**Review**

**Sexuality and sexual dysfunction in women: A review of current knowledge and areas for further research**

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Sexual dysfunction in women remains a common complaint in our communities. For a long time however, researchers and scientists have been diligently working to find out the physiology of women’s sexuality and therefore help clinicians and sexologists in management of sexual problems in women. Despite such devoted efforts, knowledge on sexual function in women appears to yield its fruits relatively slowly compared to their male counterparts. For this reason care providers have over the years used the physiology of sexuality in men to explain the same in female while in actual fact there are some differences that exists between the two sexes. The existing traditional model for human sex response cycle can be represented as desire Arousal -- orgasm -- resolution. In recent years however, there has been discoveries and discussions to explain women sexuality and sexual dysfunction though controversies still exists in some issues surrounding sexuality in women. The present setbacks in this issue pose a significant challenge to clinicians and sexologists when it comes to care of women with sexual difficulties. This article reviews the applied anatomy of women's sex organs, their physiology and sexual response as well as the dysfunction involved. Furthermore it highlights the gray and controversial areas that need further research so as to improve care of women with sexual problems. The scant knowledge in this field warrants further research to unveil the understanding of the anatomy and physiology in relation to women sexuality so as to improve their clinical care.

**Key words:** Sexuality, sexual dysfunction, sexual response, women.

**INTRODUCTION**

Most definitions of sexual dysfunction in women are based on the four phases of sexual responses model of masters and Johnson and modified by Kaplan (Masters and Johnson, 1966; Kaplan, 1979). The first phase is sexual desire consisting of the motivation or appetitive aspect of sexual response (sexual urges, fantasies and wishes are included in this phase); the second phase is sexual arousal which refers to a subjective feeling of sexual pleasure and the accompanying physiological changes (Vaginal lubrication is included in this category); the third phase is orgasmic phase or climax defined as the peak of sexual pleasure with rhythmic contractions of the genital musculature associated with a controversial and hotly debated idea of 'female ejaculation', the final phase is resolution during which a general sense of relaxation, satisfaction and well-being is experienced.

Sexual dysfunction has therefore been defined by an alteration in one or more phases of the sexual response cycle described above as per DSM IV definition. But in 1999 the Sexual Function Health Council of the American Foundation for Urologic Disease (AFUD) convened an interdisciplinary consensus conference panel and at this panel the DSM-IV definition was expanded to includes psychogenic and organic causes of desire, arousal, orgasm, and sexual pain disorders. An essential element of this new diagnostic system is the personal distress criterion, meaning that a condition is considered a disorder only if it creates distress for the woman experiencing the condition (Basson et al., 2000).

In recent times, scientists have challenged the existing model of sexual arousal and response cycle pointing out that it does not fully apply to women particularly those in
long-term relationships or marriages because the sequence of events of desire arousal and orgasm may not be the case for a significant group of women and therefore an alternative model is required to explain the physiology of sexual arousal and response in this group of clients (Bason, 2000) and therefore help to define and diagnose sexual dysfunction in women.

Clinicians in the field of sexology, gynecology and urology are now, more than ever before due to increased knowledge and awareness of sexuality, faced with a challenge of effectively diagnosing many women with who present with sexual dysfunction and offering the best available treatment, thus they need to have a cutting edge knowledge on the subject. Relevant knowledge in anatomy in terms of structure, function, blood and nerve supply of female sex organ is critical to understanding the sexual response, dysfunction and their management. This article reviews the applied anatomy, physiology and sexual response cycle of the female reproductive organs in relation to sexuality and sexual dysfunction while at the same time discloses the current knowledge on the subject and unveiling some of the areas that demands further research.

MATERIALS AND METHODS

A search algorithm to obtain published papers on female sexuality was developed. Most important keywords used to search the literature were women sexuality, sexual dysfunction, women sexual response and women sexual arousal. Publications were obtained from different Data base such as Hinari, PubMed, WebMD and Science direct. Search engines such as Medline and Google were also used to access the publications. Textbooks with chapters on the subject were also searched from online libraries as well as our University medical library. Publications obtained were then analyzed and compared to find the existing gaps on sexuality in women and used to produce this paper.

Anatomy of the female sex organs

For a long time the emphasis of the study of structure of the female external genitalia has been on its reproductive rather than its sexual function (Rupesh et al., 2007) while it is a well known fact that its sexual function is an important role of the organ that keeps intimate relationships alive.

