dyads. *Z*-score analysis (utilizing the

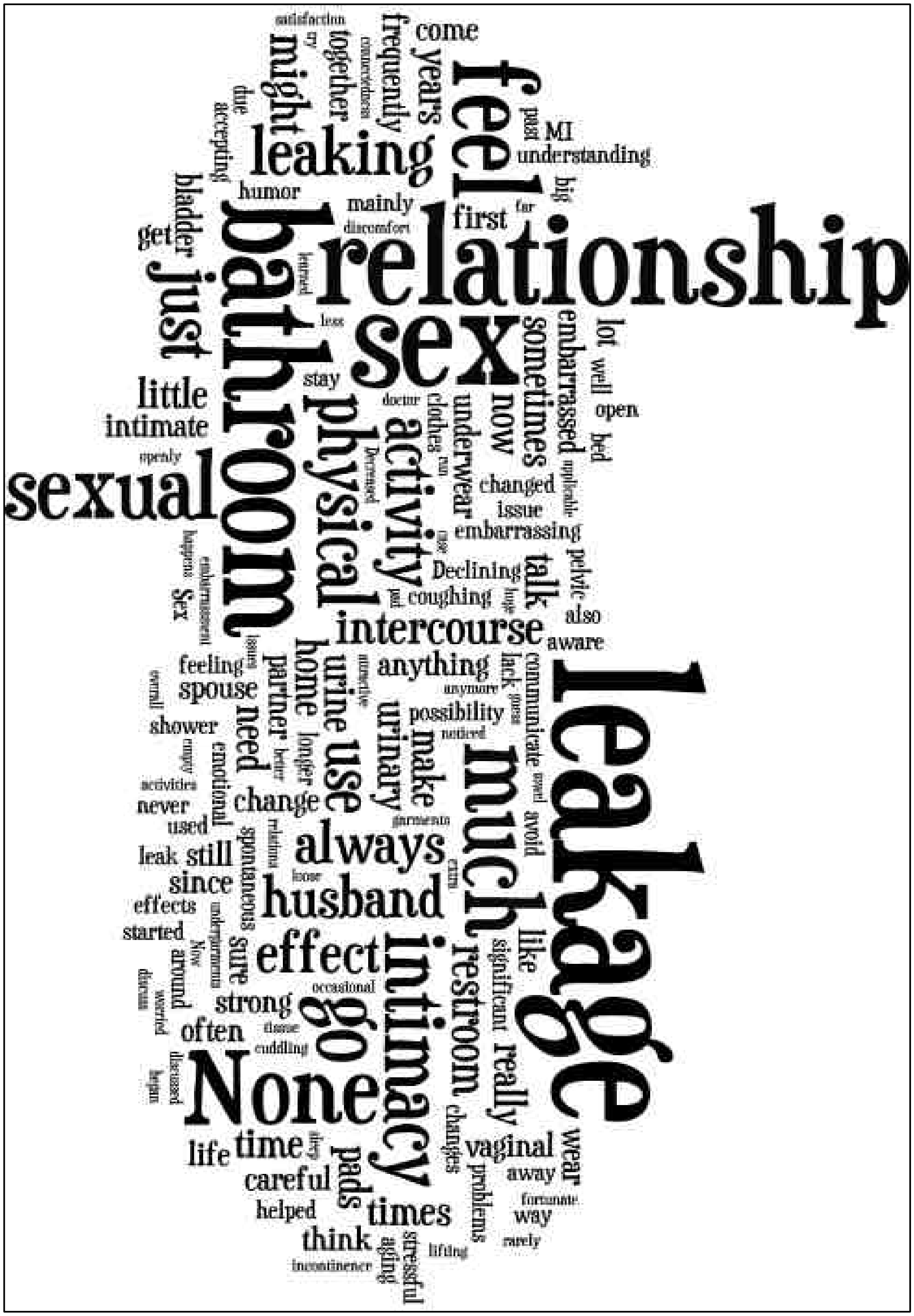

Figure 4-7. Word cloud of words used in response to open-ended questions by women (*n* = 43). Font size reflects frequency of words in text.

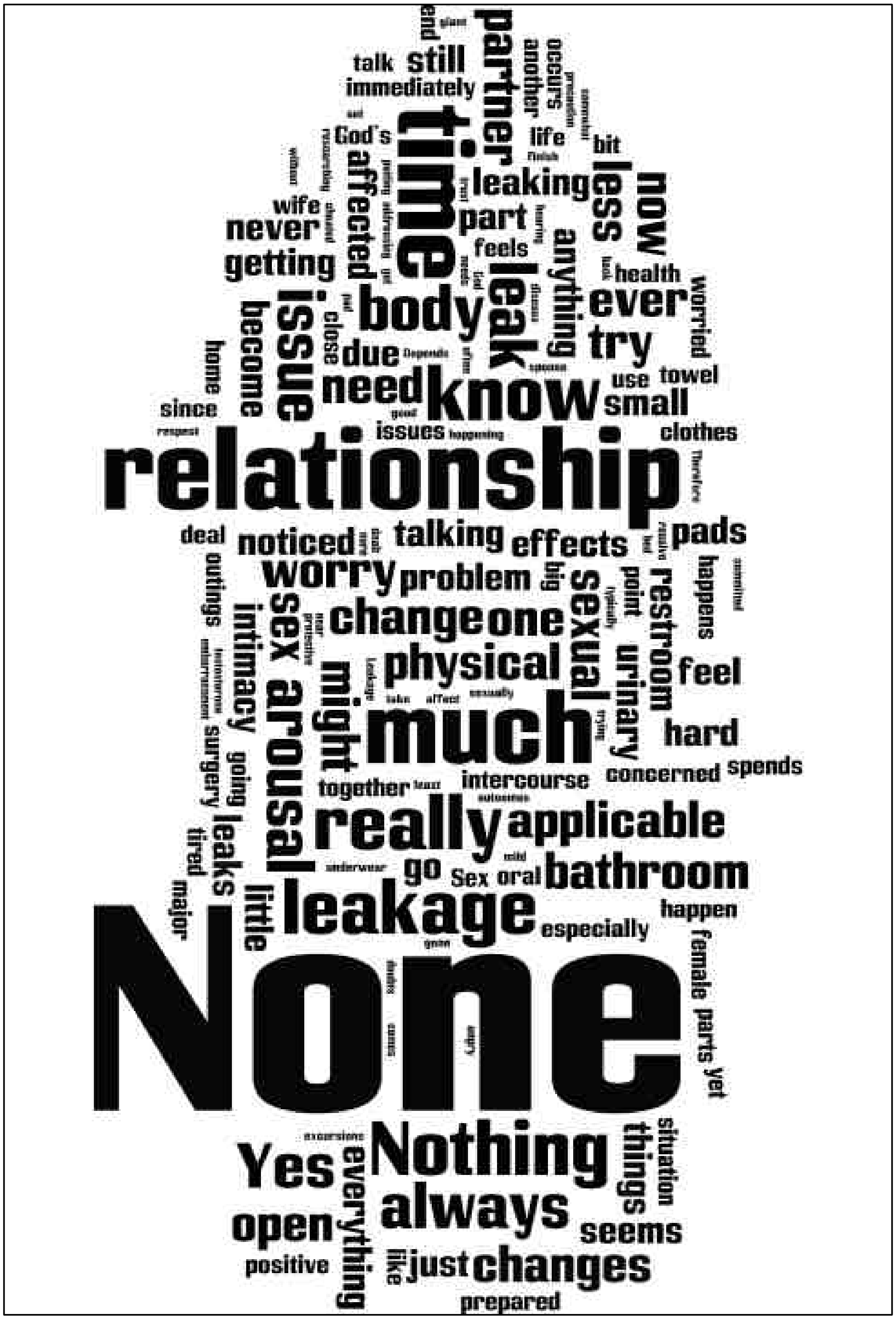

Figure 4-8. Word cloud of words used in response to open-ended questions by partners (*n* = 36). Font size reflects frequency of words in text.

Table 4-37

Word Frequencies and z-Score Analysis of Select Words Used in the Open-Ended Responses of Women (n = 2,523 words) versus Partners (n = 1,309 words)

Word(s) used in text	**Women (% of words)**	**Partners (% of words)**	***z*-score**	***p***
Activities/activity Outings/trips/travel Home/house	0.6	0.3	1.34	.18
Avoid/hide/hesitant/guarded/ distant	0.4	0.1	.93	.35
Spontaneous/spontaneity	0.2	0	1.61	.11
Orgasms/passion (women) Aroused/arousal (partners)	0.1	0.5	-2.44	.014*
Intercourse/sex	1.5	1.1	1.11	.27
Intimacy	0.2	0.2	-.49	.62
Communicate/talk/mention	0.7	0.6	.23	.82
Time	0.4	0.7	-1.22	.22
None/nothing	2.5	5.2	-4.36***	< .001
I/me/my	7.3	3.7	4.42***	< .001
He/him/his (women) She/her (partners)	2.0	5.1	-5.26***	< .001
We/us/our	3.0	3.7	-1.21	.23

†Significant at the 0.10 level (2—tailed). *Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed). ***Significant at the 0.001 level (2-tailed).

