

Sexuality in midlife: Where the passion goes?

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ABSTRACT

Women's sexuality is highly capricious and multifaceted. Sexual functioning is an imperative component of women's lives and has progressively received public health, medical and even pharmaceutical attention. Sexual functioning, however, declines with age, leading to much debate about the contribution of menopause to sexual activity and functioning among women. The past two decades have witnessed an explosion of research into female sexuality. It is now understood that healthy and satisfying sexual function may extend all through the life cycle, and does not finish with end of child bearing years. Very few women's healthcare physicians are adequately trained to monitor a woman's sexual health through her menopausal transition and beyond, much less how to treat the sexual problems that can arise during this special time. The strong association of physical health and psycho-social factors with sexual functioning accentuates the clinical domineering to explore these factors when discussing women's apprehensions regarding sexual dysfunction. It is need of hour to create scientific evidence to help women's health care physicians understand the requirements of women in these special years of her life and help deliver the care they need and so rightly, deserve.

Key Words: Female sexual dysfunction, menopause, midlife, perimenopause, sexuality

INTRODUCTION

Women's sexuality is highly capricious and multifaceted, embracing a composite chemistry of physiologic, psychological and interpersonal components. Though common elements and pathways have been identified, the role of individual differences, learning factors, socio-cultural influences and age on women's sexual response cannot be overstated. Despite major advances in understanding the neurobiology of the female sexual response, defining normal sexual response in women still remains highly challenging and controversial. There being no consensus on the same, consensus has been reached at defining normal female sexual response as absence of abnormal, i.e., absence of overt sexual dysfunction.^[1]

Sexual functioning is an imperative component of women's lives and has progressively received public health, medical and even pharmaceutical attention.^[2] More than 75% of the middle-aged women in the Study of Women's Health Across the Nation (SWAN) reported that sex was moderately to extremely important to them.^[3] Sexual

functioning, however, declines with age, leading to much debate about the contribution of menopause to sexual activity and functioning among women.^[4,5]

Natural menopause has been consistently defined over the years as twelve consecutive months of amenorrhea in absence of surgery or any other pathophysiologic causes like pregnancy and lactation, which would terminate menstruation.^[6] Perimenopause, however, has been less consistently defined. A frequently used epidemiologic definition for perimenopause has been changes in regularity of menses within the past 12 months, or no menstrual cycle in the past 3 to 11 months.^[7]

The past two decades have witnessed an explosion of research into female sexuality. Although it essentially began with publication of Sexual Behavior of the Human Female in 1953,^[8] the precise study of peri- and post-menopausal

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sexuality did not begin in earnest till the 1990s. Now, effectively, the experts have come to understand that healthy and satisfying sexual function may extend all through the life cycle.

The present review focuses on issues specific to women's sexuality in midlife at time of peri-menopausal transition. The treatment aspects shall not form a part of the present review and shall be discussed separately elsewhere.

NORMAL SEXUAL RESPONSE

Given the multifarious and highly variable nature of female sexual response, it is not amazing that little consensus exists on the definition of "normal sexual response." Multiple definitions have been proposed, but they typically fail to describe the fundamental characteristics of normal sexual response in women. Rather, normal response is defined in most epidemiologic or clinical studies by the absence of overt sexual dysfunction.

Three prominent models of female sexual response cycle have been suggested. Based on their landmark research, Masters and Johnson in 1966^[9] developed a linear four-phase model of sexual response, comprising of phases of excitement, plateau, orgasm, and resolution; each of which has associated genital and extra-genital responses. However, the model assumes that a sexually functional woman is always responsive to sexual initiation or stimulation, and no importance is given to sexual desire or libido. To address this issue, Helen Singer Kaplan^[10] proposed an alternate three-stage model in 1979 and introduced the concept of desire into normal sexual responses. In this model, desire leads to arousal, then plateau and is followed by orgasm and resolution. Kaplan brought out desire as a necessary precursor to the development of adequate excitement and subsequent orgasm. This model made the basis for classification of female sexual dysfunction in the third and fourth editions of the Diagnostic and Statistical Manual of Mental Disorders.