The majority of anatomic descriptions for these organs have been from the context of reproduction. Yet, there is a growing awareness among women themselves and men on sexual function of the organs and that fertility/reproductive function of the organs are distinct, with unique physiological responses (Van Anh and Claire, 2011).

There is a general lack of understanding of the optimal approach to sexual problems (identifications, evaluation and treatment) among general duty doctors and clinical specialists (Danielsson et al., 2003; Kaye and Jick, 2003). This calls for additional devotion of efforts into study and teaching on sexual function of sex organs.

Description of the anatomy

The vulva

Collective name for female external genitalia and it includes: The mons pubis, Clitoris and the bulbs, Labia majora, Labia Minora, Vestibule of the vaginal, Vestibule of the bulb and Greater vestibular gland (Bartholin’s glands) (Yang et al., 2006; Van Anh et al., 2011).

The clitoris

The clitoris is comprised of two erectile bodies (The corpora cavernosa). The body is the convergence of two corpora. The crura are the extensions of the corpora beneath the descending pubic rami. Each of the corpora cavernosa is surrounded by a thick fibro-elastic tunica albuginea. Because the majority of the clitoris is hidden by the mons pubis, there is a lack of appreciation for the substantial nature of these erectile bodies in the vulva (Campbell, 1976). The clitoral body and the crura can be 10 cm or more in length with the body measuring 5–7 cm in length. The glans clitoris rests as a fibrovascular cap at the tip of the clitoral body.

Despite its diminutive size, the glans clitoris is richly innervated and is an important mediator of sensory input for sexual arousal. The clitoris appears to be a purely sensory organ (Campbell, 1976) and believed to be the most erotic organ in female sexual response. It corresponds to the penis in the male. It has structure similar to the penis, but the glans in the clitoris is partly hidden in the prepuce. Arterial supply comes from the branches of internal pudendal artery and venous drainage is through the internal pudendal veins.

Labia majora

The labia majora are two elongated folds of skin that extend between the mons pubis and the perineal body. They enclose the labia minora, glans clitoris, and the vaginal introitus. They are hair bearing, pigmented skin folds. The subcutaneous tissue of the labia majora consists mostly of fat. They also contain the terminations of the round ligaments, some smooth muscle bundles, sparse nerves, and blood and lymphatic vessels. The
labia majora change with sexual arousal, from what appears to be passive vasocongestion, rather than active increase in blood flow as occurs in the other parts of the vulva. (Van Anh et al., 2011).

**Labia minora**

The labia minora are folds of tissue between the introitus and labia majora, and unlike the labia majora, they contain very little adipose. This skin is generally smooth, hairless, and pigmented. There is great variation in the size and shape of the labia minora between individuals. There can be some degree of atrophy with decreased estrogenization (Van Anh et al., 2011). Trauma due to childbirth and other types of irritation of the labia minora can result in asymmetric hypertrophy. Numerous vascular structures of varying sizes are surrounded by collagenous connective tissue, not smooth muscle. The tissue immediately deep to the epithelium is non trabecular (nonerectile) vascular tissue. This is in distinction to the trabecular vascular tissue of the clitoris and bulbs, designed to accommodate large volumes of blood during arousal. Elastin is abundantly present, presumably to allow for labial engorgement and enlargement during sexual arousal, since there is very little smooth muscle and no trabecular erectile tissue within the labia minora. Vascular structures in the labia minora are more numerous than in the labia majora (Suh et al., 2004).

Neural fibers and receptors are abundantly apparent within the labia. There is a central core of neural elements which is present along the length of each labium. This neural core appears to travel alongside the major vascular structures within the labium minus and is the neurovascular substrate through which labial engorgement occurs in response to sexual arousal. This is in contrast to the labia majora, where nerve fibers and receptors are sparse.

Given the generous vascular and innervations patterns within the labia minora, as well as evidence that the tissue is sexually responsive (Suh et al., 2004), there is good reason to believe that alteration of the labia minora can change sexual responsiveness. Exenterative procedures, such as vulvectomy, reduction labiaplasty, and certain forms of female circumcision, can have a deleterious effect on the sexual response by ablating the substrate through which sexual sensations enter the central nervous system. This kind of procedures are common in some places and they are done for different purposes most of which are medical indication and therefore unnecessarily impair female sexual function.