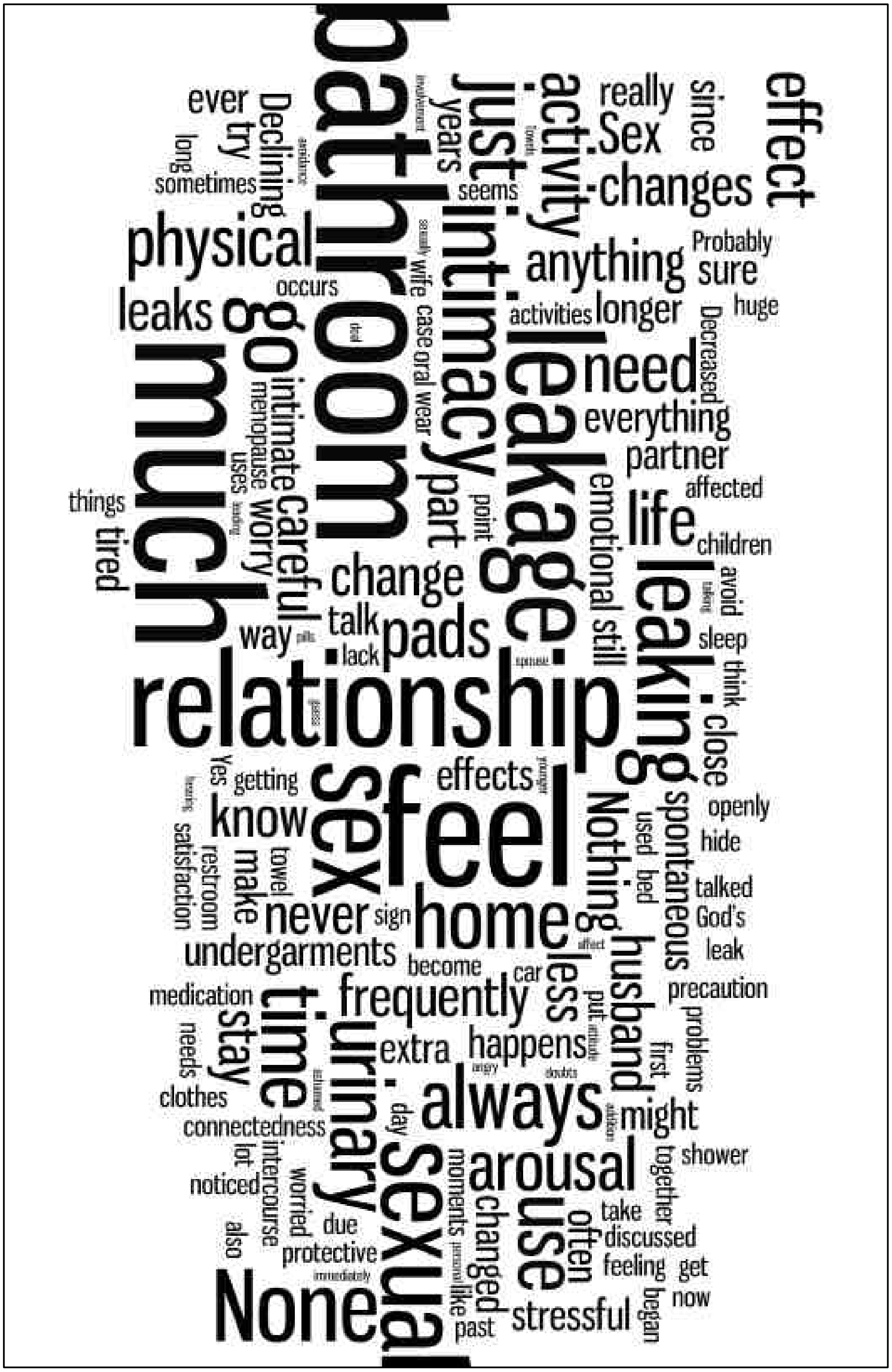

Figure 4-9. Word cloud of words used in response to open-ended questions by distressed dyads (n = 18). Font size reflects frequency of words in text.

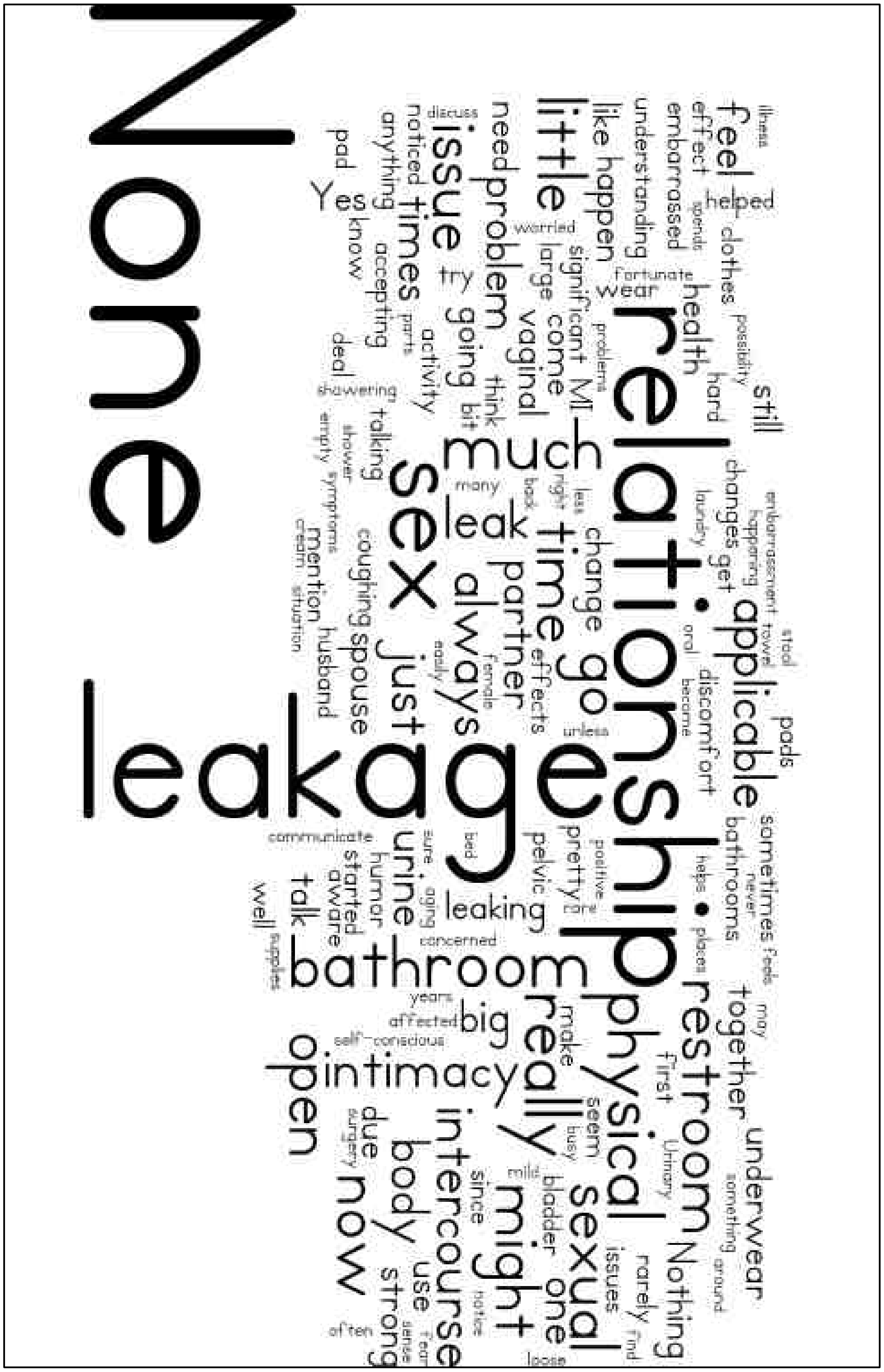

Figure 4-10. Word cloud of words used in response to open-ended questions by non-distressed dyads (*n* = 25). Font size reflects frequency of words in text.

calculation software available on the website *socscistatistics.com*) was used to test for significant differences in the proportions of content-laden words used by the distressed dyads versus the non-distressed dyads to describe the effects of the woman's urinary incontinence on the relationship (Table 4-38).

Distressed dyads significantly more often used words related to activities and outings (*z*-score = 2.80, *p* = .005, two-tailed) as well as words related to sex and intimacy (*z*-score = 2.97, *p* = .003, two-tailed) more than twice as often did the non-distressed dyads. Distressed dyads also used words related to spontaneity and avoidance, whereas these words were not found in the responses of the non-distressed dyads. Non-distressed dyads used words related to communicating more than twice as often as did distressed dyads (*z*-score = -1.87, *p* = .06, two-tailed). Non-distressed dyads also used words related to humor, help, and healthy, whereas these words were not found in the responses of the distressed dyads.

