Original Article

Effects of Menopause on Sexual Function in Indian Women: A McCoy's Questionnaire-Based Assessment

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Abstract

Background: Menopause is associated with physical, physiological, psychological changes and may lead to sexual dysfunction (SD) effecting woman's health and well-being. Scientific research in the area of female sexuality in India is scant. Therefore, this study aimed to investigate female sexual function at perimenopause and menopause and determine the association between sociodemographic and physiological factors with sexual function. **Materials and Methods:** This was a cross-sectional hospital-based study carried out in perimenopausal and menopausal women. Study participant's details were collected by gynecologists and clinical research professionals following the participant's informed consent. The case report and McCoy female sexuality questionnaire were used. The association between sociodemographic status and sexual function was determined. Data were summarized using descriptive statistics for portraying profile of the participants and *t*-test for comparison. **Results:** A total of 129 women in the menopausal (SD − 3.26) and 112 in the premenopausal group (SD − 6.01) were enrolled. The sociodemographic parameters did not significantly affect the sexual function scores in both groups. In terms of vaginal atrophy, a significant increase in urgency was noted in the postmenopause group. The general domain of sexual function was significantly lower in menopausal than and perimenopausal with a $P < 0.001$. Looking at individual domains of sexual function, for sexual interest, satisfaction, vaginal lubrication, and orgasm, the mean value of perimenopausal participants was significantly higher when compared to menopausal women; for a primary partner domain, no significant differences between the two groups were noted. **Conclusion:** Overall, the sociodemographic profile did not impact sexual function in this study. Compared with menopausal women, perimenopausal women showed better, more complete sexual function based on McCoy's score except partner-related domain that is constant from perimenopause to menopause in a monogamous relationship.

Keywords: *McCoy's questionnaire, menopause, sexual function*

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Introduction

The Oxford Dictionary described sexuality as "the feelings and activities connected with a person's sexual desires." It is not just about physical stimulation. It encompasses the entire realm of human contact, enhancing self-esteem, sense of well-being, and is an integral part of natural and healthy life. Sexual function is how the body reacts in different stages of the sexual response cycle. Sexuality studies have been extensively studied for many years,[1] or at least many attempts have been made toward understanding the subject, objectively

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as possible so that dysfunction can be explained; how does one identify dysfunction when the function itself is perplexing.

Female sexual function is known to be characterized by multiple domains of the biological mechanisms, including desire, arousal, lubrication, orgasm, satisfaction, and pain. It needs to be understood that the presence or absence, or the level of sexual activity, is also influenced by psychosocial, religious, and societal reasons.

Unlike puberty, menopause is generally perceived as a "hushed" experience that the woman must suffer alone. cultures consider menopause as the cessation of sexual activity. However, in reality, the sexual function has a significant role to play in the experience of menopause itself.[2]

The sexual function of women during the menopause transition and midlife will significantly influence their emotional well-being and their experience of mood swings disorders such as depression and anxiety. Women with negative sexual function during the menopausal and aging process are more likely to experience menopausal symptoms with greater intensity and are also more vulnerable to health problems.[3]

Biological processes such as menopause bring about drastic physiological, physical, and psychological changes. Declining estradiol levels at menopause bring about physical and psychological changes that can impair sexual functioning, desire, and responsiveness.[4] The common sexual problems among postmenopausal women when compared with the premenopausal period include loss of libido, orgasmic dysfunction, dyspareunia, decreased sexual desire, and sexual activity.[5] Thus, menopause brings about a significant decrease in the quality of life and is independent of other factors such as age, marital status, and other sociodemographic variables.[6] Sexuality is closely linked to health status at older ages,[7] and a cross-national study conducted across 29 countries showed that lower sexual well-being among women and older adults suppressed their overall happiness.[8]

A cross-sectional study of the sexual activities and behaviors of 2109 women aged between 40 and 69 years from the Kaiser Permanente Medical Care Program of Northern California, indicated that approximately 75% of the women were sexually active.[9]

The estimated average age of menopause in India is 46 years, and life expectancy is 70.3 years (World Health Organization, 2018).[10] Scientific research in the areas of sexuality in India is scant and mostly limited to male sexual function and issues.[11]

In the 1970s, 17 cases of frigidity due to ignorance related to sexual activity, fear of pregnancy, marital disharmony, and lack of emotional ambiance were reported.[12] In a retrospective review of the 237 patients attending the sexual clinic, only 0.8% were female, indicating a gross gender disparity.[13] The prevalence of orgasmic difficulties was found to be 28.6% from a study from South India.[12] The prevalence of female sexual dysfunction (SD) was reported in two-thirds of women. Similarly, SD was found in 55.5% of the fertile woman.[14] In a study of 110 postmenopausal women, 80.9% reported SD.[15] Keeping in mind, the importance of women's sexual function during menopause, and due to scarcity of data and structured research in Indian women, the primary objective of this study was to assess the sexual function among perimenopausal and menopausal women. A secondary objective was to determine the association between matched sociodemographic factors and physiological factors such as vaginal atrophy.

