Screening, assessment and management of female sexual arousal disorder

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Dedications and Acknowledgements

To Professor Sharon Gentry, PA-C, Major Advisor: Your expertise and guidance on this paper was incredible. This masterpiece would have never come to be if it was not for your leadership and direction. Most importantly, thanks for believing in my idea.

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To Emmanuele A. Jannini, MD and Jules T. Mitchel, MBA, Ph.D. for allowing the attachment of their surveys.
54 y.o. Caucasian woman presents to your practice for her annual physical exam.

Physician Assistant: I know it seems like I ask tons of questions during your physical exam, but I want to make sure we cover everything.

Patient: It’s ok.

Physician Assistant: I think we covered just about everything, just a couple more things. I ask sexual health questions to all my patients. Is that ok with you?

Patient: It’s fine. I’m actually glad you brought it up because there are few things I wanted to ask. It’s just so embarrassing to bring that kind of stuff up.

Physician Assistant: No need to be embarrassed. Your sexual health is a very important part of your overall health. Just as if there was a question or concern in any other part of your health, we want to address it.

Physician Assistant: Are you currently sexually active?

Patient: If you can call it that. My husband doesn’t seem to think I am active enough. It’s not like it was when we were younger, at least not for me. I think he thinks something is wrong with me. I don’t want to disappoint him or make him feel like there is something wrong with him.

Physician Assistant: How long have you been with your partner?

Patient: We are about to celebrate our 30th anniversary. He is a great husband.

Physician Assistant: Do you have any concerns or question about your sexual health or sexual satisfaction?

Patient: Isn’t it normal for women to have less interest or satisfaction with sex as they get older? I mean, isn’t it just part of menopause? My girlfriends seem to think it is normal.

Physician Assistant: It is true your body changes during menopause and so does your sexual responses. Understanding the changes your body is going through is important. Though menopause can change some things, you still can have a rewarding and satisfying sex life. Do you feel that your sexual activity is sexually satisfying?

Patient: Not really.

Physician Assistant: Was your sex life satisfying before menopause? What changed for you?

Patient: Yes it was satisfying. It’s just not the same.

Physician Assistant: Any difficulties achieving orgasm?
Patient: It is just not so easy anymore to get that excited. I always worry that I am taking too long for my husband. He is good about it and says he enjoys helping me to get there, I just start to worry and that doesn’t help the situation.

Physician Assistant: Any issues with lubrication?

Patient: It does seem to be different, drier than when I was younger. I am very sensitive to the lubricating gels that are available, so we don’t use those anymore.

Physician Assistant: Any issues with arousal?

Patient: Yeah, I guess that is what you call it. I just don’t get that excited.

Physician Assistant: Yes, arousal meaning excitement to initiate sex. Has anyone reviewed the sexual cycle with you?

Patient: No, I have never told anyone these things before. Actually, no one has ever asked. I am glad you did. It feels better to share these things I think about with someone.

Physician Assistant: I am glad we had this conversation. Many women share the same common complaints about their sex life. That is why I ask. Do you and your partner talk about your sexual concerns?

Patient: It is a very touchy subject. I think neither one of us wants to rock the boat, so even though it is not all that satisfying, we don’t really talk about it.

This is a common patient. As one can imagine sexual concerns can have a huge impact on a patient’s health and well being. As providers, are we asking these questions? And if we are, do we have answers to these concerns?

Sexual health and satisfaction are intricate parts of general health. When a patient is experiencing sexual difficulties or dysfunction, it can have a negative impact on their overall health status. Clinicians are obligated to pursue current knowledge for sexual dysfunction and create a comfortable atmosphere for their patients discuss their concerns.

Historically, studying female sexuality has fallen short (Kingsberg & Janata, 2007). Alfred Kinsey’s research made strides to revealed women have sexual desire and needs, but it
has taken time for the general population to accept this notion (Kingsberg & Janata). Sheryl Kingsburg concisely stated, “The struggle for sexual equality continues today, made evident by the fact that female sexuality research lags behind research on male sexuality and the difficulty our culture has in accepting the female sexual problems are as disruptive to a women’s quality of life as male sexual problems are to men (Kingsberg & Janata, p. 497).” It seems as if we are bombarded with medications, commercials, and advertisements about male erectile dysfunction and impotence, but where are we medically in the world of female sexual dysfunction?

The prevalence of female sexual dysfunction (FSD) is uncertain (Basson R., 2005). It can be challenging to identify dysfunction due to the variation of a woman’s sexual response depending on her culture, environment, current sexual partner, and life cycle (Basson, 2008). In communities where women are free to acknowledge their sexuality, self-reported sexual difficulties appear high (Basson R.). It is important to call attention to the issue between terminology used in screening and how it could potentially skew prevalence. How each woman defines sexual desire or sexual health terminology can greatly vary (Basson R.). Hayes points out one of the main difficulties with getting an exact prevalence is there is so much variance in publication and assessment tools (Hayes, Dennerstein, Bennett, & Fairley, 2008). His original research took four different sexual function instruments and compared how different the reported prevalence was for each type of sexual dysfunction (Hayes, Dennerstein, et al.). Though his research did not include each type of female sexual dysfunction, it concluded many important concepts in relation to discovering the true prevalence of female sexual dysfunction in the future. Many sexual function instruments used in the literature do not account for distress, which is currently essential for diagnosis (Hayes, Dennerstein, et al.). Time frames of dysfunction also skewed the prevalence (Hayes, Dennerstein, et al.). There would be an obvious difference in
prevalence if the screening tool asked about dysfunction of one month versus dysfunction of six
months. It is recommended to use a multi item tool which has consistent time ranges and
includes a sexual distress component (Hayes, Bennett, Fairley, & Dennerstein, 2006). Hayes
indicates the prevalence estimates can vary due to difference in time frames used and whether
distress of sexual dysfunction was an element of evaluation. Due to these reasons, exact
prevalence cannot be determined (Hayes, et al.).

Female sexual dysfunction is broken down by the area of the sexual response experience
which is affected. The main categories of dysfunction include desire, arousal, orgasm, or
dyspareunia. There are both psychological and biological factors that increase a woman’s risk of
sexual dysfunction (Basson, 2008). Psychological risk factors that can increase the prevalence of
sexual dysfunction may include poor mental health and depression caused by comorbidities
(Basson). Though Basson concluded psychological issues may account for the greater part of the
risk, biological factors can intensify risk factors (Basson). Biological factors can include, but are
not limited to, hormone deficiencies or change in hormone activity (Basson).

Desire dysfunction is characterized by reduced or absent interest in engaging in sexual
activity or erotic thoughts and fantasies. Desire is the estimated to be the most common sexual
dysfunction in women with a reported prevalence ranging from 7% to 60% (Hayes, Bennett,
Dennerstein, Taffe, & Fairley, 2008; Hayes, et al., 2006).

Dysfunction with orgasm is associated with the reduced, delayed, or absent orgasm. Orgasm
difficulty is the estimated second most common sexual dysfunction in women with a
report prevalence ranging from 4% to 46% (Hayes, Bennett, et al., 2008; Hayes, et al., 2006).
Information provided later will detail the female sexual response, but it should be noted orgasm
is not necessary for sexual satisfaction (Basson, 2008). Noted therapies for orgasmic disorders
include masturbation, anxiety reduction and cognitive behavioral therapy (Basson, Wierman, van Lankveld, & Brotto, 2010).

Dyspareunia or sexual pain disorder is pain or discomfort associated with intercourse or sexual activity. Pain can happen before, during, or after a sexual activity (Kingsberg & Janata, 2007). Sexual pain disorders are estimated to be the least common among female sexual dysfunctions (Hayes, et al., 2006). The estimate range of prevalence is quite large, .4% to 60% (Hayes, Bennett, et al., 2008). Though all investigations of sexual dysfunction require a thorough sexual history, it is important in sexual pain disorders to examine potential causes that fuel the pain cycle (Kingsberg & Janata).

There have only been few recommendations of revisions in the DSM-V in the literature for these categories (Basson, et al., 2010). From a definitional standpoint, arousal dysfunction has had a lot of suggested revision. DSM-IV defines female sexual arousal disorder (FSAD) as “Persistent or recurrent inability to attain, or to maintain until completion of the sexual activity, an adequate lubrication-swelling response of sexual excitement (American Psychiatric Association, 2000).” It has been recommended to divide arousal disorder into subcategories. Arousal is not only defined by just genital vasocongestion occur, but also has key components of pleasure and excitement that are not included in the present definition (Basson R., 2005). Research has shown there is a great deal of variance between genital vasocongestion and sexual arousal and the connection they have with each other (Basson R.) Women with sexual arousal disorder classically report a normal genital response (Basson, et al.).

Taking this information into account, the current definition does not include all the possible areas of arousal difficulties women are experiencing. Categories suggested include subjective arousal disorder, genital sexual arousal disorder, combined genital and subjective
arousal disorder, and persistent genital arousal disorder (Basson, et al.). Persistent genital arousal disorder will not be addressed in this paper. Subjective arousal disorder is defined as an “absence of or markedly diminished feeling of sexual arousal (sexual excitement and sexual pleasure) from any type of sexual stimulation. Vaginal lubrication or other signs of physical response still occur (Basson, et al., p. 315).” Genital sexual arousal disorder is defined as “complaints of impaired genital sexual arousal. Self reported symptoms may include minimal vulvar swelling or vaginal lubrication from any type of sexual stimulation and reduced sexual sensation from caressing genitalia. Subjective sexual excitement still occurs from non-genital sexual stimuli (Basson, et al., p. 315).” Combined genital and subjective arousal disorder is defined as an “absence of or markedly diminished feelings of sexual arousal (sexual excitement and sexual pleasure), from any type of sexual stimulation as well as complaints of absent or impaired genital sexual arousal (vulval swelling, lubrication) (Basson, et al., p. 315).”