**Blood supply of the external genitalia**

The main source of blood supply for the pelvis is the internal iliac, or hypogastric artery. From this, the internal pudendal artery gives off multiple variable branches, including the dorsal artery of the clitoris, the perineal artery, posterior labial artery, artery to the bulb, as well as the deep artery of the clitoris, which is centrally located in the erectile tissue of the corpora cavernosa. Small branches also supply the vaginal wall (O’Connell et al., 2008). The venous drainage of the clitoris and bulb is via the deep dorsal vein, which then drains into the vesical venous plexus within the pelvis. A secondary source of blood supply to the external genitalia arises from the femoral artery. A branch of the femoral artery, the external pudendal artery, divides into a series of anterior labial branches to supply the labia majora and labia minora. The external pudendal artery enters laterally from the thigh and tracks towards the vulva to join with the posterior labial arteries from the internal pudendal artery. The venous drainage of the labial skin is via the external pudendal vein, which drains into the greater saphenous vein. There is variation in tissue vascularity with age, with less vascular structures found in older women compared to younger women.

**Innervation of the external genitalia**

The innervation of the external genitalia involves both somatic and autonomic fibers. The pudendal nerve, arising primarily from spinal segments S2–4, is the main source of somatic innervations: Prineal Nerve (Majora, Minor, Introitus, External anal sphincter, Pelvic flow muscles, Distal urethra); Dorsal nerve of the clitoris (DNC) (Clitoris=crura, body and glans) and Inferior rectal nerve (perianal skin, anal sphincter, pelvic flow muscles) (Yang et al., 2006; Van Anh et al., 2011).

**Autonomic innervations to the erectile tissue in the vulva**

The sympathetic and parasympathetic fibers arising from the caudal thoracic spinal segments and the sacral spinal segments innervate the vessels and smooth muscle of the erectile and non-erectile vascular tissue of the vulva. The cavernous nerves carry the autonomic innervation to the erectile tissue of the clitoris and bulbs (Yang et al., 2006; Van Anh et al., 2011).

**Other sex organs/structures**

Includes; the breast (Accessory sex organ) and the 'controversial G-spot'.

**Role of the female breast in sexuality**

Female breasts play a significant role in human sexual
activity. The nipples are particularly important in this aspect and they are considered to be among the erotic structures in the female and some have called it an accessory sex organ (Anders Pape Møller et al. 1995). They are sensitive to the touch as they have many nerve endings. Some women can achieve an orgasm from touch of the breasts during the foreplay. This importance has been made concrete by findings from many studies which have reported that several sexual dysfunctions happen to over half of women who have undergone breast cancer treatment (Can et al., 2008; Alicikus et al., 2009; Zee et al., 2008).

Controversies on the “G-SPOT”

In recent years there has been a wave of evolving knowledge on women sexuality and one of the issues that has captured a great deal of attention is the Gräfenberg Spot, often called the G-Spot. With this regard there are still many questions to be answered such as the true existence of this ‘erotic’ structure, its precise anatomical location as well as its specific function in relation to women sexuality. Though it has been described by some scientists as being the most sensitive part of the female (Ladas et al., 1982; Morris and Desmond, 2004), its existence, location and function has been disputed by others (Hines, 2001; Kilchevsky et al., 2012). Those who advocate for existence and presence of the G-spot, define it as a bean-shaped structure within the vagina which is reported to be an erogenous zone which, when stimulated, can lead to strong sexual arousal, powerful orgasms and female ejaculation (Ladas, 1982).

According to these researchers, the G-Spot is typically described as being located about 2.5 to 7.6 cm up the anterior vaginal wall between the vaginal opening and the urethra and is a sensitive area that may be part of the so called ‘female prostate’ (Morris and Desmond, 2004), while others describe it as being much deeper in the vaginal 5 to 8 cm from the orifice and it produces a more intense than clitoral stimulation particularly after tactile stimulation (Ladas et al, 1982). However other anatomical studies of the area have not identified gross or histological findings to distinguish it from other parts of the urethra or vaginal wall (Hines, 2001).

Although the G-Spot has been studied since the 1940s (Morris and Desmond, 2004) disagreement persists over its existence as a distinct structure, its definition and location (Hines, 2001; Kilchevsky et al., 2012). Some studies have gone further to concluded that its existence is unproven and subjective, based on questionnaires and personal experience while other studies using ultrasound, have found physiological evidence of the G-Spot in women who report having orgasms during intercourse. It is also hypothesized that the G-Spot is an extension of the clitoris and that this is the cause of vaginal orgasms (Kilchevsky et al., 2012).