Materials and Methods

Study design

This is a multicentric, urban hospital-based cross-sectional study where two questionnaires were used – a specially designed case report form for capturing clinical as well as sociodemographic details and the McCoy Female Sexuality Questionnaire (MFSQ) (version 2000) for quantifying the sexual function. Eight different centers in India (Nagpur, Hyderabad, Faridabad, Rajkot, Surat, Jaipur, Gwalior, and Chandigarh) collected the data over 1 year.

Study tools

The case report form included demographic details, menstruation details (age of menopause, last menstrual period (LMP), average cycle duration in days, number of children, contraception methods used), factors associated with urinary incontinence/vaginal atrophy (urinary leak, urgency, frequency with urgency, leak during physical activity, quantity of leak, frequency in night, vaginal dryness, vaginal discharge, itchiness). The MFSQ is a 7-point Likert scale with 19 questions and 5 dimensions (sexual interest, satisfaction, vaginal lubrication, orgasm, sex partner) that explore various aspects of sexual attitudes over the past 4 weeks. MFSQ (version 2000) is a validated tool widely used to assess sexual functioning associated with hormonal fluctuation due to treatments for menopause. This tool is less affected by cultural differences and focuses on biological aspects of sexuality.

The items/questions were related to pleasurable sexual activity, frequency of sexual activity, sexual thoughts or fantasies, arousal, sexual interest/sex drive, vaginal lubrication, sexual attractiveness, sexual satisfaction, frequency and pleasure of sexual intercourse, orgasm, use of manual or vibrators for orgasm, pain during intercourse, primary sex partner-related questions in relation to sexual interest, satisfaction, intercourse, orgasm, and ability to achieve and maintain erection. As per the MFSQ (version 2000) a cluster of 1–19 items, each question relating to particular sexual functioning in five dimensions:

1. Sexual interest (items–1; 3–5; 7–8)
2. Satisfaction (items–2, 9, 12)
3. Vaginal lubrication (items–6,17,18)
4. Orgasm (items–13–16)
5. Sex partner (10,11,19).

Permission was obtained to use the MFSQ (User Agreement Signed and permission taken from MAPI Research Trust). Based on the response provided by the participants, individual items were scored, and mean global and domain score *P* values were calculated.

The clinical data in the CRF and the MFSQ were collected by trained gynecologists, a sexologist, and Clinical Research Associates (CRAs). Based on exclusion and inclusion criteria, all incoming patients to the gynecology department were told about the ongoing study. The participant information sheet (PIF) was provided and explained to the interested patients. The patients who agreed to sign the informed consent (IC) were enrolled as participants of the study. All participants were conversant in the English language, which was the language of the PIF and IC.

The gynecologists (who performed the clinical examination) and CRAs were provided with a standard training protocol where the standard operating procedures (SOPs) and objectives of the study were explained. Inter-rater reliability was not calibrated for this study as the clinicians examining the patients were highly experienced and well-trained CRAs delivered the McCoy questionnaire.

Menopausal and perimenopausal women were the study groups, and their age matched to the cases (within a 5-year range) served as the control. The control group was as similar to the study group as possible except for the status of menopause.

Inclusion criteria

Healthy married women aged 41 years and above, sexually active and in a monogamous relationship. Menopausal women were those with amenorrhea for more than 12 months. Perimenopausal women were defined as those women who had their LMP (regular or irregular) within the past year.

Exclusion criteria

Premature ovarian insufficiency (menopause attained before 40 years of age), primary sexual disorder, postmenopausal bleeding, use of systemic hormonal preparations, chronic systemic diseases such as malignancies, renal failure, diabetes mellitus, chronic hypertension, urinary incontinence; chronic genital infections; psychological disorders, on long-term medications, women with a hysterectomy and iatrogenic menopause.

Sample size calculation and statistical analysis

Based on an expected 10% of controls reporting dissatisfaction with sexuality and an anticipated 30% of cases reporting dissatisfaction, the sample size for a case–control study with equal allocation between cases and controls, a two-sided alpha of 0.05 and 80% power, is estimated as 71 cases and 71 controls (calculations derived using the StatCalc package of Epi Info software package). The expected number of women to be enrolled was 200.

