POSTPARTUM PELVIC FLOOR DYSFUNCTION: IMPACT UPON QUALITY OF LIFE, ASSESSMENT, TREATMENT OPTIONS IN PRIMARY CARE, AND BARRIERS TO TREATMENT.

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Abstract

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Abstract:

Purpose: To explore the nurse practitioner’s role in providing appropriate care for women who experience symptoms of pelvic floor dysfunction between six weeks and 12 months postpartum.

Data Sources: Review of the literature from 2007 to the present, via electronic search of CINAHL, Web of Science, PubMed, and the Cochrane Library.

Conclusions: The physical problems associated with the postpartum period may affect women's function, emotional health status, and quality of life. Postpartum pelvic floor dysfunction is best evaluated through verbal history-taking and conducting a physical exam of the perineum, vagina, and pelvic floor muscles. Current treatments for postpartum pelvic floor dysfunction include lifestyle modifications, pharmacologic therapy, and physical therapy. Supervised pelvic floor muscle training is increasingly being recognized as a cornerstone of therapy. Barriers to treatment of postpartum pelvic floor dysfunction
include social stigma, delay in seeking treatment, and beliefs of both women and health care providers about the disease.

Implications for Practice: Nurse practitioners working in primary care settings need to be proactive, questioning women who have given birth about symptoms related to pelvic floor dysfunction in order to increase identification and treatment of the disease.

Key Words: pelvic floor dysfunction, incontinence, dyspareunia, pelvic pain, levator ani syndrome, postpartum
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Introduction and Problem Statement

Postpartum pelvic floor dysfunction includes disorders of hypotonus and hypertonus of the pelvic floor muscles that begins after giving birth (Rosenbaum & Owens, 2008). The term describes a range of clinical problems including dyspareunia, pain in the lower abdomen, pelvis, or perineum, fecal incontinence, defecatory dysfunction, nocturia, urinary frequency, urinary urgency, and urinary incontinence, with stress urinary incontinence being more common among postpartum women than urge incontinence (Davis & Kumar, 2003; Thom & Rortveit, 2010). In addition, symptoms of pelvic floor dysfunction can include pain in the hip, buttck, or tailbone, restricted sitting tolerance, painful bowel movements, constipation, and/or straining with bowel movements (Davis, 2010b; Jeffcoat, 2008). A variety of other diagnoses may be responsible for the symptoms that are characteristic of pelvic floor dysfunction, including organic disease, so it is important to fully investigate the etiology of symptoms associated with postpartum pelvic floor dysfunction (Rosenbaum & Owens, 2008).

Postpartum pelvic floor dysfunction is fairly common. While there are no national studies that measure the incidence of postpartum pelvic floor dysfunction as a whole, some samples have been found to have rates of postpartum pelvic pain as high as 44% and postpartum urinary incontinence as high as 33% (Hay-Smith, Morkved, Fairbrother, & Herbison, 2008; Paterson, Davis, Khalife, Amsel, & Binik, 2009). Seventeen percent of women in the study conducted by Brown, Gartland, Donath, and MacArthur (2012) reported fecal incontinence at some point in the first twelve months postpartum, while 12.8% reported fecal incontinence beyond the first 3 months postpartum. In general, pelvic pain and related symptoms are under-diagnosed and under-treated (Davis & Kumar, 2003; Paterson et al., 2009). This is particularly true in the childbearing population, defined as 15-49 years of age (World Health Organization, 2002).
Symptoms of postpartum pelvic floor dysfunction can continue well beyond six weeks postpartum, which is when women in the United States are typically released from obstetric care (Hay-Smith et al., 2008; Serati et al., 2008). Providers who do not specialize in obstetrics or gynecology may be unfamiliar with the disease course, diagnosis, and treatment or referral options for postpartum pelvic floor dysfunction. The purpose of this literature review is to explore the nurse practitioner’s role in providing appropriate care for women who experience symptoms of pelvic floor dysfunction between six weeks and 12 months postpartum. This will be accomplished by answering the following questions: (a) What are the effects of postpartum pelvic floor dysfunction on quality of life? (b) What assessments (i.e., patient history and physical examinations) are useful in assessing for postpartum pelvic floor dysfunction in the primary care setting? (c) What are the treatment options for postpartum pelvic floor dysfunction in the primary care setting? And, (d) What are the barriers to treatment of postpartum pelvic floor dysfunction? Although women of all ages who have experienced childbirth may experience pelvic floor dysfunction, for the purposes of this project, the population of interest is women in the delayed postpartum period, between six weeks and 12 months postpartum.

Theoretical Framework

The symptom management model proposed by Dodd et al. (2001) provides a useful framework to help nurse practitioners assess and/or select interventions for women who experience postpartum pelvic floor dysfunction. The symptom management model explains that symptoms, mild or severe, that interfere with activities of daily life and quality of life are the driving force for persons to seek healthcare (Dodd, et al., 2001). Thus, healthcare providers who can recognize symptoms and their effect on quality of life may be more effective in promoting useful interventions. The more severe the experience of symptoms is, the greater the effect upon
The six key assumptions of the Symptom Management Model are:

- That the study of symptoms is based on the perception and self-report of the individual experiencing the symptom.
- That the model can be applied if the individual is not experiencing the symptom but is at risk for developing the symptom.
- That interpretation of symptoms by parents or caregivers is deemed accurate for report of symptom experience in the case of nonverbal persons.
- That management needs to occur for all bothersome symptoms.
- That individuals, groups, families, or the work environment may be targeted by the management strategy.
- That symptom management is a dynamic process influenced by person, health/illness, or environment, as well as individual outcomes.

The symptom management model describes three dimensions: symptom experience, management strategies, and outcomes (Dodd et al., 2001). The symptom experience dimension includes perception of symptoms, response to symptoms, and evaluation of symptoms. Signs of postpartum pelvic floor dysfunction, or findings of physical examinations, are included in the evaluation of symptoms and may consist of a hypotonic or hypertonic pelvic floor (Dodd et al., 2001). The symptoms of postpartum pelvic floor dysfunction cause patients to experience pain and embarrassment, limit activities of daily living, and seek treatment. Thus the dimensions of the symptom management model can be used to illustrate the experience of women with postpartum pelvic floor dysfunction. These dimensions are influenced by patient variables such as developmental stage, gender, health and illness status (including the influence of co-existing...
conditions), the environment, and patients’ social and psychosocial circumstances.

Patient variables are accounted for in the symptom management model via three overlapping domains including person, health/illness, and environment. The person domain is influenced by demographic, psychological, developmental, sociological, and physiological variables (Dodd et al., 2001). Applying the Symptom Management Model to women with postpartum pelvic floor dysfunction can help nurse practitioners understand and respond to patient experiences of pain, discomfort, and embarrassment, as well as difficulty working or caring for their families (Davis, 2010a). The health and illness domain includes those risk factors, injuries, disabilities, or disease as variables that are unique to the health or illness state of an individual (Dodd et al., 2001). As viewed using the Symptom Management Model, giving birth is a risk factor for postpartum pelvic floor dysfunction; thus, to a certain extent symptoms can be anticipated, prevented, or diminished through intervention by nurse practitioners (Kepenekci et al., 2011). Childbirth can also injure the pelvic floor, causing lacerations, trigger points, and hypo- and hyper-tonic pelvic floor muscles, any of which might contribute to symptoms of postpartum pelvic floor dysfunction including urinary and fecal incontinence, altered sexual function, vaginal discomfort, and pelvic pain (Davis, 2010b; Dietz, 2009; Faubion, 2012). The environment domain of the Symptom Management Model describes the physical, cultural, and social context within which symptoms occur. Using the Symptom Management Model, then, nurse practitioners can extend their understanding of the relationship between these environmental influences and a woman’s symptom experience, and symptom status as they relate to the symptoms of postpartum pelvic floor dysfunction.