In the midst of these proposed categorical divisions, focusing on arousal disorders is important. Reports state arousal difficulties are the third most frequent occurring sexual difficulty (Hayes, et al., 2006). As stated above, prevalence is hard to distinguish. Research reported prevalence estimates of arousal difficulties range from 3% to 43% (Hayes, Bennett, et al., 2008). As categories divide, it calls for new protocols for screening, assessment, management, and treatment for patients. Patients are rely on the clinician to understand the components of their dysfunction and have the knowledge to help guide them to recovery.

METHODS

Databases used were PubMed, CINAHL, PsycINFO, Cochrane Library, MD Consult, Ovid Medline. Inclusion criteria for the article reviewed were female participants, >18 years old,
and printed before 1999. Preferred research designs included randomized control trial, cohort studies, and literature reviews.

Literature was collected by reviewing current articles discussing sexual arousal disorder. Articles were focused on current screening tools and elements of the assessment of a patient experiencing sexual arousal disorder. Current recommended treatment plans were also addressed. Search terms included female sexual dysfunction, sexual arousal disorder, female arousal, female lubrication, intimacy, FSAD (female sexual arousal disorder), subjective sexual arousal disorder, genital arousal disorder, female sexual response cycle, female genitalia, physiology of female genitalia, sexual dysfunction treatment, psychological contributions to sexual response, physical contributions to sexual response, screening tools for sexual dysfunction, physical examination in female sexual dysfunction, patient communication and sexual health.

**ANATOMY OF THE FEMALE**

The female genitalia is complex with intricate parts located both internally and externally in the body. The external genitalia are divided into separate areas. The pudenda encompasses the area from the pubic symphysis to the perineum. The perineum is the section below the vaginal opening. The vulva, containing a majority of the external structures, is the area covered by the labial folds. Structures included in the vulva are the mons pubis, labia majora, labia minora, clitoris, urethral opening, and vestibule (Edge & Miller, 1994).

The mons pubis is the fatty cushion like structure inferior to the umbilicus and overlying the pubic bone. It is composed of adipose tissue, connective tissue, and sebaceous glands. There is hair growth on the mons pubis at the onset of puberty. The mons pubis serves a protective mechanism, providing a cushion over the pubic symphysis during intercourse (Edge & Miller, 1994; Seeley, Stephens, & Tate, 2006)
The labia majora are two folds that surround the vestibule on both sides. The folds meet at the pubic symphysis and extend to the perineum. They are thick and composed of adipose and connective tissue. The skin covering the labial majora is darker than surrounding skin and is very sensitive. Many nerve and vascular networks are embedded in the skin of the labia majora. There is sparse hair distribution over both folds. They also serve as a protective mechanism to the labia minora, urethral opening, and the vaginal opening (Edge & Miller, 1994; Seeley, et al., 2006).

The labia minora are located on the inner portion of the labia majora. The labia minora are hairless and composed of connective tissue. The folds meet anteriorly to form the clitoral prepuce. These folds are highly innervated and very sensitive. They contain many sebaceous glands that provide lubrication and bactericidal secretions (Edge & Miller, 1994; Seeley, et al., 2006).

The clitoris is made up of erectile tissue. Typically, the clitoris is less than two cm in length. It has a shaft and distal glands. Within the clitoris is two erectile structures called the corpus cavernosa. These are very similar to the corpus cavernosa within the male penis. When sexually aroused, the cavernosa become engorged. The clitoris is cover by the prepuce which is formed by the labia minora (Edge & Miller, 1994; Seeley, et al., 2006).

The internal reproductive organs are equally as complex as the external. The internal structures are located within the pelvic cavity between the urinary bladder and rectum. The pelvis serves a protective function to the internal organs (Edge & Miller, 1994; Seeley, et al., 2006).

The vagina is a tubular structure connecting external and internal genitalia. It is about 10 to 15 cm long. The vaginal opening is within the vestibule and extends to the cervix. The canal forms fornices, deepest points in the vagina, around the cervix. The canal is lined with
longitudinal folds and transverse rugae. The folds and rugae give the vagina flexibility. The vagina is a self-cleaning organ. The continual secretions help promote cleaning. It serves many functions including the female organ of copulation, an exit for menses, and a birth canal. The vagina is composed of multiple layers; the outer layer is a muscular layer and the inner layer is composed of mucosal tissue. The outer layer contains smooth muscle. The smooth muscle allows for adjustment in sizes. It accommodates the penis during intercourse and childbirth. The inner layer is composed mainly of stratified squamous epithelium. This mucosal layer provides secretion to lubricate the vagina during intercourse and provides a protective surface layer (Edge & Miller, 1994; Seeley, et al., 2006).

The cervix connects the vaginal canal to the uterus. It is the narrow neck of the uterus. The cervix protrudes into the vaginal canal and is attached at the fornices of the vagina. The external os of the cervix opens to the vagina. The internal os of the cervix opens to the uterus. The cervix has a small amount of innervation. The composition of the cervix is mainly fibrous connective tissue and elastic smooth muscle. During childbirth, the external os of cervix can dilate 10 cm. (Edge & Miller, 1994; Seeley, et al., 2006).

The uterus serves many roles in reproductive health. It is the protective housing for the developing fetus. It filters waste products while also providing adequate nutritional supplementation for the fetus develop (Martini & Ober, 2001). The powerful contractions of the uterus at the time of labor permits the fetus to descend into the pelvis and thru the vaginal canal (Martini & Ober). Location of the uterus is anterior to the rectum and posterior to the pubis symphysis (Edge & Miller, 1994). Typical size for a non-pregnant uterus is 7.5 cm in length and 5 cm in diameter (Martini & Ober). The uterus is divided into sections. The fundus is the uppermost portion of the uterus containing the cornua, the area that the fallopian tubes enter
(Martini & Ober). The largest portion of the uterus is called the body, or corpus (Martini & Ober). As stated above, the cervix is the lower segment of the uterus.

Oviducts, also called fallopian tubes or uterine tubes, are hollow tubes that provide transportation of fertilized embryo and unfertilized eggs to the uterus. The fallopian tubes average 13 cm in length. These tubes are also divided into segments. The infundibulum is the area closest to the ovary and contains fimbriae that help direct the egg or eggs into tube. The ampulla is the middle portion of the tube. The isthmus is the final portion of the tube, connecting to the uterus (Martini & Ober, 2001).

The ovary is the key component to female reproduction. These small almond shaped organs are complex. They can range in size but typically average 5 cm x 2.5 cm. Ovaries serve as hormone producer and oocytes storage place (Martini & Ober, 2001).

The blood supply to the female reproductive system is vast. The internal iliac artery, which evolves from the common iliac artery, is one of the main contributors to many of the arteries that supply the female reproductive area. The uterine artery branches off the internal iliac and divides into two branches, ascending and descending. After passing through the broad ligament, the ascending uterine artery supplies both the anterior and posterior portions of the uterus. The descending branch provides the internal layers of the uterus with blood supply. The vaginal artery also branches off the internal iliac artery. The vaginal and descending uterine artery merge together and supply the vagina with ample blood supply. Additional branches off the internal iliac artery supply the rest of the vagina and the external genitalia. These arteries include the internal pudendal artery, artery of the clitoris, and the perineal artery.

In addition to the internal iliac artery contribution, the external iliac artery provides branches of rich blood supply. The external iliac artery gives rise to the femoral artery. Branches
of the femoral artery supply the labia with blood flow. The ovarian artery originates from the aorta. It passes through the broad ligament and furnishes the ovary with blood supply. After giving off multiple branches to supply the ovary, the ovarian artery joins the uterine artery. This provides double circulation sources to the uterus. The uterovaginal plexus provides venous return. The pudendal and vaginal veins drain to the uterine veins. The uterine veins follow the same path as uterine arteries do. The right and left uterine veins have different draining sites. The right uterine vein empties to the inferior vena cava. The left uterine vein empties into the left renal vein (Edge & Miller, 1994).

The innervation for the female reproductive system is supplied by two different nerve plexuses, the lumbosacral plexus (L1-L4) and sacral plexus (L4,5-S1,2,3). The ilioinguinal and genital femoral branches arise from the lumbosacral branch. These branches are responsible for innervating a majority of the external genitalia. The pudendal branch, which arises from the sacral plexus, provides innervation to several portions of the female reproductive system. The pudendal nerve innervates the reproductive organs and some external genitalia. Specifically, the pudendal nerve branches to form the interior hemorrhoidal branch and dorsal nerve of the clitoris. The labia majora is mainly innervated by the interior hemorrhoidal branch. The dorsal nerve of the clitoris innervates the clitoris and other external genitalia (Edge & Miller, 1994).

