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Prevalence and Associated Factors of Sexual Dysfunction in Malaysian Menopausal Women

(Prevalens dan Faktor-faktor yang Berkait Rapat dengan Disfungsi Seks dalam Kalangan Wanita Menopaus di Malaysia)

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ABSTRACT

The complexity of physical, hormonal and psychocological changes in menopause may affect the sexual function in women. This study measured the prevalence of female sexual dysfunction (FSD) in Malaysian menopausal women. The associated factors were also examined in the study. A cross-sectional study involved 310 menopausal (defined as last menstrual period more than 12 months ago) who visited a menopausal clinic in a secondary referral hospital in the East Peninsular Malaysia. The prevalence and associated factors of female sexual dysfunction in the study subjects were determined. Sexual dysfunction was assessed using the Malay version of the female sexual function index (MVFSFI). Possible associated factors were collected in a pre-designed questionnaire. The prevalence of FSD for the menopausal women was 21.3%. Younger age was the only factor significantly associated with FSD in the study subjects (adjusted odds ratio=0.916, 95% CI=0.851-0.987). The prevalence of FSD was low in the Malaysian menopausal women and associated with younger age.

Keywords: Female sexual dysfunction; Malaysia; menopause; risk factor

ABSTRAK

Kepelbagaian perubahan daripada segi fizikal, pengaruh hormon dan psikologi ketika putus haid boleh memberi kesan terhadap fungsi seks wanita. Kajian ini bertujuan untuk mengkaji kadar prevalens dan faktor-faktor yang berkait rapat dengan disfungsi seksual dalam kalangan wanita yang telah menopaus di Malaysia. Kajian ini merupakan kajian hirisan lintang yang melibatkan 310 wanita berkahwin di klinik menopaus di Pantai Timur Semenanjung Malaysia yang menggunakan indeks fungsi seksual wanita versi Bahasa Melayu. Prevalens disfungsi seksual dalam kalangan wanita yang telah menopaus adalah 21.3%. Faktor usia muda berkait rapat dengan disfungsi seksual dalam kalangan subjek kajian (nisbah odds yang diperbetulkan = 0.916, 95% sela keyakinan = 0.851 – 0.987). Prevalens disfungsi seksual dalam kalangan wanita Malaysia yang telah menopaus yang berlaku dalam kalangan wanita muda memerlukan perhatian perubahan oleh pakar-pakar tempatan.

Kata kunci: Disfungsi seksual; faktor risiko; wanita menopaus

INTRODUCTION

Menopause is a results from the gradual depletion of ovarian follicles, the loss of which ultimately leads to a decrease in ovarian hormones estrogen and progesterone production (Bachmann 1994). The transition to menopause involves complex anatomical, physiological and psychological changes. During the transition to menopause, ovarian function begins to decline and the frequency of ovulation decreases. As the menopausal transition progresses, menstrual cycles are missed and ultimately stopped as does ovulation (Bachmann 1994). Menopause is the result of either natural or iatrogenic process of ovarian exhaustion (Graziottin 2010).

Female sexual dysfunction (FSD) is characterized by disturbances in the process of a normal sexual response cycle or pain during sexual intercourse. One or more of the phases of sexual response cycle (sexual desire, excitement,

orgasm and resolution) could be affected (Basson 2005). Various psychosocial and biological factors were found to be associated with FSD (Graziottin 2010; Nappi & Lachowsky 2009; Nappi et al. 2002; Schnatz et al. 2010). Post-menopausal hormonal imbalance was commonly showed to be related with sexual problem in women (Dennerstein et al. 2000). The reported prevalence of FSD in postmenopausal is ranged from 40% to 80% (González et al. 2004; Mattar et al. 2008; Nappi & Lachowsky 2009; Nappi et al. 2002; Schnatz et al. 2010).

