



Obstetrics & Gynaecology

COMPARATIVE EVALUATION OF SEXUAL FUNCTION, OCULAR HEALTH AND QUALITY OF LIFE IN REPRODUCTIVE AND PERIMENOPAUSAL WOMEN- A CROSS SECTIONAL STUDY

Dr. Himani	Post Graduate Resident, Department Of Obstetrics & Gynecology, Sharda Hospital, Greater Noida
Dr. Archana Mehta	Professor And Head Of The Department, Department Of Obstetrics & Gynecology, Sharda Hospital, Greater Noida
Dr. Neerja Goel	Senior Consultant, Department Of Obstetrics & Gynecology, Sharda Hospital, Greater Noida
Dr. Abha Gahlot	Professor, Department Of Obstetrics & Gynecology, Sharda Hospital, Greater Noida

(ABSTRACT) **Background:** Perimenopause is the period immediately prior and up to 1 year after the final menstrual period. Sexual and ocular health are the most affected and ignored parameters in this age group which in turn impact the quality of life negatively. **Aim:** The objective of this study was to compare and evaluate sexual function, ocular health and quality of life in reproductive and perimenopausal women and their correlation with quality of life. **Methods:** It was an observational Cross-Sectional study conducted at a tertiary care centre in Greater Noida from Nov 2020 – September 2022, a total of 160 women were equally divided into perimenopausal and reproductive age group and compared on the basis of MVHI, FSFI-6, OSDI and MENQOL. **Results:** Mean age of perimenopausal group was 46.65 ± 3.90 . In reproductive age group, mean total FSFI score was 27.89 ± 2.34 , where as in perimenopause age group, it was 24.15 ± 5.16 . A statistically significant difference was observed in all FSFI parameters except pain. The difference in the OSDI score was also statistically significant. Amongst MENQOL domains, physical was the most affected, followed by vasomotor in perimenopausal women. FSFI score was also observed to be positively correlated with quality of life assessment. **Conclusion:** Sexual efficacy and sexual quality of life declines amongst perimenopausal women. Dry eye disease is also more prevalent in the perimenopausal women necessitating regular ophthalmic evaluation. Since quality of life is a sum of health of all systems of body, so it is essential to evaluate all these parameters in perimenopausal women.

KEYWORDS : Perimenopause, premenopause, menopausal transition, sexual function, quality of life

INTRODUCTION

The average age of menopause in India is 46 ± 2 years (World Health Organization, 2018).¹ Menopause is the transition phase from the reproductive to non-reproductive phase and has much wider implications than simply loss of fertility and also accelerates the process of non-communicable disorders.² Perimenopause is defined as a period between late reproductive age group to menopause and 1 year after that, i.e., period immediately prior to and up to 1 year after the final menstrual period.

Sexual health comprises the entire realm of human contact, enhancing self-esteem & sense of well-being. It is also an integral part of natural and healthy life, and not merely a physical stimulation. Desirable level of sexual quality of life is crucial in sexual and reproductive health. Falling estradiol levels at perimenopause leads to physical and psychological changes that can negatively affect the sexual functioning, desire, and responsiveness.³ Loss of libido, orgasmic dysfunction, dyspareunia, decreased sexual desire, and sexual activity are commonly faced sexual problems.⁴

To objectively assess the trivial change in ageing during perimenopause, another parameter is assessment of ocular health which results in trouble reading fine prints or things close up without the help of lenses or a magnifying glass. Dry eye disease, macular degeneration, cataract and glaucoma are some of the aging problems. Changes in these ocular components can decrease ocular function which can further have long term impact on quality of life.

The WHO has defined quality of life (QOL) as an individual's perception of their position in life in context of culture and value system in which they live and in relation to their goals, expectations, standards and concern. Not many studies have been done on QOL care in women in India.

As women's sexual function has an important role but data and research in Indian women is limited, especially in perimenopausal age group, therefore the primary objective of this study was to compare and evaluate sexual function, ocular health and quality of life in reproductive and perimenopausal women.