Autonomic nervous system fibers are directed to the female reproductive system with both efferent and afferent pathways. The pathway’s main plexuses include the aortic, hypogastric and uterovaginal. Uterine smooth muscle is innervated. The aortic-ovarian plexus carries autonomic innervation to the ovary. Though not densely supplied, the vagina receives innervation from the pudendal plexus (Edge & Miller, 1994).
There are multiple lymphatic systems that drain the female reproductive system. The lymphatic setup mirrors the arterial system. The body uterus and ovary have multiple lymphatic networks that eventually connect and empty to the internal iliac, external iliac, and superficial inguinal nodes. The lower portion of the uterus drains to the obturator and iliac lymph nodes. The lumbar lymph nodes play a role in draining the fundus, fallopian tubes, and ovaries. The superficial inguinal nodes also serve as a drainage point to the external genitalia (Edge & Miller, 1994).

**SEXUAL RESPONSE CYCLE**

The traditional model of human sexual response is a stepwise progression of excitement, plateau, orgasm, and resolution. It has been used since the 1960’s and was thought to apply to both genders. The excitement phase is a made up of desire and arousal. The sequence of female arousal is displayed with vaginal lubrication, clitoral engorgement, and breast changes. Males experience penile engorgement and erection (Haessler & Rosenthal, 2007). The plateau phase occurs while there are increased bodily changes preparing for orgasm. Both men and women experience increased engorgement during this phase. Men experience testicular enlargement. Further engorgement in women produces a tighter grip around the penis (Haessler & Rosenthal). The peak of the cycle, orgasm, is marked with rhythmic contraction, increased muscle tension, and pleasurable sensations. The rhythmic contractions cause the expulsion of the ejaculation of semen in the male. Resolution allows for the return of normal muscle tension, reduction of engorgement and clitoral size (Haessler & Rosenthal). As stated, the traditional model solely focuses on the physical response and is very linear in nature (Basson R., 2005). Desire is said to be spontaneous and the cycle proceeds in order without variation (Basson, 2001). It does not take into account psychosocial aspects.
As research progressed, it appeared that the sexual response cycle may vary slightly from male to female. Rosemary Basson expanded the traditional cycle to more appropriately adapt to the female patient (Basson, 2001). Female sexual response cycle is individualized (Basson, 2008). Rather than having four set phases that are progressed through, the female sexual cycle tends to overlap and blend traditional phases together (Basson, 2008).

Research results have consistently reported women have a variety of reasons and ambitions for taking part in sexual activity (Basson, et al., 2010). Frequently, women engage in sexual activity for reasons beyond basic physical desire (Basson R., 2005). Women often approach a sexual encounter from a point of sexual neutrality versus spontaneous sexual drive seen more often in men (Kingsberg & Janata, 2007). New elements included in the cycle were intimacy and stimuli that both enhance and strengthen the female sexual cycle (Basson, 2001). Subject arousal results from appropriate sexual stimulation and willingness to be receptive. If the mental and physical excitements of arousal are associated with positive emotions, it can result in desire and advanced arousal (Basson, 2008). Positive sexual encounters promote future sexual encounters. Once a positive interaction with a certain stimuli occurs, it can expand her reasons to engage in the activity again (Basson, 2008). This reinforces the idea of a cyclic response for women. Each step can be overlapped, repeated, and vary in order. Each needs a positive response to continue with the cycle and achieve sexual satisfaction.

As much as positive interactions fuel the cycle, negative cognitive patterns can hinder sexual satisfaction and pleasure. Nobre wanted to expand the research on emotions during sexual activity and how they correlated with sexual function or dysfunction (Nobre & Pinto-Gouveia, 2006). As he noted, research has shown there is most certainly a connection between the physiological response and specific emotions. Nobre studied the automatic thoughts that
occurred during sexual activity and the emotions that correlated with those thoughts for participants. He used the Sexual Modes Questionnaire. He assessed both males and females (Nobre & Pinto-Gouveia).

A control group, consisting of sexually functional men and women, and a clinical group, women and men diagnosed with sexual dysfunction, were used. The International Index of Erectile Function (ILEF) and Female Sexual Function Index (FSFI) were used to exclude members of the control group that may have undiagnosed sexual dysfunction. The Sexual Modes Questionnaire had 3 sections including automatic thought subscale, emotional response subscale, and sexual response subscale. The automatic thought subscale contain multiple factors including but not limited to partner’s lack of affection, failure and disengagement thoughts, and low self-body image. Emotions included in the emotional response subscale were worry, sadness, disillusion, fear, guilt, shame, anger, hurt, pleasure, and satisfaction. Sexual response subscale was used to rate arousal during each automatic thought presented (Nobre & Pinto-Gouveia, 2006).

In sexually dysfunctional women specifically, there were a higher amount of responses of sadness, disillusion, and anger. On the opposite spectrum, positive emotions of satisfaction and pleasure were reported in higher numbers in women who were not diagnosed with sexual dysfunction. Overall Nobre stated, “Data supported the important role played by emotional response on sexual dysfunctional processes. The results showed both men and women with sexual dysfunction endorsed significantly more negative emotions and less positive emotions to a list of automatic thoughts during sexual activity (Nobre & Pinto-Gouveia, 2006, pp. 496-497).

Menopause has a historical role associated with sexual dysfunction. Naturally menopausal women are frequently assessed in sexual dysfunction studies, but surgically
menopausal women are not largely identified. In Kuppermann’s 2010 study, hysterectomy use and satisfaction was addressed. Study of Pelvic Problems, Hysterectomy, and Intervention Alternatives (SOHPIA) set out to investigate the reasoning behind choosing hysterectomy and the successfulness of the procedure (Kuppermann et al., 2010). It was interesting to note one of the end points in the study showed the more negative influence the participant’s pelvic problem had on her sexuality, the more likely she would be to undergo a hysterectomy. What are the sexual repercussions of surgical hysterectomy for patients? Are there other options?

Celik’s 2008 study set out to find the repercussions on sexual functioning in post-menopausal women who underwent a hysterectomy. One hundred four post-menopausal women, either receiving an abdominal hysterectomy (AH) or vaginal hysterectomy (VH) with bilateral salpingo-oophorectomy (BSO), participated. Some participants had estrogen replacement therapy before and after surgery. There were four groups in the study. Groups included AH/BSO/ERT(+), AH/BSO/ERT(-), VH/BSO/ERT(+), and VH/BSO/ERT(-). Participants were evaluated with Female Sexual Function Index (FSFI) before surgery and 6 months postoperative (Celik et al., 2008).

VH BSO FSFI scored decreased in the orgasm domain and total overall score, where as the AH BSO FSFI declined in almost all component of the FSFI and total overall score. ERT subgroups showed some areas of difference including higher lubrication score preoperatively in the AH BSO ERT (+) group and larger decrease from preoperative score in VH BSO ERT(-). AH BSO ERT (+) had a significant drop in lubrication and sexual success and significant decline in total score. AH BSO ERT (-) declined in all components including total score, except for pain and orgasm(Celik, et al., 2008).
Beyond the data present in Celik’s study, there are key concepts and hypotheses addressed. When research shows a decrease in function, one must consider the cause. One of the contributions noted in a decrease of sexual dysfunction after a hysterectomy is the procedure itself (Celik, et al., 2008). The arterial supply to the vagina, a key component of lubrication and engorgement, is disrupted. Another element to address is the role of the BSO and the hormonal affect of sexual dysfunction. Celik discussed the impact on decreased testosterone available to the post-menopausal woman when the ovaries are removed (Celik, et al., 2008).

**SCREENING TOOLS**

A majority of the screening and diagnostic tools within the field of FSAD are subjective. Patients can rate their own difficulties and self report sexual dysfunction. As in any evaluation of a medical disorder, it is helpful to have both subjective and objectives measures and FSAD should not be any different (Helpman, Greenstein, Hartoov, & Abramov, 2009). What are the objective tools available in the area of female sexual dysfunction? And if available, what will be the usefulness of these devices?

As discussed previously, sexual arousal has both physiological and psychological elements. Not surprisingly each sexual dysfunction can have intertwined psychological and physiological etiologies (Helpman, et al., 2009). Having tools to access both aspects could be very beneficial in diagnosing and treating FSAD. The study conducted by Helpman, Greenstein, Hartoov, and Abramov, explored the options of using an objective tool to access both sexual arousal and orgasmic disorders. The study used a GenitoSensory Analyzer (GSA) to compare the set normative values of vibratory and thermal sensation against those with self reported sexual dysfunction (Helpman, et al.). The participants were given FSFI and those who scored low in the questions addressing arousal and orgasm were included in the study. The participants were
required to have sexual dysfunction for greater than six months and any participant with dyspareunia or desire disorder were excluded (Helpman, et al.).

The GSA normative values were derived from a previous study that tested and validated the instrument with a control population of sexually healthy women (Helpman, et al., 2009). The GSA device assessed the thermal and vibratory sensation of the anterior and posterior vaginal walls and clitoris. In total, eight different parameters or areas were measured. The stimulus threshold was recorded when the participant reported first sensation. Sensation was reported by participant from initial perception of sensation to there was no sensation felt anymore. The device comfort was comminuted by verbal feedback of participants (Helpman, et al.).