Data were summarized using descriptive statistics, and inferential statistics did all the statistical significance testing. For all the numerical variables such as age, # of martial years, MFSQ scores, and the derived constructs, sexual interest, sexual satisfaction, vaginal lubrication, orgasm, sex partner, and overall are summarized using their mean, median, standard deviation, standard error for mean, and 95% confidence intervals and their significance difference between perimenopause and postmenopause/menopause derived using independent *t*-test using means. A value of $P < 0.05$ was considered statistically significant.

The design for the study involved enrolling menopausal and perimenopausal participants following a series of steps as detailed in the flow chart in Figure 1.

Other variables such as sociodemographic parameters (religion, occupation, and socioeconomic status) and urinary incontinence (in terms of the urinary leak, vaginal dryness, discharge, and itchiness) on the sexual function variables are summarized using proportions, and their significant difference between perimenopause and postmenopause/menopause derived using Chi-square and Fisher's exact where ever they are applicable. A value of $P < 0.05$ was considered statistically significant.

Ethical clearance

Ethical approval was obtained from the Independent Ethics Committee, Hyderabad.

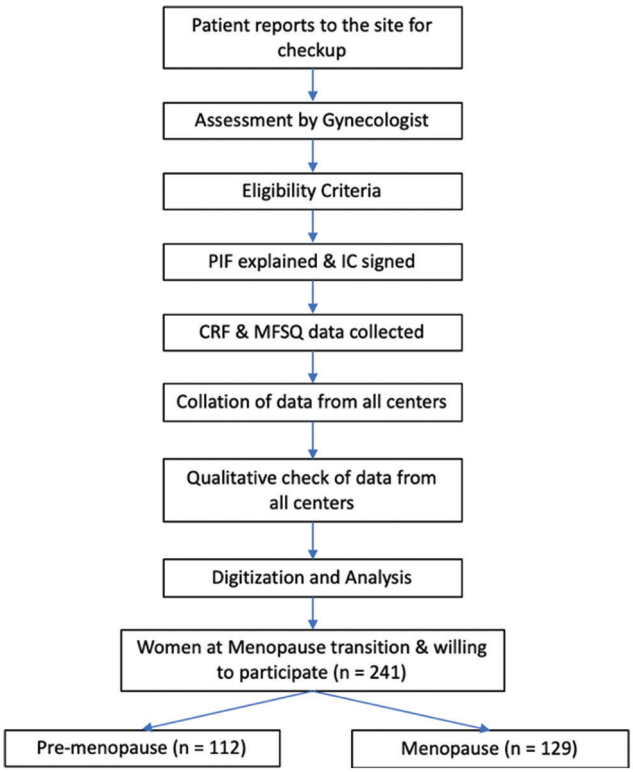

Figure 1: Design of the study

Results

Sociodemographic details

Going by the sample size requirements for a robust statistical analysis, which was around 100 per group, the postmenopausal study group comprised 129 women (mean – 52.1 years), and the perimenopausal group comprised 112 participants (43.5 years). A difference of approximately 10 years has been ensured in the sample to mirror the natural difference in the population.

The two samples have been matched by socioeconomic variables such as occupation, religion, social strata. Important to note that the participants in this study were from diverse backgrounds in education, religion, occupation, and socioeconomic status. In both groups, most women were housewives, Hindus, literate, married, and belonged to the middle class Table 1.

Factors associated with vaginal atrophy

The most-reported problem among the sample across the two groups is "dryness of vagina" (31%) and "urgency" (31%). The lesser issues were "itchiness" (15%) and "discharge from vagina" (11%). Among those who reported "urgency," leak during physical activity (35%) and "frequency in the night" (36%) are the bigger issues. If we look for significant differences between the two groups, the issue of "urgency" in postmenopause group is significantly higher than in the perimenopause group. No significant differences were noted between the two groups on the other parameters Table 2.

Analysis of responses to the individual elements of McCoy female sexuality questionnaire

Table 3 contains the description of the individual questions, average score for each question in the two groups. This is detailed segregation of the complete data and gives a cross-sectional idea of the metrics of sexual function from different aspects. Indeed, some questions have a statistically significant difference in their respective score, but their analysis would be better done when we study the dimensions of the questionnaire. Extensive literature is available that validates the five main dimensions that are appropriately captured in the MFSQ.