AIMS AND OBJECTIVES

Aim: Comparative evaluation of sexual function, ocular health and quality of life in reproductive and perimenopausal women.

Primary Objectives

- To compare and evaluate sexual function in reproductive and perimenopausal women.
- To compare and evaluate ocular health in reproductive and perimenopausal women.
- To assess the quality of life in reproductive and perimenopausal women.

Secondary Objective

- To evaluate the impact of sexual function and ocular health on quality of life in both the age group.

MATERIAL & METHODS

It was an Observational Cross-Sectional study amongst women in reproductive and perimenopausal age groups at School of Medical Sciences and Research, Greater Noida, from Nov 2020 – September 2022. The optimal sample size was calculated to be 80 per group (total 160).

Age group 25-39 years comprise the reproductive age group for controls and from 40-55 years or age at menopause + 1 year i.e. the perimenopausal age group for subjects.

Inclusion Criteria For Controls

- a) Age group – 25-39 years
- b) Willing to participate

Exclusion Criteria For Controls

- a) Pregnancy
- b) Vaginitis
- c) Acute or chronic PID
- d) Infertility
- e) Genital malignancy
- f) Diabetes
- g) Hypertension
- h) Pre-existing Ocular morbidity
- i) Mental illness
- j) Receiving any drug

Inclusion Criteria For Subjects

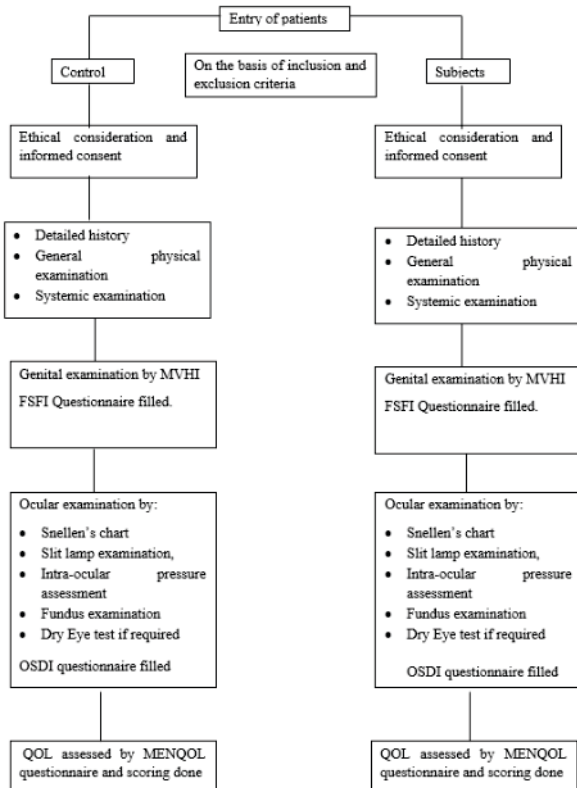
- a) Age 40-55 years or 40 to menopause plus 1 year
- b) Willing to participate

Exclusion Criteria For Subjects

- a) Pregnancy
- b) Acute or chronic PID

- c) Hysterectomised
- d) Bilateral oophorectomised
- e) Gynecological malignancy
- f) Diabetes
- g) Hypertension
- h) Pre-existing Ocular morbidity
- i) Mental illness and receiving treatment for that
- j) Any other medication such as HRT

Study Procedure



Flowchart 1 : Study procedure (MVHI: Modified Vaginal Health Index, FSFI: Female Sexual Function Index, OSDI: Ocular Surface Disease Index, MENQOL: menopausal quality of life)

Statistical Analysis

Pearson correlation was used to find the correlation between the FSFI score, OSDI and MENQOL in both the groups. P values were calculated with independent samples t-test and with cross-tabulation using Student t-test. Values of $p < 0.05$ were considered as significant.

RESULTS

The mean age of reproductive age group and perimenopausal age group was 34.01 ± 3.56 years and 46.65 ± 3.90 years, respectively.