The results of this small study of 28 subjects revealed the values reported by the GSA of women reporting orgasmic and/or arousal difficulties were statistically different than the normative values set by sexually healthy women (Helpman, et al., 2009). The participants’ average age was 40.4 +/- 13 years. All participants had low scoring or subnormal score of the arousal and orgasm sections of the FSFI. The thresholds measured were warm, cold, and vibratory. All were shown to be positively and significantly correlated. Eighty nine percent of the participant had at least one abnormal genitor-sensory threshold. Sixty eight percent had greater than three abnormal thresholds. Menopausal status was the only other variable had a correlation with sexual dysfunction. Women with greater than four abnormal thresholds were older (Helpman, et al.).

The GSA has been studied previously and all reported studies have had similar results as the study stated above (Helpman, et al., 2009). Studies have repeatedly shown an association between abnormal GSA thresholds and arousal and/or orgasmic dysfunction and menopause. The use of this instrument could serve as an assessment for the physiological aspect of sexual
dysfunction. The utilization of this instrument can evaluate possible neurological or vascular issues related to sexual dysfunction (Helpman, et al., 2009).

Sexual questionnaires serve an important function in diagnosing women with sexual dysfunction. As stated previously, many women are not revealing sexual issues with their primary provider. Having tools in place will help bridge the gap between patient and provider. Screening questionnaires can serve as the gateway to communication to talking about sexual dysfunction.

The Female Sexual Function Index (FSFI) is a heavily utilized item in the field of sexual dysfunction. In 2000, Rosen’s et al. noted the lack of acceptable instruments to assess dysfunction in each domain (Rosen et al., 2000). Research and questionnaire formulation began with a collaboration questions prepared by an expert panel. The second phase of the trial, 29 questions were given to a large sample consisting of 259 volunteers. Volunteer were divided into 2 samples, a clinical sample contained 128 patients that met the criteria for FSAD and a control sample containing 131 participants without sexual dysfunction (Rosen, et al.).

After factor analysis of each question, a 19 item questionnaire was produced with questions addressing desire, arousal, lubrication, orgasm, satisfaction, and pain. Discriminant validity was achieved by showing a distinct difference between differentiating FSAD participants from the control participants (Rosen, et al., 2000). Participant scores from visit one were compared to visit two score to ensure test reliability.

Though the FSFI is a highly reliable tool for FSD screening and diagnosing, a shorter version has been addressed. In Isidori proposed the use of a condensed version of the highly popular tool. As stated above, the FSFI addresses six domains including desire, arousal, lubrication, orgasm, satisfaction, and pain. Isidori’s version addresses each domain with one
question. There were 160 participants in the study. Participants were asked to complete the original FSFI and medical assessment. Of the 160 participants, 105 were diagnosed with some form of sexual dysfunction (Isidori et al., 2010).

The shortened 6-item version was then used to evaluate participants at their second visit. A score of less than 19 reflected a diagnosis of sexual dysfunction. The sensitivity was 96.1% and the specificity was 90.9% in diagnosing sexual dysfunction. Isidori stated, “The internal consistency of the scale for the test group proved to be good. The responses for the first five items, as expected, showed a strong correlation. A weak indirect correlation was found only for the sixth question (Isidori, et al., 2010, p. 1143).”

There are many positives to the shortened version. When comparing amount of time to complete each assessment, there is a large discrepancy. The full version of the FSFI took an average of 13 minutes. The shortened FSFI-6 only took an average of 1.5 minutes to complete. The quick time for completion allow ease of application in a clinic setting more likely.

There are unfavorable aspects to the shortened version. It provides a more general diagnosis of dysfunction. Each domain is not addressed in detail. The shortened version may indicate sexual dysfunction is present, but details about which dysfunction is lacking. Though the initial survey is shorter in time, if dysfunction is revealed more time will be needed for further investigation of dysfunction (Isidori, et al., 2010)

Another validated resource is the Brief Index of Sexual Functioning for Women (BISF-W). This 20 minute assessment calculates levels of female sexual functioning and satisfaction. It was validated using a wide age range of females from 20-73 years old. Areas assessed are thoughts/desires, arousal, frequency of sexual activity, receptive/initiation, pleasure/orgasm, relationship satisfaction, and problems affecting sexual function (Meston & Derogatis, 2002).
The Changes in Sexual Functioning Questionnaire (CSFQ) was developed for a subcategory of sexual function assessment. CSFQ consists of 35 questions assessing medication and illness effects on sexual function. There are different forms for men and women. Standard domains are addressed including frequency, desire, pleasure, arousal, and orgasm. Other areas addressed include how much illness and medication has affected sexual function, comparison to previous sexual functioning, and what the participant felt was the causative factor of change (Meston & Derogatis, 2002).

The Golomnok-Rust Inventory of Sexual Satisfaction (GRISS) is a self report assessment completed by each partner. Questions gather information about both female and male domains and a combination of both. Some of the areas assessed include anorgasmia, vaginismus, avoidance, nonsensuality, dissatisfaction, sexual contact, and noncommunication (Meston & Derogatis, 2002). Though this inventory may be useful in heterosexual relationship, female sexual dysfunction is not limited to heterosexual women. It is not validated to assess homosexual and bi-sexual relationships.

**TREATMENTS**

The medical field has struggled with finding adequate treatment for either type of sexual arousal dysfunction. In concurrence with the main principles of sexual medicine, the field must form a standard management for treating sexual problems (Hatzichristou et al., 2010). How is the field going to set a standard treatment when female sexual response is immensely individualized? Are there treatments available that can be utilized for certain subsets of arousal disorder? Lastly, should a treatment become a standard even though it only restores the sexual health of certain patients? There are no US FDA approved drugs for FSAD. Many
pharmacological treatments have been studied and none have successfully passed approval (Schoen & Bachmann, 2009).

Sildenafil citrate, a phosphodiesterase type 5 (PDE5) inhibitor, has been researched as a possible treatment of FSAD (Schoen & Bachmann, 2009). PDE5 inhibitors effectively allows the relaxation of smooth muscle by stopping the degradation of cyclic GMP, an activated product of nitric oxide, by PDE5. PDE5 has been found in vaginal, clitoral, and labial smooth muscle therefore using PDE5 inhibitors could aid in increased blood flood and engorgement. PDE5 inhibitors are actively used in the treatment of erectile dysfunction in men. Schoen’s review stated that the overall clinical trials results that have addressed the treatment of FSAD with Sildenafil vary (Schoen & Bachmann, 2009). Since the genital sexual arousal disorder specifically has problems with lubrication and engorgement, Sildenafil may have positive outcomes. With the immensely individualized sexual response, only a subgroup of genital sexual arousal disorder patient may benefit. Further investigation, looking at the vaginal pulse amplitude (VPA) response, may depict the women who may benefit from Sildenafil. A specific subset of women with FSAD and co-morbidities also may benefit. Schoen expressed that subgroups may benefit from Sildenafil use. Subgroups include multiple sclerosis, diabetes, and antidepressant users. Schoen articulated more research is needed to conclude these findings (Schoen & Bachmann, 2009).

Chivers and Rosen wanted to investigate many of the discrepancies stated above in regards to Sildenafil research and use in females. Why is Sildenafil so successful in men and results vary in women? What did the research really show? Why was the research so different? They compiled research from 16 different clinical trials on sexual function and Sildenafil (Chivers & Rosen, 2010). Chivers and Rosen challenge that the difference in efficacy between
genders can be attributed to the lack of automatic connection between genital vasocongestion and subjective arousal in women, making PDE5 inhibitors less effective (Chivers & Rosen, 2010).

All published studies related to female use of PDE5 were used, regardless of methodology. Studies were then separated into categories: small clinical trials, large clinical trials, and sexual psychophysiological trials (Chivers & Rosen, 2010). In reviewing each small clinical trial, there was no consistent method of subjective evaluation measure, design, or characteristic of subjects. Some small clinical trials used premenopausal or postmenopausal women. Others included women with no reported problems with sexual functioning. As would be expected with the array of trial variables, results varied (Chivers & Rosen).

Caruso’s 2001 study was one with the most positive results published for Sildenafil use in women with FSAD. The study showed significant improvement in arousal, orgasm, and frequency of sexual intercourse with the use of Sildenafil (Chivers & Rosen, 2010). The study used 25 mg and 50 mg dosing. Both were shown to have significant improvement on areas stated prior when compared to placebo. Though this study was a pioneer for use of Sildenafil in women with FSAD, the study had many reported flaws in Chivers and Rosen opinion (Chivers & Rosen). Objective assessment of sexual functioning was not addressed nor was a full evaluation of the subjective assessment. The subjective tool used was Personal Experiences Questionnaire (Chivers & Rosen). The authors did not use the whole questionnaire and did not reveal what questions were used. There were also questions in regards to data collection, appropriate use, and analysis (Chivers & Rosen).

Berman’s 2003 clinical trial, including 180 participants, revealed modest positive results of Sildenafil use. The demographics included premenopausal women, surgically, and naturally
menopausal women. It was a double-blind, placebo controlled trial without crossover. Dosage for Sildenafil ranged from 25 mg- 100 mg. Improved genital sensation was reported in 69% of Sildenafil participants vs. 41% for placebo (Chivers & Rosen, 2010). Quality of sexual activity was shown to increase with use of Sildenafil vs. placebo, 42% vs. 20% respectively. Assessment tools used were Female Intervention Efficacy Index (FIEI), Sexual Function Questionnaire (SFQ) and a sexual activity log. Other areas that showed significant improved were self-reported sexual arousal and lubrication, sexual arousal and sensation, and orgasm. It is important to note these improvements were only significant in women who did not have a secondary diagnosis of HSDD (Chivers & Rosen).