There are two explanations about the association of female hormone with sexual dysfunction. Firstly, an overall decline in estrogen, accompanied by occasional surges in estradiol, leads initially to hot flushes and night sweats, sleep problems, mood changes (Archer 2000; Bachmann 1994) and changes in body shape and sexual function. Low estrogen levels cause a thinning of the vaginal mucosa

epithelium (Bachmann 1995), atrophy of vaginal wall smooth muscle (Archer 2000), vaginal dryness (Bachmann 1995) caused by lubrication inadequacy, breast tenderness and an increased in vaginal pH (Dennerstein et al. 2000). These changes lead to increased risk of vaginal infections, urinary tract infections, urinary incontinence and sexual problems. Inadequate vaginal lubrication frequently leads to dyspareunia (Bachmann 1994), which results in painful sexual coitus. As adequate vaginal lubrication was needed for a normal sexual response cycle (Salonia et al. 2004), lack of lubrication was significantly associated with sexual dysfunction. In addition to the genital changes, estrogens and androgens play a role in the neurobiology of brain aging such as neuronal membrane repair, promoting neuronal sprouting and interneuronal connectivity. It reduces sexual desire, central and peripheral arousal, with vaginal dryness and causes/worsens orgasmic difficulties and dyspareunia, causing loss of self-confidence and self-esteem and increases anxiety and concerns (Graziottin 2010).

The reasons for having sexual dysfunction following menopause remain numerous, complex and it was not possible to substantiate if this dysfunction was due to menopause per se or due to advancing age. In addition to the physical and hormonal changes that affect the sexual functioning in the menopausal women, cultural and social factors influences the perception of sexual functioning. To date, there are many studies looking into the sexuality in menopausal women, but mostly from the West. Studies of sexual dysfunction in the East especially among Malaysian menopausal women is very limited. Malaysia is a multi-ethnic, tradition and religion strongly adhered country. Hardip et al. (2005) found out that nearly two-third of menopausal women in Kelantan, Malaysia reported a decreased or absent in sexual activity following menopause. The aim of this study was to estimate the prevalence of sexual dysfunction in the menopausal women in Malaysia using a validated screening instrument. We also studied the associated factors and potential risk factor/s of FSD in this group of women.

METHODS

Ethical approval from the Ethics Committee of the Ministry of Health, Malaysia (MOH) was obtained prior commencing the study.

STUDY DESIGN AND SUBJECTS

This is a cross-sectional study aims to assess the prevalence and associated factors of FSD in menopausal women in Malaysia. The study subjects were patients who fulfilled the inclusion criteria and attended the Menopausal Clinic, Hospital Sultanah Nur Zahirah, Kuala Terengganu during the study period. Kuala Terengganu is the capital city of Terengganu, a state in East Peninsular Malaysia. The population comprise mostly of Malay ethnicity and Muslim in religion. The society is more conservative, tradition

and religion strongly adhered. The inclusion criteria were women who: attained menopause state (both natural or iatrogenic), were married and with a stable sexual partner, who were able to read and understand Malay (the national language) or English and who consented for the study. Naturally, menopausal is defined as last menstrual period (LMP) more than 12 months and periods did not stop due to surgery, chemotherapy or hormones. Iatrogenic menopausal is defined as menstrual periods stopped due to surgical removal of the uterus (with or without removal of ovaries) or chemotherapy/radiation or taking hormones (oral contraceptives, OCs) or hormone replacement therapy (HRT). The exclusion criteria includes women who: were suffering from chronic and severe medical illness and were known case of psychiatric illness.

In term of the sample size, the estimated prevalence of sexual dysfunction in menopausal women was 60% (Hardip et al. 2005). A total of 360 subjects gave a precision of 5% for the study. The subjects of this study were identified from the Menopausal Clinic, Hospital Sultanah Nur Zahirah, Kuala Terengganu. The patients were given the questionnaire including clear definitions of terms and instructions for self-completion with inform consent. The patients could direct questions to a fieldworker regarding any doubts about the questionnaire. The basic socio demographic data of the subjects were collected using a predesigned questionnaire. The sexual dysfunction was assessed with a validated Malay version of the female sexual function index (MVFSFI). FSFI is a brief, multidimensional self-report measure of sexual functioning. It has been validated on a clinically diagnosed sample of women with female sexual dysfunction. It consists of 19 items and can be divided into 6 basic domains in female sexual dysfunction such as desire, subjective arousal, lubrication, orgasm, satisfaction and pain. Each of the domains has two to four questions with five to six options for patients to choose the most likely answer representing their sexual function within 4 weeks prior to the day they were given the questionnaire (Rosen et al. 2000; Wiegel et al. 2005).