The most widely cited current model of female sexual response, Basson's intimacy-based model,^[11] conceptualizes female sexual response as cyclic in nature. This model departs from the traditional elements of desire, excitement, plateau, orgasm, and resolution, arguing that these are not reflective of women's sexual experiences. The Basson model is based on observations that women experience the phases of sexual response in an overlapping, non-sequential manner that incorporates mental and physical components. Rather than initiate sexual activity out of sexual drive, as the traditional model would propose, Basson suggested that a woman may instigate physical contact or be receptive to sexual initiation for various reasons, such as the desire for

closeness, intimacy, commitment, and as an expression of caring. Sand and Fisher found that equal numbers of women endorsed each model, suggesting that the female sexual response is heterogenous.^[12]

PERIMENOPAUSAL AND POSTMENOPAUSAL SEXUALITY

As women finish their childbearing years, it often leads to cessation of discussions about reproductive and sexual health between her and her health provider. Very few women's healthcare physicians are adequately trained to monitor a woman's sexual health through her menopausal transition and beyond, much less how to treat the sexual problems that can arise during this special time. Apart from the menopause itself, women at mid-life are also subject to the typical diseases of both men and women in this demographic, and sexual functioning may be affected by the pathophysiology of these disease processes, as well as their treatment.

THE MENOPAUSAL TRANSITION: HORMONAL AND NON-HORMONAL VARIATIONS

It is the changes in menstrual pattern and FSH levels that classify reproductive stages.^[13] Fluctuations in Gonadotropin-releasing hormone (GnRH) levels alter the release of follicle-stimulating hormone (FSH) and luteinizing hormone (LH), and signal menopausal transition. Starting from intra-uterine period, there is a steady decline in the number of follicles present in the ovaries throughout a woman's life. Sometime after age 40, the number of follicles is low enough to cause changes in menstruation. At this juncture, even increased release of FSH and LH cannot compensate for diminishing ovarian reserves, the androgen synthesis decreases in the theca cells, estrogen levels decrease, and so does progesterone synthesis in the corpus luteum.^[14] Ovarian failure in a naturally menopausal woman is signified by the final menstrual period, and one year following that she is considered postmenopausal. In early menopause, FSH and LH levels increase to 20 times their premenopausal levels in an attempt to stimulate hormone production in the follicle-depleted ovaries. Thereafter, FSH and LH levels start declining and continue to decline until age 70.

Decreased estrogen leads to genital atrophy. The uterus decreases in size, and vulva and vagina lose their thickness and vascularity. Cervical secretions as well as those from Bartholin glands decrease, contributing to vaginal dryness. Changes in vaginal flora causes decreased acid production and increased pH. Vaginal atrophy and dryness may lead to pruritus, dyspareunia, and increased rates of infection. Estrogen is vital to maintain the integrity of pelvic connective tissue,

and its withdrawal can result in decreased strength in pelvic ligaments, increasing the risk of stress urinary incontinence^[15] and prolapse of both the uterus and bladder.^[16]

Postmenopausal dyspareunia is usually thought to result from atrophy of the vaginal wall tissue, leading to difficulty in lubrication. However, this has been disputed by Laan *et al.*^[17] who found no association of decreasing estrogen levels with vaginal dryness or dyspareunia, whereas at the same time stated that decreasing estrogen levels during menopause were significantly associated with vaginal atrophy. Breast is also sensitive to estrogen withdrawal, and postmenopausal women have decreased tactile sensitivity in their breasts. Decreased levels of estrogen lead to reduced fat content in the breasts, as well as reduced nipple sensitivity and erection at the time of sexual arousal. This results in greater stimulation requirements so as to achieve same sexual excitement.^[18] Free testosterone levels also decrease leading to symptoms of androgen insufficiency, which includes an ebbed sense of well-being, unexplained fatigue, and sexual changes including decreased libido, diminished sexual receptivity, and reduced pleasure.^[19]

Overall, these transformations in brain and genital anatomy and physiology may contribute to an increase in prevalence of sexual disorders among postmenopausal women. However, biggest myth about the menopausal transition is that the end of a woman's fertility signals the end of her sex life. Prevalence of sexual disorders increases during the menopausal transition. In a literature review, Bachmann^[20] found that from early to late in the menopausal transition, the percentage of women with sexual dysfunction was found to increase from 42 to 88%. More severe sexual dysfunction was correlated with decreasing estrogen, but not with level of free testosterone. Significant decline was found in several areas of sexual response, including sexual excitement and interest, frequency of sexual intercourse, and overall satisfaction with sexual function. Significant increases were reported in vaginal dryness and dyspareunia. Low satisfaction with partner sexual function was also significantly correlated with poor sexual function. Women with low scores on the Sexuality Questionnaire were more likely to report distress about their sexuality.^[21]

