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STUDY ON PREVALENCE OF MENOPAUSE SYMPTOMS AND SEXUAL DYSFUNCTION IN PERI AND POST MENOPAUSE WOMEN

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ABSTRACT

Women are living longer, almost more than two third of their life span is passed through postmenopause and so many of them suffer from short and long term consequences of estrogen deficiency. Climacteric symptoms start from perimenopause period but lasts for variable period of time beyond menopause. Many women feel symptoms like hot flushes, night sweats, restless, palpitation, insomnia, dry vagina, urinary frequency, diminished sexuality and mental disturbances. Beside that menopause has long term consequences like, osteoporosis, cardiovascular disease, cognitive impairment and metabolic syndrome**.** Vasomotor symptoms symptoms predominate most, but though sexual disorders are not life threatening but it decreases the quality of life. Good Sexual health is important to improve the quality of life. Knowing the prevalence of symptoms shape the strategy of holistic treatment approach for these women. **Objective:** To assess the frequency of menopausal symptoms, sexual problems and to identify the number of women used Menopause hormlne therapy (MHT) in peri and post menopause women. **Methodology:** A hospital based cross sectional study was carried out on all perimenopausal and post-menopausal women of age 45 to 55 year attended Sikder women medical college and medinova consultation center during the period of July 2022 to December 2024. Total 150 women were enrolled in the study but finally complete data were found from 120 women. This study assessed the menopausal symptoms with MRS (menopause rating scale) and sexual function using FSFI (female sexual function index). Inclusion criteria were age 45-55 years having husband and sexually active. We excluded women with severe illness like cancer and psychological illness. Participants were asked to fill up the MRS & FSFI tool by the doctors trained in menopause symptoms. **Result:** Regarding sexual dysfunction, 65.8% women of our study experienced sexual problems, FSFI <26.55 and (34.2%) had FSFI score > 26 indicating good sexual function. The incidence of hot flushes in our study showed 85.71%, night sweats (69.23%), insomnia 71%, Mood disorders 24.18%, Anxiety /irritability 19.78%, Vaginal dryness 67.03%, Dyspareunia 57%, Urgency/ frequency 17.6%, Back pain 21.98% and Muscular pain 15.40%. Only 17 % women took MHT, 53 % women did not use any of MHT and the rest were with MHT on irregular basis. The women who used MHT had good sexual function. **Conclusion:** The study showed, that psychosomatic complain was most common. A significant number of women suffered from GSM, This study also highlighted that 65 % women suffered from sexual dysfunction. So HCP need to evaluate menopause symptoms especially sexual dysfunction for all menopause women, whenever they come for consultation. Women who did not use MHT suffered more from sexual dysfunction. So there is ample opportunity to discuss about MHT with its prose and cones and offer them MHT along with life style modification.

KEYWORDS: menopause, sexuality, menopause hormone therapy, vasomotor symptoms.

INTRODUCTION

Menopause is a normal physiological & natural event of women's life. It occurs at the end of the reproductive age when ovaries cease to produce estrogen hormone and women stop menstruation**.** Women are living longer, almost more than two third of their life span is passed through postmenopause and so many of them suffer from consequences of estrogen deficiency. Though Vasomotor symptoms predominate most but withdrawal of estrogen and testosterone hormone, exacerbates the female sexual dysfunction more than men.[1] Female Sexual dysfunction(FSD) though not life threatening but it

decrease the quality of life. ISSM (International society of sexual medicine) noted that one out of every five women suffers from severe dyspareunia. FSD has tremendous negative impact on interpersonal relationship, quality of life, and sexual satisfaction. Other than menopause, biopsychosocial model influences the sexual wellbeing of women mostly it includes the personal attitude towards sex, social belief, religious culture, relationship with the partner, comorbidities of partner or herself. Good Sexual health is important to improve the quality of life and to maintain the conjugal harmony.