McCoy's five dimensions of sexual function

McCoy's questionnaire score observations relating to each of five dimensions of sexual function is mentioned below in Table 4 – (1) sexual interest, (2) sexual satisfaction, (3) vaginal lubrication, (4) orgasm, and (5) sex partner.

Sexual interest

This dimension of "sexual interest" represented by McCoy questions concerned with sexual activity, sexual thoughts, excitement during sexual activity, level of sexual interest, and sexual attractiveness. There is a marked difference between the two groups across all parameters. At a construct level, the mean value of perimenopausal participants (25.1) was significantly higher when compared to menopausal women (21.8), implying that the perimenopause group exhibited more sexual interest than the menopause group Figure 2.

Satisfaction

This dimension of "satisfaction" is represented by McCoy's questions concerned with the frequency of sexual activity and satisfaction. There is a marked difference between the two groups across all parameters. At a construct level, the mean value of perimenopausal participants (11.5) was significantly higher when compared to menopausal women (10.6), implying that the perimenopause group is more satisfied with sexual activity in comparison to the menopause group Figure 3.

Nearly 50% of the menopausal/postmenopausal and 40% of perimenopausal women feel that the frequency of sexual activity is inadequate. Eight-six percent of menopausal women and 71% of perimenopausal women have sexual activity once/twice a month.

Table 1: Profile by socioeconomic factors

	Perimenopause, *n* (%)	Postmenopause, *n* (%)	Total, *n* (%)	Significance value
Age				
n	110	107	217	<0.001***
Mean	43.5	52.1	47.7	
SD	3.26	6.01	6.45	
95% CI (lower bound-upper bound)	42.9-44.1	51-53.2	46.9-48.6	
Occupation				
n	111	110	221	
House wife	64.0 (57.7)	66.0 (60.0)	130.0 (58.8)	0.4791
Medical professional	15.0 (13.5)	14.0 (12.7)	29.0 (13.1)	
Nonmedical professional	29.0 (26.1)	30.0 (27.3)	59.0 (26.7)	
Agriculture	3.0 (2.7)	0.0 (0.0)	3.0 (1.4)	
Religion				
n	113	111	224	
Hindu	99.0 (87.6)	97.0 (87.4)	196.0 (87.5)	0.849
Christian	2.0 (1.8)	1.0 (0.9)	3.0 (1.3)	
Muslim	8.0 (7.1)	7.0 (6.3)	15.0 (6.7)	
Sikh	4.0 (3.5)	6.0 (5.4)	10.0 (4.5)	
Socioeconomic status				
n	113	111	224	
Poor	10.0 (8.8)	15.0 (13.5)	25.0 (11.2)	0.036*
Lower middle	37.0 (32.7)	22.0 (19.8)	59.0 (26.3)	
Middle	8.0 (7.1)	20.0 (18.0)	28.0 (12.5)	
Upper middle	40.0 (35.4)	35.0 (31.5)	75.0 (33.5)	
Upper	18.0 (15.9)	19.0 (17.1)	37.0 (16.5)	

SD: Standard deviation, CI: Confidence interval, *P<0.05 significant, **P<0.01, ***P<0.001 highly significant

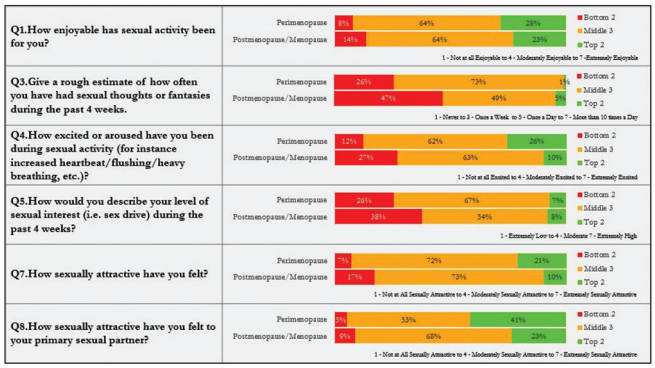

Figure 2: Sexual interest: Perimenopause group exhibited more sexual interest in comparison to menopause group

Vaginal lubrication

This dimension of "vaginal lubrication" is represented by McCoy's questions concerned with the adequacy of lubrication, frequency of natural lubrication, and pain during intercourse. There is a marked difference between the two groups across all parameters (P = 0.001). At a construct level, the mean value of perimenopausal participants (13.8) was significantly higher when compared to menopausal women (11.3), implying that the perimenopause group experiences better vaginal lubrication during sexual activity in comparison to the menopause group Figure 4.