Summary

The following null hypotheses related to the study questions were tested (α = 0.05, two-tailed), with the results presented below.

1. *There will be no significant association between incontinence symptom severity and relationship satisfaction.*

This null hypothesis was supported by the data. No significant association was demonstrated between women's scores on the Incontinence Severity Index and either the women's or the partners' scores on the Couples Satisfaction Index.

Table 4-38

Word Frequencies and z-Score Analysis of Select Words Used in the Open-Ended Responses of Distressed Dyads (n = 1523 words) versus Non-Distressed Dyads (n = 2309 words)

Word(s) used in text	**Distressed (% of words)**	**Non-Distressed (% of words)**	***z*-score**	***p***
Activities/activity Out/outings/outside Home/house	1.6	0.6	2.80**	.005
Sex/Intercourse Intimacy/Intimate	2.3	1.1	2.97**	.003
Spontaneous/spontaneity	0.3	0	2.46*	.014
Avoid/avoidance/avoiding	0.3	0	2.76*	.006
Communicate/mention/discuss Talk/talked/talking	0.4	0.9	-1.87†	.06
Humor/joke/laugh	0	0.3	-2.15*	.03
Help/helped/helps	0	0.3	-1.99*	.047
Healthy/health	0	0.2	-1.82†	.07
Embarrassed/embarrassing	0.2	0.3	-.63	.53
Worry/worried/worries	0.3	0.2	.59	.56
Relationship	0.6	0.7	-.38	.70
Bathroom/restroom	0.8	0.8	-.12	.90
None/not/nothing/no	3.1	3.6	-.85	.40
I/me/my/myself	5.1	6.5	-1.80†	.07
We/us/our	3.4	3.2	.43	.67

†Significant at the 0.10 level (2—tailed). *Significant at the 0.05 level (2-tailed). **Significant at the 0.01 level (2-tailed).

2. *There will be no significant difference between women's scores and their partners' scores on relationship satisfaction and measures of relationship work variables.*

This null hypothesis was supported. No significant differences were found between women's and partners' scores on measures of the relationship.

3. *There will be no significant associations among women's scores on biographical work variables and their scores on relationship work variables.*

This null hypothesis was not supported. There were significant medium to strong correlations between all pairings of the Self-Esteem Scale, the Body Image Scale, the Hospital Anxiety and Depression Scale, the Relational Ethics Scale, the Sexual Quality of Life-Female, and the Couples' Illness Communication Scale.

4. *Neither scores on biographical work variables nor scores on relationship work variables will have a significant mediating effect on the proposed association between incontinence symptom severity and the woman's relationship satisfaction scores.*

This null hypothesis was supported. Exploratory path analyses of the proposed model of relationships did not fit the data. However, support was provided for the Relational Ethics Scale, Sexual Quality of Life-Female, Sexual Quality of Life-Male, and the Hospital Anxiety and Depression-Depression subscale scores as unique contributors to the variance in women and partners' Couples Satisfaction Index scores.

Theme analysis and content analysis of the women and their partners' responses to the open-ended questions provided support for the constructs identified in the theoretical framework of this study, the Corbin and Strauss Collaborative Chronic Illness

Model (Corbin & Strauss, 1984; 1988): *Maintaining the Bonds of Physical Intimacy*, *Maintaining a Sense of Connectedness*, and *Communication about Female Urinary Incontinence*. Responses and word choice supported the significance of a) maintaining the physical bond of intimacy, b) a sense of connectedness with one's partner through shared activities and emotional closeness, and c) communicating openly as being key factors in promoting relationship satisfaction for these couples who are living with female urinary incontinence. Breakdown in the relationship secondary to urinary incontinence symptom management was manifested through words used in the open-ended responses that discussed hiding the symptoms, avoiding intimacy, and reducing relaxed time spent in previously shared activities.

CHAPTER 5: CONCLUSION

Introduction

This fifth and final chapter discusses the purpose for and results of this dissertation research in light of the study questions, literature review, and theoretical framework of the study. A summary of the study is presented first, and includes a review of the purpose and objectives, summary of the salient literature, synopsis of the theoretical framework, description of the study questions, and review of the research methods. This is followed by a summary of study findings and a discussion of the significance of the findings as they relate to the study questions, the literature and theoretical framework, and to nursing care of women living with urinary incontinence. The limitations of the study are then discussed, followed by suggestions for future research. Finally, the overall conclusions of this dissertation research are presented.

Summary of the Study

Review of the Purpose and Aims of the Study

The purpose of this study was to explore, from a chronic illness perspective, the potential impact of living with urinary incontinence on the midlife woman's relationship with her intimate partner. The specific aims of this descriptive, exploratory study were to examine potential associations between midlife female urinary incontinence symptom severity and the quality of the intimate dyadic relationship. This study also aimed to examine the potential for associations among several theoretically derived biographical work variables (self-esteem, incontinence-related body image, depression and anxiety) and relationship work variables (relational ethics, sexual quality of life, and incontinence-related communication) with incontinence symptom severity and the quality of the intimate relationship (relationship satisfaction). Finally, this study sought to explore the woman and her partner’s perceptions regarding the potential impact of midlife female urinary incontinence on their relationship.

Review of the Literature and Theoretical Framework

Female urinary incontinence is a significant source of morbidity for midlife U.S. women, with reported incidence rates ranging from 15-56.9%. Women live with symptoms an average of approximately seven years before seeking care from health care professionals. Female urinary incontinence has many attributes of a chronic illness including an often ambiguous, indeterminate onset followed by an uncertain progression and/or pattern of symptom severity requiring ongoing management efforts that affect the woman’s daily life. A large body of quantitative and qualitative research supports an association between female urinary incontinence and lower levels of self-esteem, lower quality of life, symptoms of anxiety, mild depressive symptoms, and compromised sexual function. The impact of midlife female urinary incontinence on a woman’s biopsychosocial health, therefore, may be best understood from a chronic illness perspective.

The Corbin and Strauss Collaborative Chronic Illness Trajectory Model (Corbin & Strauss, 1984; 1988), developed from a grounded theory analysis of research exploring a variety of health conditions, proposes that psychosocial factors, such as those identified in the literature as being associated with female urinary incontinence, have the potential to significantly affect interpersonal relationships, including the intimate relationships of women and their partners. Specifically, biographical factors proposed to be crucial to coping with a chronic health condition include self-concept, body performance, and life stage or role transition. Based on years of studying couples coping with chronic illness, the Corbin and Strauss Collaborative Chronic Illness Trajectory Model also proposes that several relationship factors affected by living with a chronic health condition interact and have an impact on the quality of the relationship and the ability of the partners to develop effective coping strategies. These proposed relationship factors include commitment to the relationship, alignment or congruency in coping styles, and the interactional stance of each partner to each other.

How partners jointly cope with the woman's urinary incontinence symptom management and the impact of urinary incontinence symptom burden on the relationship are not well understood. The relative contribution of select, operationalized biographical factors (self-esteem, body image, anxiety, and depression) and relationship factors (relational ethics, sexual quality of life, UI-related communication) in terms of demonstrating associations and/or mediating effects on couples' perceived satisfaction with the relationship in the face of the ongoing nature of coping with the symptoms of midlife female urinary incontinence are not well understood. Perceptions of the impact of midlife female urinary incontinence on the intimate relationship, from the perspective of both the woman and her partner, remain underexplored.

Review of the Study Questions

To address the purpose and aims of this study, the following research questions were explored:

1a. To what extent is women's reported urinary incontinence symptom severity associated with women's perception of the quality of the intimate dyad?

1b. To what extent is women’s reported urinary incontinence symptom severity associated with partners’ perception of the quality of the intimate dyad?

2a. To what extent is women’s reported urinary incontinence symptom severity associated with women’s perceptions of biographical work variables?

2b. To what extent is women’s reported urinary incontinence symptom severity associated with women’s perceptions of relationship work variables?

2c. To what extent is women’s reported urinary incontinence symptom severity associated with partners’ perceptions of relationship work variables?

3a. To what extent are women’s perceptions of biographical work variables associated with women’s perceptions of relationship work variables?

3b. To what extent are women’s perceptions of biographical work variables associated with partners’ perceptions of relationship work variables?

4a. To what extent are women’s perceptions of biographical and/or relationship work variables associated with women’s perceptions of the quality of the intimate dyad?

4b. To what extent are women’s perceptions of biographical work variables or partners’ perceptions of relationship work variables associated with partners’ perceptions of the quality of the intimate dyad?

5. To what extent do women’s perceptions of biographical work variables and/or relationship work variables mediate the association between incontinence symptom severity and women’s perception of the quality of the intimate dyad?