It is usually diagnosed clinically, when woman has not had a period for twelve full months. Many women suffer from symptoms of estrogen hormone deficiency. The symptoms are of wide diversity, these are vasomotor symptoms e i hot flushes, night sweats, palpitation then psychological disorders like low mood, anxiety, depression and genitourinary syndrome of menopause (GSM) which includes vaginal dryness, repeated urinary infection and dyspareunia. Also Menopause has long term health impact such as osteoporosis, cardiovascular diseases, cognitive impairment and metabolic syndrome**.** Regarding sexual disorders, women may suffer from decreased libido, painful sex and fail to achieve orgasm or satisfaction. Withdrawal of both estrogen and androgen exacerbate the female sexual dysfunction.[1] But sexual wellbeing of menopausal women depends not only on menopause status or hormone deficiency but it is influenced by Bio psychosexual model. The Biopsychosocial model has tremendous impact on these women's sexual life.[2] It includes the women's personal attitude towards sex, social belief, religious culture, and relationship with the partner, comorbidities of partner or herself. Among them Interpersonal relationship is the most important factor. Women suffer from wide range of female dysfunction. Vasomotor symptoms are the main bothering and common symptom in the early menopause that may persist long time as much as 10 years. These symptoms include hot flushes night sweats, insomnia and palpitation. Vasomotor symptoms occur due to increased vascular reactivity of the thermostat zone of the hypothalamus due to estrogen deficiency, with initial prominent vasodilatation. Women feel hot flushes as transient periods of intense heat in the upper part of the body usually accompanied by sweating. Hot flushes and night sweats are experienced by about 40 % in early transition, increasing to 60 to 80% in late menopausal women.[3] About 25% of women may have severe form, which cause significant distress. Sleep disturbances happen because of hot flushes and perceived stress. Insomnia caused by hot flushes and sweating can lead to lethargy, poor physical functioning and depressed mood. These symptoms need to be properly managed to prevent the progression of long-term consequences.

Mood swings, anxiety, and depression are some of the psychological symptoms which occur during the menopausal change. Nearly half of women on menopause transition can get easily irritated and suffer from mood swing. They become less impatient with the members of the family, friends, colleagues, and often feel tired and sad. Such emotional changes make women nervous, stressful, and sometimes aggressive. Depression is also more common in the menopause transition and early post menopause. Many studies reported that there is significant increase in risk of new-onset depression in women during menopause.[4]

GSM-It is a new term for a condition known as vulvovaginal atrophy. It is consisting of genital, urological, and sexual problems affecting menopausal women with a prevalence ranging from 36 to 90%, it affects many peri and post-menopausal women. In pre-menopausal years, it can be found in 19% of women aged 40–45.[5,6]

This symptomatology affects the quality of lives. Also the estrogen deficiency state produces long term squeal like osteoporosis, cardiovascular diseases, musculoskeletal problems, and decreased cognitive skills. These symptoms need to be properly managed to prevent the progression of long-term consequences.

The poor QOL of menopausal women would toll huge burden on public health care in developing countries as the number of menopause women is increasing day by day. Therefore our aim is to find out frequency of menopausal symptoms, sexual problems and identify the rate of impairment of quality of life in peri and post menopause women of Bangladesh.

METHODOLOGY

A cross sectional study of 150 peri and post-menopausal women of age 45 to 55 year who attended Sikder women medical college & Mdinova, OPD was carried out (July 2023 to December 2024). Though **Total 150 women were enrolled in the study but finally complete data were found from 120 women.** This study assessed the menopausal symptoms and sexual function with the use of MRS (Menopause Rating Scale**)** and FSFI (Female sexual function index).