Basson and Brotto’s 2003 small clinical trial used classification of physical findings to assess effectiveness of Sildenafil. The study participants were all diagnosed with acquired FSAD and impaired orgasm. All participants had a pre-treatment sexual arousal assessment where vaginal vasocongestion and self-reported sexual arousal were measured. The study revealed many interesting findings (Chivers & Rosen, 2010). Though Sildenafil did not improve orgasm intensity or latency overall, it was beneficial to a certain subset within the study. Participants showing low vaginal blood flow measured by vaginal pulse amplitude in the pre-treatment assessment showed improved sexual functioning with Sildenafil use. Physical function before use was the biggest predictor for effectiveness of treatment (Chivers & Rosen).

As mentioned above, studies have shown Sildenafil success with subsets of women with FSAD. Nurnberg’s 2008 study solidified the effective use of Sildenafil in women who use serotonin reuptake inhibitors. The study showed statistical significant improvement in symptoms and increase in sexual function in these women. Using PDE5 as first line treatment in secondary FSAD from SSRI is now well established in the literature (Chivers & Rosen, 2010).
The largest clinical trial of Sildenafil use was done by Basson in 2002. It studied a 221 postmenopausal women not on estrogen replacement therapy and 583 pre and postmenopausal women with normal estrogen. Dosage for Sildenafil ranged from 10, 50, and 100 mg. Assessment was done multiple times throughout the study. Assessment used during the trials included questionnaires and sexual activity event logging. A baseline, 4, 8, and 12 week assessments were completed, in addition to a two week follow up after the trial had ended. Even when lengthy comparison, no significant results were noted with Sildenafil use vs. placebo (Chivers & Rosen, 2010).

Sexual psychophysiology testing trials reported in Chivers and Rosen article may give a glimpse of clarity on the confusion in the effectiveness of Sildenafil. Laan’s 2002 study revealed the sexual response action of Sildenafil was working, but the self-reported effectiveness was dependent on whether the patient believed they received the drug or placebo. This is called the expectancy effect. The vaginal photopylethysmograph showed an increase in vaginal congestion from baseline measurements. Overall, there was no increase in self-reported sexual arousal. When the groups were separated by drug expectancy, women thought they received the active drug reported a significant increase in sexual arousal and lubrication (Chivers & Rosen, 2010).

Where should the medical community stand on Sildenafil use in women in FSAD? PDE5 are reported in female smooth muscle and sexual functioning, why doesn’t it work as effectively as it does in men? The true answer is that men and women are not parallel. Similarly to the sexual response cycle, men and women are different. Though the drug may have the same exact mechanism of action within the body, other factors contribute. Currently, estrogen mechanisms and effects on vaginal and clitoral NO synthase is currently being investigated. As Chivers stated these mechanisms may not occur in the male population and could be the major attribute to
decreased efficacy in PDE5 in the female population (Chivers & Rosen, 2010). The disagreement between actual physiologic genital response and subjective awareness of that response may hold Sildenafil back from being effective for most women with FSAD (Chivers & Rosen).

Another medication that has been proven effective in the treatment of ED and is being evaluated for the treatment of FSAD is Alprostadil. In ED, alprostadil is used as an intravenous injection to the corpus cavernosa or a suppository. Alprostadil is prostaglandin E and ultimately causes smooth muscle relaxation and vasodilatation. Smooth muscle relaxation and vasodilatation would provide an environment of increased blood flow. Initial small trials showed promise for the use of Alprostadil topical cream in women with FSAD. In 2003, Padma-Nathan conducted a larger study using different dosing of Alprostadil versus a placebo (Padma-Nathan et al., 2003).

The study consisted of 94 women, all with previously diagnosed FSAD. Participants used the topical cream by applying the pre-packaged dosage supplied by the study. Women were instructed to apply it to the clitoris and labia 5 to 30 minutes before intercourse. Women were evaluated before and after the 6 week trial using the Female Sexual Distress Scale and Female Sexual Function Index to note changes from baseline. Participant were asked to complete an at home diary containing the Female Sexual Encounter Profile, which evaluated each intercourse encounter (Padma-Nathan, et al., 2003).

Though initial assessments indicated a strong possibility of increase in sexual arousal with Alprostadil, Padma-Nathan’s study failed to show a statistical difference between the placebo group and Alprostadil groups. The comparison of 500 micrograms, 1000 micrograms, and 1500 micrograms, 1000 micrograms showed the best results and least side effects. There was a very
high placebo response that was not anticipated. As with most drugs notably approved for treating male ED, they just do not seem to have a clear cut improvement on women with female sexual dysfunction. More investigation is needed for this drug.

Hormone replacement has always been an area of controversy. Studying estrogen and testosterone supplementation dates back to the 1960’s (Schorge & Williams, 2008). Most recent controversy started with the Women’s Health Initiative (WHI) in 1993. After almost 5 years of conducting studies with hormone replacement, the WHI was halted when the predetermined ranges of risks were exceeded (Schorge & Williams). Risks included increase incidence of breast cancer, venous embolism, and heart disease. Benefits noted were an increase protection of colon cancer, reduced bone loss, and lower fracture risk (Schorge & Williams). Currently, absolute contraindication to hormone replacement therapy are abnormal vaginal bleeding, history of breast cancer, history of pulmonary embolism, history of stoke, history of myocardial infarction, or liver disease. Hormone therapy should be used with caution in patients with dementia, gall bladder disease, prior cholestatic jaundice, hypertriglyceridemia, hypothyroidism, fluid retention plus cardiac or renal dysfunction, severe hypocalcemia, hepatic hemangiomas, or prior endometriosis (Schorge & Williams).

A hormonal drug with a potential for the treatment of FSAD is Tibolone. Tibolone is a synthetic hormone with weak estrogenic, progestogenic, and androgenic activity. The mechanism of action of Tibolone is increasing the level of free testosterone (Nijland et al., 2008). Tibolone activates androgen receptors while reducing sexual hormone binding globulin (SHGB) and ultimately raises the level of free testosterone. Tibolone can have both estrogenic and progestogenic effects. This is extremely beneficial because it does not have a negative effect on the endometrium. Due to its multiple hormonal actions, it has been suggested Tibolone may have
greater potential to improve sexual arousal than the standard estrogen and progestin therapy. Tibolone use is popular in other parts of the world for menopausal therapy (Nijland, et al.)

A randomized active-controlled trial conducted by Nijland et al. was developed to compare Tibolone to estradiol(E2)/noretisterone acetate (NETA) in treating postmenopausal women with sexual dysfunction. Nijland et al. used women who naturally entered menopause, age ranging from 48-68 years old. All participants had to have experienced a decline in sexual satisfaction after menopause. Female Sexual Distress Scale (FSDS) and Female Sexual Function Index (FSFI) were used to evaluate sexual satisfaction and personal distress. Participants received one of two treatment regimens throughout the study. E2(50 mcg)/NETA (140 mcg) twice weekly patch plus daily placebo tablet was the first regimen. Second regimen included Tibolone 2.5 mg as a daily tablet and twice weekly placebo patch (Nijland, et al., 2008). There was a 4-week pretreatment period followed by assessments at start of therapy, 12 and 24 week of therapy.

The two main endpoints of the study were to see if there was difference between treatments and comparing the decrease in the level of distress of sexual function. Participants were asked to document frequency of sexual activity. The personal diary included whether the sexual activity was satisfying, frequency of sexual thoughts, frequency of sexual arousal, how many times participant initiated sexual activity, and how many times participant refused sexual activity. In addition to personal documentation, hormone levels were checked twice during the trial, once at baseline and again at 24 weeks.

Results of the study revealed both therapies showed improvement in sexual function for participants. FSFI scores increased more in participants who used Tibolone. Tibolone showed a 30% increase in the FSFI score versus 23% increase with E2/NETA. Reduction of sexual distress
was noted in both groups without any statistical difference between groups. A review of the personal documentation revealed frequency of sexual arousal increased 23% in women using Tibolone versus 15% using E2/NETA and the frequency of refusing partner decreased by 45% for women using Tibolone versus 27% using E2/NETA (Nijland, et al., 2008).

Tibolone has shown promising result for the improvement of FSAD. From 1980-2006, over 400 studies have reviewed the effects of Tibolone and the positive effects on not only sexual function, but other areas of women’s health (Nijland, et al., 2008). Tibolone is currently not available in the United States.

The option of topical hormonal treatment is available and has been assessed. Post menopausal patients may benefit from the topical treatments. Due to hormones decreasing, the body changes in many different ways. Sex hormones play a vital role in all areas of sexual arousal and response. The vulva and vaginal health are mediated by estrogen receptors. With the endogenous estrogen production depleting, vaginal tissue will change. Anatomical changes include vaginal atrophy, thinning of the vaginal endothelium, and reduction of lubrication (Hazzard & Halter, 2009).