6a. To what extent is there congruence between women’s and partners’ perceptions of the quality of the intimate dyad?

6b. To what extent is there congruence between women and partners' perceptions of each of the relationship work variables?

7. What major themes are identified by women and their partners regarding changes in the relationship that they attribute to coping with female urinary incontinence?

Review of the Proposed Model of Relationships of Study Constructs

The Corbin and Strauss Theory of Collaborative Chronic Illness Trajectory (Corbin & Strauss, 1984; 1988), a review of the literature on the impact of chronic illness on the intimate dyad, and the extensive body of literature discussing the potential biopsychosocial implications of living with female urinary incontinence informed the choice of mediating factors to be evaluated in this study of the impact of incontinence symptom severity on the dyadic relationship (see Figure 5-1). Instruments utilized in the study to operationalize the constructs proposed in the model are identified in Figure 5-1. Research questions represented in the model are also identified.

Review of the Methods

Purposive convenience/snowball recruitment methods of placing fliers at community centers, community events, physician's offices, newspaper, and internet forums were utilized to community-dwelling women aged 45-65 with urinary incontinence. Screening for meeting study criteria and study details was performed when women contacted the researcher by phone or by email. Women were offered the opportunity to invite their partners to participate. Study packets, with informed consent and study details included, were mailed to interested women who met study criteria. Return of the completed packet constituted informed consent. Using these methods, 57 women and 43 partners (all identified as male) returned completed study packets.

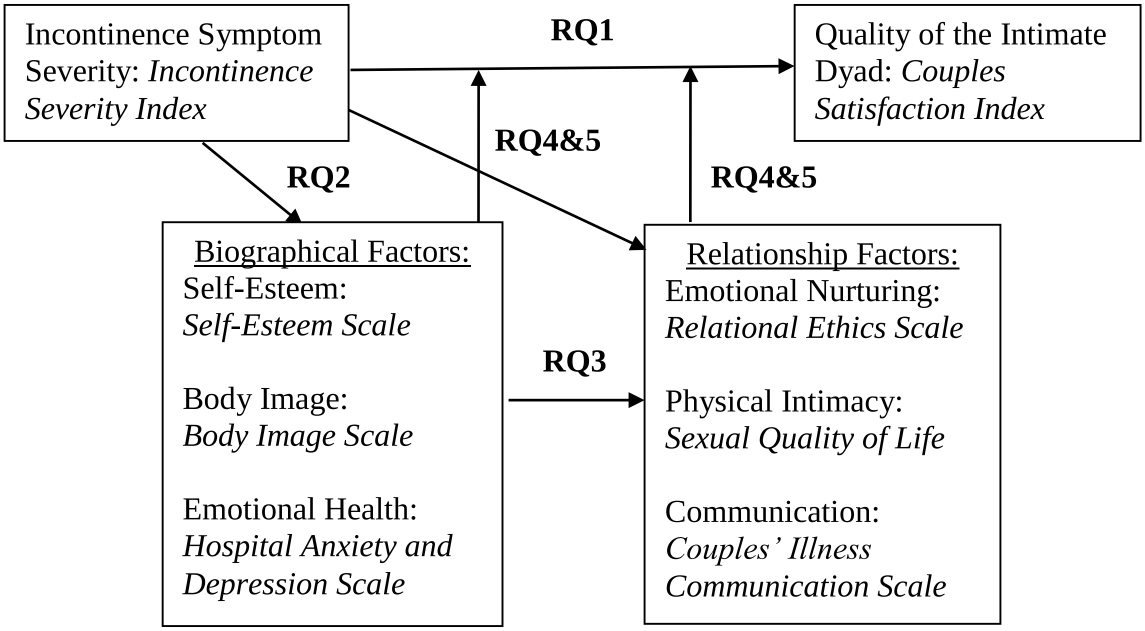

Figure 5-1. Model of constructs, variables, and relationships investigated in the study with research questions (RQ) identified.

The majority of the women who participated in this study described themselves as married and working outside the home. Approximately half of the women reported stress urinary incontinence as their primary symptom profile. The remainder were fairly evenly split between reporting primarily symptoms of urgency urinary incontinence or mixed urinary incontinence. Although these women reported living with urinary incontinence for an average of eight years, only a little over half had discussed their symptoms with a healthcare provider and less than 20% had received treatment for urinary incontinence.

Women and their partners completed questionnaires comprised of established, valid, and reliable instruments chosen as operationalized measures of relationship satisfaction and relationship factors selected for this study (see Figure 5-1). Women also completed questionnaires comprised of established, valid, and reliable instruments chosen as operationalized measures of urinary incontinence symptom severity and select biographical factors (see Figure 5-1). All of the instruments used in this study demonstrated good to high Cronbach alpha coefficient values. Inferential statistical analyses were performed to answer study questions 1-6.

Women and their partners were also given the opportunity to respond to open-ended questions about their perceptions of urinary incontinence symptom impact on the relationship. Theme analysis and content analysis of word frequencies present in the responses were performed to answer study question 7.

Summary of the Study Findings

Synthesis of the Data Regarding the Study Questions

The average urinary incontinence symptom severity score fell in the moderate severity category, though all symptom severity categories were represented in this study.

Nearly 44% of the women and 42% of the partners scored in the distressed category for relationship satisfaction. No significant association was found, however, between urinary incontinence symptom severity and relationship satisfaction for the women or for their partners. In addition, no significant correlations were found between urinary incontinence symptom severity and women's scores on any of the measures of the biographical variables of interest (self-esteem, body image, anxiety, and depression), with the exception of a weak relationship with poorer body image following the removal of one outlying score. No significant correlations were found between urinary incontinence symptom severity and women's or partners' scores on any of the measures of the relationship variables of interest (relational ethics, sexual quality of life, and incontinence-related communication). Not surprisingly, path analysis did not support the proposed model exploring the potential mediating effects of the biographical variables and the relationship variables on women's relationship satisfaction, due to the non-significance of associations of all of these variables with urinary incontinence symptom severity.

In addition to the study questions outlined above, another aspect of chronicity, length of time lived with symptoms, was explored for a potential association with relationship satisfaction. A weak association was found between how long women had been living with the UI symptoms and women's relationship satisfaction, but not with the partners' relationship satisfaction. No significant correlations were found between the length of time women had lived with urinary incontinence and the women's scores on any of the measures of the biographical variables, or with the women's or partners' scores on any of the measures of the relationship variables.

Some interesting patterns did, however, emerge from the data. One-way ANOVA demonstrated statistically significant differences among urinary incontinence severity categories in terms of women's self-esteem and women's incontinence-related communication. Self-esteem was lowest for women with moderate and very severe symptoms. Communication about incontinence was lowest for women with slight symptom severity, was improved for moderate and severe incontinence, and then trended down among women with very severe incontinence. Due to the weak correlation between urinary incontinence symptom severity and women's body image suggested by the removal of one outlying score, the pattern in score distribution across symptom categories was explored. Though no significant differences were found, the small number of women in the very severe symptom category had notably poorer body image scores.

It may be of particular importance in working with women who have urinary incontinence to note that all of the women's biographical variables and relationship variables demonstrated moderate to strong correlations with each other (with the exception of self-esteem and incontinence-related communication) and with women's relationship satisfaction. Women's depression and body image, and all of the partners' relationship variables also demonstrated significant medium to strong correlations with partners' relationship satisfaction. Significant medium to strong associations were found between partners' scoring of the couple's incontinence-related communication and women's scores on self-esteem, body image, anxiety, and depression. Significant medium to strong associations were found between women's depression scores and all of the partners' relationship variables, including relationship satisfaction.

Due to the large number of statistically significant associations found in the correlation analyses of women's biographical variables, women's and partners' relationship variables, and women's and partners' relationship satisfaction, standard multiple regression analyses were performed in order to explore the possibility that the biographical variables and/or relationship variables may have explained some of the variance in the relationship satisfaction scores of women and/or of their partners. On analysis of the data, the relational ethics scores were so strongly correlated with the relationship satisfaction scores, and uniquely explained such a large amount of the variance in these scores, that the possibility was raised that the two instruments might have been measuring a similar construct. The other possibility in interpretation of the data is that the perception of trustworthiness of the partner to engage in a fair give-and-take stance toward the relationship is a critical factor in relationship satisfaction that outweighs the other aspects investigated in this study. Of note, all of the women's biographical and relationship variables investigated in this study demonstrated medium (self-esteem, body image, anxiety, incontinence-related communication) to strong (sexual quality of life, depression) correlations with women's relational ethics scores. For partners, relational ethics demonstrated strong correlations with sexual quality of life and incontinence-related communication and a medium-strength correlation with women's depression scores.

A second round of regression analyses were performed removing the relational ethics scale scores in order to explore the contributions of the other variables of interest to relationship satisfaction. Of the remaining six variables (self-esteem, body image, anxiety, depression, sexual quality of life, and incontinence-related communication), primarily sexual quality of life and secondarily women's depressive symptoms each made significant, unique contributions to the variance in both women's and partners' relationship satisfaction.