We excluded women with severe illness like cancer and having psychological illness. Participants were asked to fill up the questionnaires by the doctors in English and translated in local language if women felt difficulties in understanding the questions. FSFI is a validated standardized Questionnaires to assess sexual function, consists of domains of sexual desire, arousal, satisfaction and pain/dyspareunia. The questions are scored from 0 to 5. Total FSFI score is done by the number of the items from each domain and multiply by .6 for desire and arousal, by .4 for satisfaction and pain. Higher the score better the function. Women with score < than 26, suffer from sexual problems. Similarly The MRS is the most frequently used instruments to evaluate menopausal symptoms, validated questionnaire that consists of 11 items grouped into three categories somato vegetative or

Somatic, psychological, and urogenital or Genitourinary syndrome of menopause.[7] Each item is a menopausal symptom, which is graded on a minimum score of 0 and maximum of 4. Each symptom is rated from 0 to 4 as "no symptom," "mild," "moderate," and "severe," respectively. Depending on the severity, each symptom is scored from 0 to 4 on Likert's scale with 0 being none and 4 being extremely severe. The overall score ranges from 0 to 44. Somatic subscale consists of 4 items i.e., Hot flushes or sweating, heart discomfort, sleeping problems, joint or muscular discomfort. Psychological subscale consists of 4 items i.e., Depressive mood, Irritability, Anxiety and Physical or mental exhaustion. Urogenital subscale consist of 3 items i.e., sexual problems, bladder problems and dryness of vagina. Somatic domain has a total score ranging from 0 to 16, urogenital domain has total score from 0 to 12, and psychological domain has total score ranging from 0 to 16. The overall score ranges from 0 to 44. The sum of the subscales scores provides the total MRS score and reflects the status of QOL. This total score determines severity of menopausal symptoms in the form of no or little (score 0– 4), mild (score 5–8), moderate (score 9–16) and severe (score 17–44).

The higher the score of a domain, the more severe the problem and the greater is the degree of impairment of QOL.[8,9] A cut off value of score up to 8 for somatic, 6 for psychological and 3 for urogenital and 16 for total MRS revealed good QOL, but above these scores, reveals moderate to severe symptoms and poor QOL.[10]

We enrolled 120 women in our study, who were asked by the doctors. Our doctors are trained about the signs & symptoms of menopause so that they were comfortable to get the history and translating MRS in Bengali where necessary.

Table I: Description of the symptoms of MRS.

ITEM	DESCRIPTION
1.	Hot flushes, sweating (episode of sweating)
2.	Irritability (feeling nervous, inner tension, feeling aggressive,
3.	Heart discomfort (unusual awareness of heart beat, Palpitation, tierdness
4.	Sleep problems (difficulty falling sleep, difficulty in sleeping through the night, waking up too early)
5.	Depressive mood (feeling 'down', sad, on the verge of tears, lack of derive, mood swings, loneliness,)
6.	Anxiety (inner restlessness, feeling 'panicky')
7.	Physical and mental exhaustion (general decrease in performance, impaired memory, decrease in concentration, forgetfulness, fatigue, headache, dizziness)
8.	Sexual problems (change in sexual desire, in sexual activity and satisfaction)
9.	Bladder problems (difficulty in urinating, increase need to urinate, bladder incontinence)
10.	Dryness of the vagina (sensation of dryness or burning in the vagina, difficulty with sexual intercourse)
11.	Joint and muscular discomfort (joint pain, muscle pain, backache)

Face to face interview was taken. We took age, residence, occupation, education, BMI, mean age of menopause, nature of menopause for sociodemographic variables. We considered, parity, mode of deliveries and comorbidities. After collecting all data these were checked and tabulated using the SPSS version 25 (IBM Corp, Ar monk NY). Data were expressed as mean, SD and percentage. P< .05 was taken as statistically significant.

Main outcome variables were, Prevalence of menopause symptoms and sexual dysfunction. Also we assessed the number of women used MHT at their perimenoapse and menopause state. Patient's written consent and Ethical permission from the ethical board of the hospital was taken.

RESULT

The age distribution of the study population was - two third of women 70.8% belonged to 45-54 years and only 8.3% women were above 54 years (Table 1).

In our study all women were staying with their husbands, 90% were service holders, 52 women were below secondary school, others were educated (Table 2). 55% women were with normal weight group.