To examine the role of relationship factors in women's sexual functioning at mid-life, an Australian study interviewed 438 women between 45 to 55 years who were still menstruating at the time of their baseline interview and eight years of longitudinal data were available for 336 of these women.^[22] Sexual response as well as frequency of sexual activity was found to be predicted by prior level of sexual function, change in partner status, feelings for partner, and estrogen level. Significant predictors of dyspareunia included premenopausal history of

dyspareunia. In all, prior sexual function and relationship factors were found to be more important than hormonal determinants of sexual function in perimenopausal women.

There has been cross-sectional as well as longitudinal research in recent past which has focused on broader aspects of sexual functioning in mid-life. The Massachusetts Women's Health Study,^[23] a community-based, prospective study defined women as perimenopausal if they had experienced menstrual bleeding within the previous 12 months, but not within the past three months. It examined 200 women for various aspects of sexual functioning. Although unadjusted analyses showed that perimenopausal women reported feeling less arousal than when they were in their 40s, compared with premenopausal women, but did not differ on any other of the sexual functioning outcomes. After adjusting for age and other variables, results showed that perimenopausal women reported significantly less frequency of sexual desire than premenopausal women, but did not differ on the other outcomes.

The SWAN is among the largest community-based studies that includes a broad range of sexual functioning domains. SWAN is a multiethnic, observational cohort study of the menopausal transition in 3302 women.^[24] Baseline eligibility criteria for this study included age 42 to 52 years, intact uterus and at least one ovary, not currently using exogenous hormones affecting ovarian function and, at least one menstrual period in the previous three months. Variables of interest fell into the domains of importance of sex, sexual desire, frequency of activities (sexual intercourse as well as masturbation) and physical pleasure, emotional satisfaction with partner, arousal, and pain. All study women were asked how important sex was in their lives and certain other covariates. Baseline analyses comparing premenopausal and early peri-menopausal women found that early peri-menopausal women reported greater pain with intercourse than premenopausal women, an association which was found even after adjustment for vaginal dryness, age, and other covariates.^[25] Perimenopausal women were about 40% more likely to report having frequent pain during intercourse than premenopausal women. The two groups did not differ on frequency of sexual intercourse, desire, arousal, or physical or emotional satisfaction.

Cross-sectional studies, however, by their very design have a limited ability to characterize changes in sexual functioning owing to menopause or aging and to examine changes over the menopausal transition. Recently, few longitudinal studies have provided some advantage over the cross-sectional literature.

The longitudinal module of the Melbourne Women's Midlife Health Project enrolled 438 women who were premenopausal

or early perimenopausal for follow-up.^[4] Sexual functioning was assessed in terms of feelings for partner, libido, partner problems, sexual responsivity, frequency of sexual activities, and vaginal dryness and dyspareunia. Early perimenopause was defined as a change in menstrual frequency and late perimenopause was defined when women reported at least three months but fewer than 12 months of amenorrhea. Changes from premenopause and early perimenopause (these two groups were combined) to late perimenopause were analysed and compared, as well as comparisons were made between late perimenopause to postmenopause. From premenopause/early perimenopause to late perimenopause, sexual responsivity decreased and feelings for the partner declined. From late perimenopause to postmenopause, there were further declines in sexual responsivity, libido, and frequency of sexual activities and also vaginal dyspareunia and partner problems increased. So as to control for the effects of aging, this study compared changes in sexual functioning among women who transitioned from one menopausal stage to another with among women who remained premenopausal or postmenopausal during the seven years follow-up. It revealed that both of these groups had significant declines in sexual responsivity, implying that responsivity is as adversely affected by aging as by the menopause transition itself.

The Penn Ovarian Aging Study was a longitudinal study of a population-based cohort of 436 women aged between 35 to 47.^[26] Sexual functioning was assessed by the Female Sexual Function Index. In both unadjusted and adjusted results, sexual dysfunction increased significantly among late transition women, but not women early in the transition. Lubrication and orgasm scores decreased early in the transition, whereas arousal, lubrication, orgasm, and pain all decreased late in the transition.