The evolution of the existence of the G-spot has imparted the community and medical practice where in search for attaining sexual pleasure, operative procedures have been introduced to enlarge the G-spot (called G-spot amplification). G-Spot amplification (also called G-Spot augmentation or the G-Shot) is a procedure intended to temporarily increase pleasure in sexually active women with normal sexual function, focusing on increasing the size and sensitivity of the G-Spot.

In a paper published by the American College of Obstetricians and Gynecologists (ACOG) in 2007, the ACOG warns that there is no valid medical reason to perform this procedure, which is not considered routine or accepted by the College; and it has not been proven to be safe or effective. The potential risks include sexual dysfunction, infection, altered sensation, dyspareunia, adhesions and scarring (ACOG, 2007). The ACOG position is that it is untenable to recommend the procedure. The procedure is also not approved by relevant authorities, and no peer-reviewed studies have been accepted to account for either safety or effectiveness of this treatment (ACOG, 2007).

Sexologists and other researchers are concerned that women may consider themselves to be dysfunctional if they do not experience the G-Spot, and emphasize that it is normal not to experience it. Appreciable number of women has undergone a plastic surgery procedure (G-Spot amplification) in an effort to enhance its sensitivity (Morris and Desmond, 2004).

Whether or not the G-Spot exists, it anatomical location and function is still a gray area that calls for more research to relieve tension to women, their partners and the medical community at large.

The sexual arousal and response cycle

The cycle of human sexual response is a series of physiological events that occur during sexual activity. Though difficulty to just simply describe so as to fit all men and women, scientists have been able to develop models that can explain the common physiological changes that occur and therefore help to diagnose whether an individual is normal or not. In this regard several models have been developed but the most commonly described are: the Masters and Johnson Excitement, Plateau, Orgasm and Resolution (EPOR model) (1966), Helen Singer Kaplan’s Model of Sexual Response (1979) and the David Reed’s Erotic Stimulus Pathway (ESP) Model (1998).

According to Masters and Johnson, there are our successive physiological phases to the sexual response cycle. The model consist of four phases: excitement,
plateau, orgasm, and resolution abbreviated as EPOR.

The excitement phase is the first phase of the EPOR model followed by the plateau phase which is an advanced state of arousal that precedes orgasm. In the orgasmic phase, rhythmic muscle contractions begin throughout the body in both males and females, while blood pressure, respiration, and heart rate continue to increase. Lastly is the resolution phase which follows orgasm. During this phase the body returns to its pre-arousal state. In both males and females myotonia decreases within a few minutes after orgasm, and blood pressure, heart rate, and respiration return to normal levels.

After resolution males enter what Masters and Johnson call a refractory period during which they are physiologically incapable of another orgasm or ejaculation. This period may last from a few minutes in adolescent males to a much longer period for older men. Females do not experience a refractory period. They may be re-stimulated quickly to the orgasmic phase (multiple orgasm phenomena) (Masters and Johnson, 1966).

According to Kaplan’s Model of sexual response

In contrast to the four phases in the Masters and Johnson model, after years of research she developed a model of sexual response consisting of three independent components: desire, excitement and orgasm. (Kaplan, 1979)

Desire is the most important element of Kaplan’s model; it demonstrates the role of psychological and cognitive needs in the human sexual response cycle. Excitement and orgasm are described as primarily physiological components.

David Reed’s Erotic Stimulus Pathway (ESP) theory (1998)

This divides the sexual response cycle into four phases that contain elements of both Kaplan’s and Masters and Johnson’s models. The first phase of Reed’s model is seduction, the phase when an individual learns how to attract someone sexually. A seduction translates into memories and rituals. In the sensation phase, the senses enhance sexual excitement extending it into a plateau phase, which makes an individual want to continue the pleasurable moment for a longer period of time. According to Reed, these seduction and sensation experiences are the psychological input to the physiology of sexual response. In the surrender phase, orgasm occurs. The final phase of Reed’s model is the reflection phase where meaning is brought to a sexual experience (Reeds, 1998).