In a dyadic study, the issues of non-independence of responses between members of the dyad and the potential congruence in scores both need to be evaluated when interpreting the data. Women's and partners' scores on the relationship variables and relationship satisfaction were all significantly correlated with each other, indicating non-independence of scores on the study instruments between women and their partners. Women's and partners' scores also demonstrated no significant differences in magnitude of the score by paired-samples *t*-tests.

When women and partners were asked to rank their perceptions of the relationship prior to the onset of female urinary incontinence, as compared to their perceptions of the relationship currently, both women and their partners rated the five facets of the relationship presented in the questions (meets emotional needs, trust there are good intentions, physical intimacy, communication about body needs, feel valued and respected) as being better prior to symptom onset than it was at the time of the study. The only significant difference found between women and their partners in their ratings of the relationship before and after the women developed urinary incontinence was that women rated their communication about body needs as being better prior to the onset of incontinence than the partners did. Women's and partners' views of the woman's communication about body needs after the incontinence developed were congruent.

Finally, both women and their partners were given the opportunity to answer open-ended questions about what the perceived impact of female urinary incontinence was on their relationship. Approximately one-third of the women and one-half of the partners reported no impact of urinary incontinence on the relationship. Approximately 20% of the women reported negative feelings about themselves as a result of living with urinary incontinence.

Of the approximately two-thirds of the women who reported an impact of urinary incontinence on their relationship, nearly half described a compromised sexual relationship with their partner. The comments ranged from decreased spontaneity and avoidance of sexual intimacy to loss of the sexual relationship entirely. In contrast, only about 20% of the partners reported an impact of urinary incontinence on sexual intimacy. There was, however, a significant difference in the frequency of words used related to sexual arousal, with partners using this category more often than did the women to describe the impact of urinary incontinence on the relationship.

Approximately 20% of the women and 10% of the partners discussed a negative effect of urinary incontinence on shared activities. Distressed couples used words related to activities and sexual intimacy more than twice as often as did the non-distressed couples, and this difference was statistically significant by *z*-score analysis. Distressed couples used words related to spontaneity and avoidance, whereas the non-distressed couples did not use these words in their responses to the open ended questions.

Regarding communication about urinary incontinence, an equal number of women reported that they do not discuss it as did women who reported discussing their symptoms openly with their partner (approximately 20% each). One quarter of the partners felt that the women’s problems communicating about urinary incontinence and their symptoms, symptom impact, or coping strategies regarding urinary incontinence had a negative impact on the relationship. Non-distressed couples used words related to communicating, help, and humor more than twice as often as did the distressed couples. This difference was statistically significant by *z*-score analysis.

Interpretation of Findings in Light of the Theoretical Framework

No support was found in the study data for either increased symptom severity or how long women had lived with symptoms, two facets of living with a chronic health condition, as having an impact on couples' relationship satisfaction. Neither symptom severity nor how long women had lived with symptoms were associated with deterioration in this study's selected biographical variables or relationship variables that were predicted, based on the theoretical framework, to be affected by living with a chronic health condition.

The women in this study, regardless of UI symptom severity or length of time that they had lived with the symptoms, demonstrated medium to strong associations among all of the operationalized measures of biographical variables (self-esteem, body image, anxiety, and depression) and relationship variables (relational ethics, sexual quality of life, and incontinence-related communication) proposed by the Corbin and Strauss Collaborative Chronic Illness Trajectory Model (Corbin & Strauss, 1984; 1988), informed by the literature, and selected for this study. Of the variables examined in this study and in this sample of partnered women living with urinary incontinence, the perceptions of relational ethics (a sense of fairness and trustworthiness, "give-and-take"), sexual quality of life (for both women and their partners), and women's depressive symptoms (ranging from normal to mild) significantly and uniquely contributed to the variance in perceptions regarding the quality of the intimate relationship. Women and partner participants in this study were congruent in this finding.

Qualitative data supported the significance of maintaining the physical bond of intimacy, a sense of connectedness with one's partner through shared activities and emotional closeness, and open communication as key factors in supporting relationship satisfaction for these women who are living with urinary incontinence. Breakdown in the relationship secondary to urinary incontinence symptom management was manifested through words used in the open-ended responses that discussed hiding the symptoms, avoiding intimacy, and reducing time spent engaging in previously shared activities.

Implications of the Findings to Nursing Care of Women with Urinary Incontinence

The presence of urinary incontinence may be just as important as symptom severity when it comes to contextualizing the impact of this condition in terms of sense of self and maintaining intimate relationships. Asking women if they are experiencing symptoms is a critical first step, as many women do not bring up the topic during a health history. In this study of women who responded to community-based recruitment strategies, nearly half had not discussed their symptoms with a healthcare professional. Women not identified as living with urinary incontinence must cope with symptom management without information or support from nurses or healthcare providers. Routine screening of midlife women for presence of urinary incontinence is advised.

The findings in this study indicate that women with urinary incontinence might benefit from nurses considering this condition from a chronic health perspective. Individual women may internalize or conceptualize symptoms differently; however, significant moderate and large correlations were found among the biographical and relationship work variables in this study. Nurses would be advised to consider the impact of urinary incontinence from a collaborative chronic health model and assess perceptions of the impact of symptom management on biographical work (self-esteem, body image, depression and anxiety) and relationship work (emotional nurturing, physical intimacy, and incontinence-related communication).

Relationships are complex and transactional. The findings in this study suggest, however, that for women living with urinary incontinence who are partnered, it may be most important to assess for challenges in maintaining intimacy through shared activities and physical intimacy. The challenges may be exacerbated by the presence of mild depressive symptoms. These factors may have the strongest direct contribution to breakdown in her intimate relationship with her partner.

Biographical factors such as self-esteem, body image, and anxiety may interact with each other and with other factors in the relationship, such as maintaining a social connection and closeness through shared activities and maintaining physical and emotional intimacy. Interactions among these factors may contribute to an overall negative impact on the woman’s relationship with her partner. Encouraging a woman with urinary incontinence to communicate with her partner about symptom management issues in order to maintain a sense of intimacy may contribute, in particular by association with the partner’s perception of relationship factors, to maintaining a satisfying relationship with her partner.

This study suggests that nurses may offer women living with urinary incontinence reassurance that partners do not feel the impact on the relationship as much, as long as women are able to share themselves, not hide symptoms, and keep their sense of humor. Withdrawal, either emotionally or physically, is keenly felt as a loss in the relationship.

Limitations of the Study

There were several challenges faced and problems encountered through the course of implementing this study that limit the interpretation and generalizability of findings. These limitations are discussed below.

One major challenge in this study was to enroll enough partnered women through community recruitment methods to have the sample size needed for a well-powered path analysis. The intention was to reach women who had not necessarily discussed their urinary incontinence with their healthcare providers, thereby possibly broadening the participant population and the application of findings to a more general population of women living with urinary incontinence. In fact, more women were recruited and enrolled in the study through community and internet venues than through practitioners' offices. However, after 13 months of trying to enroll women in the study and failing to reach a sample size needed for a well-powered path analysis, the decision was made to end recruitment. Partner enrollment was unexpectedly successful and surpassed the target number of intact dyads. The number of partners who participated in the study was an unanticipated strength of the study.

The lack of a sufficient sample size of women participants did not allow for a well-powered test of the mediation model suggested by the theoretical framework. The decision was made to break the model down into two models – one to test for the potential mediating effects of the biographical variables and a second to test for the potential mediating effects of the relationship variables. Even with two models to test the two sets of variables separately, the sample size was underpowered for the number of parameters in the model. The fact that so many significant associations were found among the variables in this study, however, provides hope that a well-powered study might provide interesting information regarding the salient factors affecting couples' relationships as they cope with ongoing female urinary incontinence.

Another major limitation of this study was the point-in-time sampling strategy necessary to complete a dissertation research project in a timely manner. This identified limitation was attempted to be addressed in this study by using increasing urinary incontinence symptom severity as a means of approximating a deteriorating condition over time. No association was found, however, between urinary incontinence symptom severity and the length of time that the symptoms were noted. In addition, although there were participants representing all symptom severity categories, there were too few in both the "slight" and the "very severe" categories to rule out significant associations between symptom severity and any of the other variables. Trends suggested in the data of this study may prove to be spurious with a much larger sample size.

Because the study was not a longitudinal design, and therefore not able to follow trends over time, it is not possible to determine the temporal relationships among the study variables. The demonstrated associations between biographical work variables and relationship work variables do not imply cause-and-effect and cannot be interpreted as such. Implications of the associations found between the measures of biographical and relationship work and the measure of relationship satisfaction may only be offered as suggestions for future inquiry and assessment of possible outcomes as women and their partners collaboratively cope with symptom management of urinary incontinence.