The collected data was analyzed using SPSS version 12 (SPSS for Windows 2003). The prevalence of the overall and each domain of female sexual dysfunction was calculated. Multivariate logistic regression analysis (enter method) was use to examine the association between the independent variables and female sexual dysfunction. All the analysis were two sided and at the alpha level of 5%. A total score of 55 was taken as the cutoff point for the MVFSFI to distinguish between women with and without sexual dysfunction (sensitivity = 99%, specificity = 97%) with higher scores indicate more healthier sexual functioning. The cutoff score for each domain was also established for the MVFSFI by Sidi et al. (2007).

RESULT

Table 1 shows the baseline characteristics of the subjects in the study. A total of 310 menopausal women were included in the study. They were mainly of Malay ethnic

TABLE 1. Characteristics of the subjects ($n= 310$)

Characteristic	Mean (SD)	<i>n</i> (%)
Age	52.2 (5.71)	
Age at menarche (y)	13.4 (1.58)	
Age at menopause (y)	48.73 (3.82)	
Years of menopause (y)	5.18 (5.30)	
Number of children	4.10 (2.42)	
Body mass index (BMI) (kg/m ²)	26.42 (4.48)	
Years of marriage	29.02 (8.74)	
Ethnic		
Malay		274 (88.4)
Chinese		32 (10.3)
Indian		3 (1.0)
Others		1 (0.3)
Education level		
Nil		9 (2.9)
Primary		89 (28.7)
Secondary		181 (58.4)
Tertiary		31 (10.0)
Cause of menopause		
Natural		180 (58.1)
Premature		11 (3.5)
Surgical		115 (37.1)
Radiotherapy		1 (0.3)
Others		3 (1.0)
Use of hormone replacement therapy (HRT)		
Yes		83 (26.8)
No		227(73.2)
Comorbid medical illness(es)		
Yes		213 (68.7)
No		97 (31.3)
Climateric		
Yes		163 (52.6)
No		147(47.4)

group (88.4%) with secondary educational level or higher (68.4%) and slightly overweight (mean BMI = 26.41 kg/m²). The mean age of the women was about 52 years old with about the mean of 5 years of menopause. On average, they achieved menopause at the age of 49 years old. Majority of these women had natural menopause (58.1%) with 3.5% of the subjects had premature menopause (less than 30 years old). Most of the women had other medical illnesses (68.7%) and not on hormone replacement therapy (73.2%). Slightly more than half (52.6%) of the women experienced premenstrual syndrome (climateric) in the past.

The results based on the assessment with MVFSFI showed that 21.3% of the study subjects had female sexual dysfunction (Table 2). The commonest domain of sexual dysfunction in the menopausal women was low sexual desire (40%) followed by low sexual satisfaction (22.3%). Sexual dysfunction due to low vaginal lubrication was 16.8%, orgasmic dysfunction was 11.9% and pain during sexual intercourse was 15.8%.

Clinical relevant variables were included in the multivariate logistic regression analysis of the association with female sexual dysfunction in the menopausal women (Table 3). The result showed that age was the only

significant factor associated with sexual dysfunction in the study subjects ($p < 0.05$). Menopausal women of younger age had higher risk of having sexual dysfunction (Adjusted odds ratio = 0.916, 95% CI = 0.851–0.987). The other factors (years of menopause, body mass index, ethnicity, educational level, cause of menopause, use of HRT and comorbid medical condition) did not show significant association with sexual dysfunction in the menopausal women.

DISCUSSION

This cross-sectional study was conducted to determine the prevalence and associated factors of female sexual dysfunction in menopausal women in Malaysia. The study sample were recruited from a more conservative population which comprise mostly of Muslim and Malay ethnicity in East Peninsular Malaysia. The results showed that about one fifth of the menopausal women was having sexual dysfunction and mostly complained of low sexual desire. Younger age was the only factor found to be significantly associated with female sexual dysfunction in the subjects. The strength of the study as compared with most of the

TABLE 2. Sexual dysfunction (overall and each domain) of the menopausal women based on MVFSFI

	Sexual dysfunction, <i>n</i> (%)
Overall	66 (21.3)
Sexual desire	124 (40.0)
Sexual arousal	53 (17.1)
Vaginal lubrication	52 (16.8)
Orgasm	37 (11.9)
Sexual satisfaction	69 (22.3)
Sexual pain	49 (15.8)