Topical and local estrogen has been well documented has a short term treatment for the vaginal symptoms in menopause and may be used to improve sexual functioning. Exogenous estrogen use increases vaginal maturation index, decreases pH, and repairs vaginal atrophy by replenishing the vaginal lining (Raghunandan, Agrawal, Dubey, Choudhury, & Jain, 2010). Raghunandan compared the effects of topical estrogen cream vs. topical estrogen with testosterone cream. The goal of the study was to see if there was any additional benefit or consequences to using the testosterone component.
Raghunandan’s study included 75 postmenopausal women with urogenital and sexual dysfunction. The women were divided equally into three separate groups. Group one received Premarin Cream® with 1 gram of cream containing 0.625 mg of conjugated equine estrogen. The first two weeks participants were instructed to apply daily. After the initial two weeks, participants were instructed to apply it twice weekly. Group two were given the same Premarin cream for the first two weeks. The remaining 10 weeks, participants used 1 gram of Premarin cream containing 0.625 mg of conjugated equine estrogen along with 0.5 gram of 2% testosterone cream prepared in petroleum twice weekly. A control group of 25 women used a lubricant gel containing no hormones daily for two weeks and twice weekly for the remainder of the study (Raghunandan, et al., 2010).

Two areas of interest were addressed in the study. Urogenital and sexual function were studied and evaluated for improvement. Urogenital function was assessed using subjective assessment of vaginal dryness, dyspareunia, urinary frequency and urgency. Sexual function was assessed by using an adapted version of McCoy Female Sexuality Questionnaire. Participants were initially evaluated and scored on function in above areas and were re-evaluated on weeks 4 and 12. The results revealed both group one and two improved urogenital symptoms, 58% and 62% respectively. There was a 25% improvement in urogenital symptoms in the control group.

Sexual function improvement was very different among the groups. Though both group one and two improve sexual function, group two improved by a greater degree. There was a 147% increase in sexuality scores in group two versus 42% in group one. The control group showed a much smaller degree of improvement with sexuality scores, only increasing them 18% (Raghunandan, et al., 2010).
There is a lot of controversy surrounding any hormone replacement. Raghunandan also revealed the level of hormone increase systemically and adverse effects in participants. There was a significant increase in both estradiol and testosterone levels in the groups using the topical hormone replacements, but the levels were still in the acceptable range for a normal postmenopausal woman (Raghunandan, et al., 2010). Endometrial thickness was also evaluated in each participant and there was no significant change by the completion of the study. Eight women reported increased vaginal discharge or discomfort in the group one and two combined (Raghunandan, et al.)

Transdermal testosterone patches are currently approved in the US for men with hypogonadism. There is no current androgen therapy approved for women. Europe has approved transdermal testosterone patches for hypoactive sexual desire disorder in surgically menopausal women. Panzer’s review of testosterone replacement revealed more than 23 clinical trials were completed with testosterone replacement. Testosterone continues to be evaluated for both surgically menopausal women and naturally menopausal women with sexual dysfunction (Panzer & Guay, 2009).

Though the above results show hope for androgenic replacement, not everyone is a fan. In 2006, the Journal of Clinical Endocrinology and Metabolism published recommendations of androgen therapy in women by the Endocrine Society. The article concluded there is evidence to support the use of testosterone, but it is only studied during short term use. Overall, they recommend against it because there are no definitive indications and the safety profile is not complete (Wierman et al., 2006). According to their recommendation, three things are need to be addressed and completed. The article stated, “To formulate clinical recommendation, the task force would require additional date 1) defining conditions that, when not treated with androgens,
have adverse health consequences to women; 2) defining clinical and laboratory parameters that distinguished those with these conditions; and 3) assessing the efficacy and long-term safety of androgen administration on outcomes that are important to women diagnosed with these conditions (Wierman, et al., p. 3698).

Questions being asked by the Endocrine Society are direct. How are you supposed to treat someone with an androgen when there is no definition of androgen deficiency in women? Establishing criteria and clinical attributes to androgen deficiency in women would be beneficial. Do all women with androgen deficiency look clinically similar? If androgens are used, how long should the therapy be? What are the long term consequences? According to the recommendations, they did not find the literature to support the efficacy and safety of testosterone use past 24 week trial (Wierman, et al., 2006).

Another area of concern is finding adequate means to test testosterone levels. Getting accurate and reproducible testing of testosterone levels can be difficult. Testosterone is mainly bound, to albumin and sex hormone binding globulin, and only a small percentage is free within the blood. The article suggested multiple complex ways of calculating testosterone levels, but to date the current tools lack the sensitivity or specificity to measure levels needed. The main key is to establish a gold standard (Wierman, et al., 2006).

The Endocrine Society recommended more research in non-human subjects, including rats, to specifically expand knowledge of the effects on sexual responses and brain function. These areas tend to be subjective and establishing markers would be beneficial in determining the overall efficacy of androgen use. In the area of sexual dysfunction, the Endocrine Society concluded androgen use may not be relevant since sexual dysfunction is the intertwined product of personal, interpersonal, contextual and medical pathologies (Wierman, et al., 2006). The main
area the Endocrine Society considers androgens possibly play a role is in surgically menopausal women. While they believe there is adequate literature to consider a recommendation for use, they have not due to the lack of definition of actual disorder and limited information on safety for long term use. If women are using androgen therapy to treat sexual dysfunction and want to continue being sexually active, there is no information on how long the medication should be used (Wierman, et al.).

Zestra, a topically applied lubricant, was another treatment studied for FSD. Zestra is made up of borage seed oil, evening primrose oil, angelica root extract, and coleus forskohlii extract (Ferguson, Hosmane, & Heiman, 2010). It is mixed with vitamin C and vitamin E to avoid oxidation. All ingredients to the product, though some in lower concentrations, have been generally recognized as safe by the FDA (Ferguson, et al.). Ferguson’s 2010 study of Zestra sought to expand the statistical data on the effects of Zestra clinical significance on women experiencing arousal, desire, and orgasm complaints. The study incorporated women with desire disorder, genital and subjective arousal disorder, and orgasmic disorder (Ferguson, et al., 2010).

One hundred seventy eight women completed the 12 week randomized, placebo controlled, double blind study. Ninety three women used the placebo product and 85 used Zestra. The study included a multitude of demographics commonly excluded in studies reviewing sexual dysfunction, including participants on anti-depressants, participants with more than one sexual dysfunction, and women with previous history of resolved sexual abuse or trauma (Ferguson, et al., 2010). Participants had six visits over a 12 week period. The first three visits were used for medical testing, survey completion, and instructions for use of product. Surveys used to assess participants included FSFI, Women’s Inventory of Treatment Satisfaction (WITS), Zestra Consumer Testing Survey (ZCTS), Global Assessment Questions (GAQ), the Beck Depression
Inventory (BDI), Dyadic Adjustment Scale (DAS), and Female Sexual Distress Scale (FSDS). Participants were also asked to complete Female Sexual Encounter Profile (FSEP) after each sexual encounter. After visit three, participants were either given placebo or Zestra with a copy of FSEP for each sexual encounter. At the fourth and fifth visit, FSEPs, used and unused study material were collected and new study material was distributed. Participants were reassessed on all the above surveys at visit six (Ferguson, et al.) Surveys completed on visit three were compared to visit 6 surveys.

Zestra showed a greater improvement in desire and arousal domain on the FSFI. There was no statistically difference in placebo over Zestra in total FSFI score. On the FSEP, there was a significant improvement on reported levels of desire and arousal with Zestra. Users of Zestra reported significant improvement in treatment satisfaction, sex life satisfaction, self-perception, and partner perception on the WITS. ZCTS revealed Zestra users reported an increase in genital sensation, pleasurable sensation, and willingness to pay more for the product (Ferguson, et al., 2010).

There were no statistical difference on the GAQ, BDI, and DAS between the placebo users and Zestra users. The FSDS was reduced in both groups, but there was no statistical significance. No difference was reported between groups for frequency of sexual encounters. The use of anti-depressants was not significant in the level of responsiveness to the product. No adverse reactions were noted in the placebo group. Genital burning was experienced by approximately 15% of Zestra users, 5.2% discontinuing study due to this adverse effect (Ferguson, et al., 2010).
THE CLINICIAN AND THE PATIENT

In order to address the patient profile above, many key things need to happen. The discussion of sexual health needs to take place. In Wittenberg’s original research on discussing sexual health with patients, revealed there are key characteristics patients look for in a provider before discussing their sexual concerns (Wittenberg & Gerber, 2009). Wittenberg and Gerber addressed the barriers to covering sexual health during patient interactions. This was a two arm study. Arm one, containing 501 completed surveys, were distributed to undergraduate and graduate students containing questions related to preferred method of obtaining sexual health information and characteristics important to them when discussing sexual health concerns with their health provider. Arm two, containing 125 completed surveys, were distributed to third and fourth year medical students containing questions about their comfort level and how their educational training prepared them for sexual health discussions (Wittenberg & Gerber). Arm one identified the most desirable characteristics of clinicians when discussing sexual health was being comfortable discussing sexual concerns and be knowledgeable about the subject area.

Physician Assistants, as well as all other clinicians, need to note the above study revealed 45.1% of patients most prefer to receive sexual health information from their provider who initiates the conversation (Wittenberg & Gerber, 2009). Other most preferred avenues of addressing sexual health information were receiving sexual health information from their provider after they initiate conversation, 31.5%, and receiving sexual health information from their providers after they filled out a questionnaire, 18.9%. Least preferred avenues of obtaining sexual health information included receiving information from the internet, a pamphlet, or from a family member or friend (Wittenberg & Gerber). When comparing male to female patient
respondents, females were more likely to prefer a provider initiated the conversation (Wittenberg & Gerber).