The lack of significant correlations found between urinary incontinence symptom severity and the other study variables may have been due to a variety of confounding factors. To conclude, from this study's findings, that symptom severity has no significant impact on coping with urinary incontinence, may be short-sighted. The global measures of biographical or relationship work used in this study may not have been responsive to urinary incontinence symptom impact. Validated condition-specific instruments worded to capture the essence of the themes consistently identified in the rich, qualitative literature and the theoretical framework are not currently available. Many potentially confounding conditions co-exist for midlife women with urinary incontinence, which may have contributed to the lack of an association between symptom severity and the other study variables. For example, 10.7% of the women were also living with fecal incontinence and 17.5% had a history of pelvic organ prolapse. Approximately one third of the women were currently taking antidepressant medication. Menopausal status and symptom profile was not assessed in this study and may have had a confounding effect on the study results. Also not assessed was the participants' perspectives on symptom impact pertaining to personal expectations of health, or what they expect from a satisfying, intimate relationship.

Although interesting information was obtained from the open-ended questions, which allowed for an exploratory theme analysis and content analysis of word choice and word frequencies, this qualitative data was very limited in scope and may have been biased in content by the nature of the study instruments presented in the questionnaire prior to presentation of the open-ended questions. The intention was to offer participants the opportunity to respond in their own words regarding coping as a couple with female urinary incontinence. Two major problems arose with this strategy. First, there was no guarantee that the participants responded truthfully, freely, and fully. Second, there was no opportunity to probe for clarification or to dig deeper into issues and concerns raised by the participants. Time involved in writing out their responses, or the nature of providing a written response to a question of a sensitive nature, may have limited the expression of concerns or altered what participants were willing to include in their responses to the study questions.

Other study limitations and potential threats to validity which were identified prior to implementing this dissertation research include the following:

1. *Nonrandom sampling in this study may have limited the ability to generalize the findings.* The demographic traits of the participants in this study were not necessarily representative of the U.S. population of midlife women who have urinary incontinence. Because not all of the instruments were available in Spanish the decision was made to provide only English language questionnaires and, unfortunately, the large population of exclusively Spanish-speaking women in Colorado and New Mexico did not have the opportunity to participate in this study.
2. *Women who were comfortable disclosing their incontinence may have been more likely to participate in this study.* This may have been the case and may have contributed to the difficulty in enrolling participants into this study, however there were women participants who had not discussed their urinary incontinence with a healthcare provider or with their partner.

3. *Women who had disclosed their incontinence to their partner without negative consequence may have been more likely to seek inclusion of their partner in this study.* This was a difficult issue to control for. The majority of the participants did invite their partner to participate, and a large proportion of partners did participate in the study. A few of the women noted that their partner had been invited but that he had declined participation.
4. *Partners who perceived high relationship satisfaction may have been more likely to consent to participate in this study.* In this study, approximately 40% of partners and women reported low relationship satisfaction. Although this number may be low compared to the general population, the number of intact dyads was adequate for a well-powered analysis of the data.
5. *Participants may not have accurately recorded their responses on the self-report measures.* A small number of the items were left blank, and due to the small sample size the item value was imputed to obtain a total scale score. This may have biased the results of the data.
6. *Partners may not have independently completed their own self-report questionnaires.* It is unknown whether or not this was a factor in this study. If partners did not independently complete the questionnaire, this would have inflated the measures of congruence and correlation when comparing women's and partners' scores on study instruments.
7. *Other confounding variables that could affect interpretation of the findings may have existed (e.g., testing effects, inability to understand questions, response fatigue).* The study packet, instructions, and information sheets

were designed for ease of reading and formatted with large font and shaded lines to optimize readability and increase ease in matching response options to instrument item. The presentation of study instruments in the questionnaire was randomly ordered to decrease the possibility of results being biased by response fatigue. Participants were provided with anonymous questionnaires to be completed on their own time and in the privacy of their homes in order to decrease response fatigue and reduce bias inherent in any study resulting from participants responding in ways they perceive might please the researcher or otherwise misrepresent their true responses.

Even with the strategies put in place to reduce bias, community-based recruitment may inadvertently result in sample bias in terms of who might be likely to respond to posted fliers or on-line advertisements and participate in a research study on such a sensitive topic as urinary incontinence. Snowball sampling may have resulted in women with similar perceptions or lifestyles enrolling in the study. The anonymity of the mailed survey could have resulted in misrepresentation.

Suggestions for Future Research

More research designed to evaluate interactions among biopsychosocial factors known to be associated with living with urinary incontinence is needed. Women who have urinary incontinence must manage their symptoms in the context of their interpersonal relationships. Further investigation of the impact of potentially confounding conditions such as fecal incontinence, pelvic organ prolapse, and menopausal symptoms such as vaginal dryness is warranted. Much remains unknown about the complex interactions at play as women cope with the very private and personal symptoms of urinary incontinence, engage in urinary incontinence symptom management, maintain control of the social implications of symptoms, all while trying to maintain a satisfying intimate partner relationship.

Future research would benefit from a much larger participant population in order to adequately test for the mediating effects of these significantly associated variables on the quality of intimate partner relationships. A much larger sample size is also needed in order to adequately evaluate the significance of symptom severity and length of time lived with urinary incontinence on the variables of interest, including relationship satisfaction. Targeted recruitment through urogynecology specialty practices where women seek care for more severe incontinence might increase the number of participants to represent the very severe symptom category. Recruitment strategies such as targeting primary care clinics and an additional sentence on recruitment fliers about the need for women who have very minor symptoms to participate may increase the number of participants in the study that represent the slight symptom category.

Future research would also benefit from a participant population that was more diverse and representative of the general population. In particular, greater diversity and representation in ethnicities, religious preference, and economic status (along with a much larger sample size) would improve generalizability of the findings. Future research should remedy the loss of perspective of the large Spanish-speaking population in the U.S. by preparing instruments and questions written in Spanish. It would also be of interest and value to explore relationship issues when living with urinary incontinence for women with same-sex partners and for women who are not currently partnered.

Because the implication of living with a chronic health condition is that there may be deterioration in physical health over time, a better design to document the effects of ongoing symptom management on the quality of the intimate relationship would have been a longitudinal design. A longitudinal study design may provide more information about how couples cope together with urinary incontinence and what impact symptom management may have on the quality of the relationship. Development and use of condition-specific instruments may provide more insight and documentation of changes in ability to cope with symptoms over time.

Further qualitative and mixed methods study might benefit from interviewing women and partners separately, as well as together, for rich qualitative data regarding the impact of urinary incontinence on coping as a couple and on the intimate relationship.

Conclusion

This study was developed in order to explore if and/or how couples cope with and are affected by midlife female urinary incontinence. The interest in this question was driven by the observation that across studies and through personal observations experienced during years of work as a women's health nurse, women with urinary incontinence have been reluctant to report symptoms of urinary incontinence. When they muster up the courage to do so, women have consistently reported an impact of symptom management and burden on their quality of life, voiced worry about their ability to manage social situations, and expressed concern about a possible impact on their intimate relationships.

The variables chosen for analysis in this study were selected based on the large body of research on living with urinary incontinence and on the theoretical framework of

Corbin and Strauss' Collaborative Chronic Illness Trajectory Model (Corbin & Strauss, 1984; 1988), situating urinary incontinence in a chronic illness framework. Although the sample size obtained in this study did not support a well-powered analysis of the potential mediating effects of the selected biographical variables (self-esteem, body image, anxiety, and depression) and the selected relationship variables (relational ethics, sexual quality of life, and incontinence-related communication), the following findings were significant. For the midlife women with urinary incontinence who participated in this study, all of the study variables, with the exception of symptom severity, were significantly correlated. Relational ethics (fairness and trustworthiness), sexual quality of life, and depressive symptoms made significant, unique contributions to the perceived quality of the relationship for both women and their partners.

Women and their partners who reported an impact of living with urinary incontinence on their relationship cited maintaining intimacy, rather than pulling away and avoiding intimacy, as a major issue affecting satisfaction with their relationship. The findings of this dissertation research offer nurses further insights into the relative contribution of factors that potentially affect the ability of intimate, midlife couples to successfully cope with female urinary incontinence. It is sincerely hoped that a chronic health framework, a dyadic perspective honoring the importance of intimate relationships, and further research into the complexities of negotiating urinary incontinence symptom management in the context of an intimate partnership will lead to nursing care that supports the biopsychosocial health of women living with urinary incontinence.

APPENDICES

Appendix A. Recruitment flyer

Are you a woman between the ages of 45-65 and living with a spouse or partner?

Do you *occasionally* or even *frequently* leak urine?

If so, you are invited to participate in a
women's health nursing research study exploring
the impact of urinary leakage on personal relationships.

Upon study completion you will receive $10 and the chance to win a $100 gift card.
(odds of winning approximately 1 in 25)

The confidential questionnaire will take approximately 60 minutes to complete.
The study may be completed on your own time and in the privacy of your home.