TABLE 3. Multivariate analysis of the determinant for female sexual dysfunction in the menopausal women (*n*=310)

Variable	B	SE	<i>p</i> value	Adjusted Odds Ratio	95% CI
Age	-0.087	0.038	0.021	0.916	0.851-0.987
Years of menopause	0.038	0.040	0.335	1.039	0.961-1.124
BMI	0.060	0.034	0.078	1.062	0.993-1.135
Ethnic					
Malay					
Non-Malay	0.013	0.448	0.976	1.013	0.421-2.440
Educational level	-0.330	0.305	0.278	0.719	0.396-1.306
Less than secondary					
Secondary and above					
Cause of menopause					
Natural	-0.079	0.347	0.820	0.924	0.468-1.825
Iatrogenic					
Use of HRT					
Yes					
No	-0.318	0.339	0.348	0.728	0.375-1.413
Comorbid medical condition					
Yes	-0.142	0.315	0.652	0.867	0.467-1.609
No					

CI= confidence interval
 BMI = body mass index
 HRT= hormone replacement therapy

previous studies of sexual function in the menopausal women in the region is the use of a validated questionnaire in local language. The cut off value of the instrument to determine female sexual dysfunction was well established in Malaysian population.

There were conflicting results in the reports of sexual dysfunction in menopausal women. Several cross-sectional studies had found significant association of menopausal status with sexual functioning (Nappi & Lachowsky 2009; Schnatz et al. 2010). Schnatz et al. (2010) reported that FSD was as high as 75.6% among 102 women visited the menopausal clinic in a inner city in the United States. In a prospective observational study of 438 Australian women aged 45 to 55 years, Dennerstein et al. (1997) found significant changes in sexual functioning, including decreases in sexual responsiveness, sexual frequency, libido and increases in vaginal dyspareunia and partner

problem. However, based on the report from the Oxford community-based studies, the study did not observe an association between women's sexual functioning and menopausal status (Osborn et al. 1988). In Melbourne women's midlife health project, reduced sexual activity and painful sexual activity was determined only in 31% of women in menopausal ages (Guthrie et al. 2004). Inconsistency of the reported risk of sexual dysfunction in menopausal women was also illustrated in the results of the studies from Asia. An interviewed-based survey conducted in 5 different countries in Asia reported a wide range of sexual complaints where reduced sexual drive was as high as 70% in Hong Kong but as low as 47% in Taiwan. The prevalence in Malaysia was 50% (Huang et al. 2010). Another study which examine the sexual function in a neighbouring state of our study population using a semi-structured questionnaire found that two third of the study

subjects had decreased sexual activity after menopause (Hardip et al. 2005). In contrast, our results showed that the prevalence of sexual dysfunction was only 21.3% in the menopausal women. It is similar to the reported prevalence of FSD (29.6%) in the general Malaysian population in a primary care setting (Sidi et al. 2007). The expression of female sexuality is a complex interaction of psychological, physiological and socio-cultural factors. It is recognized that the endocrine changes after menopause affect the sense of well-being of women, however, some can well adjust to the transition with healthy relationship with partners, positive living environment and psychological health (Bachmann & Leiblum 1991; Nappi et al. 2002; Sarrel & Whitehead 1985). This is reflected in result of our study where no increased of sexual dysfunction in the menopausal women as compared with the general population. Berra et al. (2010) conducted a study to compare the personal distress due to sexual function between women pre-menopause and menopause and found that the level of distress was higher in premenopausal women.