Female sexual physiology and sexual response cycle

Combined major sequence of events in the existing models of sexual arousal disorder consist of desire-arousal and orgasm in that order, but current knowledge on the models of sexual response acknowledges that women and men have different reasons to initiate or agree to sex (Meuleman and van Lankveld, 2005; Cain et al., 2003; Regan, 1996) and therefore this pattern of event may only apply to nearly all men but not to all women particularly those in long-term relationships. Studies have shown that sexually healthy women do not necessarily have “spontaneous” desire on any frequent basis and, for some; desire is never the reason they instigate or accept sexual engagement. Evidence is emerging to confirm this clinical impression that multiple motivations/incentives encourage a woman to agree to or initiate sex (Meuleman and van Lankveld, 2005). Common motivations for women to agree to or initiate sex include a desire to: enjoy the emotional closeness that accompanies and follows sexual activity with the partner, increase their own sense of wellbeing and self-image (feeling more desirable, attractive, appreciated), and reduce anxiety or guilt about sexual infrequency (Cain et al., 2003; Galyer and Conaglen et al., 1999).

Furthermore, women’s sexual desire is commonly triggered rather than spontaneous is a concept which is now supported by current research. It is clear, then, that a woman can begin (initiating or accepting) a sexual experiences for reasons other than desire. To move from their “sexually neutral” state, sexual stimuli are needed. A woman can become aroused with useful stimuli and a context that is appropriate (usually defined as sufficiently private, subsequent to feeling emotionally close to her partner and not tired). If she enjoys that subjective state of arousal/excitement, she can access desire that was not present initially. She then has desire for sexual satisfaction, which may be in the form of an orgasm, multiple orgasms, or simply a plateau of subjective arousal. Therefore arousal may precede desire and the two coexist and reinforce each other “and multiple reasons over and beyond desire motivate women to sexually engage (Basson, 2001). By this there is reason to believe that female sexual arousal is organized differently (Meredith et al., 2004).

Variation in female orgasm

In the early 1900s, Sigmund Freud theorized that there were two distinct types of orgasm, vaginal orgasm and clitoral orgasm. Moreover, he took what appeared to be the anatomical locus of an orgasm to be a measure of developmental maturity. According to Freud, orgasms caused by clitoral stimulation were called immature and is for young women; by the time a woman entered puberty
and was physically ready to have intercourse with a man; her center of orgasm is transferred to the vagina. However, research by Masters and Johnson dispelled Freud’s theory by showing that there is no measurable physiological difference between female orgasms resulting from clitoral stimulation and those from vaginal stimulation (Masters and Johnson, 1966). It is now widely thought that all female orgasms are the result of direct or indirect clitoral stimulation.

The clitoris can be directly stimulated by hand, mouth, or vibrator, or indirectly during certain positions of intercourse. However the clitoris is stimulated, the center of the orgasmic response is around the vagina or around the uterus. Other studies have stressed that, all female orgasms “are triggered by stimulation of the clitoris and expressed by vaginal contractions” (Kaplan, 1974).

Josephine and Irving Singer (1972) described three types of female orgasm: vulval, uterine, and blended. According to their theory, a vulval orgasm may result from either manual stimulation or coitus. The vulval orgasm is accompanied by contraction of the orgasmic platform and is not followed by a refractory period. A uterine orgasm occurs only as a result of intercourse and is typically characterized by a woman holding her breath and then explosively exhaling at orgasm. This type of orgasm is said to produce a great deal of relaxation and satisfaction and is followed by a refractory period. The blended orgasm is a combination of vulval and uterine orgasms.

For most women, penile thrusting is less efficient in causing female orgasm than direct clitoral stimulation. In a famous study by Sheri Hite (1976), for example, only about 30% of the women could reach orgasm regularly from intercourse without more direct manual clitoral stimulation. However, approximately 44% of those tested experienced regular orgasm from manual stimulation of the clitoris (as “foreplay”), either by a partner or through self-stimulation, and 42% experienced regular orgasm during oral stimulation of the clitoris. By comparison, 99.5% of women were able to experience orgasm during masturbation.

Females’ multiple orgasms

The phenomenon of ‘multiple orgasms’ occurs when one orgasm quickly follows the previous though it has not been defined how quickly one follows the other. Women are biologically far more likely to have multiple orgasms than men, because they do not have the refractory period that men experience. Some women are able to have several orgasms only seconds apart; men usually need much more time. Although only a small portion of the female population experiences them, Masters and Johnson (1966) and Fisher (1992) suggest that nearly all women are physically capable of multiple orgasm. Many factors could account for the discrepancy between experience and capability, but the most likely is that, once orgasm is reached, stimulation usually stops.