Of the medical students surveyed, 75.2% believed sexual history taking will be important in their careers. It was interesting to note this study revealed only roughly half of the future medical practitioners surveyed felt comfortable taking a sexual history or adequately trained to do so (Wittenberg & Gerber, 2009). Wittenberg and Gerber acknowledge the disconnect between the noted importance of sexual history taking, and lack of feeling adequately prepared to take the sexual history. What happens when patients are mostly looking for comfortableness and knowledge from their provider when discussing sexual concerns, but medical practitioners are not equipped to provide that atmosphere? Wittenberg and Gerber suggest increased amounts of simulated patient interactions and more sexual health lectures added to the medical education curriculum (Wittenberg & Gerber)

CONCLUSION

Sexual health can be complex. Acknowledging adequate sexual health is an important part of the overall health assessment given by clinicians. Sexual dysfunction can negatively affect patient overall health status. Female patients with sexual dysfunction may not be readily addressed because female sexual dysfunction has many gray areas. Since the female sexual response greatly relies on a communication factor, simply addressing the topic may provide more insight to the patient. Understanding the female sexual response and how the female’s mind does not always match the body’s response may help reduce personal stress and acknowledge key areas within the patient relationship that can be solved prior to discussion of medication therapy.

Female sexual dysfunction categories are in transition. Many recommendations have been made in defining the different categories, specifically female sexual arousal disorder. Being estimated as the third most frequent sexual dysfunction in the female patient, clarification of the
symptoms the patient is experiencing helps determine the specific type of arousal disorder. Subjective versus genital arousal disorder is important to distinguish when managing and treating a patient. Lubrication issues are handled much differently than a patient who is unable to achieve any type of sexual excitement or pleasure. As clinicians, it is important to not limit diagnosis of arousal disorders into one large category. Knowing the specific characteristics of the female sexual arousal disorder subtypes will make for a swift assessment and enable discussion of treatment options.

Though only a few were addressed, many screening tools of female sexual dysfunction are available. The decision of which tool to utilize in any practice depends on the personal attributes of the practice. Time constraints or designated pre appointment paperwork completion may allow for one tool to be used over another. The most important note should be made that screening tools do exist! These tools can open the discussion to sexual function in your female patient.

Treatment options are difficult. With no FDA approved therapy, practitioners need to be aware of the risk for patient use. It is important to note that with negative effect of sexual dysfunction on overall health status, benefits may outweigh the risks for treatment use. Talking to the patient, explaining the risks of each therapy, and discussing the results with each therapy can help determine the appropriate treatment plan for each patient.

There are many gaps in the research of female sexual dysfunction assessment and treatment. Definitive algorithm of treatment is needed. There are possibilities of treatment on the horizon. The delays of FDA approval or exact proven efficacies are major barriers in medication utilization in female sexual dysfunction. Sex and sexual response is an individualized art. It may not be a disease category that one specific treatment will work for all females with sexual
dysfunction. Open communication and patient expectations need to be continually addressed during the treatment process.

Studies related to sexual dysfunction and surgical menopause should be in high demand. As practitioners, one must discuss the possibility of sexual dysfunction after a hysterectomy or bilateral salpingo-oophorectomy when discussing this treatment option with patient. Though many disease processes require this procedure, it could be highly beneficial to engage in the conversation of sexual side effects prior to procedure if possible. Preparation and pre-determined plans of treatment may liberate the patient to seek immediate help for sexual dysfunction or guide to a healthy satisfying sexual identity. Though by statistics, heterosexual relationships are vaster in number that does not eliminate sexual dysfunction in homosexual and bisexual relationship. Screening tools needed to be validated in these populations.

Fighting to see sexual health justice for our female patients is detrimental in equalizing sexual dysfunction. One hope, the complexity of female sexual response and female dysfunction will soon be a thing of the past. Having the assessment, screening tools, and treatment algorithms in place to adequately identify and treat women with any sexual dysfunction should be mandatory. Until that day, ask questions! You may be surprised what your female patients have to say.
References


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Appendix A

Components of the FSFI-6 questionnaire

Over the past 4 weeks:

<table>
<thead>
<tr>
<th>Question</th>
<th>Very High</th>
<th>High</th>
<th>Moderate</th>
<th>Low</th>
<th>Very low or not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate your level (degree) of sexual desire or interest?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How would you rate your level of sexual arousal (&quot;turn on&quot;) during sexual activity or intercourse?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How often did you become lubricated (&quot;wet&quot;) during sexual activity or intercourse?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>When you had sexual stimulation or intercourse, how often did you reach orgasm?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How satisfied have you been with your overall sexual life?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>How often did you experience discomfort or pain during vaginal penetration?</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

The FSFI-6 score is the sum of the ordinal responses to the six items; the score can range from 2 to 30. Cut off score is 19. If a patient’s score is below the specified optimal FSFI-6 cut-off point, there is a very high probability of sexual dysfunction.

Appendix B: FSFI

INSTRUCTIONS: These questions ask about your sexual feelings and responses during the past 4 weeks. Please answer the following questions as honestly and clearly as possible. Your responses will be kept completely confidential. In answering these questions the following definitions apply:

Sexual activity can include caressing, foreplay, masturbation and vaginal intercourse.

Sexual intercourse is defined as penile penetration (entry) of the vagina.

Sexual stimulation includes situations like foreplay with a partner, self-stimulation (masturbation), or sexual fantasy.

CHECK ONLY ONE BOX PER QUESTION.