The tradition sexual response as proposed by Masters and Johnson and Kaplan is a linear progression from excitement to orgasm and resolution (Kaplan 1969; Masters & Johnson 1966). Basson introduced an alternative to this linear model to describe female sexual response cycle. Female sexual expression is governed by biological and psychological factors. Once sexual arousal is experienced, it may lead to sexual satisfaction/orgasm. Even in the case that women fail to achieve sexual satisfaction/arousal, non sexual reward such as intimacy or increase sense of well-being will be achieved. This also increases the willingness of engagement in sexual activity. This is known as Basson's circular model (Basson 2001, 2005; Basson et al. 2004). There are five phases in Basson's model; i.e. sexual desire, sexual arousal, orgasm, sexual satisfaction and sexual pain. In this study, we found that low sexual desire (40%) was the commonest phase of sexual complaints. The result is similar to the survey conducted in six European countries on 1805 postmenopausal women where one-third (34%) reported that they experienced a reduced sex drive, whereas half (53%) noticed that they had become less interested in sex. However, the risk was higher in other studies. Hardip et al. (2005) found two third of the menopausal women had reduced sexual desire. In the 5 Asian countries survey, 1000 menopausal women were interviewed and 55.9% reported that they had reduced sexual drive. Decreased libidinal drive was frequent associated with estrogen depletion (Huang et al. 2010). It is believed that sexual desire involves more complex interaction of hormonal and psychosocial factors such as marriage, partner relationship, preconceived notion about menopause, altered body image, cultural attitudes and religion belief (O'Leary & Arias 1983; Pfeiffer et al. 1972). One of the early studies on the correlates of sexual desire in menopausal women was conducted by Bachmann et al. (1985). The authors found that 50% of the women had no decreased in sexual interest with menopause. There was positive relationship between desire and marital adjustment. They suggested

that changes of sexual desire are not a necessary outcome of menopause.

Two important factors that affect female sexuality in middle-aged women are the aging process and menopause. Depletion of female hormone estrogen and progesterone were most extensively studied in relation with sexual dysfunction in menopause. The decreased in estrogen production with menopause leads to epithelial thinning as well as reduced vasocongestion and lubrication of the genitalia during sexual arousal, which leads to vaginal dryness and dyspareunia (Archer 2000; Bachmann 1994, 1995). These were associated with reduced sexual libido and activity. Age was another common factor often related with reduced sexual activity in menopause women (Nappi & Lachowsky 2009; Nappi et al. 2002). There is a tendency to assume that older women are less sexually active and have decreased sexuality, particularly after menopause. Changes of sexual function and fatigue in middle-aged women are attributed to the decline in testosterone levels that begin in a woman's twenties. By the time a woman reaches the age of 45, her testosterone levels may have reduced by half regardless of the menopausal status (Burger et al. 2000; Davis et al. 1995). However, in a review of sex and ageing, Kaplan (1990) concluded that most physically healthy men and women remain regularly sexually active well into advanced old age. Similarly, we found that younger age was associated with higher risk of sexual dysfunction in menopause women in the current study. This finding can be explained by the difficulty in adjustment to the physiological and physical changes in initial phase of menopause. Women of younger age are at their early stage of menopause and experienced higher level of distress during the transition. Studies had showed that the earlier the menopause, the more severe and complex is the impact on the female sexuality (Graziottin & Basson et al. 2004; Graziottin & Leiblum 2005; Madanat et al. 2008). As mentioned by Graziottin, sexual impairment is more pervasive in the younger woman as they are still unclear about the different goals of her life cycle such as falling in love, having a satisfying sexual life, forming a stable couple, getting married, having a family (Graziottin 2010). HRT was shown to improve sexual function especially orgasmic, lubrication and reduced sexual pain in menopausal women (González et al. 2004; Kovalevsky 2005) but the finding was not replicated in our study. We also did not find association between ethnicity, duration of menopause, body weight, cause of menopause, educational level and comorbid medical conditions with sexual dysfunction in menopause.

There were several limitations in this study. This study was conducted at only one urban centre. This may limit the generalizability of the findings from this study. The study subjects were from a conservative population. There is a possibility of reservation in reviewing the sexual attitude and experience during the assessment. This may lead to underestimation of the risk of sexual dysfunction in the study. Secondly, this is a cross-sectional study in nature, so only an association could be determined

and not a causal effect. A longitudinal and prospective study could be done in order to investigate any causal relationship, course and outcome. The psychological state of the women was not assessed in this study. Studies had reported that psychological factors such as depression and anxiety are positively associated with sexual dysfunction in the menopausal women (Schnatz et al. 2010; Sidi et al. 2012; Yangina et al. 2008). Depression and anxiety level of the study subjects may confound the result of the study. Lastly, sexual function of the partner and marital relationship was not investigated. Female sexual dysfunction is often attributed to marital conflict or to dysfunction or disinterest on the part of the male rather than lack of responsiveness of the female (O'Leary & Arias 1983; Pfeiffer et al. 1972).