The phenomena of ejaculation in women

Some researchers believe that women ejaculate like men when they reach orgasm while others do not. Female ejaculation is believed to be the expulsion of fluid by human females from the paraurethral ducts through and around the female urethra during or before an orgasm. It has also been described as gushing or squirting, (Rubio-Casillas, 2012) although the exact source and nature of the fluid continue to be a topic of debate among medical professionals, which is also related to doubts over the existence of the G-Spot (Bell, 1994).

Those who support the idea of female ejaculation believe that the secretion comes from intravaginaeal glands correlated with erotic zone along the urethra in the anterior vaginal wall however the profuse secretion coming out with orgasm have no lubricating significance (Grafenberg, 1950). Critics to this theory pint out that muscular contraction of the vagina following organism may squeeze out some of the genital secretions and in few cases ejet with some force and the was initially supported by masters and Johnson and ten years later they said most women do not ejaculate during orgasm and they were able to observe fluid which was not urine but could not be proved to be female prostatic secretion (Kinsey et al., 1953; Masters and Johnson, 1966; 1982). This was further rejected by some scientist who reported that female ejaculation has never been scientifically substantiated and it’s highly questionable (Bohlen, 1982; Kaplan, 1983).

From other researcher emerged the question of the source and biochemical composition of the fluid excreted where some thought it was urine. The composition appear to vary with menstrual cycle (Zaviacic, 1984) and the biochemical profile of the para-urethral tissues varies with age. Other have even questioned the sensitivity and specificity of the markers chosen while the key question still remain unanswered is on the source of the fluid produced and its chemical composition (Bohlen, 1982) to reach a consensus of whether women ejaculate or not. Critics to this have maintained that ejaculation is either stress incontinence or vaginal lubrication and researchers have concentrated almost exclusively on attempt to prove that the ejaculate is not urine (Belzer, 1984; Zaviačič, 1984).

The debate in the current literature trying to solve the mystery is focused to address three major issues in this regard: the existence of female ejaculation, its source(s) and composition with its relationship to theories of female sexuality (Bell, 1994).

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Classification of sexual dysfunction in women

The DSM-IV-TR defines Female Orgasmic Disorder using the following diagnostic criteria: Persistent or recurrent delay in, or absence of, orgasm following a normal sexual excitement phase that causes marked distress or interpersonal difficulty (DSM-IV, 1994) while the International Statistical Classification of Diseases and Related Health Problems (ICD-10) initially defined Orgasmic dysfunction simply as “Orgasm either does not occur or is markedly delayed.” Regarding women who can obtain orgasm during masturbation or during intercourse with manual stimulation but not during intercourse alone, the clinical consensus is that she would not meet criteria for clinical diagnosis.

However, later the definition from the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV TR; Am. Psychol. Assoc. 2000), classified sexual dysfunctions into disorders of desire that is, affecting thoughts about sex or motivation to engage in sexual activity), disorders of arousal that is, affecting psychological and physiological excitement in response to sexual stimulation), disorder of orgasm that is, delayed, diminished, or absent “peak” intensity of sexual pleasure or sensation), and pain (that is, genital or pelvic pain occurring before, during, or after sexual activity).

In the past decade, three International Consensus Conferences gathered experts in the field of women’s sexuality for discussion of the definition and classification of female sexual dysfunctions. The most recent of these consisted of four meetings during 2002 and 2003, and was composed of an international, multidisciplinary group of experts from different countries. The result of these consensus conferences was the glaring realization that the DSM-IV-TR and the International Statistical Classification of Disease and Related Health Problems (ICD10) definitions of female sexual dysfunction are unsatisfactory.

The argument in the conference stems in part from the problematic conceptualization of women’s sexual response cycle. That is, the DSMIV-TR and ICD10 definitions of women’s sexual dysfunction are based on a model more characteristic of men than of women, with the assumed sequential stages of desire, arousal, and orgasm. The panel challenged several assumptions underlying the DSM-IV-TR and ICD10 definitions of women’s sexual dysfunctions and provided a revised classification system (Basson et al. 2003).

Furthermore, in 2003, an international committee organized by the American Urological Association Foundation (AUAF) was asked to review the literature on women’s sexuality and make recommendations for changing definitions of women’s sexual dysfunction. The recommended revisions to the American Psychiatric Association Diagnostic and Statistical Manual, Fourth Edition, Text Revised (DSM-IV-TR) reflect the changes in our understanding of women’s sexual function.