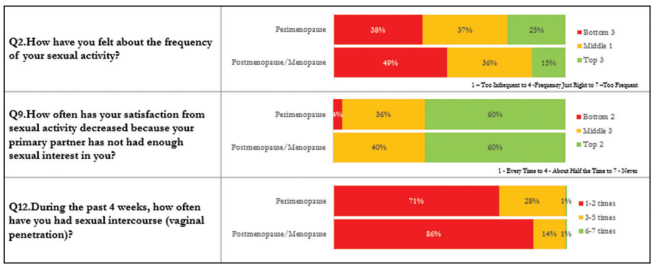

Figure 3: Sexual satisfaction

Orgasm during sexual intercourse

This dimension of orgasm during sexual intercourse is represented by McCoy questions concerned with enjoyability of sexual activity, frequency of orgasm, pleasurability, and external stimulation requirements. At a construct level, the mean value of perimenopausal participants (11.5) was significantly higher when compared to menopausal women (10.6), implying that the perimenopause group is more satisfied with sexual activity than the menopause group Figure 5.

Primary partner

This dimension of "primary partner" is represented by McCoy questions concerned primarily with satisfaction with the sexual partner Figure 6.

This is the only construct where there are no significant differences between the two groups.

Table 2: Factors associated with vaginal atrophy

	Perimenopause, *n* (%)	Postmenopause, *n* (%)	Total, *n* (%)	Significance P value
Urinary leak				
n	113	110	223	
Yes	17 (15)	15 (14)	32 (14)	0.76
No	96 (85)	95 (86)	191 (86)	
Urgency				
n	44	21	65	
Yes	9 (20)	11 (52)	20 (31)	0.009***
No	35 (80)	10 (48)	45 (69)	
Frequency with urgency				
n	44	19	63	
Yes	7 (16)	4 (21)	11 (17)	0.622
No	37 (84)	15 (79)	52 (83)	
Leak during physical activity				
n	37	17	54	
Yes	12 (32)	7 (41)	19 (35)	0.532
No	25 (68)	10 (59)	35 (65)	
Quantity of leak				
n	17	13	30	
Small	17 (100)	12 (92)	29 (97)	0.433
Large	0 (0)	1 (7.7)	1 (3)	
Frequency in night				
n	12	13	25	
Usual	5 (42)	4 (31)	9 (36)	0.688
Seldom	7 (58)	9 (69)	16 (64)	
Dryness of vagina				
n	110	110	220	
Yes	30 (27)	39 (35)	69 (31)	0.191
No	80 (73)	71 (65)	151 (69)	
Discharge from vagina				
n	111	109	220	
Yes	13 (12)	10 (9.2)	23 (11)	0.539
No	98 (88)	99 (91)	197 (89)	
Itchiness				
n	110	109	219	
Yes	13 (12)	20 (18)	33 (15)	0.177
No	97 (88)	89 (82)	186 (85)	

*P<0.05 significant, **P<0.01, ***P<0.001 highly significant 39

Discussion

Physical, physiological, and psychological modifications and negative cultural influences play a significant role in sexual function at menopause. Menopausal women were less likely to report SD related to lack of sexual interest, inadequate lubrication, and failure to have an orgasm.[16]

In the sexual response cycle, the excitement phase may take 5 min or longer compared to 10–15 s in younger women.[17] The plateau phase of sexual response is prolonged in older women, uterine elevation is reduced, the labia majora do not elevate to the same degree as in younger years, the breasts become less vasocongested, and nipple erection is less likely to occur.[18] Women retain multiorgasmic capacity, although the number and intensity of vaginal and rectal contractions are reduced. The contractions being 2–3 in older women compared to 5–10 contractions in younger women.[19]

A longitudinal study by McCoy showed that frequency of sexual thoughts and fantasies (sexual interest – item 3), satisfaction with partner as lover showed significant reduction (primary partner – item 10), and (vaginal lubrication – item 17) insufficient vaginal lubrication had significantly increased as a problem from pre to postmenopause.[20] The present study relating to McCoy's sexual function scoring also reported lower scores for sexual interest, vaginal lubrication, and orgasm (21.8, 14.11, and 14.39, respectively) among menopausal participants in comparison to perimenopausal women (25.78, 15.51, and 16.82, respectively). The

Table 3: Description of individual McCoy's questionnaire and analysis of responses to the individual elements of McCoy female sexuality questionnaire