In postpartum pelvic floor dysfunction, mild symptoms such as a small amount of urine loss when sneezing may or may not alter function, emotional status, and quality of life. However,
severe incontinence may limit women's ability to be physically active or to care for their children (Hermansen, 2010; Lo et al., 2010). Severe dyspareunia may lead a woman to abstain from intercourse with her partner (Mouritsen, 2009). The experience of severe symptoms may influence women to seek help from health care providers in managing symptoms in order to alter symptom status and their experience of symptoms. The examples of urinary incontinence and dyspareunia illustrate the relationship between symptom experience and the outcomes of the symptom management model that relate to postpartum pelvic floor dysfunction—symptom status, functional status, emotional status, and quality of life. The symptom management model has been used to organize this paper and provide a clear picture of the relationships between symptom experience, symptom management, and outcomes in postpartum pelvic floor dysfunction.
Figure 1: Revised Symptom Management Model (Dodd, et al., 2001). Copyright 2001 by John Wiley and Son, Inc. Used with permission.

**Review of the Literature**

The Symptom Management Model guided the selection of literature for review. Initially, articles were selected if they fit into one of the dimensions (symptom experience, symptom management strategies, and/or outcomes) or domains (environment, person, and/or health & illness) of the model. Symptoms and symptom experiences were considered in the context of how they informed treatment options and outcomes. Treatment options were regarded based upon their ability to alter the symptom experience and outcomes. Outcomes from the symptom management model that were considered important when reviewing the literature were symptom status, quality of life, functional status, and emotional status.
Literature Search Strategies

To provide useful information for nurse practitioners about postpartum pelvic floor dysfunction symptoms and about the NP role in assessing and treating women with this disorder, an electronic literature search was conducted using the Cumulative Index of Nursing and Allied Health Literature (CINAHL), Web of Science, PubMed, and the Cochrane Library databases. The goal of this search was to obtain primary qualitative and quantitative research studies and other literature reviews that could be reviewed and analyzed to determine best practice approaches to the care of this sometimes neglected population. Search terms included pelvic floor dysfunction, incontinence, dyspareunia, pelvic pain, levator ani syndrome paired with postpartum. One hundred and seventy two articles were further screened by title and abstract. Articles were excluded if they were published before 2007, if they were not reports of primary research studies or literature reviews. Exceptions were made regarding publishing date to allow the inclusion of one meta analysis regarding pelvic floor dysfunction that provided unique information about patient centered care but was published in 2003. Also included were four articles that were considered classic literature and that addressed evaluation of pelvic floor dysfunction but were published in 2005, 2003, and 2001, one article that was published in 2006 and provided information that was specific to primary care, and one additional article that was published in 2005 and contained important information about barriers to treatment. Fifty-nine articles were retained to address the purpose of this review, in addition to six other articles that informed the introduction and problem statement, for a total of 65 articles.

These articles were organized into four categories, again guided by the Symptom Management Model: quality of life among women with postpartum pelvic floor dysfunction (4 articles, corresponding to the Outcomes dimension of the model); evaluation of postpartum...
pelvic floor dysfunction (18 articles that corresponded to the Symptom Experience dimension of
the Model); treatment options for postpartum pelvic floor dysfunction (20 articles, corresponding
to the Symptom Management Strategies dimension); and barriers to treatment (5 articles,
corresponding to the person, health/illness, and environment domains of the model). Eleven
additional articles were retained that addressed both evaluation of symptoms and treatment,
while one article addressed both quality of life and barriers to treatment. Thus, the literature
review is organized into four sections. Section one reviews evidence related to the quality of life
among women with postpartum pelvic floor dysfunction. The second section reviews evaluation
of postpartum pelvic floor dysfunction, both symptoms and signs. History taking is reviewed,
including three important conditions to evaluate when collecting the history of present illness:
urinary and defecatory symptoms, vaginal or pelvic pain, and sexual function. Also discussed in
evaluation of postpartum pelvic floor dysfunction are validated questionnaires that are applicable
for use by nurse practitioners in clinical settings and physical examination of the pelvic floor
muscles. The third section of the review provides information about treatment options for
postpartum pelvic floor dysfunction, including lifestyle management, pharmacologic treatment,
and physical therapy techniques. The final section of the literature review addresses barriers to
treatment of postpartum pelvic floor dysfunction.

Symptom Experience in Pelvic Floor Dysfunction

Pelvic floor dysfunction is a term that describes an array of clinical problems that are
anatomically grouped (Davis and Kumar, 2003). Pelvic floor dysfunction is categorized as being
caused by hypertonic or hypotonic pelvic floor muscles, both of which are characterized by the
same symptoms (Fox, 2009). Many of the symptoms associated with pelvic floor dysfunction
relate to the urinary tract. Urinary symptoms include urinary frequency, urinary urgency, and
urinary incontinence (Chaliha, 2009; Itza et al., 2010). Among healthcare professionals and the lay public, urinary incontinence may well be the most recognized symptom of pelvic floor dysfunction (Davis, 2010a). Urinary incontinence may consist of involuntary urine loss related to physical exertion or activity (stress urinary incontinence), involuntary loss of urine in relation to strong urge to urinate (urge urinary incontinence), involuntary urine loss during coitus (coital urinary incontinence), involuntary urine loss with change of body position (postural urinary incontinence), and/or involuntary loss of urine with urgency and with physical exertion (mixed urinary incontinence) (Haylen et al., 2010; Serati et al., 2008).

The other, lesser known, symptoms of pelvic floor dysfunction include altered defecatory function, vaginal comfort, and sexual function (Davis, 2010b; Pauls, Occhino, Dryfhout, & Karram, 2008). Women with pelvic floor dysfunction that results in altered defecatory function may describe a feeling of heaviness in the rectal area, pain in the anus, pain with defecation, constipation, diminished rectal sensation, straining to defecate, and anal incontinence (FitzGerald & Kotarinos, 2003a; Itza et al., 2010; Luthander, Emilsson, Ljunggren, & Hammarstrom, 2011). Anal incontinence is the involuntary loss of flatus and/or feces (Haylen et al., 2010). Involuntary loss of feces (fecal incontinence) may be experienced as the involuntary loss of stool without warning or sensation (passive fecal incontinence), loss of stool during vaginal intercourse (coital fecal incontinence), urge fecal incontinence, and/or mixed fecal incontinence (Serati et al., 2008).

Vaginal comfort is impacted by the experience of pelvic pain, pain in the buttock or hip, vulvar pain, feeling of heaviness in the pelvis or vagina (Haylen et al., 2010; Itza et al., 2010). Sexual function may be altered in pelvic floor dysfunction by the sensation that vaginal penetration is not possible due to obstruction (obstructed intercourse) or by vaginal laxity,
anorgasmia, or dyspareunia, either superficial and deep (FitzGerald, 2003a; Haylen et al., 2010; Itza et al., 2010; Serati et al., 2008). Superficial dyspareunia is defined as experience of discomfort or pain at the vaginal introitus during vaginal entry or intercourse (Haylen et al., 2010). Deep dyspareunia is the experience of discomfort or pain upon deep penetration during sexual intercourse (Haylen et al., 2010). All of the symptoms of postpartum pelvic floor dysfunction can occur with varying levels of severity and frequency (Davis & Kumar, 2003). The symptoms may also occur singly or multiple symptoms may be present (Davis & Kumar, 2003; Davis, 2010a; Webb et al, 2008).