Please contact **Lori Saiki RN, MSN** (University of New Mexico College of Nursing) by
Phone: 303-653-8867 or by **Email:** lsaiki@salud.unm.edu
for confidential details about participating in this study.

Appendix B. The Incontinence Severity Index (Sandvik, et al., 2000)
Permission for use in this dissertation study was granted by Dr. Hogne Sandvik (personal communication, March 29, 2013).

1. How often do you experience urinary leakage?

Less than once a month	A few times a month	A few times a week	Every day and/or night
○	○	○	○

2. How much urine do you lose each time?

Drops	Small splashes	More
○	○	○

Appendix C. The Couples Satisfaction Index-4 (Funk & Rogge, 2007)

The Couples Satisfaction Index-4 is available in the public domain as *pdf versions for downloading without restrictions* at www.courses.rochester.edu/surveys/funk/CSI-32.doc.

1. Please indicate the degree of happiness, all things considered, of your relationship.

Extremely unhappy	Fairly unhappy	A little unhappy	Happy	Very happy	Extremely happy	Perfect
○	○	○	○	○	○	○

2. I have a warm and comfortable relationship with my partner.

Not at all true	A little true	Somewhat true	Mostly true	Almost completely true	Completely true
○	○	○	○	○	○

3. How rewarding is your relationship with your partner?

Not at all	A little	Somewhat	Mostly	Almost completely	Completely
○	○	○	○	○	○

4. In general, how satisfied are you with your relationship?

Not at all	A little	Somewhat	Mostly	Almost completely	Completely
○	○	○	○	○	○

Appendix D. The Rosenberg Self-Esteem Scale (Rosenberg, 1965)
This instrument is available in the public domain with permission to use granted by the Rosenberg family (http://www.bsos.umd.edu/socy/research/rosenberg.htm).

Please read each of the following questions carefully and place an "X" under the response that comes closest to the way you have been feeling about yourself lately.	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**
1. On the whole, I am satisfied with myself.				
2. At times, I think I am no good at all.				
3. I feel that I have a number of good qualities.				
4. I am able to do things as well as most other people.				
5. I feel I do not have much to be proud of.				
6. I certainly feel useless at times.				
7. I feel that I'm a person of worth, at least on an equal plane with others.				
8. I wish I could have more respect for myself.				
9. All in all, I am inclined to feel that I am a failure.				
10. I take a positive attitude toward myself.				

Appendix E. The Body Image Scale (Hopwood, et al., 2001) modified following Jelovsek and Barber (2006) use with pelvic organ prolapse.
Dr. Penelope Hopwood has given permission to use the Body Image Scale in this dissertation study (personal communication, April 24, 2013).
Item wording was modified to refer to "leaking urine" instead of "disease or treatment."

Please read each question carefully and place an "X" under the response that comes closest to the way you have been feeling about yourself lately.	**Not at all**	**A little**	**Quite a bit**	**Very much**
1. Have you been feeling self-conscious about your appearance?				
2. Have you felt <u>less</u> physically attractive as a result of leaking urine?				
3. Have you been <u>dissatisfied</u> with your appearance when dressed?				
4. Have you been feeling <u>less</u> feminine as a result of leaking urine?				
5. Did you find it difficult to look at yourself naked?				
6. Have you been feeling less sexually attractive as a result of leaking urine?				
7. Did you avoid people because of the way you felt about your appearance?				
8. Have you felt <u>dissatisfied</u> with your body?				

Appendix F. The Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) Permission to use the HADS in this dissertation study was granted by GL Assessments (http://www.gl-assessment.co.uk/products/).

1. I feel tense or ‘wound up’:

Most of the time	A lot of the time	From time to time, occasionally	Not at all
○	○	○	○

2. I still enjoy the things I used to enjoy:

Definitely as much	Not quite so much	Only a little	Hardly at all
○	○	○	○

3. I get a sort of frightened feeling as if something awful is about to happen:

Very definitely and quite badly	Yes, but not too badly	A little, but it doesn’t worry me	Not at all
○	○	○	○

4. I can laugh and see the funny side of things:

As much as I always could	Not quite so much now	Definitely not so much now	Not at all
○	○	○	○

5. Worrying thoughts go through my mind:

A great deal of the time	A lot of the time	From time to time but not too often	Only occasionally
○	○	○	○

6. I feel cheerful:

Not at all	Not often	Sometimes	Most of the time
○	○	○	○

7. I can sit at ease and feel relaxed:

Definitely	Usually	Not often	Not at all
○	○	○	○

8. I feel as if I am slowed down:

Nearly all the time	Very often	Sometimes	Not at all
○	○	○	○

9. I get a sort of frightened feeling like ‘butterflies’ in the stomach:

Not at all	Occasionally	Quite often	Very often
○	○	○	○

10. I have lost interest in my appearance:

Definitely	I don’t take so much care as I should	I may not take quite as much care	I take just as much care as ever
○	○	○	○

11. I feel restless as if I have to be on the move:

Very much indeed	Quite a lot	Not very much	Not at all
○	○	○	○

12. I look forward with enjoyment to things:

As much as I ever did	Rather less than I used to	Definitely less than I used to	Hardly at all
○	○	○	○

13. I get sudden feelings of panic:

Very often indeed	Quite often	Not very often	Not at all
○	○	○	○

14. I can enjoy a good book or radio or TV program:

Often	Sometimes	Not often	Very seldom
○	○	○	○

Appendix G. The Relational Ethics Scale (Hargrave, et al., 1991)
Permission for use in this dissertation study was granted by Dr. Terry Hargrave (personal communication, March 30, 2013).

Please read each item carefully and place an "X" under the response that comes closest to your own experiences. *Please respond to every statement.*	**Strongly agree**	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**
1. I try to meet the emotional needs of my partner.					
2. I do not trust my partner to look out for my best interests.					
3. When I feel hurt, I say or do hurtful things to my partner.					
4. My partner stands beside me in times of trouble or joy.					
5. Before I make important decisions, I ask for the opinions of my partner.					
6. There is unequal contribution to the relationship between me and my partner.					
7. When I feel angry, I tend to take it out on my partner.					
8. My partner and I are equal partners in this relationship.					
9. My partner and I give of ourselves to benefit one another.					
10. I take advantage of my partner.					
11. I am taken for granted or used unfairly in my relationship with my partner.					
12. My partner listens to me and values my thoughts.					

Appendix H. The Sexual Quality of Life-Female questionnaire (Symonds, et al., 2005) Permission to use the instrument in this dissertation study has been granted by Pfizer (http://www.pfizerpatientreportedoutcomes.com/orderall1.php).

Please read each item carefully and place an "X" under the response that comes closest to your own experiences.	**Completely agree**	**Moderately agree**	**Slightly agree**	**Slightly disagree**	**Moderately disagree**	**Completely disagree**
1. When I think about my sex life, it is an enjoyable part of my overall life.						
2. When I think about my sex life, I feel frustrated.						
3. When I think about my sex life, I feel depressed.						
4. When I think about my sex life, I feel like less of a woman.						
5. When I think about my sex life, I feel good about myself.						
6. I have lost confidence in myself as a sexual partner.						
7. When I think about my sex life, I feel anxious.						
8. When I think about my sex life, I feel angry.						
9. When I think about my sex life, I feel close to my partner.						
10. I worry about the future of my sex life.						
11. I have lost pleasure in sexual activity.						
12. When I think about my sex life, I feel embarrassed.						
13. When I think about my sex life, I feel that I can talk to my partner about sexual matters.						
14. I try to avoid sexual activity.						

Please read each item carefully and place an "X" under the response that comes closest to your own experiences.	**Completely agree**	**Moderately agree**	**Slightly agree**	**Slightly disagree**	**Moderately disagree**	**Completely disagree**
15. When I think about my sex life, I feel guilty.						
16. When I think about my sex life, I worry that my partner feels hurt or rejected.						
17. When I think about my sex life, I feel like I have lost something.						
18. When I think about my sex life, I am satisfied with the frequency of sexual activity.						

Appendix I. The Sexual Quality of Life-Male questionnaire (Abraham, et al., 2008) Permission to use the instrument in this dissertation study has been granted by Pfizer (http://www.pfizerpatientreportedoutcomes.com/orderall1.php).

Please read each item carefully and place an "X" under the response that comes closest to your own experiences.	**Completely agree**	**Moderately agree**	**Slightly agree**	**Slightly disagree**	**Moderately disagree**	**Completely disagree**
1. When I think about my sex life, I feel frustrated.						
2. When I think about my sex life, I feel depressed.						
3. When I think about my sex life, I feel like less of a man.						
4. I have lost confidence in myself as a sexual partner.						
5. When I think about my sex life, I feel anxious.						
6. When I think about my sex life, I feel angry.						
7. I worry about the future of my sex life.						
8. When I think about my sex life, I am embarrassed.						
9. When I think about my sex life, I feel guilty.						
10. When I think about my sex life, I worry that my partner feels hurt or rejected.						
11. When I think about my sex life, I feel like I have lost something.						