Background characteristics of the study of the participants revealed (Table 3) majority women 65, 8% were postmenopausal, age at menopause experienced between the ages 45-49 years (62.3%), and incidence of natural menopause was found among 66.70 % women of the study group.

Regarding sexual dysfunction, 65.8% women of our study experienced sexual problems, FSFI <26.55, (Table 4).

Our study showed 41 women (34.2%) had FSFI score > 26 indicating good sexual function. The mean scores for FSFI are presented in (Table 5). Only 17 % women of our study group took MHT regularly during interview at least for 6 months. 53 % women did not use any of MHT

and the rest were with MHT on irregular basis. The Women who did not have sexual dysfunction, majority took MHT indicating MHT might help them to maintain good sexual function.

The incidence of hot flushes in our study showed 85.71%. In our study women suffered from hot flushes were the most predominant finding (Table 6). Women had night sweats (69.23%), insomnia 71%, Mood disorders 24.18%, Anxiety irritability 19.78%, vaginal dryness 67.03%, Dyspareunia 57%, Urgency/ frequency 17.6%, Back pain 21.98% and Muscular pain 15.40%.

Table 1: The age distribution of women of the study population (120).

Age group in year	Frequency	Percentage
45-48	72	
49-51	43	
52-54	4	
55	1	

Mean ± SD=47.73 ± 3.54, Range 45-55 year

Table 2: Socio-demographic characteristics among study participants (N=120).

Serial No	Characteristics	Frequency	Percentage
1	Marital status	120	
2	Home maker Service holder	90, 30	
3	Educational status	<SSC-52, Intermediate49 graduate13, Masters 6	43.3%, 40.8%, 10.8%, 5.1%
4	BMI	Normal 35, Overweight66 Obesity19	29.2%, 55%, 15.8%
5	Primi, Multi	1, 119	8%, 99.2%
6	Vaginal delivery, Caesarean section	117, 11	97.5%, 9.1%

Table 3: Background characteristics of the study of participants (N=120).

Serial No	Characteristics	Frequency	Percentag
1.	Menstrual History		
	Premenopause	42	34.2%
	Postmenopause	79	65.8%
2	MenopauseType		
	Natural	114	95%
	Surgical	79	05%
3	Age at Menopause		
	45 -46	24	30.40
	47-50	49	62.00
	51- 55	6	7.60
4	Duration of Menopause		
	>1 year	18	22.8
	>2-3 year	27	34.2
	3-5	34	39.2
5	Gynaecological disease		
	Present	06	05
	Absent	118	95
6	Prolapse		
	Present	02	1.7
	Absent	114	95
7	Hystrectomy		
	Yes	04	33.3
	No	116	66.7
8.	Diabetes		

	Present	24	20
	Absent	96	80
9	Hypertension		
	Present	26	21.7
	Absent	94	78.3
Sexual dysfunction		**Frequency**	**Percentage**
Experienced		41	34.2 %
Not experienced		79	65.8 %
Total		120	100 %

Table 5: FSFI- Obtained result from affected women.

	Desire	**Arousal**	**Satisfaction**	**Dyspareunea**
Mean ±	2.58 ±	3.68±	3.44 ±	3.66 ±
SD	1.49	1.77	1.98	1.87
Median	2.4	3.4	3.75	4.4

Table 6: Distribution of menopausal symptoms.

Symptoms	**Frequency**	**Percentage**
Hot Flushes	78	85.71
Night sweats	63	69.23
Insomnia	65	71.43
Mood disorders	22	24.18
Vaginal dryness	61	67.03
Dyspareunea	57	
Urinary problems (urgency, frequency)	16	17.6
Repeated UTI	44	48.35
Back pain	20	21.98
Muscle pain	14	15.40
Anxity & Irritability	18	19.78

Table 7: Women used Menopause Hormone therapy (1 year).