Quality of Life Among Women With Postpartum Pelvic Floor Dysfunction

A review by Davis (2010a) concluded that pelvic floor dysfunction alters the function of women in many domains including social, sexual, interpersonal, and professional. Hermansen, O'Connell, and Gaskin (2010) found that 50% of participants who were experiencing urinary incontinence in the postpartum period were moderately to greatly bothered by their symptoms. The same study noted a decrease in sexual relations, a decrease in involvement in physical activities, and that concern about toilet availability limited women's willingness to travel or attend events (Hermansen et al., 2010). These authors also found that pelvic floor dysfunction, as it relates to urinary incontinence, can increase the sleep deprivation that mothers of young children experience. Lo et al. (2010) found that women with postpartum anal incontinence, a possible symptom of pelvic floor dysfunction, reported feelings of frustration, poor emotional health, and felt that their ability to care for their child/children was affected, as well as negative effects upon social activities. Poor body image in women with postpartum pelvic floor dysfunction was noted by Pauls et al. (2008).
Evaluation of Symptom Experience in Postpartum Pelvic Floor Dysfunction

Evaluation of postpartum pelvic floor dysfunction requires advanced listening and interviewing skills, familiarity with terminology used to describe pelvic floor dysfunction, and ability to conduct a physical examination of the pelvic floor muscles (Davis, 2010a). As patient concerns focus around urinary and defecatory symptoms, vaginal or pelvic pain, and sexual function, collection of the history of present illness should focus upon determining the frequency and severity of symptoms, aggravating and relieving factors, and impact upon daily life. The physical exam should include inspection of the vagina and perineum, assessment of the ability to contract and relax the pelvic floor muscles, and palpation of the pelvic floor muscles for trigger points, taut muscles, and muscle spasms (Faubion, 2012; Mouritsen, 2009). One important goal of the physical examination is to determine whether pathology of the pelvic floor muscle is the cause of the patient's symptoms (Dietz, 2009).

Collecting the History of Present Illness. The postpartum period is divided into three phases- the acute (6-12 hours), the subacute (2-6 weeks), and the delayed postpartum period (6 weeks-6 months) (Romano, Cacciatore, Giordano, & La Rosa, 2010). The third phase involves restoration of muscle tone and connective tissues to the pre-pregnant state (Romano et al., 2010). However, Romano et al. (2010) noted that it may take much longer than the third postpartum phase for changes to the genitourinary system to resolve. Some changes may not return to the pre-pregnant state and may be implicated in causing symptoms of pelvic floor dysfunction (Romano, et al., 2010). Thus, it is important for nurse practitioners to ask postpartum women about symptoms of postpartum pelvic floor dysfunction for up to one year after childbirth and to complete a subjective assessment regarding current symptoms.

History-taking should seek to identify other health history or conditions that may
contribute to symptoms including, but not limited to, endometriosis, irritable bowel syndrome, interstitial cystitis, sacroiliac joint dysfunction, constipation, urinary tract infection, voiding difficulty, abdominal surgery, diabetes mellitus, stroke, lung disease, cognitive impairment, drug therapies, and pelvic organ prolapse (Herbruck, 2008a; Hull & Corton, 2009). Back injury, arthritis, and muscle weakness also need to be investigated as contributors to symptoms (Davis, 2010a). Providers should also assess fluid intake, dietary habits, alcohol consumption, and tobacco smoking as they relate to both fecal and urinary symptoms (Davis, 2010a). While childbirth is the typical etiology for pelvic floor dysfunction, most physical symptoms do not correlate with birth trauma, so nurse practitioners should not rely on childbirth history of trauma to diagnose postpartum pelvic floor dysfunction (Mouritsen, 2009). History taking pertaining to pelvic floor dysfunction requires time, advanced interviewing and listening skills, and familiarity with the terminology used to describe pelvic floor dysfunction (Davis, 2010a; Haylen et al., 2010). History taking should begin with a broad survey of current symptoms that may be associated with postpartum pelvic floor dysfunction, then narrow in scope to assess the characteristics of each symptom. The history taking can be divided into three assessment areas, as they pertain to the symptom experience in postpartum pelvic floor dysfunction and relate to the symptom management model: urinary and defecatory, vaginal or pelvic comfort, and sexual function (Davis, 2010a, Dodd et al., 2001). It is important to question the patient about all three domains, rather than solely the chief complaint, as symptoms are often co-occurring.

**Urinary and Defecatory Symptoms.** Postpartum pelvic floor dysfunction may manifest with urinary and fecal symptoms, thus both urinary and fecal symptoms should be addressed during exams of postpartum women (Guise et al., 2007). Symptoms need to be asked about specifically and individually, as women may not volunteer information about urinary and
defecatory symptoms due to embarrassment or the belief that there is nothing that can be done to improve their symptoms (Kirby, 2006). Nurse practitioners need to ask about incontinence and discuss voiding and stooling patterns including frequency of urination and defecation, presence of urinary or defecatory urgency, level of bladder sensation, frequency of urinary and/or fecal incontinence, severity of urinary and/or fecal incontinence, aggravating factors for incontinence including sneeze, cough, laugh, and exercises, incontinence with orgasm or sexual intercourse, fluid intake, and history of urinary tract and kidney infections (Haylen et al., 2010; Herbruck, 2008a; Wieslander, 2009). While the literature revealed that symptoms of postpartum pelvic floor dysfunction do not correlate with birth trauma, there is some evidence that fecal incontinence is associated with third and fourth degree sphincter rupture or laceration (Bols et al., 2010). Thus, nurse practitioners may want to inquire about childbirth trauma in the context of women experiencing fecal incontinence.

Clarification of urinary and defecatory symptoms may be needed after initial history-taking if symptoms are complex or if type of incontinence is not clear. If this is the case, nurse practitioners may want to consider a bladder and bowel diary. Both Herbruck (2008a) and Wieslander (2009) recommended utilizing a three-day bladder and bowel diary to assess type of incontinence and severity of symptoms. The diary should include each void or bowel movement, episodes of incontinence, associated events, and other symptoms. It may be helpful to address the need to use and change pads or change underwear when incontinence occurs in order to assess volume (Wieslander, 2009). Fluid intake and urine output may also be measured in the diary (Haylen et al., 2010). The diary should then be reviewed by the nurse practitioner and the patient so that a treatment plan can be devised (Wieslander, 2009).

**Vaginal or Pelvic Comfort.** Vaginal or pelvic pain in postpartum pelvic floor
dysfunction may manifest as restricted sitting tolerance or as pain in the lower abdomen, pelvis, hip, vagina, perineum, buttock, or tailbone. Nurse practitioners should ask about pain location, character, and frequency, as well as aggravating and relieving factors for vaginal or pelvic pain. (Davis, 2010a). Presence of vaginal discharge or bleeding beyond six weeks postpartum should be determined, with attention to amount and frequency. While bleeding and discharge in the delayed postpartum period can be associated with pelvic organ prolapse, they may also indicate the presence of organic disease (Davis, 2010a, Haylen et al., 2010). Vaginal or pelvic pain and discomfort can be associated with pelvic organ prolapse, manifesting as vaginal or rectal bulging, feeling of a 'ball' protruding into the vagina, a lump in the vagina, feeling of vaginal pressure or heaviness, and low back pain. In the case of prolapse, symptoms are often worse at the end of the day, especially after long periods of standing (Muller, 2010).