The revised definitions have been endorsed by the 2003 consultation of the following societies: the International Consultation on Urological Disease, the International Society of Urology, and the International Society for Sexual and Impotence Research. The disorders includes: Sexual desire/Interest disorder, Combined sexual arousal disorder, Subjective sexual arousal disorder, Genital arousal disorder, Orgasmic disorder, Vaginismus, Dyspareunia (Bason et al., 2003; Basson et al., 2006).

The revised definitions may in future aid researchers on women’s sexual dysfunctions by better delineating the clinical realities of women’s sexuality and by helping clinicians to minimize inappropriate classification and pathologizing of women as having sexual dysfunction.

Prevalence of dysfunction

Sexual problems are highly prevalent in both sexes but under-recognized and under diagnosed in medical practice (Heiman, 2002). The estimates vary depending on the definition used, means of assessment and population studied (Laumann et al., 1999) which means different studies would report different prevalence.

In general, female sexuality is least studied and its understanding is still in infancy despite years of research and study of reproductive function of women’s reproductive organs. It is undisputed fact that, it has not been studied as extensively as male sexual dysfunction and often underestimated problem (Rupesh et al, 2007). In one The National Health Survey done in a US it was revealed that 43% of studied women had some form of sexual dysfunction while a population census data from the same country it has been shown that approximately 3% of the total population, self-reported some form of sexual dysfunction (Laumann et al, 1999) while in one study conducted in Ghana, it was found that sexual dysfunction affects up to72.8% of Ghanaian women who participated in the study (Naflu et al., 2010).

Another study conducted in five different countries involving women aged 18-59 years revealed that 34% of the participants had decreased sexual interest, and 19% did not consider sexual intercourse to be pleasurable (Salonia et al., 2004). The problem of sexual dysfunction appears to be multifactorial, age-related and progressive in nature (Basson et al., 2000).

Considering prevalence by type of SD in women, several studies has given different incidences but most have pointed out that orgasmic dysfunction is most prevalent. One study in The Us revealed that is noticed in 24-37% of women presenting to sex therapy clinics for various reasons (Rosen et al., 2000), a study by Naflu et al in Ghana revealed that anorgasmia is the leading SD
in women with a prevalence of 72.4% while another study in the US revealed a figure of 24% of gynecological clinic attendees affected by anorgasmia where it was ranked the second most important outpatient clinic attendance problems (Laumann et al., 1994; Nafiu et al., 2020).

Another study by Rosen et al. in the US Orgasmic problems were reported by 29% of 329 healthy women (ages 18-73) who attended an outpatient gynecological clinic whereas the UK the figure has been found to be 23% of 104 women (18-65+) attending a U.K. general practice clinic (Rosen et al., 1993, Read et al., 1997). Another study reported that anorgasmia is noticed in 24-37% of women presenting to sex therapy clinics for various reasons (Rosen et al., 2000).

Other common SD in women includes low sexual desire, dyspareunia, lubrication problem and vaginismus. Based on findings from one large national survey in the US, it was reported that 31% of studied women experienced a lack of interest in sex for at least several months during the prior year. Findings from one clinic-based study indicated a 29% lifetime prevalence rate of low sexual desire in women. Difficulties with lubrication have been noted in 8-15% of all women and 21-31% of sexually active women (Lewis et al., 2004). The incidence is higher among women of peri or postmenopausal years, with one study reporting that 44% of postmenopausal women experience persistent or recurrent lubrication problems (Rosen et al., 1993).

One study in this respect reported that sexual problems frequently reported were anxiety or inhibition during sexual activity (38.1%), lack of sexual pleasure (16.3%), and difficulty in achieving orgasm (15.4%). Other common problems were lack of lubrication (13.6%) and painful intercourse (11.3%), each of which was significantly more prevalent in the postmenopausal group (Raymond et al., 1993). Dyspareunia rates reported in the literature range from 14 to 18% (Spector et al., 1990).

Because many epidemiological studies exclude questions about vaginismus, the prevalence of the disorder is not well established, though it is estimated to be between 1 and 6% (Lewis et al., 2004). More data are available on the epidemiology of dyspareunia, although estimates vary depending on geographical location and setting (Weijmar et al., 2005). In one of the largest prevalence surveys to date, Laumann et al. (1999) reported that approximately 16% of American women reported persistent or recurrent sexual pain in the past year, with older age associated with a lower likelihood of sexual pain. These results are consistent with those of a large epidemiological survey conducted in France in which 5% of women reported sexual intercourse pain “often” and 19% reported intercourse pain “some of the time” (Binik et al., 1999). In a community-based survey of 303 women, 12% reported a chronic history of pain provoked by any genital contact (Harlow et al., 2001).