WHAT EVIDENCE SAYS?

Evidence brings out that dyspareunia occurs early in the perimenopause, independent of aging. Decrease in sexual desire occurs later in perimenopause, a finding that may be confounded by chronically increased pain or increases in partner problems. Perimenopause seems to be a time of increasing pain during intercourse and diminished sexual interest. Frequency of masturbation increases during early perimenopause and may be correlated to the parallel increase in painful intercourse. There is a decline in masturbation in postmenopausal women which may be due to parallel decline in desire. It hints a conceivable causal pattern underlying declines in sexual functioning, because increases in pain may lead to lowered sexual desire. The vulvovaginal epithelium is rich in estrogen receptors, and estrogens are a necessity for urogenital maturation, maintenance, and genital vascular congestion during arousal. Lower estrogen levels in the late transition lead

to decreased vascular engorgement and vaginal secretions during sex, resulting in a diminished sense of pleasure from subjective arousal and a disruption in sexual response cycle.

There is a lack of association between the menopausal transition and frequency of sexual intercourse or satisfaction with partner. It indicates that these aspects of sexual function are not directly related to the menopausal transition.

Psychosocial factors are at least equal if not more important determinants of sexual function at midlife than what is ovarian function.^[27] Emotions for the partner and the relationship with their partner during intercourse together with general emotional wellbeing have been identified as the strongest predictors of sexual health.^[28]

Availability of a partner, previous sexual behavior, the quality of relationship, physical and psychological health is important parameters which affect a women's sexuality at midlife. The Massachusetts Women's Health Study found that health was a significant variable related to all aspects of sexual functioning.^[23] In the longitudinal cohort of the Melbourne Women's Midlife Health Project, important factors influencing libido and sexual responsiveness were prior level sexual functioning, change in partner status, feelings for partner, and estradiol levels. Frequency of sexual activities was not influenced by estradiol level, but was predicted by prior level of sexual function, change in partner status, feelings for partner, and level of sexual response.

Longitudinal results from SWAN found that health, psychological functioning and the importance of sex were related to all sexual function outcomes.^[29] Vaginal dryness was found to be an important factor associated with masturbation, pain, arousal, physical pleasure, and emotional satisfaction. Women who had a new relationship reported higher importance, desire, arousal, frequency, and emotional satisfaction, whereas women who lost a relationship reported more masturbation, and less arousal, frequency, emotional satisfaction, and physical pleasure. The most important variable related to sexual functioning was the importance of sex, which was highly related with all outcomes.

Taken as a whole, research has shown some changes in sexual functioning beginning at the perimenopause that are primarily related to vaginal dryness, but other factors such as a woman's prior sexual functioning, physical and mental health, and partner's health are equally, or possibly more, important.

CONCLUSIONS

Sexual functioning during midlife is multifaceted and swayed by hormonal and non-hormonal factors. The association of the importance of sex with all domains of sexual function

suggests that asking patients about the importance of sex may be a cornerstone of the management of the sexual concerns of midlife women. The strong association of physical health and psycho-social factors with sexual functioning accentuates the clinical domineering to explore these factors when discussing women's apprehensions regarding sexual dysfunction. There is a paucity of research on the treatment of sexual dysfunction specifically in the perimenopause. To date, there have been no clinical trials that focus exclusively on sexual dysfunction in peri-menopausal women.

It is hard to fight nature, but in the case of sexual and sensual enjoyment, it is a fight worth engaging. Our genetic engineering, oriented towards preservation of the species, doesn't mind if our sexuality withers after fecundity declines. But then, today's generation of women who is entering midlife isn't prepared to relegate great sex to a fond memory. They want to know where the passion went, and they want it back. They feel that they were more deserving of a good sex life now than ever before in their lives. And it is high time that end of child-bearing years should not be considered an end to women's sexual requirements. It is need of hour to create scientific evidence to help women's health care physicians understand the requirements of women in these special years of her life and help deliver the care they need and so rightly, deserve. Further research into diagnosis and potential treatments for sexual disorders in women are anticipated to enhance sexual function and satisfaction throughout women's lives.

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