Sexual Function. Altered sexual function in pelvic floor dysfunction is most commonly characterized by dyspareunia, but women may also experience obstructed intercourse, vaginal laxity, and anorgasmia (Itza et al., 2010; Serati et al., 2008). Dyspareunia is the experience of recurrent discomfort or pain with attempted or complete vaginal penetration (Haylen et al., 2010). Nurse practitioners should determine whether pain occurs with shallow penetration, deep penetration, or both, as well as where pain is located during intercourse (Fisher, 2007). Nurse practitioners should ask the patient to describe the characteristics of dyspareunia including pain character and frequency, while identifying aggravating and relieving factors. The experience of additional symptoms, such as lack of sensation in the vagina, vaginal laxity, and anorgasmia should also be investigated. While dyspareunia can be a symptom of pelvic floor dysfunction, not all dyspareunia is caused by pelvic floor dysfunction. Hence, it is important to ask about breast-feeding in the context of postpartum dyspareunia as breast-feeding decreases estrogen
levels, reduces vaginal lubrication, and can increase dyspareunia due to vaginal dryness (Serati et al., 2010). Nurse practitioners should also explore psychosocial factors that can be related to dyspareunia including depression, physical or sexual abuse, and anxiety (Fisher, 2007).

**Use of Questionnaires in the Clinical Setting.** Nurse practitioners may use patient questionnaires to assess pelvic floor health in the clinical setting (Davis, 2010a; Wieslander, 2009). While there are numerous questionnaires that address the various symptoms of pelvic floor dysfunction singly, there are few questionnaires that address the multitude of symptoms as a whole (Barber, 2007). The Pelvic Floor Distress Inventory and the Pelvic Floor Impact Questionnaire are questionnaires that both address pelvic floor dysfunction as a whole and are validated by research (Barber, 2007). The Pelvic Floor Distress Inventory (PFDI) is based upon the structure and content of the Urinary Distress Inventory, while the Pelvic Floor Impact Questionnaire (PFIQ) is based upon the structure and content of the Incontinence Impact Questionnaire. Additional questions about vaginal comfort, sexual function, and defecatory function were added to each questionnaire in order to account for all symptoms of pelvic floor dysfunction (Barber, Kuchibhatla, Pieper, & Bump, 2001). Barber et al. (2001) analyzed the questionnaires for reliability and found the internal consistency of the PFDI to be good (Cronbach's alpha = 0.88) and the internal consistency of the PFIQ to be excellent (Cronbach's alpha = 0.98). The questionnaires were also found to be reproducible (interclass correlations: PFDI 0.86-0.87 and PFIQ 0.77-0.92) (Barber et al., 2001). The subscales within the questionnaires were found to significantly correlate with the number of urinary incontinence episodes per week (p = 0.26, P<.05; p = 0.46, P< 0.0001), the number of pads used per week (p = 0.26, P < 0.05; p = 0.40, P<0.0001), the stage of prolapse (p = 0.32 and p = 0.33, P< 0.01 each), the number of fecal incontinence episodes per month (p = 0.49, P < 0.0001 and p = 0.30,
P < 0.01), and a diagnosis of defecatory dysfunction (p = 0.47, P < 0.0001 and p = 0.29, P < 0.01) (Barber et al., 2001). Both the PFDI and PFIQ are lengthy, which may limit their clinical use due to time constraints. However, Barber, Walters, and Bump (2005) validated a short form version of each, which may prove to be more useful in the clinical setting. The 20 item short-form scales of the Pelvic Floor Distress Inventory (PFDI-20) demonstrated significant correlation with the long-forms scales in the original questionnaire (r = 0.86, r = 0.92, and r = 0.93, P < 0.0001). The seven items used on the Pelvic Floor Impact Questionnaire short form (PFIQ-7) correlated with subscales of incontinence impact, colorectal-anal impact, and pelvic organ prolapse impact used in the long form (r = 0.96, P < 0.0001, r = 0.96, P < 0.0001, r = 0.94, P < 0.0001 respectively). Barber et al. (2005) found the test-retest reliability of each scale to be good to excellent (intra-class correlation coefficient 0.70 to 0.93, P < 0.001 for all scales). The PFDI-20 assesses the presence, severity, and/or bother of symptoms or groups of symptoms associated with pelvic floor disorders (Barber, 2007). The PFIQ-7 addresses quality of life in relation to pelvic floor dysfunction (Barber, 2007). All aspects of pelvic floor dysfunction can be assessed by both the PFDI and PFIQ, in short or long forms (Davis 2010a; Barber et al., 2011). There are currently no postpartum specific questionnaires related to pelvic floor dysfunction, but the questionnaires reviewed may be of use to practitioners evaluating symptoms of pelvic floor dysfunction in postpartum women.

**Assessment of the Pelvic Floor.** Assessment of the pelvic floor muscles is an essential piece of diagnosis as physical exam allows the nurse practitioner to determine if postpartum pelvic floor dysfunction is the culprit of symptoms (Dietz, 2009). Exam findings that may indicate pelvic floor dysfunction include a hypo- or hyper- tonic pelvic floor, trigger points, or muscle spasm (Faubion, 2012; Fisher, 2007; Mouritsen, 2009). The results of the physical exam
not only help to establish a correct diagnosis, but can also serve to guide creation of an effective treatment plan and aid the nurse practitioner in determining whether or not that plan should include lifestyle modification, pharmacotherapy, or physical therapy (Davis & Kumar, 2003; Faubion, 2010). The physical assessment relates to the symptom management model in that the exam findings may provide confirmation of pathology that relates to symptoms, as well as help determine who will deliver the symptom management strategies and what strategies will be used.

Pelvic floor status and function can be assessed utilizing visual inspection, vaginal palpation, pressure measurements, electromyography, transabdominal ultrasound, magnetic resonance imaging (MRI), and vaginal blood flow measurements (Ariail, Sears, & Hampton, 2008; Mouritsen 2009). Ultrasound, MRI, and vaginal blood flow measurements are regarded to be second-line testing (Mouritsen, 2009). Inspection and palpation are considered basic tools for primary care, while pressure measurements, electromyography, transabdominal ultrasound, MRI, and vaginal blood flow flow measurements are typically reserved for use by specialists.

Physical assessment should begin with inspection of skin anomalies and skin integrity on the exterior of the vagina, the urethra, and the perineum (Fox 2009, Wieslander, 2009). The areas should be observed for areas of redness, edema, fissure, and atrophy (Rosenbaum & Owens, 2008). Scarring from episiotomy or laceration should be noted (Hull & Corton, 2009). Both Hull and Corton (2009) and Sliker-ten Hove et al. (2009) recommended that the examiner observe for perineal movement while instructing the patient to complete a series of contractions and relaxations of the pelvic floor muscles before moving on to palpation of the pelvic floor. Both authors suggested instructing the patient to contract the pelvic floor muscles, relax the muscles, thenValsalva, and relax again. Observed upward perineal movement indicates a correct pelvic floor contraction (Wieslander, 2009). Sliker-ten Hove et al. also advised instructing the patient to
cough so that the examiner can observe for reflex contraction of the pelvic floor muscles.

Sliker-ten Hove et al. (2009) provided verbal instructions that may used to give the patient guidance about contraction and relaxation of the pelvic floor while the examiner observes for perineal movement and use of accessory muscles. During the voluntary contraction of the pelvic floor, the examiner should instruct the patient to lift and squeeze the pelvic floor as if trying to avoid passing urine or flatus (Sliker-ten Hove et al., 2009). The contraction is followed by the instruction to relax the pelvic floor muscles. When assessing valsalva, the examiner can ask the patient to give a strong push with the muscles of the pelvic floor. Reflex contraction of the pelvic floor muscles can be observed by instructing the patient to cough forcefully. This type of testing may be useful to the clinician as a patient with a hypertonic pelvic floor or pelvic floor spasm may use other muscles when attempting to contract the pelvic floor muscles, may not be able to completely relax the pelvic floor, or may not be able to properly valsalva (Hull & Corton, 2009). After inspection of the perineum and observation of perineal movement during pelvic floor contraction, the examiner should then proceed to vaginal palpation, as it is the preferred method for qualitatively deciding if the patient can contract and relax the pelvic floor muscles correctly (Fisher, 2007; Wieslander, 2009).