CONCLUSION

In this study, it was shown that the prevalence of sexual dysfunction was not increased which was about 21.3% in the menopausal women from the East Peninsular Malaysia. Younger age was the only factor associated with female sexual dysfunction in the menopausal women.

REFERENCES

- Archer, D.F. 2000. Guiding your patients through the transitional years, menopause, and beyond. *Contemp. Ob. Gyn. Suppl.*:1-18.
- Bachmann, G.A. 1994. The changes before 'the change': Strategies for the transition to the menopause. *Postgrad. Med.* 95(4): 113-115, 119-121,124.
- Bachmann, G.A. 1995. Influence of menopause on sexuality. *Int. J. Fert.* 40: 49-62.
- Bachmann, G.A. & Leiblum, S.R. 1991. Sexuality in sexagenarian women. *Maturitas* 13(1): 43-50.
- Bachmann, G.A., Leiblum, S.R., Sandler, B., Ainsley, W., Narcessian, R., Shelden, R. & Hymans, H.N. 1985. Correlates of sexual desire in post-menopausal women. *Maturitas* 7(3): 211-216.
- Basson, R. 2001. Using a different model for female sexual response to address women's problematic low sexual desire. *J. Sex. Marital Ther.* 27(5): 395-403.
- Basson, R. 2005. Women's sexual dysfunction: Revised and expanded definitions [review]. *CMAJ* 172(10): 1327-1333.
- Basson, R., Leiblum, S., Brotto, L., Derogatis, L., Fourcroy, J. & Fugl-Meyer, K. 2004. Revised definitions of women's sexual dysfunction. *J. Sex. Med.* 1(1): 40-48.
- Berra, M., De Musso, F., Matteucci, C., Martelli, V., Perrone, A.M., Pelusi, C., Pelusi, G. & Meriggiola, M.C. 2010. The impairment of sexual function is less distressing for menopausal than for premenopausal women. *J. Sex. Med.* 7(3): 1209-1215.
- Burger, H.G., Dudley, E., Hopper, J., Cui, J., Dennerstein, L. & Hopper, J.L. 2000. A prospective longitudinal study of serum testosterone, DHE-androsterone sulfate, and sex hormone binding globulin levels through the menopause transition. *J. Clin. Endocrinol. Metab.* 85: 2832-2838.
- Davis, S.R., McCloud, P., Strauss, B.J.G. & Burger, H. 1995. Testosterone enhances estradiol's effects on postmenopausal bone density and sexuality. *Maturitas* 21(3): 227-236.
- Dennerstein, L., Dudley, E.C., Hopper, J.L. & Burger, H.G. 1997. Sexuality, hormones and the menopausal transition. *Maturitas* 26(2): 83-93.
- Dennerstein, L., Dudley, E.C., Hopper, J.L., Guthrie, J.R. & Burger, H.G. 2000. A prospective population-based study of menopausal symptoms. *Obstet. Gynecol.* 93(3): 351-358.
- González, M., Viáfara, G., Caba, F. & Molina, E. 2004. Sexual function, menopause and hormone replacement therapy (HRT). *Maturitas* 48(4): 411-420.
- Graziottin, A. 2010. Menopause and sexuality: Key issues in premature menopause and beyond. *Ann. N.Y. Acad. Sci.* 1205: 254-261.
- Graziottin, A. & Basson, R. 2004. Sexual dysfunctions in women with premature menopause. *Menopause* 11 (6 Pt 2): 766-777.
- Graziottin, A. & Leiblum, S.R. 2005. Biological and psychosocial pathophysiology of female sexual dysfunction during the menopausal transition. *J. Sex. Med.* 2(3): 133-145.
- Guthrie, J.R., Dennerstein, L., Taffe, J.R., Lehert, P. & Burger, H.G. 2004. The menopausal transition: 9 year prospective population-based study. The Melbourne women's midlife health project. *Climacteric* 7(4): 375-389.
- Hardip, K.D., Harbinder, J.S. & Nor Aliza, A.G. 2005. Sexual function in menopausal women in Kelantan, Malaysia. *Maturitas* 52(3-4): 256-263.
- Huang, K.E., Xu, L., Nasri, N. & Jaisamrarn, U. 2010. The asian menopause survey: Knowledge, perceptions, hormone treatment and sexual function. *Maturitas* 65(3): 276-283.
- Kaplan, H.S. 1969. Hypoactive sexual desire. *J. Sex. Marital Ther.* 3: 3-9.
- Kaplan, H.S. 1990. Sex, intimacy, and the aging process. *J. Am. Acad. Psychoanal.* 18(2): 185-205.
- Kovalevsky, G. 2005. Female sexual dysfunction and use of hormone therapy in postmenopausal women. *Semin. Reprod. Med.* 23(2): 180-187.
- Madanat, L.M.S., Malila, N., Dyba, T., Hakulinen, T., Sankila, R., Boice, J.D.J. & Lähteenmäki, P.M. 2008. Probability of parenthood after early onset cancer: A population-based study. *Int. J. Cancer* 123(12): 2891-2898.
- Masters, W.H. & Johnson, V. 1966. *Human Sexual Response*. Boston: Little Brown & Co.
- Mattar, C.N., Yap, S.C., Lin, L.S., Agarwal, A.A., Wong, P.C. & Mahesh, C. 2008. Care of women in menopause: Sexual function, dysfunction and therapeutic modalities. *Ann. Acad. Med. Singapore* 37(3): 215-223.
- Nappi, R.E. & Lachowsky, M. 2009. Menopause and sexuality: Prevalence of symptoms and impact on quality of life. *Maturitas* 63(2): 138-141.
- Nappi, R.E., Verde, J.B., Polatti, F., Genazzani, A.R. & Zara, C. 2002. Self-reported sexual symptoms in women attending menopause clinics. *Gynecol. Obstet. Invest.* 53(3): 181-187.
- O'Leary, K.D. & Arias, I. 1983. The influence of marital therapy on sexual satisfaction. *J. Sex. Marital Ther.* 9(3): 171-181.
- Osborn, M., Hawton, K. & Gath, D. 1988. Sexual dysfunction among middle aged women in the community. *Br. Med. J.* 296(6627): 959-962.
- Pfeiffer, E., Venvoerd, A. & Davis, G. 1972. Sexual behavior in middle life. *Am. J. Psychiatry* 128: 1262-1267.
- Rosen, R.C., Brown, C., Heiman, J., Leiblum, S., Meston, C.M., Shabsigh, R., Ferguson, D. & D'Agostino, R.J. 2000. The female sexual function index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *J. Sex. Marital Ther.* 26(2): 191-208.