Sexual desire or interest is a feeling that includes wanting to have a sexual experience, feeling receptive to a partner's sexual initiation, and thinking or fantasizing about having sex.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Over the past 4 weeks, how often did you feel sexual desire or interest?</td>
<td>5 = Almost always or always&lt;br&gt;4 = Most times (more than half the time)&lt;br&gt;3 = Sometimes (about half the time)&lt;br&gt;2 = A few times (less than half the time)&lt;br&gt;1 = Almost never or never</td>
</tr>
<tr>
<td>2. Over the past 4 weeks, how would you rate your level (degree) of sexual desire or interest?</td>
<td>5 = Very high&lt;br&gt;4 = High&lt;br&gt;3 = Moderate&lt;br&gt;2 = Low&lt;br&gt;1 = Very low or none at all</td>
</tr>
<tr>
<td>3. Over the past 4 weeks, how often did you feel sexually aroused (&quot;turned on&quot;) during sexual activity or intercourse?</td>
<td>0 = No sexual activity&lt;br&gt;5 = Almost always or always&lt;br&gt;4 = Most times (more than half the time)&lt;br&gt;3 = Sometimes (about half the time)&lt;br&gt;2 = A few times (less than half the time)&lt;br&gt;1 = Almost never or never</td>
</tr>
<tr>
<td>4. Over the past 4 weeks, how would you rate your level of sexual arousal (&quot;turn on&quot;) during sexual activity or intercourse?</td>
<td>0 = No sexual activity&lt;br&gt;5 = Very high&lt;br&gt;4 = High&lt;br&gt;3 = Moderate&lt;br&gt;2 = Low&lt;br&gt;1 = Very low or none at all</td>
</tr>
<tr>
<td>5. Over the past 4 weeks, how confident were you about becoming</td>
<td>0 = No sexual activity&lt;br&gt;5 = Very high confidence</td>
</tr>
<tr>
<td>Question</td>
<td>Confidence Options</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------</td>
</tr>
<tr>
<td>sexually aroused during sexual activity or intercourse?</td>
<td>4 = High confidence</td>
</tr>
<tr>
<td></td>
<td>3 = Moderate confidence</td>
</tr>
<tr>
<td></td>
<td>2 = Low confidence</td>
</tr>
<tr>
<td></td>
<td>1 = Very low or no confidence</td>
</tr>
<tr>
<td>6. Over the past 4 weeks, how often have you been satisfied with your</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>arousal (excitement) during sexual activity or intercourse?</td>
<td>5 = Almost always or always</td>
</tr>
<tr>
<td></td>
<td>4 = Most times (more than half the time)</td>
</tr>
<tr>
<td></td>
<td>3 = Sometimes (about half the time)</td>
</tr>
<tr>
<td></td>
<td>2 = A few times (less than half the time)</td>
</tr>
<tr>
<td></td>
<td>1 = Almost never or never</td>
</tr>
<tr>
<td>7. Over the past 4 weeks, how often did you become lubricated (&quot;wet&quot;)</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>during sexual activity or intercourse?</td>
<td>5 = Almost always or always</td>
</tr>
<tr>
<td></td>
<td>4 = Most times (more than half the time)</td>
</tr>
<tr>
<td></td>
<td>3 = Sometimes (about half the time)</td>
</tr>
<tr>
<td></td>
<td>2 = A few times (less than half the time)</td>
</tr>
<tr>
<td></td>
<td>1 = Almost never or never</td>
</tr>
<tr>
<td>8. Over the past 4 weeks, how difficult was it to become lubricated</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>(&quot;wet&quot;) during sexual activity or intercourse?</td>
<td>1 = Extremely difficult or impossible</td>
</tr>
<tr>
<td></td>
<td>2 = Very difficult</td>
</tr>
<tr>
<td></td>
<td>3 = Difficult</td>
</tr>
<tr>
<td></td>
<td>4 = Slightly difficult</td>
</tr>
<tr>
<td></td>
<td>5 = Not difficult</td>
</tr>
<tr>
<td>9. Over the past 4 weeks, how often did you maintain your lubrication</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>(&quot;wetness&quot;) until completion of sexual activity or intercourse?</td>
<td>5 = Almost always or always</td>
</tr>
<tr>
<td></td>
<td>4 = Most times (more than half the time)</td>
</tr>
<tr>
<td></td>
<td>3 = Sometimes (about half the time)</td>
</tr>
<tr>
<td></td>
<td>2 = A few times (less than half the time)</td>
</tr>
<tr>
<td></td>
<td>1 = Almost never or never</td>
</tr>
<tr>
<td>10. Over the past 4 weeks, how difficult was it to maintain your</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>lubrication (&quot;wetness&quot;) until completion of sexual activity or</td>
<td>1 = Extremely difficult or impossible</td>
</tr>
<tr>
<td>intercourse?</td>
<td>2 = Very difficult</td>
</tr>
<tr>
<td></td>
<td>3 = Difficult</td>
</tr>
<tr>
<td></td>
<td>4 = Slightly difficult</td>
</tr>
<tr>
<td></td>
<td>5 = Not difficult</td>
</tr>
<tr>
<td>11. Over the past 4 weeks, when you had sexual stimulation or</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>intercourse, how often did you reach orgasm (climax)?</td>
<td>5 = Almost always or always</td>
</tr>
<tr>
<td></td>
<td>4 = Most times (more than half the time)</td>
</tr>
<tr>
<td></td>
<td>3 = Sometimes (about half the time)</td>
</tr>
<tr>
<td></td>
<td>2 = A few times (less than half the time)</td>
</tr>
<tr>
<td></td>
<td>1 = Almost never or never</td>
</tr>
<tr>
<td>12. Over the past 4 weeks, when you had sexual stimulation or</td>
<td>0 = No sexual activity</td>
</tr>
<tr>
<td>intercourse, how difficult was it for you to reach orgasm (climax)?</td>
<td>1 = Extremely difficult or impossible</td>
</tr>
<tr>
<td></td>
<td>2 = Very difficult</td>
</tr>
<tr>
<td></td>
<td>3 = Difficult</td>
</tr>
<tr>
<td>Question</td>
<td>Scale</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 13. Over the past 4 weeks, how satisfied were you with your ability to reach orgasm (climax) during sexual activity or intercourse? | 0 = No sexual activity
5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied |
| 14. Over the past 4 weeks, how satisfied have you been with the amount of emotional closeness during sexual activity between you and your partner? | 0 = No sexual activity
5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied |
| 15. Over the past 4 weeks, how satisfied have you been with your sexual relationship with your partner? | 5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied |
| 16. Over the past 4 weeks, how satisfied have you been with your overall sexual life? | 5 = Very satisfied
4 = Moderately satisfied
3 = About equally satisfied and dissatisfied
2 = Moderately dissatisfied
1 = Very dissatisfied |
| 17. Over the past 4 weeks, how often did you experience discomfort or pain during vaginal penetration? | 0 = Did not attempt intercourse
1 = Almost always or always
2 = Most times (more than half the time)
3 = Sometimes (about half the time)
4 = A few times (less than half the time)
5 = Almost never or never |
| 18. Over the past 4 weeks, how often did you experience discomfort or pain following vaginal penetration? | 0 = Did not attempt intercourse
1 = Almost always or always
2 = Most times (more than half the time)
3 = Sometimes (about half the time)
4 = A few times (less than half the time)
5 = Almost never or never |
| 19. Over the past 4 weeks, how would you rate your level (degree) of discomfort or pain during or following vaginal penetration? | 0 = Did not attempt intercourse
1 = Very high
2 = High
3 = Moderate
4 = Low
5 = Very low or none at all |
The individual domain scores and full scale (overall) score of the FSFI can be derived from the computational formula outlined in the table below. For individual domain scores, add the scores of the individual items that comprise the domain and multiply the sum by the domain factor (see below). Add the six domain scores to obtain the full scale score. It should be noted that within the individual domains, a domain score of zero indicates that the subject reported having no sexual activity during the past month. Subject scores can be entered in the right-hand column.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Questions</th>
<th>Score Range</th>
<th>Factor</th>
<th>Minimum Score</th>
<th>Maximum Score</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire</td>
<td>1, 2</td>
<td>1–5</td>
<td>0.6</td>
<td>1.2</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Arousal</td>
<td>3, 4, 5, 6</td>
<td>0–5</td>
<td>0.3</td>
<td>0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>7, 8, 9, 10</td>
<td>0–5</td>
<td>0.3</td>
<td>0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Orgasm</td>
<td>11, 12, 13</td>
<td>0–5</td>
<td>0.4</td>
<td>0</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>14, 15, 16</td>
<td>0 (or 1)–5*</td>
<td>0.4</td>
<td>0.8</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Pain</td>
<td>17, 18, 19</td>
<td>0–5</td>
<td>0.4</td>
<td>0</td>
<td>6.0</td>
<td></td>
</tr>
</tbody>
</table>

Abstract

Objective: To clarify the current definitions, screening, assessment, and management recommendations for female sexual dysfunction (FSD), specifically female sexual arousal disorder (FSAD).

Method: Literature was collected by reviewing articles discussing FSAD and FSD. Databases used were PubMed, CINAHL, PsycINFO, Cochrane Library, MD Consult, Ovid Medline. Inclusion criteria for the articles reviewed were female participants, >18 years old, and published before 1999.

Discussion: Female sexual response can vary greatly. FSD definitions are changing, allowing for new categories for FSAD. Assessment and screening tools are available to differentiate types of FSD. Though no current FDA approved treatments exist, many have shown promise for FSD and FSAD.

Conclusion: Female sexual dysfunction is an evolving field in medicine. Appropriate patient screening and assessment can help guide treatment options for sexual dysfunction. Overcoming the barrier to addressing sexual concerns is equally as important as developing a clear treatment algorithm for female sexual arousal disorder.
Permission for Surveys:

To: Walsh, Sarah E

Attachments: JSM FSFI abridged.pdf (229 KB)[Open in Browser]

Saturday, June 25, 2011 1:08 AM

here is, with pleasure.
eaj

Emmanuele A. Jannini, MD
Professor of Endocrinology and Sexology
Department of Experimental Medicine
University of L'Aquila
L'Aquila School of Sexology - Coordinator
Italian Society of Endocrinology - General Secretary
Italian Society of Andrology and Sexual Medicine - Chairman of the Scientific Board
European Academy of Andrology - Chairman of the Education Committee
International Society for Sexual Medicine - Member of the Standard Committee
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Via Vetoio
67100 L'Aquila ITALY

----- Messaggio originale -----  
Da: "Sarah E Walsh" <Sarah.Walsh@rockets.utoledo.edu> 
A: "emmanuele.jannini" <emmanuele.jannini@univaq.it> 
Invio: Venerdi, 24 giugno 2011 23:08:04 GMT +01:00
Amsterdam/Berlino/Berna/Roma/Stoccolma/Vienna 
Oggetto: FSFI-6

Good Afternoon Dr. Jannini,

I am a graduate student at the University of Toledo. I am currently in the process of completing my graduate thesis. I am doing a literature review on the screening, assessment and management of female patients’ with sexual arousal disorder. I reviewed your original research regarding the FSFI-6. I feel that it would be very beneficial to include a copy of this in the appendix in my paper. With your approval, I would love to include the FSFI-6 in my appendix. If you need more information, such as the proposal for my graduate thesis, I would be more than happy to share this information.
Please let me know if I need to contact someone else for approval.

Thank you in advance for your time. Have a great weekend.
Sincerely,
Sarah Walsh, PA-S2
College of Medicine  
University of Toledo  
To: Walsh, Sarah E  
Sunday, April 24, 2011 8:09 AM  
Sarah,

You may use it. Just send over any publications as at some point we will create a bibliography online.

Jules T. Mitchel, MBA, Ph.D.  
President  
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julesmitchel@targethealth.com  
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www.targethealth.com

From: Walsh, Sarah E [mailto:Sarah.Walsh@rockets.utoledo.edu]  
Sent: Saturday, April 23, 2011 12:33 PM  
To: info@fsfi-questionnaire.com  
Subject: FSFI  

Good Afternoon,

I am a graduate student at the University of Toledo. I am currently in the process of completing my graduate thesis. I am doing a literary review on the screening, assessment and management of female patients’ with sexual arousal disorder. Many of the articles and studies I have reviewed use the FSFI. I feel that it would be very beneficial to include a copy of this in the appendix in my paper. With your approval, I would love to include the FSFI in my appendix. If you need more information, such as the proposal for my graduate thesis, I would be more than happy to share this information.

I referenced the original article in the Journal of Sex and Martial Therapy for contact information for Dr. Raymond Rosen. I checked the Department of Psychiatry at Robert Wood Johnson Medical School for current contact information and was unable to obtain it. Http://www.fsfiquestionnaire.com/ was the only resource with contact information. Please let me know if I need to contact someone else for approval.

Thank you in advance for your time. Have a great weekend.

Sincerely,  
Sarah Walsh, PA-S2  
College of Medicine