**Palpation of the Pelvic Floor.** Vaginal palpation of the pelvic floor muscles can assess ability to contract the pelvic floor muscles, as well as help identify trigger points, muscle spasm, and areas of pain (Fisher, 2007; Fox, 2009). Palpation may also help nurse practitioners assess whether symptoms of postpartum pelvic floor dysfunction are caused by hypertonicity or hypotonicity of the pelvic floor muscles. Hypertonic or "non-relaxing" pelvic floor dysfunction is implicated as a cause of urinary and defecatory symptoms, altered sexual function, and vaginal pain and discomfort, but is not widely recognized by health care professionals (Faubion, Shuster,
Thus, most diagnosis and treatment of pelvic floor dysfunction focuses upon weakened pelvic floor muscles and the need to strengthen them. Practitioners should bear in mind both the hypertonic and hypotonic pelvic floor when conducting vaginal palpation (Itza et al., 2010; Faubion, 2012). Palpation of the pelvic floor muscles also allows resting tone, tenderness, symmetry, endurance, relaxation, and contraction speed to be assessed (Fox, 2009).

The Modified Oxford Scale was adapted from the Oxford Scale by Laycock and can be used by the nurse practitioner to grade pelvic floor muscle strength (Dietz, 2009; Laycock & Jerwood, 2001; Wieslander, 2009). The scale provides a numerical grade that can be used to represent the pelvic floor muscle strength, based upon a description of the movement of the pelvic floor and pressure placed upon the examiner's finger during pelvic floor muscle contraction (Sarton, 2010; Wieslander 2009). The scale's ratings are: 0/5 = no contraction, 1/5 = flicker or pulse; weak contraction, 2/5= weak contraction; increase in muscle tension but no lift of pelvic floor muscles, 3/5= moderate contraction (lift of posterior pelvic floor is felt, as is pressure at the base of the examiner's finger as the perineum is drawn in), 4/5= good contraction (lift of posterior pelvic floor is felt and examiner can apply small resistance without impacting contraction) and 5/5 = strong contraction (lift of posterior pelvic floor is felt and strong resistance can be applied against pelvic floor elevation) (Bo & Sherburn, 2005; Laycock & Jerwood, 2001; Wieslander, 2009). Grading of the pelvic floor muscle strength and contraction can be documented and utilized by clinicians for comparison of strength and contraction after treatment (Laycock & Jerwood, 2001).

The PERFECT scheme can also help nurse practitioners to assess the pelvic floor muscles as the acronym serves as a reminder to assess the varying components of pelvic floor muscle contraction (Laycock & Jerwood, 2001). P represents Power or Pressure, which refers to
the muscle strength and can be assigned a score from the Modified Oxford Scale. E represents Endurance, the length of time that the contraction can be held before the pelvic floor muscles begin to fatigue. Contractions are not expected to last more than ten seconds. R is the number of Repetitions that can be completed before the muscle becomes fatigued. Laycock & Jerwood (2001) recommended a four second rest period between each contraction. F stands for Fast contractions. The patient is instructed to contract and relax the pelvic floor as fast and strong as possible, for up to ten contractions. The examiner should assess for muscle fatigue as the contractions take place. No more than ten contractions are recommended. While repetitions and fast contractions can give nurse practitioners an idea of the overall strength of the pelvic floor, both may be more useful in determining home exercises programs than assessing the status of the pelvic floor muscles. ECT stands for Every Contraction Timed, reminding the nurse practitioner to time and chart each contraction (Laycock & Jerwood, 2001). The PERFECT acronym may be useful in helping to guide practitioners through assessment of the pelvic floor muscles.

This analysis of the literature suggests that researchers have reached a general consensus that palpation of the pelvic floor is the most effective way to qualitatively assess pelvic floor muscle contraction; however, there is no agreement about how best to position the patient, what instructions to give, or whether to use one or two fingers to palpate (Bo & Sherburn, 2005). The patient is most commonly placed in the lithotomy or dorsal recumbent positions, but occasionally may be evaluated while standing (Bo & Sherburn, 2005; Hull & Corton, 2009; Wieslander, 2009). The nurse practitioner should insert one or two gloved fingers into the vagina, as if completing a bimanual exam. Wieslander (2009) recommended that the vaginal wall be palpated at 5 and 7 o'clock, about 2 to 4 centimeters cephalad of the hymen, while assessing the patient’s ability to contract the pelvic floor muscles. The instructions given to patients in the articles
reviewed focus upon directing the patient to complete a valsalva maneuver, to complete a "kegel" or contract the pelvic floor muscles, and to relax the pelvic floor muscles while the examiner palpates the pelvic floor and assesses contractions and relaxation (Faubion et al., 2012; Fitzgerald & Kotarinos, 2003a; Herbruck, 2008a; Rosenbaum & Owens, 2008; Sliker-ten Hove et al., 2009). Sliker-ten Hove et al. (2009) recommended a series of verbal instructions with voluntary contraction, endurance testing, fast contractions, and valsalva including, "Lift and squeeze your pelvic floor muscles as hard as possible," "Make a steady but firm contraction and hold it as long as you can, while repeating 'hold and hold and hold'," "Make fast, short, and strong contractions, while repeating contract, contract, contract'," and, "Give a strong push" (p. 297). Much of the literature recommends simultaneously palpating the pelvic floor muscles and observing the perineum for inward movement, which would indicate a correct pelvic floor muscle contraction (Faubion et al., 2010; Bo & Sherburn, 2005; Wieslander, 2009).

The practitioner should then progress to palpating the pelvic floor while evaluating for tenderness, trigger points, nodules, taut muscle bands, and muscle spasm (Hull & Corton, 2009). Pressure of palpation should be gentle, but firm, and the nurse practitioners should give attention to the patient's experience of pain (FitzGerald & Kotarinos, 2003a; Hull & Corton, 2009). Both Refaat, Fischer-Hammedeh, and Hammadeh (2012) and Sarton (2010) noted that it may be useful for the examiner to mentally divide the pelvic floor into compartments when palpating for trigger points, tenderness, and spasm so that the pelvic floor muscles can be systematically assessed. Hull and Corton (2009) suggested picturing the vagina on the face of a clock and recommends that palpation should begin with insertion of the gloved finger to the first distal knuckle, so that the pubococygeus muscle can be assessed from 7 to 11 o'clock on the left and from 1 to 5 o'clock on the right. As the examining finger is inserted further into the vagina, the
iliococcygeus can be palpated from the 4 to 8 o'clock position. With the examining finger is inserted to the second and third knuckles, the obturator internus muscles can be palpated at the 10 and 2 o'clock positions (Hull & Corton, 2009). Hull and Corton lastly recommended inserting the finger deep into the vagina and palpating the coccygeus muscle at 5 and 7 o'clock. Trigger points may be hyperirritable, immobile, and tender to touch. They can also be associated with edema, tension, and muscle contracture (Itza et al., 2010). If the patient experiences pain during palpation of the pelvic floor muscles, she should be asked if the pain is similar to that which she experiences in daily life (Wieslander, 2009). According to Dietz (2009), even nurse practitioners unfamiliar with palpation of the pelvic floor muscles should be able to assess contraction, evaluate muscle tone of the pelvic floor, and locate trigger points. While more detailed diagnosis of pelvic floor dysfunction using palpation takes time to learn, palpation of the pelvic floor muscles is a skill worth acquiring as it informs decision making regarding both treatment and referral (Dietz, 2009).