Continuous	13	17 %
Irregular	24	30%
Not at al	42	53%

DISCUSSION

Menopause is a milestone in women's life**,** withdrawal of hormone produces vasomotor symptoms, psychological symptoms, symptoms of genitourinary syndrome of menopause and sexual dysfunction. Age is associated with decline of sexual desire, but estrogen withdrawal in menopause exacerbates female sexual dysfunction more than men.[11] Women live more than 30 years following natural menopause, which commonly occurs between 48 and 52 years, in developed countries.[12]

Menopause associated with FSD has tremendous effect in quality of women's life, highly prevalent 20 %-40% (Lauman 99) in young and 48% in older women (Dinnestein 2003). Sexual behavior is controlled by a hormonally response neural network. But estrogen deficiency is an important factor that contributes sexual dysfunction. Menopause hormone therapy boosts up the sexuality in menopause women. In this study we found frequency of sexual dysfunction was FSFI <26.55 and 65.8% women experienced sexual dysfunction (Table 4).

The mean score for FSFI domain is documented in table 5. Revive study showed that vaginal dryness of menopause women adversely affects the sexual enjoyment 72% and 66% women felt sexual spontaneity.[13] Diminished sexuality of women may break the harmony of relationship and women may suffer from severe mental agony. The International vaginal health; insight, Views, and attitudes (VIVA) study reported the prevalence of specific symptoms including vaginal dryness (83%) and pain during sex (42%).[14]

Similarly we have found 67.03% women suffered rom vaginal dryness and 48.05% women felt dyspareunia. One single entity of dyspareunia leads dysfunction in all the domains of sexual functions. Withdrawal of estrogen hormone makes the vaginal wall very thin friable, less elastic, dry and it becomes prone to mechanical damage during sex. Lack of Lubrication is important factor for painful intercourse. We have found a significant number of women suffered rom dryness of vagina in our study. Early intervention may prevent the progression of the disease and improve the sexuality of menopause women.

In our study (Table-6) showed 85.71% women suffered from hot flushes which is the most predominate finding

of our study. Though the severity differs from women to women. Also vasomotor symptoms in our study had similarity with many other studies.[15,16,17,18,19,20]

Women had night sweats (69.23%), insomnia 71%, Similar findings were discovered in a study conducted by Joseph et al in Manipal, India,[21] which revealed that 96.4% of study participants experienced somatic complaints In contrast, Bairy L et al. found that their study population had fewer vasomotor symptoms and had a lower incidence of hot flushes and profuse sweating (< 50%).[22] Actually the incidence of vasomotor symptoms varies widely depending upon many factors like age, ethnicity, geography, cultural attitude, personal belief and knowledge.

GSM causes silent suffering for our menopause women, it brings conjugal disharmony. So knowledge of the concept of GSM and its impact on the quality of life is paramount importance since it affects millions of women of worldwide, doctors need to know how to address this issue. Our study revealed women had Vaginal dryness 67.03%, Dyspareunia 57%, and urgency frequency 17.6%. Similar findings were shown by the studies of Sarmento and Tadir, their most common symptoms include vaginal dryness (78%) and dyspareunia (76%).[23,24]

Unstable oestrogen levels can have an impact on the brain, predisposing some women for feelings of mood disorders and anxiety. We all know that many women may suffer from some of the common physical symptoms like brain fogging, slight memory loss and thinking problems, but these symptoms wane off over the period of time. A longitudinal study, performed in U.S A. have reported that the menopausal symptoms entail not only for depressive symptoms, but also does have major depressive disorder. However, a clear correlation between symptomatic menopausal transition and psychiatric disorders has not been well established.[25] Our study showed women suffered from mood disorders about 24.18%. Anxiety/irritability was 19.78%. The study of Liu Chi Yo consisted of the symptomatic menopausal transition and control cohorts each recruited 19,028 women. The study showed the incidences of bipolar disorders (hazard ratio [HR]=1.69, 95% confidence interval [CI]=1.01–2.80), depressive disorders (HR=2.17, 95% CI=1.93–2.45), anxiety disorders (HR=2.11, 95% CI=1.84–2.41), and sleep disorders (HR=2.01, 95% CI=1.73–2.34) were higher among the symptomatic menopausal transition women than in the comparison cohort. The author of the study concluded, 'menopausal transition is highly symptomatic in at least 20% of women. A higher prevalence of psychiatric symptoms, including depression, anxiety, and sleep disturbance, has been shown in women with symptomatic menopausal transition.[26] A Nationwide Population-Based Retrospective Cohort Study, also Broomberg's from their study highlighted -the risk of major depression is greater for women during and immediately after the menopausal transition than when they are pre-menopausal.[27]