A statistically significant difference was seen in rugosity, elasticity, thickness and length of vagina in the two groups whereas there was no statistically significant difference in pH, moisture, epithelial integrity and vascularity. (Table 1)

Table 1: Distribution On The Basis Of Modified Vaginal Health Index

MVHI		Reproductive (n=80)	Perimenopause (n=80)	P value
pH	<5	55 (68.8%)	52 (65.0%)	0.614
	5-6.5	25 (31.3%)	28 (35.0%)	
Moisture	Normal	58 (72.5%)	52 (65.0%)	0.306
	Minimal	22 (27.5%)	28 (35.0%)	
Epithelial integrity	Normal	55 (68.8%)	50 (62.5%)	0.405
	Petechiae after scraping	25 (31.3%)	30 (37.5%)	
Rugosity	Good	52 (65.0%)	39 (48.8%)	0.038
	Minimal	28 (35.0%)	41 (51.2%)	
Elasticity	Excellent	52 (65.0%)	36 (45.0%)	0.011
	Fair	28 (35.0%)	44 (55.0%)	

Thickness of vagina	Normal	57 (71.3%)	45 (56.3%)	0.048
	Thin	23 (28.7%)	35 (43.8%)	
Length of vagina	>6	56 (70.0%)	39 (48.8%)	0.006
	4-6	24 (30.0%)	41 (51.2%)	
Vascularity	Good	51 (63.7%)	50 (62.5%)	0.870
	Fair	29 (36.3%)	30 (37.5%)	

A comparison between reproductive age group and perimenopause age group on the basis of FSFI SCORE was done and it was observed that mean values of all domains (Desire, Arousal, Lubrication, Orgasm, Satisfaction) of reproductive age group were significantly higher as compared to perimenopause age group ($p < 0.05$). Only pain showed no statistically significant difference between both the groups ($p > 0.05$). There was also statistically significant difference in total FSFI score in the two groups ($p < 0.05$). (Table 2)

Table 2: FSFI Score

Domain	Reproductive (n=80)	Perimenopause (n=80)	P value
Desire	4.54±1.03	3.85±1.42	<0.001
Arousal	4.44±0.73	3.76±1.39	<0.001
Lubrication	5.28±2.24	4.24±1.17	<0.001
Orgasm	4.95±1.08	4.44±1.26	0.006
Satisfaction	4.50±0.98	3.90±1.17	<0.001
Pain	4.19±0.87	3.96±1.05	0.142
Mean FSFI score	27.89±2.34	24.15±5.16	<0.001

Snellen's test and OSDI showed statistically significant difference between reproductive age group and perimenopause age group ($p < 0.05$). Mean OSDI, mean Schirmer's value and mean IOP also showed significant difference between reproductive age group and perimenopause age group ($p < 0.05$). There was no statistically significant difference in Slit Lamp test between reproductive age group and perimenopause age group ($p > 0.05$) (Table 3)

Table 3: Association Of Eye Examination Parameters (UCVA – Uncorrected Visual Acuity, BCVA- Best Corrected Visual Acuity)

Eye Examination	UCVA	BCVA	Reproductive	Perimenopause	p-value
Visual acuity	6/6	-	73 (91.3%)	61 (76.2%)	0.047
	6/9	6/6	6 (7.5%)	15 (18.7%)	
	6/12	6/12	0 (0.0%)	3 (3.8%)	
	6/18	6/18 (No improvement)	1 (1.3%)	1 (1.3%)	
Slit Lamp examination	Normal		79 (98.7%)	76 (95.0%)	0.357
	Corneal opacity		1 (1.3%)	3 (3.7%)	
	IMC		0 (0.0%)	1 (1.3%)	
OSDI	≤20		78 (97.5%)	66 (82.5%)	0.002
	>20		2 (2.5%)	14 (17.5%)	
OSDI Mean±SD			6.81±2.82	11.50±6.68	<0.001
Schirmer's (mm)			10.04±2.46	11.75±4.75	0.005
IOP (mmHg)			17.70±2.15	15.93±3.28	<0.001