Nurse practitioners may consider referral to specialty care after assessment if symptoms or examination findings are complex, if diagnosis is unclear, or if more testing is needed (Faubion, 2012). The majority of the literature reviewed did not address what comprised complex symptoms or examination findings. However, Davis (2010b) advised that symptomatic prolapse visible at or below the vaginal introitus, a palpable bladder upon bimanual exam after the patient has voided, or overt perineal or anal trauma all constitute complex findings. Davis also noted that abnormal bleeding, marked change in bowel or bladder function, and/or unintended weight loss suggest more serious pathology that may require specialty care. Upon referral, additional testing completed by specialty care may include pressure measurements, electromyography, transabdominal ultrasound, MRI, and vaginal blood flow measurements.
as these are typically reserved for use by physical therapists, gynecologists, and other specialists who have access to equipment and familiarity with testing procedures. Davis and Kumar (2003) made the point that management of complex pelvic floor disorders may involve multiple nurse practitioners and aspects of health care, all of which need to be coordinated so that collaboration can occur and outcomes regarding pelvic floor symptoms can be improved.

Treatment Options for Postpartum Pelvic Floor Dysfunction

Once a diagnosis of postpartum pelvic floor dysfunction has been made, treatment consists of lifestyle interventions, medications, pelvic floor muscle training, and/or surgery. A review completed by Davis (2010b) recommended including advice about physical activity in relation to symptoms, modifications to diet and fluid intake, weight loss, and information about bowel and bladder training as lifestyle interventions. Medications used for treatment include pain medications, muscarinic receptor antagonists, SNRIs, and muscle relaxants. Pelvic floor muscle physical therapy, including pelvic floor muscle training, is considered the cornerstone of management of postpartum pelvic floor dysfunction and its symptoms (Cichowski & Rogers, 2011; Davis & Kumar, 2003; Kirby, 2006). Surgical treatment is most commonly used in the case of more advanced or severe disease, including pelvic organ prolapse (Davis, 2010b). Nurse practitioners working in primary care should intervene early, efficiently, and effectively by recognizing the symptoms of postpartum pelvic floor dysfunction, educating patients, performing selective tests when needed to confirm diagnosis, and provide early referral for physical therapy (Faubion et al., 2012). If complex symptoms or examination findings are noted or primary management fails, then referral to a subspecialist is suggested (Faubion et al., 2012; Santiagu, Arianayagam, & Wang, 2008). Subspecialty may include but is not limited to gastroenterology, gynecology, and urology.
**Lifestyle Modifications.** Lifestyle modifications are an important aspect of managing urinary and defecatory symptoms of postpartum pelvic floor dysfunction. Nurse practitioners may confidently recommend diet changes that may include increasing the intake of dietary fiber, altering fluid intake, and reducing caffeine and alcohol intake (Herbruck, 2008a; Wyman, Burgio, & Newman, 2009). Recommendations about lifestyle modifications should also include advising smoking cessation and weight loss, as both are associated with urinary urgency and urinary urge incontinence in women (Herbruck, 2008a; Wyman et al., 2009). The literature provided contradictory findings regarding bladder training as treatment for pelvic floor dysfunction. Wallace, Roe, and Palmer (2009) concluded that there is currently limited evidence available suggesting that bladder training is helpful for management of urinary incontinence; alternately, there is insufficient evidence to determine the effectiveness of bladder training when combined with other therapies. However, in the Shamliyan et al. (2008) systematic review of non-surgical treatments for urinary incontinence in women, bladder training plus pelvic floor muscle training was found to resolve urinary incontinence at higher rates than pelvic floor muscle training alone. Santiagu et al. (2008) contend that bladder training is most effective in women with symptoms of urinary urge incontinence.

Despite the apparently contradictory evidence, bladder training may be an appropriate intervention for patients with urinary urgency and urinary incontinence. Research investigating bladder training has shown rates of resolution of urinary incontinence that range from 12 to 73 percent and rates of improvement that range from 57 to 87% (Wyman et al., 2009). Nurse practitioners who elect to incorporate bladder training strategies into treatment plans developed for women with pelvic floor dysfunction, could follow a recommendation to begin with a one-hour voiding interval (Santiagu et al.) or an alternative treatment approach beginning with voids
no more frequent than every 30-60 minutes (Wyman et al., 2009) Regardless of the initial interval that is recommended, the voiding interval should be increased by 15-30 minutes per week until an ideal voiding interval of two to four hours is reached (Santiagu et al., 2008; Wyman et al., 2009).

**Pharmacologic Treatment.** Pharmacologic therapy aims to treat symptoms of postpartum pelvic floor dysfunction rather than cure the pathology causing symptoms. Pain can be treated with non-opioid analgesics, such as tylenol or non-steroidal anti-inflammatories, and skeletal muscles relaxants such as cyclobenzaprine (Hull & Corton, 2009). Muscarinic receptor antagonists used to treat urinary symptoms include oxybutynin, tolterodine, solifenacin, and darefenacin. Tolterodine, solifenacin, and darefenacin have better side effect profiles as they are uroselective (Santiagu et al., 2008). However, all muscarinic receptor antagonists have a high incidence of medication side effect, which is implicated in poor medication compliance (Cichowski & Rogers, 2011). There is some evidence that Serotonin-norepinephrine Reuptake Inhibitors (SNRIs) such as duloxetine may improve urinary incontinence (Shamliyan et al., 2008). However, the role of pharmacotherapy in stress incontinence, the most common type of incontinence associated with postpartum pelvic floor dysfunction, is limited (Santiagu et al., 2008; Shamliyan et al., 2008).

**Physical Therapy for Pelvic Floor Dysfunction.** Physical therapy is being utilized frequently in the treatment of postpartum pelvic floor dysfunction as physical therapists are able to provide one to one instruction about pelvic floor muscle training, as well as manual therapy and biofeedback. Baracho et al. (2012) found that three out of the four predictors of postpartum stress urinary incontinence revealed in their study were modifiable using physical therapy. Hay-Smith, Herderschee, Dunnoulin, and Herbison (2011) compared different approaches to pelvic
floor muscle training for urinary incontinence, which included different content and varying levels of supervision, and noted that women who received regular or weekly supervision with the person that taught them to do the pelvic floor muscle exercises and monitored their progress were more likely to report improvement after the treatment than those who received little or no supervision. Many women are unable to isolate pelvic floor muscles without supervision and feedback about contraction and relaxation, which may explain the importance of physical therapist supervised pelvic floor muscle training and biofeedback (Caroci et al., 2010). After assessing the pelvic floor muscles, physical therapists will decide which form of therapy will best treat the pelvic floor dysfunction present—biofeedback, manual therapy, or pelvic floor muscle training.

**Biofeedback.** Biofeedback is used in the treatment of postpartum pelvic floor dysfunction as tool for patients to gain awareness of and learn how to control their pelvic floor muscles. However, there is no clear consensus in the literature regarding biofeedback. Norton, Cody, and Hosker (2009), completed a review regarding the use of biofeedback and sphincter exercises for the treatment of fecal incontinence and found that the evidence was uncertain as most of the studies relating to the topic were of small sample size. In the treatment of the hypertonic pelvic floor, Chiarioni, Nardo, Vantini, Romito, and Whitehead (2010) found biofeedback to be superior to electrogalvanic stimulation (EGS), and massage, as 59.6% of biofeedback treated patients reported adequate relief one month after treatment, compared with 32.7% of EGS, and 28.3% of massage treated patients. Transvaginal biofeedback paired with electrical stimulation was found to improve symptoms of urinary urgency and frequency, as well as pelvic floor muscle spasm, for up to six weeks after treatment (Bendana et al., 2009). The results of the study by Rett et al. (2007) revealed that pelvic floor muscle exercises assisted by
surface electromyography biofeedback resulted in decreased frequency of urine loss, decreased incidence of nocturia, and a decrease in the number of pads needed to manage urine loss. The authors also noted an improvement in quality of life, pelvic floor muscle strength, and amplitude of pelvic floor muscle contractions (Rett et al., 2007). While the literature may not have reached consensus about biofeedback in the treatment of pelvic floor dysfunction, it is being utilized by physical therapists in clinical practice.