McCoy Questions	Perimenopause (113)				Postmenopause (111)				*P*
	Mean	SD	Lower limit	Upper limit	Mean	SD	Lower limit	Upper limit	
Q1.How enjoyable has sexual activity been for you?	4.59	1.62	4.29	4.89	4.20	1.69	3.88	4.52	0.078
Not at all enjoyable - extremely enjoyable									
Q2. How have you felt about the frequency of your sexual activity?	3.71	1.69	3.40	4.03	3.20	1.63	2.90	3.50	0.022
Too infrequent - too frequent									
Q3. Give a rough estimate of how often you have had sexual thoughts or fantasies during the past 4 weeks	2.97	1.21	2.75	3.20	2.62	1.49	2.34	2.90	0.053
Never - > Ten times a day									
Q4. How excited or aroused have you been during sexual activity (for instance increased heartbeat/flushing/heavy breathing, etc.)?	4.41	1.72	4.09	4.72	3.52	1.61	3.22	3.82	<.001
Not at all excited - extremely excited									
Q5. How would you describe your level of sexual interest (i.e., sex drive) during the past 4 weeks?	3.57	1.53	3.28	3.85	3.13	1.68	2.81	3.44	0.042
Extremely low - extremely high									
Q6. How would you describe your natural vaginal lubrication (wetness during sexual arousal) during the past 4 weeks?	4.16	1.01	3.97	4.34	3.45	1.47	3.18	3.73	<.001
Absent - excessive									
Q7. How sexually attractive have you felt?	4.48	1.39	4.22	4.73	3.86	1.33	3.61	4.10	<.001
Not at all sexually attractive - extremely sexually attractive									
Q8. How sexually attractive have you felt to your primary sexual partner?	5.16	1.49	4.88	5.44	4.51	1.49	4.24	4.79	0.001
Not at all sexually attractive - extremely sexually attractive									
Q9. How often has your satisfaction from sexual activity decreased because your primary partner has not had enough sexual interest in you?	5.80	1.49	5.52	6.09	5.68	1.43	5.41	5.95	0.542
Every time - never									
Q10. How satisfied have you been with your primary partner as a lover?	5.90	1.40	5.64	6.16	5.64	1.31	5.39	5.88	0.145
Not at all satisfied - extremely satisfied									
Q11. How satisfied have you been with your primary partner as a human	6.04	1.36	5.78	6.29	5.87	1.45	5.60	6.14	0.39
Not at all satisfied - extremely satisfied									
Q12. Score during the past 4 weeks, how often have you had sexual intercourse (vaginal penetration)? Number of times	2.35	1.08	2.15	2.55	1.97	0.94	1.79	2.15	0.007
Q13. How enjoyable has sexual intercourse been for you?	4.83	1.38	4.55	5.11	3.99	1.50	3.66	4.32	<.001
Not at all enjoyable - extremely enjoyable									
Q14. How often have you had an orgasm during sexual intercourse?	4.96	1.52	4.65	5.26	4.16	1.71	3.79	4.54	0.001
Never - every time									
Q15. On the average, how pleasurable were the orgasm (s) you have had during sexual intercourse?	4.11	1.88	3.73	4.48	3.91	1.41	3.59	4.22	0.448
Slightly pleasurable - extremely pleasurable									

Contd...

Table 3: Contd...

McCoy Questions	Perimenopause (113)				Postmenopause (111)				*P*
	Mean	SD	Lower limit	Upper limit	Mean	SD	Lower limit	Upper limit	
Q16. To have an orgasm during sexual intercourse, how often have you required manual (hand) or vibratory (vibrator) stimulation at the point of orgasm?	5.13	1.70	4.78	5.47	5.56	1.58	5.22	5.91	0.083
Never - every time									
Q17.How often have you had insufficient (natural) vaginal lubrication during sexual intercourse?	5.53	1.73	5.18	5.87	5.14	1.84	4.73	5.54	0.152
Every time - never									
Q18. How often have you had pain during sexual intercourse?	5.93	1.56	5.61	6.24	5.60	1.53	5.26	5.94	0.166
Every time - never									
Q19. How often have you been prevented from having sexual intercourse because your primary partner could not achieve or maintain an erection?	6.40	0.96	6.20	6.60	6.16	1.09	5.92	6.41	0.132
Every time - never									