It was observed that vasomotor, physical and sexual MENQOL parameters showed statistically significant difference in the two age groups ($p < 0.05$), whereas there was no statistically significant difference in psychosocial parameter in the two-age groups ($p > 0.05$) (Table 4)

Table 4: Association Of MENQOL Parameters

MENQOL Parameters		Reproductive	Perimenopause	p-value
VASOMOTOR	NO	66 (82.5%)	19 (23.8%)	<0.001
	YES	14 (17.5%)	61 (76.3%)	
Psychosocial	NO	65 (81.3%)	54 (67.5%)	0.046
	YES	15 (18.8%)	26 (32.5%)	
Physical	NO	36 (45.0%)	18 (22.5%)	0.004
	YES	44 (55.0%)	62 (77.5%)	
Sexual	NO	79 (98.8%)	66 (82.5%)	<0.001
	YES	1 (1.3%)	14 (17.5%)	

Based on Pearson Correlation, we observed that MENQOL Parameters (vasomotor, psychosocial, physical), OSDI, MVHI showed non-significant correlation with each other ($p > 0.05$). TOTAL

FSFI SCORE showed statistically significant correlation with sexual parameter of MENQOL ($p < 0.05$). (Table 5)

Table 5: Pearson Correlation Between FSFI, OSDI, MVHI, MENQOL Parameters In Reproductive Age Group

		Total FSFI	OSDI	MV-HI	Vaso-motor	Psycho-social	Physical	Sexual
Total FSFI Score	Pearson Correlation	1	-0.088	-0.141	0.065	0.023	0.064	-0.429**
	P value		0.440	0.213	0.569	0.838	0.572	0.000
OSDI	Pearson Correlation	-0.088	1	-0.012	-0.004	-0.059	0.119	-0.033
	P value	0.440		0.919	0.969	0.601	0.293	0.774
MVHI	Pearson Correlation	-0.141	-0.012	1	-0.071	0.045	-0.073	0.135
	P value	0.213	0.919		0.531	0.691	0.520	0.233
Vaso-motor	Pearson Correlation	0.065	-0.004	-0.071	1	0.032	0.152	-0.052
	P value	0.569	0.969	0.531		0.781	0.178	0.648
Psycho-social	Pearson Correlation	0.023	-0.059	0.045	0.032	1	0.113	-0.054
	P value	0.838	0.601	0.691	0.781		0.320	0.634
Physical	Pearson Correlation	0.064	0.119	-0.073	0.152	0.113	1	0.102
	P value	0.572	0.293	0.520	0.178	0.320		0.369
Sexual	Pearson Correlation	-0.429**	-0.033	0.135	-0.052	-0.054	0.102	1
	P value	0.000	0.774	0.233	0.648	0.634	0.369	

**. Correlation is significant at the 0.01 level (2-tailed).

Based on Pearson Correlation, we observed that MENQOL Parameters (vasomotor, psychosocial, physical), OSDI, MVHI showed non-significant correlation with each other ($p > 0.05$). TOTAL FSFI SCORE showed statistically significant correlation with sexual parameter of MENQOL ($p < 0.05$). (Table 6)

Table 6: Pearson Correlation Between FSFI, OSDI, MVHI, MENQOL Parameters In Perimenopausal Age Group

		Total FSFI	OSDI	MV-HI	Vaso-motor	Psycho-social	Physical	Sexual
Total FSFI Score	Pearson Correlation	1	-0.131	-0.085	0.120	-0.041	0.045	-0.951**
	P value		0.248	0.453	0.291	0.717	0.692	<0.001
OSDI	Pearson Correlation	-0.131	1	-0.150	-0.095	0.056	0.045	0.084
	P value	0.248		0.185	0.401	0.620	0.691	0.458
MVHI	Pearson Correlation	-0.085	-0.150	1	0.190	-0.165	-0.118	0.151
	P value	0.453	0.185		0.091	0.143	0.298	0.182
Vaso-motor	Pearson Correlation	0.120	-0.095	0.190	1	-0.052	-0.019	-0.052
	P value	0.291	0.401	0.091		0.649	0.865	0.646
Psycho-social	Pearson Correlation	-0.041	0.056	-0.165	-0.052	1	-0.010	-0.039
	P value	0.717	0.620	0.143	0.649		0.933	0.734
Physical	Pearson Correlation	0.045	-0.045	-0.118	-0.019	-0.010	1	-0.067
	P value	0.692	0.691	0.298	0.865	0.33		0.555
Sexual	Pearson Correlation	-0.951**	0.084	0.151	-0.052	-0.039	-0.067	1
	P value	<0.001	0.458	0.182	0.646	0.734	0.555	

**. Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Women's sexual functioning can vary across life, especially in context of reproductive events and aging.⁵ There is a growing body of research investigating declining sexual functioning in perimenopause. Reducing estradiol levels lead to a wide range of symptoms which can affect women's physical, mental, sexual health and affect work, social activities, mood, communication with others, life pleasure, and ultimately the quality of their life.⁶

In the present study the mean age of the reproductive women group was 34.01 ± 3.56 and that of perimenopausal group was 46.65 ± 3.90 . Other demographic variables showed no significant difference between the two groups ($p > 0.05$).

Modified vaginal health index was studied in both the groups and out of 8 parameters rugosity, elasticity, thickness of vagina and length of vagina were significantly better in the reproductive age women as compared to the perimenopausal group ($p < 0.05$). In our study, 35% of women in perimenopausal age group had decreased vaginal moisture which was comparable to another study⁷ that reported vaginal dryness and associated discomfort in 38% of perimenopausal women. As women age, vaginal symptoms such as vaginal dryness emerge and pH increases (lack of lactobacilli) more often due to the reduced production of mucus from the glands of the vaginal wall as a sign of vaginal atrophy.⁸ These age-associated physiological changes are confounded by the hormonal decline during perimenopausal phase, and henceforth needs to be carefully disentangled from the effect of menopausal status on sexual functioning.⁹

Female Sexual Function Index (FSFI Score) of all cases was done and it was observed that mean values of most domains of reproductive age group were significantly higher as compared to perimenopause age group ($p < 0.05$). Only pain showed no statistically significant difference between two groups ($p > 0.05$). These findings correspond with another study which reported prevalence of distressing sexual problems 14.8% in women aged 45-64 as compared to 10.8% in 18-44 years age group.¹⁰ According to another study the mean total FSFI score in middle aged sexually active women was 20.1 ± 12.4 (median 24.7) and in our study it was calculated to be 24.15 ± 5.16 .¹¹ The prevalence of female sexual dysfunction (FSFI score ≤ 26.55) was 55.70%, whereas in the current study, 62.5% women were found to have female sexual dysfunction.

The second parameter ocular health was studied under Visual acuity, Slit lamp examination, Schirmer's test, and Intraocular pressure (IOP). OSDI score showed statistically significant difference between two groups ($p < 0.05$). Mean OSDI, mean Schirmer's value and mean IOP also showed significant difference ($p < 0.05$). In a study in 2010¹², no statistically significant difference was seen in the schirmer test results, which is in contrast to this study, where the difference in schirmer's value is statistically significant. Hence, dry eye incidence increases with age as reported in this study.

Association of Menopausal Quality of Life (MENQOL) score was observed and it was found that all the MENQOL parameters were significantly affected in the perimenopausal age group ($p < 0.05$), physical (77.5%) being the most affected, followed by vasomotor (76.3%), psychosocial (32.5%) and lastly sexual (17.5%). In a study¹³ in Karnataka, vasomotor symptoms, psychosocial and physical symptoms were significantly rising with ageing (2.33 vs. 0, $p = 0.001$), ($p = 0.016$ and $p = 0.009$) respectively. Recent epidemiological evidence indicates that hot flashes are experienced by 30.0%–70.0% of premenopausal women, and in our study 46.8% of premenopausal females had vasomotor symptoms.¹⁴

In a study¹⁵ of Brazilian women aged 40–65 years, intensity of climacteric symptoms was associated with the presence of sexual dysfunction and current results are in agreement with theirs. Total FSFI score has positive correlation with quality of life, which is in line with observations reported in a study on quality of life and sexual health.¹⁶ They also found significant association between quality of life and total FSFI.