**Manual Therapy.** Manual therapy includes perineal massage to break down scar tissue, massage of the pelvic floor muscles, and trigger point release (Itza et al., 2010). Manual therapy may also include acupuncture, dry needling, and transcutaneous electrical nerve stimulation (TENS) but this review will focus upon massage and trigger point release as they are the most common type of manual therapy in the literature (Dionisi & Senatori, 2011; Itza et al., 2010). Scar tissues of the perineum can be broken down using massage. FitzGerald and Kotarinos (2003b) advised therapists to roll the scar between the fingers and thumbs to soften and release the scar tissue. This technique is helpful in breaking up scars resulting from perineal laceration or episiotomy. Thiele's massage is used to relieve pain from muscle spasm in the pelvic floor (Hull & Corton, 2009). The massage consists of inserting a gloved finger into the rectum while the patient is in the Sims position. The therapist then palpates the levator ani with firm, steady pressure, while using a sweeping, U-shaped motion (Hull & Corton, 2009). The massage can also be performed using similar motions, but approaching through the vagina with the patient in the lithotomy or dorsal recumbent position. Approaching through the vagina allows access to both the levator ani and the obturator internus muscles. The massage is typically performed 10-15 times per session (Hull & Corton, 2009). Ischemic compression may also be used to treat postpartum pelvic floor dysfunction, but can be slightly to moderately painful for the patient. The
therapist applies constant, deep pressure while palpating the affected muscle until it relaxes, usually 90 second to 2 minutes (Hull & Corton, 2009). If the patient has pelvic floor trigger points, pressure is applied to the trigger point in the pelvic floor muscle until it begins to relax (Itza et al., 2010). This procedure is repeated multiple times to encourage release of the trigger point (Itza et al., 2010). Patients may report a decrease in pain as the muscle or trigger point relaxes during both ischemic compression and trigger point massage (Hull & Corton, 2009; Itza et al., 2010).

**Pelvic Floor Muscle Training.** Pelvic floor muscle training (PFMT) is the most common treatment recommendation for postpartum pelvic floor dysfunction. The literature does provide support for the widespread recommendation for PFMT as a first-line conservative treatment for women with pelvic floor dysfunction (Davis, 2010a; Dumoulin & Hay-Smith, 2010; Wieslander, 2009). Chaliha (2009) noted that pelvic floor muscle exercises have been shown to reduce urinary incontinence, as well as increase pelvic floor strength in the postpartum period. PFMT is considered the best treatment for stress urinary incontinence, a common symptom of postpartum pelvic floor dysfunction in the postpartum, specifically when PFMT is used for three months or more (Dumoulin & Hay-Smith, 2010). A study conducted by Citak et al. (2010) found that pelvic floor muscle training completed by women between the fourth and seventh months postpartum, improved pelvic floor muscle strength and has positive effects upon female sexual function. Benefits of an intensive intervention program utilizing PFMT to treat stress urinary incontinence may still be present up to six months post-treatment (Borello-France, Downey, Zyczynski, & Rause, 2008). A review completed by Hay-Smith et al. (2008) found that PFMT decreases symptoms of both urinary and fecal incontinence among postpartum women. While any PFMT was associated with less symptoms, the review also found that intensive PFMT, defined as
having one-on-one instruction, assessment of correct contraction of pelvic floor muscles, and continued supervision during training, is associated with greater efficacy (Hay-Smith et al., 2008).

Many primary care nurse practitioners will routinely recommend “kegel” exercises or pelvic floor muscle training to patients who are concerned about urinary incontinence, without first assessing the pelvic floor. However, it is important for nurse practitioners to understand that a hypertonic pelvic floor can also contribute to symptoms of pelvic floor dysfunction, including urinary incontinence, and that unsupervised pelvic floor muscle training without exploration of the status of the pelvic floor can worsen the pathology—increasing hypertonicity and exacerbating trigger points (FitzGerald & Kotarinos, 2003b; Rosenbaum & Owens, 2008). Home exercises are commonly recommended when patients are participating in physical therapy treatment of pelvic floor dysfunction and are a valid treatment option once the pelvic floor has been assessed. Kruger, Luz, and Virtuoso (2011) concluded that home pelvic floor muscle exercises helped to maintain continence after completing physical therapy treatment. Best results were achieved when home pelvic floor muscle exercises were performed two or more times per week (Kruger et al., 2011).

Supervised, intensive pelvic floor muscle training is increasingly advised as first-line treatment. Supervised training includes palpation of the pelvic floor muscles, as it is the preferred technique for teaching and offering feedback to patients about pelvic floor muscle contraction (Bo & Sherburn, 2005). This is recommended by much of the literature as verbal instruction alone is less than 50% effective in assisting women to learn to correctly contract the pelvic floor muscles (Ariail et al., 2008). Caroci et al. (2010) found that the majority of postpartum women in their study had difficulty locating the pelvic floor muscles, frequently contracted the abdominal
muscles instead of the pelvic floor muscles, and evidenced lack of practice in exercising the pelvic floor muscles. Kruger et al. (2011) found that when physical therapy was used to treat urinary incontinence, 60% of participants had no urine loss at one year post treatment conclusion, while the remaining participants experienced urine loss only when coughing, sneezing, or both. Cichowski and Rogers (2011) made the point that pelvic floor muscles may require training, strengthening, and rehabilitation after childbirth, similar to the therapy that other muscles in the body require after injury. Physical therapists that specialize in women's health are trained to assess, treat, and supervise home pelvic floor muscle training for women with postpartum pelvic floor dysfunction (Davis, 2010b). Supervised pelvic floor muscle training is an efficacious and low-risk treatment option, which should be considered as first-line conservative treatment (Cichowski & Rogers, 2011).

**Barriers to Treatment**

Barriers to treatment of postpartum pelvic floor dysfunction include delay in seeking treatment, women's beliefs and knowledge about the disease, social stigma, and nurse practitioner beliefs about the disease. Paterson et al. (2009) found that while almost half of study participants reported a resolved or current episode of pelvic pain that was triggered by both sexual and non sexual activities, none of the participants were receiving treatment. When reviewing the literature, Logan (2005) found that many women postpone seeking help with symptoms of postpartum pelvic floor dysfunction and noted that this delay in treatment means that women are not seen at an early stage of the disease when pelvic floor rehabilitation might be more effective. Delay in seeking treatment is likely associated with women's beliefs and social stigma regarding the disease. Many women with postpartum pelvic floor dysfunction believe that their symptoms will spontaneously resolve with time. However, Serati et al. (2008) found that,
with the exception of dyspareunia, postpartum pelvic floor dysfunction rarely resolves spontaneously. There is also a pervasive attitude that urinary incontinence, dyspareunia, and pelvic pain are normal symptoms after giving birth. While this may be true in the short term, persistent symptoms are not considered normal.