SD: Standard deviation

Table 4: McCoy's five dimensions of sexual function

	Perimenopause (113)					Postmenopause (111)					*P*
	Mean	Median	SD	Lower limit	Upper limit	Mean	Median	SD	Lower limit	Upper limit	
Sexual interest	25.09	26.00	6.50	23.89	26.29	21.80	21.00	7.32	20.44	23.2	<0.001***
Sexual satisfaction	11.47	12.00	3.43	10.84	12.10	10.57	10.00	2.98	10.01	11.1	0.037*
Vaginal lubrication	13.79	16.00	5.29	12.81	14.76	11.26	13.00	5.89	10.16	12.4	0.001**
Orgasm	19.02	20.00	4.18	18.18	19.86	17.43	17.00	3.84	16.58	18.3	0.01*
Sex partner	16.98	18.00	4.47	16.16	17.81	15.88	17.00	4.20	15.10	16.7	0.059
Overall	83.32	90.00	21.77	79.30	87.33	71.97	74.00	23.05	67.69	76.3	<0.001***

*P<0.05 significant, **P<0.01, ***P<0.001 highly significant, @Independent t-test for means between 2 samples. SD: Standard deviation

difference was that there was no change in the primary partner domain in Indian women. Earlier studies reported that one of the primary causes of decreased sexual desire in postmenopausal women is vaginal dryness and decreased vaginal lubrication causing pain during vaginal intercourse, caused by estrogen deficiency.[21] Vaginal dryness incessantly increased through the progression of postmenopausal years, triggering, itching, burning, dyspareunia, vaginal atrophy furthering a compromise in woman's sexual function and activity.[22]

Similarly, our study examining McCoy's sexual function observations also concluded that dryness of the vagina was higher in the menopausal women (31.8%) than perimenopausal women (26.7%). The itchiness was also higher in menopausal women (16.3%) when compared to perimenopausal women (11.6%). It was also observed that the mean total scores of sexual activities were significantly lower in menopausal and perimenopausal women with dryness of the vagina (P = 0.0079 and P = 0.0092, respectively). Menopausal women had a low score of 14.11 for vaginal lubrication, resulting in overall negative sexual function during menopause. In comparison, perimenopausal women exhibited a score of 15.51 and showed a positive sexual function with higher sexual activity.

Therefore, McCoy's questionnaire study investigations conclude that menopausal women reported a higher percentage of vaginal atrophy responsible for lowering their sexual desire/interest and more inferior sexual function. This is in line with the assessment that dyspareunia is the most common sexual complaint among older women seeking gynecologic consultation.[23] Cross-sectional study conducted in Amol, Iran, revealed a wide range of factors, including sexual desire disorder (80%), arousal dysfunction (80%), orgasmic dysfunction (25%), dyspareunia (55.6%), and lack of overall sexual satisfaction (43.2%) associated with the prevalence of negative sexual function in menopausal women.[24] The presence of an able sexual partner is a significant factor in the sexuality of older women. Bancroft showed that the best predictors of sexual distress were markers of general emotional well-being

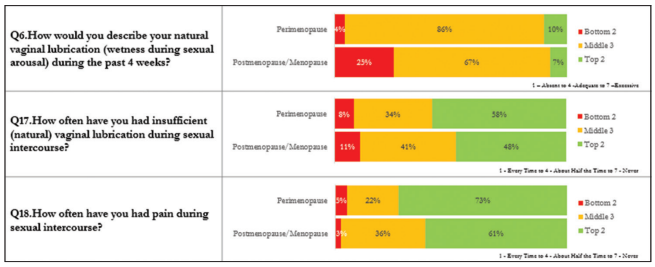

Figure 4: Vaginal lubrication

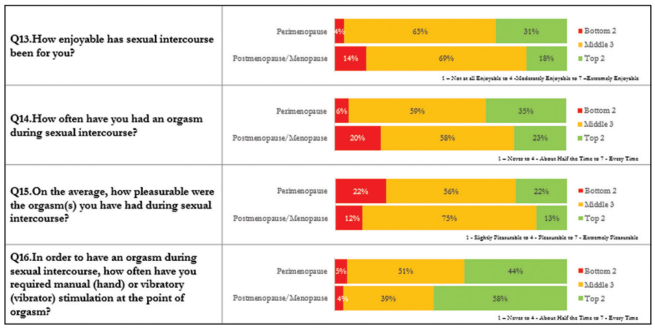

Figure 5: Orgasm during sexual intercourse

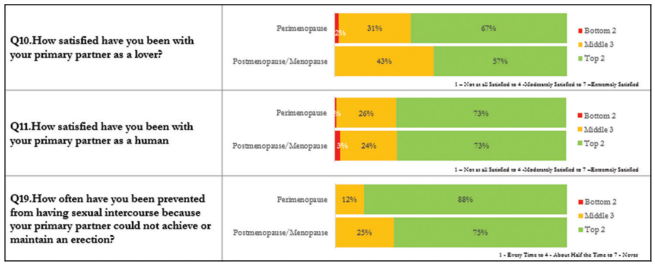

Figure 6: Primary partner

and the emotional relationship with the partner during sexual activity. Physical factors in sexual response were poor predictors of sexual distress.[25] The primary partner-related sexual function was the only unaffected domain by menopause in this study, underlying the partner's importance at menopause.