Appendix J. The Couples' Illness Communication Scale (Arden-Close, et al, 2010)
Permission for use in this dissertation study was granted by Dr. Laura Dennison and Dr. Emily Arden-Close (personal communication, April 4, 2013).
Items were modified to replace "illness" with "leaking urine."

Woman's version:

Please read each item carefully and place an "X" under the response that comes closest to your own experiences.	**Disagree Strongly**	**Disagree**	**Undecided**	**Agree**	**Agree Strongly**
1. It is hard for me to express feelings about my leaking urine to my partner.					
2. I feel comfortable discussing issues related to my leaking urine with my partner.					
3. My partner is reluctant to talk about my leaking urine.					
4. My partner is willing to share his/her feelings about my leaking urine with me.					

Partner's version:

Please read each item carefully and place an "X" under the response that comes closest to your own experiences.	**Disagree Strongly**	**Disagree**	**Undecided**	**Agree**	**Agree Strongly**
1. It is hard for me to express feelings about her leaking urine to my partner.					
2. I feel comfortable discussing issues related to her leaking urine with my partner.					
3. My partner is reluctant to talk about her leaking urine.					
4. My partner is willing to share her feelings about my leaking urine with me.					

Appendix K. "Before and After" scaled questions.

1. I have experienced urinary leaking ever since I started this relationship with my partner.

No, I did not have urinary leaking when I started this relationship	Yes, and symptoms are about the same as they were in the beginning of this relationship	Yes, and symptoms are worse than they were in the beginning of this relationship
○	○	○

2. My relationship with my partner meets my emotional needs.

Before:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

Now:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

3. I trust that my partner has good intentions toward me and our relationship.

Before:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

Now:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

4. I am able to share satisfying physical intimacy with my partner.

Before:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

Now:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

5. I am able to communicate satisfactorily with my partner about my body's needs and physical symptoms.

Before:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

Now:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

6. I feel valued and respected by my partner.

Before:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

Now:

Strongly agree	Moderately agree	Slightly agree	Slightly disagree	Moderately disagree	Strongly disagree
○	○	○	○	○	○

Appendix L. Open-ended questions

Please take a few minutes to answer the following questions to provide a better understanding of how urinary leaking affects your personal life. A few sentences about your thoughts on each question would be very helpful. Answers will remain confidential.

1. What changes in your relationship with your partner have you noticed since the urinary leakage, or the possibility of a leak, started?

2. What effects have urinary leaks, or the possibility of a leak, had on your relationship?

3. How have you and your partner dealt with the possibility of a leak?

Appendix M. Sexual function questions from the PISQ-12 (Rogers et al., 2003). Permission was granted for use by Dr. Rebecca Rogers by personal communication on July 31, 2013.

Please place a check under the response that best answers the question for you.	**Always**	**Usually**	**Sometimes**	**Seldom**	**Never**
1. How frequently do you feel sexual desire? This feeling may include wanting to have sex, planning to have sex, feeling frustrated due to lack of sex, etc.					
2. Do you climax (have an orgasm) when having sexual activity with your partner?					
3. Do you feel sexually excited (turned on) when having sexual activity with your partner?					
4. How satisfied are you with the variety of sexual activities in your current sex life?					
5. Do you feel pain during sexual activity?					
6. Are you incontinent of urine (leak urine) with sexual activity?					
7. Does fear of incontinence (either stool or urine) restrict your sexual activity?					
8. Do you avoid sexual activity because of bulging in the vagina (either the bladder, rectum, or vagina falling out?)?					
9. When you have sex with your partner, do you have negative emotional reactions such as fear, disgust, shame or guilt?					
10. Does your partner have a problem with <u>erections</u> that affects your sexual activity?					
11. Does your partner have a problem with premature ejaculation that affects your sexual activity?					
Please place a check under the response that best answers the question for you.	**Much less intense**	**Less Intense**	**Same intensity**	**More intense**	**Much more intense**
12. Compared to orgasms you have had in the past, how intense are the orgasms you have had in the past six months?					

Appendix N. Demographic/Condition-Specific questionnaire (version for women with UI)

1. What is your age?

2. How many years have you been living with your partner?

3. Are you and your partner married, in a civil union, common law, or living together?

4. Are there children or other family members living with you?

5. Are you employed outside the home?

6. What is your approximate joint annual income?

7. What is the highest educational level you have completed?

8. What is your racial/ethnic background?

9. What is your religious affiliation?

10. During the last 3 months, when did you leak urine <u>most often</u>?

11. How long have you had symptoms of leaking urine?

12. How many times do you get up in the night to urinate?

13. Have you mentioned the urinary leaking to your partner?

14. Have you mentioned the urinary leaking to your doctor or nurse?

15. Have you discussed treatment for urinary leaking with a doctor?

16. Have you ever been treated or had surgery for the urinary symptoms?

17. Do you have a sensation that there is a bulge in your vagina or that something is falling out from your vagina?

18. Do you lose stool beyond your control if your stool is loose or liquid?

19. Do you lose well-formed stool beyond your control?

20. What is your height and weight?

21. Are you currently taking antidepressant medication?   (if yes, for how long?)

22. Does your partner have episodes of urinary leakage?

23. Does your partner have benign prostate hypertrophy (BPH)?

Appendix O. Demographic questionnaire (partner version)

Partner’s version:

1. What is your age?
2. What is your racial/ethnic background?
3. What is your religious affiliation?
4. What is the highest educational level you have completed?
5. How many times do you usually get up during the night to urinate?
6. Do you have episodes of leakage of urine?

   If yes, when do you most often leak urine? (female partners only)

   When you were performing some physical activity, such as coughing, sneezing, lifting, or exercise?

   When you had the urge or the feeling that you needed to empty your bladder, but you could not get to the toilet fast enough?

   Without physical activity and without a sense of urgency?

   About equally as often with physical activity as with a sense of urgency?

7. Do you have benign prostate hypertrophy (BPH)? (male partners only)

Appendix P. Informed consent form

University of New Mexico Health Sciences Center

Informed Consent Cover Letter for Anonymous Surveys

STUDY TITLE

Midlife Female Urinary Incontinence and the Intimate Dyad

Lori Saiki RN, MSN, PhD Candidate from the College of Nursing is conducting a research study. The purpose of the study is to explore how a woman's urinary leaking may or may not affect her relationship with her spouse or partner. You are being asked to participate in this study because as a partnered woman living with some level of symptoms of urinary leakage, you have important insights into the effect of those symptoms on your relationship with your partner.

Your participation will involve completing a set of questionnaires. The survey should take about 60 minutes to complete. Your involvement in the study is voluntary, and you may choose not to participate. There are no names or identifying information associated with this survey. The survey includes questions that ask about your feelings (such as 'Have you been feeling self-conscious about your appearance?') and ask about your relationship (such as 'In general, how satisfied are you with your relationship?'). Open ended questions are also included so that you can provide a description of your experiences with urinary incontinence. You can refuse to answer any of the questions at any time.

There are no known risks in this study, but some individuals may experience discomfort when answering questions. We will take measures to protect the security of all your personal information, but we cannot guarantee confidentiality of all study data. You should understand that these measures do not prevent you or a member of your family from seeing or releasing information about yourself or your involvement in this research. There is the possibility of lost or stolen data. A separate list linking your name with the identification number on the questionnaire packet will be kept until completion of data analysis in a locked cabinet in Lori Saiki's home office and then destroyed. If you have given permission to be contacted for future studies, your name and contact information will be kept in a locked cabinet separate from the study data. All other data (without any personally identifying information) will be kept in a locked cabinet in Lori Saiki's home office. If the study packet is not returned within two weeks, a reminder letter will be sent to complete the study. If the study packet is not received two weeks after the reminder letter, a second, final reminder letter will be sent. No reminder letters will be sent for partner participation.

There will be no direct benefit to you from participating in this study. In return for your time and the inconvenience of participating in this study, following return of your completed study packet to the investigator you will be given a $15 gift card. You will also automatically be enrolled in a drawing for a chance to win a $100 gift card (chance of winning approximately 1 in 25). The findings from this project will provide information on the impact of female urinary incontinence symptom severity on the quality of the midlife intimate relationship. If published, results will be presented in summary form only. Any provision of healthcare sought during the course of this study or following this study is the financial responsibility of the participant. If you have any questions about this research project, please feel free to call Lori Saiki at (303) 653-8867. If you have questions regarding your legal rights as a research subject, you may call the UNMHSC Office of Human Research Protections at (505) 272-1129.

By returning this survey in the envelope provided, you will be agreeing to participate in the above described research study.

Thank you for your consideration.
Sincerely,

Lori Saiki
RN, MSN, PhD Candidate
UNMHSC HRRC #13-513

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