Health care provider beliefs and attitudes about risk factors for and contributors to postpartum pelvic floor dysfunction may also act as a barrier to treatment. Davis and Kumar (2003) found that functional pelvic floor problems were perceived to have low priority as compared to other diagnoses. This belief is implicated as a reason for sub-optimal treatment of pelvic floor dysfunction (Davis & Kumar, 2003). Luthander et al. (2011) found that women's experiences with symptoms of pelvic floor dysfunction often did not correlate with perineal injury or tear during childbirth. Thus, it is important for health care providers to take symptoms seriously, even if the childbirth process is not considered to have been exceptionally difficult or traumatic. Luthander et al. also found that symptoms of pelvic floor dysfunction were present at 12 and 18 months postpartum, indicating that primary care providers need to continue to ask about genito-urinary symptoms after the immediate postpartum period. As women with postpartum pelvic floor dysfunction experience embarrassment about their symptoms, barriers to treatment may be broken down when health care providers are proactive, ask about symptoms, and relay information about efficacious treatments (Davis, 2010b).

Discussion

This literature review was undertaken to explore the nurse practitioner’s role in providing appropriate care for women in the delayed postpartum who experience symptoms of pelvic floor dysfunction. This was accomplished by answering the following questions: (a) What are the effects of postpartum pelvic floor dysfunction on quality of life? (b) What assessments (i.e.,
patient history and physical examinations) are useful in assessing for postpartum pelvic floor dysfunction in the primary care setting? (c) What are the treatment options for postpartum pelvic floor dysfunction in the primary care setting? And, (d) What are the barriers to treatment of postpartum pelvic floor dysfunction?

Fifty-nine articles were reviewed to address the purpose of this review, with an additional six articles reviewed to inform the introduction and problem statement, for a total of 65 articles. The articles were organized into four categories, guided by the symptom management model. Three of the categories pertain to the dimensions of the Symptom Management Model: quality of life among women with postpartum pelvic floor dysfunction (4 articles, corresponding to the Outcomes dimension of the model), evaluation of postpartum pelvic floor dysfunction (18 articles, corresponding with the Symptom Experience dimension), and treatment options for postpartum pelvic floor dysfunction (20 articles, corresponding with the Symptom Management Strategies dimension). The fourth category, barriers to treatment, pertains to the domains of nursing science used within the model: person, health/illness, and environment. Five articles were retained to address barriers to treatment. Eleven additional articles were retained that addressed both assessment and treatment, while one article addressed both quality of life and barriers to treatment. Thus, the literature review is organized into four sections.

The Symptom Management Model may be effective in helping nurse practitioners to explore and understand how the symptoms of pelvic floor dysfunction interact and affect women’s health status and quality of life. This analysis of a sub-set of contemporary literature about postpartum pelvic dysfunction suggests that it is important for nurse practitioners and other healthcare providers to attend to women’s experiences with and perceptions of symptoms, as well as the impact that symptoms have upon daily life. The components of symptom management
strategies, including who delivers the strategies, what the strategies should be, and why the strategies should be implemented in regards to their efficacy, were also addressed. However, there were some gaps in the literature pertaining to how specific management strategies should be carried out and the quantity of strategies needed to demonstrate effectiveness, e.g. regarding pelvic floor muscle training. The components of outcomes after initiation of symptom management were well explored in the literature, with the exception of costs. The three domains of nursing science, as they are part of the symptom management model, were accounted for and discussed. The environmental aspect of the model, which includes physical, social, and cultural components, was discussed at length as it has been identified as having great impact upon symptom experience and implementation of management strategies. The literature reveals that if symptoms are normalized by society, and thus perceived as unimportant by the woman experiencing the symptom/s, or if the impacts of social stigma are too great, women will believe that no viable options exist for management or experience feelings of embarrassment, which can lead them to avoid seeking help from health care nurse practitioners.

While the physical problems associated with the postpartum period are often considered to be transient or minor in nature, they may affect women's function, emotional health status, and quality of life, highlighting the importance of carefully assessing the multifactorial health status of women up to one year after childbirth (Webb et al., 2008). There may be benefit to extending postpartum follow up visits beyond 6-8 weeks postpartum in order to provide surveillance for potential pelvic floor dysfunction as women with postpartum pelvic floor dysfunction are at increased risk of experiencing symptoms, often severe, in the long-term (Guise et al., 2007; Herbruck, 2008b; Rosenbaum & Owen, 2010). Women with postpartum pelvic floor dysfunction experience feelings of frustration and embarrassment, which contribute to decreased quality of
Postpartum pelvic floor dysfunction is best evaluated through verbal history-taking and conducting a physical exam of the perineum, vagina, and pelvic floor muscles. Evaluation of pelvic floor dysfunction requires time, advanced interviewing and listening skills, familiarity with the terminology used to describe pelvic floor dysfunction, and the development of advanced physical assessment skills (Davis, 2010a; Haylen et al., 2010). Nurse practitioners should not rely on history of childbirth trauma to diagnose postpartum pelvic floor dysfunction, as most physical symptoms do not correlate with birth trauma (Mouritsen, 2009).

Current treatments for postpartum pelvic floor dysfunction include lifestyle modifications, pharmacologic therapy, biofeedback, manual therapy, and pelvic floor muscle training (Davis, 2010b). Lifestyle modifications include weight loss, fluid intake, diet changes, and bowel and bladder training. Pharmacologic therapy includes analgesics, skeletal muscle relaxants, muscarinic receptor antagonists, and SNRIs (Hull & Corton, 2009; Santiago et al., 2008; Shamliyan et al., 2008). Biofeedback and manual therapy are utilized by physical therapists to treat postpartum pelvic floor dysfunction. Pelvic floor muscle training may be conducted with or without the supervision of a physical therapist, although supervised pelvic floor muscle training is increasingly being recognized as a cornerstone of therapy (Faubion et al., 2012). Barriers to treatment of postpartum pelvic floor dysfunction include social stigma, delay in seeking treatment, and beliefs of both women and health care providers about the disease. Nurse practitioners and women may believe that the symptoms of postpartum pelvic floor dysfunction are a normal part of the postpartum and will resolve without intervention (Serati et al., 2010). Both feelings of embarrassment and the belief that no intervention is needed or available contribute to delay in seeking treatment (Davis, 2010b).
Significance to Nursing

For women experiencing the troublesome symptoms of pelvic floor dysfunction at any age, nurse practitioners working in primary care settings may be the first provider they encounter. Thus, nurse practitioners providing healthcare to women of any age may have the opportunity to identify, assess, and treat postpartum pelvic floor dysfunction, as well as refer women to a specialty care provider as indicated. Nurse practitioners should be educationally prepared to carry out their role in regards to the disease (Davis & Kumar, 2003). Because effective care begins with comprehensive assessment, nurse practitioners working in primary care settings need to be proactive, questioning women who have given birth about symptoms related to pelvic floor dysfunction, including urinary and fecal incontinence, dyspareunia, pelvic pain, and bowel dysfunction in order to increase identification and treatment of the disease (Hermansen et al., 2010).

Conclusion and Recommendations for Future Research

A review of current literature was conducted to answer four research questions about pelvic floor dysfunction in women during the delayed postpartum period (six to 12 months after childbirth). The majority of research pertaining to postpartum pelvic floor dysfunction focused upon postpartum urinary and fecal incontinence, pelvic pain, and sexual function as separate issues. While this research is helpful in understanding specific symptoms and treatments, more literature addressing the phenomena of postpartum pelvic floor dysfunction is needed. A question should be explored further. Are urinary and fecal incontinence, pelvic pain, and sexual function singular symptoms, or do they act synergistically as a cluster of symptoms? In the future, effective research is needed to guide nurse practitioner practice in the areas of patient identification, assessment, and management of the condition. While women may continue to
experience this challenging condition, when nurse practitioners are better prepared to provide their care, suffering may be reduced.
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