- Salonia, A., Munariz, R., Naspro, R., Nappi, R.E., Briganti, A., Chionna, R., Federghini, F., Mirone, V., Rigatti, P., Goldstein, I. & Montorsi, F. 2004. Women's sexual dysfunction: A pathophysiological review. *Br. J. Urol.* 93(8): 1156-1164.
- Sarrel, P.M. & Whitehead, M.I. 1985. Sex and menopause: Defining the issue. *Maturitas* 7(3): 217-224.
- Schnatz, P.F., Whitehurst, S.K. & O'Sullivan, D.M. 2010. Sexual dysfunction, depression, and anxiety among patients of an inner-city menopause clinic. *J. Womens Health (Larchmt)* 19(10): 1843-1849.
- Sidi, H., Asmidar, D., Hod, R. & Ng, C.G. 2012. Female sexual dysfunction in patients treated with antidepressant-comparison between escitalopram and fluoxetine. *J. Sex. Med.* 9(5): 1392-1399.
- Sidi, H., Puteh, S.E.W., Abdullah, N. & Midin, M. 2007. The prevalence of sexual dysfunction and potential risk factors that may impair sexual function in Malaysian women. *J. Sex. Med.* 4(2): 311-321.
- SPSS for Windows, Rel. 12.0.1. 2003. Chicago: SPSS Inc.
- Wiegel, M., Meston, C. & Rosen, R. 2005. The female sexual function index (FSFI): Cross-validation and development of clinical cutoff scores. *J. Sex. Marital Ther.* 31(1): 1-20.
- Yangina, H.B., Sözer, G.A., Şengün, N. & Kukulcu, K. 2008. The relationship between depression and sexual function in menopause period. *Maturitas* 61(3): 233-237.
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