However some sexual difficulties in women are contributed by both women and their partner’s sexual performance. Problems like anorgasmia, lack of desire, lubrication and vaginismus may not have any organic physical/organic but rather the attitude, expectations and performance of the individuals involved. Interfering thoughts, plans, negative self image or fear of an unrewarding sex experience in the past resulting from pain, partners erectile dysfunction or inexperience may lead to women being thought to have sexual difficulties (Basson, 2007).

**Treatment of SD in women**

Most women with FSD will initially present to a gynecologist for evaluation, so it is essential for them to have a comprehensive knowledge regarding the methodology of a complete and systematic evaluation.

The management of women with sexual dysfunction requires that a detailed clinical interview is undertaken and physical examination done to gather information on the presenting problem so as to identify a point at which the sexual response cycle is broken and the attention is paid to repair the broken link (Stewart, 2006). Research on pharmacological treatment of female sexual dysfunction (FSD) has shown some success in treating some types of FSD.

Estrogens have, for a long time, been the mainstay of treatment of FSD (Burkman et al., 2001). Studies in peri- and postmenopausal women revealed a strong correlation between decreasing E levels and sexual function. A meta-analysis conducted to compare E with placebo revealed that irrespective of the route of administration, E significantly improved dyspareunia and vaginal pH (Cardozo et al., 1998). Estrogens are also reported to improve mood and sexual desire, frequency, and orgasm. Hormone replacement therapy in postmenopausal women improves clitoral and vaginal sensitivity, lubrication, and sexual desire (Collins et al., 1994). Currently, estrogens are the most commonly used medications for the treatment of FSD, especially in peri- and postmenopausal women.

Statistically significant (not necessarily clinically significant) results have been found on the use of transdermal testosterone in women who had undergone oophorectomy in which there has been improvements in clitoral sensitivity and sexual arousal (Buster et al., 2005; Simon et al., 2005). As pointed earlier, the clinical meaningfulness of these results are questionable (Althof et al., 2005) and its wide distribution and use has been hampered by light of concerns about long-term safety and effects of testosterone.

EROS clitoral device has shown favorable results in increasing vaginal lubrication, sensation, orgasm and overall satisfaction. The device works by improving vasoconstriction through suction. This device has been
approved by the US FDA (Billups, 2001). Since the enormous success of using phosphodiesterase inhibitors (sildenafil, tadalafl, vardenafil) for treating male erectile dysfunction, a number of studies have examined whether these and similar vasodilator drugs may also be effective for treating women’s arousal disorders. Results from a limited number of placebo controlled studies suggest that phosphodiesterase inhibitors may be effective for treating difficulties with perceptions of physical sensations and physiological aspects of FSAD (for example, improved genital sensation, vaginal lubrication, satisfaction with intercourse, clitoral sensitivity), particularly among postmenopausal women with FSAD (Basson and Brotto, 2003; Berman et al., 2003).

Among premenopausal women with FSAD, one placebo-controlled study indicated increased self-reported sexual arousal, orgasm, sexual fantasy, intercourse, and enjoyment of sexual activity with sildenafil (Caruso et al., 2001). Findings from comparable studies also suggest that these drugs can enhance blood flow into women’s genital tissue and perceptions of genital responses. However, more often than not, sexual interest and psychological arousal are not comparably enhanced (Basson and Brotto, 2003; Basson et al. 2002; Kaplan et al., 1999; Laan et al., 2002). This suggests for women, external stimulus information such as relationship satisfaction, mood state, and sexual scenarios may play a more important role in assessing feelings of sexual desire and arousal than do internal physiological cues (Cindy, 2007).

Unless the problem is organic in nature, most FSDs are managed by psychological treatment, sexual therapy with emphasis on sexuality and sensate focus exercises (Masters and Johnson, 1970; Brutto, 2006). The management however, is tailored to treat the underlying cause of the problem.

**Conclusion**

Female sexual dysfunction is prevalent in the community but has not been studied as extensive as men sexuality and many questions on the subject remain unanswered and therefore its knowledge to general trained doctors in other fields of medicine is not sufficient enough to meet the expanding client understanding and need. This calls for further research in this field to unveil the untapped knowledge to help solve sexuality problems in women. A blend of knowledge on gynecology, anatomy, physiology, and sociology is needed to attain a high quality research to produce valuable result to solve the women with sexual dysfunction.

**REFERENCES**