CONCLUSIONS

In the present study it was demonstrated that reproductive women had better sexual efficacy and enjoyed higher levels of sexual quality of life in contrast to perimenopausal women. Perimenopausal women also scored poorly in all the sexual parameters. A positive correlation was seen with sexual health and quality of life. Dry eye disease was more

prevalent in the perimenopausal women and therefore, women of this age group should have a regular ophthalmic evaluation to avoid subsequent deadly complications. Since the quality of life is a sum of health of all systems of the body, so it is essential to evaluate sexual function, ocular health and quality of life in all perimenopausal women.

Financial Support And Sponsorship: Nil

Conflicts Of Interest: There are no conflicts of interest

REFERENCES

1. Meeta M, Digumarti L, Agarwal An executive summary and recommendations: Indian menopause society 2019-2020. *J Midlife N*. Vaze N, Shah R, Malik S. Clinical practice guidelines on menopause: Health. 2020;11:55-95.
2. Milsom I. Menopause-related symptoms and their treatment. In: Erkkola R. The Menopause. Philadelphia: Elsevier; 2006; 16
3. Nazarpour S, Simbar M, Tehrani FR. Factors affecting sexual function in menopause: A review article. *Taiwan J Obstet Gynecol*. 2016;55:480-7.
4. Masliza W, Daud W, Yazid Bajuri M et al. Sexual dysfunction among postmenopausal women. *Clin Ter*. 2014;165:83-9.
5. Clayton AH and Harsh V. Sexual function across aging. *Curr. Psychiatry Rep*. 2016;18:28.
6. Shirvani M, Heidari M. Quality of life in postmenopausal female members and non-members of the elderly support association. *J Menopausal Med* 2016; 22: 154-60.
7. Zobar E, KahyaogluSüt H. Relationships among Increasing Age, Sexual Dysfunction, and Sexual Quality of Life in Married Women of Reproductive Age. *Bezmialem Science* 2021;9(4):399-406.
8. Samsioe B. Urogenital aging—a hidden problem. *Am. J. Obstet. Gynecol*. 1998;178, S245-9.
9. Dennerstein L, Alexander JL, and KotzK. The menopause and sexual functioning: a review of the population-based studies. *Ann. Rev. Sex Res*. 2003;14:64-82
10. Suzuki T, Kinoshita Y, Tachibana M, et al. Expression of sex steroid hormone receptors in human cornea. *Curr Eye Res*. 2001;22(1):28-33
11. Chedraui P, Pérez-López FR, Mezones-Holguin E, San Miguel G, Avila C. Collaborative Group for Research of the Climacteric in Latin America (REDLINC) Assessing predictors of sexual function in mid-aged sexually active women. *Maturitas*. 2011;68:387-90.
12. Sullivan DA, Edwards JA, Wickham LA, et al. Identification and endocrine control of sex steroid binding sites in the lacrimal gland. *Current Eye Research, Curr Eye Res*. 1996;15(3):279-91.
13. Nayak G, Kamath A, Kumar P, Rao A, A study of quality of life among perimenopausal women in selected coastal areas of Karnataka, India. *J Midlife Health* 2012; 3: 71-5.
14. Reed SD, Lampe JW, Qu C, et al. Premenopausal vasomotor symptoms in an ethnically diverse population. *Menopause* 2014;21:153-8
15. Cruz EF, Nina VJ, Figuerêdo ED. Climacteric Symptoms and Sexual Dysfunction: Association between the Blatt-Kupperman Index and the Female Sexual Function Index. *Rev. Bras. Ginecol. Obs*. 2017;39:66-71.
16. Nazarpour S, Simbar M, Ramezani-Tehrani F, Alavi-Majid H. Quality of life and sexual function in postmenopausal women. *J. Women Aging*. 2018;30:299-309.