Musculoskeletal pain is common complaints of menopausal women. Though the exact relationship between estrogen deficiency and musculoskeletal pain is not clear. Our study showed 21.98% women had back pain and 14.40% women had Muscular pain. We don't know exactly whether it was due to menopause or ageing of women. Fiona E Watt commented in her study "Although the association appears strong, a causal link between estrogen deficiency and musculoskeletal pain or different types of arthritis is lacking; and there is much still to understand about musculoskeletal pain and arthritis at the time of the menopause".[28] 30% menopause women of our study group used menopause hormone therapy (MHT) for 1 year. Interestingly we found these women had good sexual function. On the other hand women suffered more sexual dysfunction, who did not use any MHT.

CONCLUSION

The study showed, that psychosomatic complain was most common. A significant number of women suffered from GSM, This study also highlighted that 65 % women suffered from sexual dysfunction. So HCP need to evaluate menopause symptoms especially sexual dysfunction for all menopause women, whenever they come for consultation. Women who did not use MHT suffered more from sexual dysfunction. So there is ample opportunity to discuss about MHT with its prose and cones and offer them MHT along with life style modification.

REFERENCES

1. Taffe JR, Dennerstein L. Menstrual patterns leading to the final menstrual period. Menopause, 2002; 9: 32.
2. McKinlay SM, Brambilla DJ, Posner JG. The normal menopause transition. Maturitus, 1992; 14: 103.
3. Thurston EC, Joffe H. V. Crandall CJ, Tseng CH, Crawford SL, et al. Association of menopausal vasomotor symptoms with increased bone turnover during the menopause transition. J Bone Miner Res., 2011; 26: 840.
4. Cohen LS, Soares CN, Joffe H. Diagnosis of management of mood disorder during the menopausal transition. Am J Med., 2005; 118: Suppl 12B: 93.
5. Sarrel PM. Ovarian hormones and vaginal blood flow; using laser Doppler Velocimetry to measure effects in a clinical trial of post-menopausal women. Int J Impot Res., 1998; 10: Suppl 2: S91 asomotor symptoms and menopause: findings from the study of women's Health across the Nation. Obstet/Gynecol Clin North Am., 2011; 38: 489.
6. Heinemann K, Ruebig A, Potthoff P, et al. The Menopause Rat- ing Scale (MRS): a methodological review. Health Qual Life Outcomes, 2004; 2: 45.