In a review of sex and aging, Kaplan concluded that most physically healthy men and women remain regularly sexually active well into advanced old age.[26] Seventy-seven percent cross-sectional data from the Women's Health Initiative observational cohort of postmenopausal sexually active women between the ages 50 and 79 years reported sexual satisfaction of 77% with their partner, dispelling the myth that the elderly are asexual.[27]

Earlier investigations relating to the prevalence, type, and severity of menopausal symptoms had confirmed that lower educational level, lack of employment outside the home, and lower socioeconomic status were associated with increased.[28] Our investigations focused on unveiling the effect of sociodemographic factors, specifically on McCoy's questionnaire-based sexual function aspects in women. Our findings found that sociodemographic parameters (religion, education, and socioeconomic status) did not correlate with sexual function and activity in menopausal and perimenopausal women. Our observations might differ from previously noted findings, either due to differences in the study design (hospital-based study, homogenous, and matched sample versus random sampling method) or population size (small population from selected hospitals versus larger sample size).

A multinational study to decipher women's sexual function and coping strategies during postmenopausal vaginal atrophy revealed that participants with dominance, combatting, individualism approached treatment well compared to participants exhibiting submission, acceptance, or belonging traits. Hence, a personalized medicine approach would benefit vaginal atrophic participants depending on their personality traits.[29]

A randomized clinical trial in Iran studied the effectiveness of implementing sexual enhancement programs with weekly follow-ups that showed alteration in sexual function with increased scores of sexual arousal and pain reduction compared to control participants. Hence, sexual education among Iranian women improved sexual activity, promoting a positive sexual attitude in postmenopausal women.[30] A study conducted in Latin America established that women could not recognize and manage vaginal atrophy symptoms due to a lack of understanding knowledge related to menopause transition. Dialogue initiation by health-care professionals and health-care camps was suggested as a mitigation measure for the management of menopause among the illiterate.[31] Literature survey suggested a novel paradigm of couple-oriented approach – "couple pause" by investigating, addressing sexual health status, sexual attitudes of both the partners (male and female), to improve their overall sexual function, sexual satisfaction, and intimacy during the menopause in women and andropause in men.[32] Strengthening the ability of women to manage symptoms during the menopausal transition in culturally competent ways is imperative for their health and well-being.[33]

Our research investigations about McCoy's scoring index confirmed that sexual function is significantly affected after menopause in Indian women. It was also inferred during the survey that most of the women were not very comfortable talking about sexual issues and function, indicating the role of the sociocultural background of Indians in determining the sexual attitude of women during menopause. Previous studies reported that Indian

women were unwilling to admit the issues relating to vaginal atrophy and SD and failed to get appropriate medical attention. However, while hesitant to discuss their sexual problems, these women were relieved when the doctor initiated a discussion and offered help. These noted observations indicate that Indian women needed greater awareness of the implications of the climacteric stage, vaginal atrophy, and the benefits of early treatment.

Strengths and limitations of the study

Potential misclassification (classifying menopausal women as perimenopausal or vice versa) was addressed by clearing defining eligibility criteria for menopause and perimenopausal participants. Survey index forms were completed and handled by clinical research professionals, which helped better understand and confidence building among the study participants. Recall bias was a possibility. However, it was minimized as information of only recent events in the past was collected. One limitation in this study was the hospital-based selection of participants. This led to a lack of representation from the general population. Since populations that access hospitals may differ from the characteristics of the general population. This limitation was considered while extrapolating results. Further, assessment of hormonal factors relating to physiological complications associated with sexual function can be included in support of noted observations.

Conclusion

In conclusion, the sociodemographic profile did not impact sexual function in this study. Compared with menopausal women, perimenopausal women showed better, complete McCoy's score-based sexual function.

Understanding factors that affect sexual functioning can help clinicians address the modifiable factors and help women in maintaining the sexual function at menopause.

Personalized psychosocial counseling strategies, sexual education workshops, and scientific-based awareness relating to menopause and vulvovaginal atrophy would significantly mitigate the poor sexual function and promote increased sexual function and well-being among menopause women.

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Conflicts of interest

There are no conflicts of interest.

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