7. Heinemann K, Ruebig A, Potthoff P, Schneider HP, Strelow F, Heinemann LA, Thai DM. The Menopause Rating Scale (MRS) scale: a methodological review. Health and Quality of life Outcomes, 2004 Dec; 2: 1-8.
8. Chuni N, Sreeramareddy CT. Frequency of symptoms, determinants of severe symptoms, validity of and cut-off score for Menopause Rating Scale (MRS) as a screening tool: a cross- sectional survey among midlife Nepalese women. BMC women's health, 2011 Dec; 11(1): 1-9
9. Acquadro C, Jambon B, Ellis D, Marquis P. Languages and translation issues. In: Spilker B, editor. Quality of Life and Pharmaco-Econonomics in Clinical Trials, 1996; 2: 575–585.
10. Lindau ST., et al. "A study of sexuality and health among older adults in the UNITED States". The New England Journal of Med- icine, 2007; 357: 762-774.
11. GBD 2017 Mortality Collaborators. Global, regional, and national age-se specific mortality and life expectancy, 1950–2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet, 2018; 392: 1684–735. 10.1016/S0140-6736(18)31891-9.
12. Nappi RE., et al. "The closer servey; Implications of vaginal discomfort in postmenopausal women and in male partmers". The Journal of Sexual Medicine, 2013; 10.9: 2232-2241.
13. Nappi RE., et al. "Health; insight, Views & Attitude (VIVA) - results from an international survey". Climacteric 15.1 (2012): 36-44.
14. Abdullah B, Moize B, Ismail BA, Zamri M, Mohd Nasir NF. Prevalence of menopausal symptoms, its effect to quality of life among Malaysian women and their treatment seeking behaviour. Med J Malaysia, 2017; 72: 94–9
15. Sood A, Singh M, Raina SK, Bhardwaj AK, Chander V, Manhas A. Study of menopausal symptoms in the nursing staff and female attendants in a rural medical college. Trop J Med Res., 2017; 20: 185–8.
16. Khatoon F, Sinha P, Shahid S, Gupta U. Assessment of menopausal symptoms using modified menopause rating scale (MRS) in women of Northern India. Int J Reprod Contracept Obstet Gynecol, 2018;7:947–51
17. Joseph N, Nagaraj K, Saralaya V, Nelliyanil M, Rao PJ. Assessment of menopausal symptoms among women attending various outreach clinics in South Canara District of India. J Midlife Health. 2014; 5: 84–90.
18. Joseph LA, Varghese AP. Prevalence of menopausal symptoms and perceptions about menopause among postmenopausal women attending gynecology OPD at GMC Idukki, India. Int J Reprod Contraception Obstet Gynecol, 2017; 6: 413–6.
19. Palacios S, Henderson VW, Siseles N, Tan D, Villaseca P. Age of menopause and impact of climacteric symptoms by geographical region. Climacteric, 2010; 13: 419–28. 10.3109/13697137.2010.507886.
20. Joseph N, Nagaraj K, Saralaya V, Nelliyanil M, Rao PJ. Assessment of menopausal symptoms among women attending various outreach clinics in South Canara District of India. Journal of mid-life health, 2014 Apr; 5(2): 84.
21. Bairy L, Adiga S, Bhat P, Bhat R. Prevalence of menopausal symptoms and quality of life after menopause in women from South India. Australian and New Zealand Journal of Obstetrics and Gynaecology, 2009 Feb; 49(1): 106-9.
22. Sarmento AC, Fernandes FS, Marconi C, Giraldo CP, Janaina C, Crispim JC, et al.. Impact of microablative fractional radiofrequency on the vaginal health, microbiota, and cellularity of postmenopausal women. CLINICS, 2020; 75: e1750.
23. Tadir Y, Iglesia C, Alexiades M, Davila GW, Guerette N, Gaspar A. Energy-based treatment for gynecologic conditions including genitourinary syndrome of menopause: consensus, controversies, recommendations, and FDA clearance. Lasers Surg Med.) World Psychiatry, 2016 Jun; 15(2): 146–154.
24. Li-Yu Hu, MD, Cheng-Che Shen, MD, Jeng-Hsiu Hung, MD, Pan-Ming Chen, MD, Chun-Hsien Wen, MD, Yung-Yen Chiang, PhD, and Ti Lu, MD; Risk of Psychiatric Disorders Following Symptomatic Menopausal Transition: Medicine (Baltimore).
25. JT Bromberger [1], H M Kravitz, Y-F Chang, J M Cyranowski, C Brown, K A Matthews; Psychol Med., 2011 Oct; 41(10): 2238.
26. Fiona E Watt. Musculoskeletal pain and menopause; Post Reprod Health, 2018 Mar; 24(1): 34-43.