RESEARCH ARTICLE

A community based comparative study on menopausal health issues of urban and rural women of Tripura, North-East India

Sudipta Pal

Abstract

Background: Menopausal health issues may differ in diverse socioeconomic groups and among the urban and rural populations. *Objectives:* The present cross-sectional study was carried out on a small population of urban and rural menopausal women from Tripura, a state of North-East India, to evaluate the average age of menopause and to examine prevalence and variations in menopausal features between the rural and urban women above the age of 40 years. *Methods:* Data on socio-demographic variables, reproductive history and menopausal symptoms were collected from 400 menopausal women of Tripura by questionnaire method. *Observation:* Variations in menopausal symptoms among rural and urban women were observed. Muscle and joint pain were the most common symptoms in rural (86%) and urban (80%) women, and 32% of both groups reported having breast pain. It was followed by hot flushes, sleep disturbances and night sweating. Due to lack of awareness, the majority of rural women thought that menopausal symptoms are very natural and need not require any attention until severe complications arise. *Conclusion:* Such regional studies thus helped to corroborate data with health status of menopausal women and also created awareness among middle-aged women regarding self-care for better management of their menopausal discomforts.

Keywords: Menopausal women, Rural women, Psychosomatic symptoms, Tripura, Urban women, Vasomotor symptoms.

Indian Journal of Physiology and Allied Sciences (2023); **DOI:** 10.55184/ijpas.v75i01.121 **ISSN:** 0367-8350 (Print)

INTRODUCTION

Menopausal health demands importance in Indian situation due to rise in life expectations and the increasing menopausal women populace. So, enormous efforts are essential to make women aware of menopausal symptoms, which will aid in the timely recognition of menopausal signs, reduction of uneasiness, and allow pursuing suitable medical care, if necessary. In women, the post-menopausal period occupies almost one third of their lives, the occurrence of certain circumstances such as coronary heart disease, diabetes, breast cancer, cervical cancer and osteoporosis increases after menopause or may happen as early menopausal consequences.[1,2] During this transition phase, women may experience diverse menopausal symptoms. The prevalence of each of these menopausal symptoms differs across socioeconomic and ethnic groups, and between urban and rural women.[3] Additionally, socioeconomic, lifestyle and biological variables were considered as predictors of menopausal symptoms.[4] Severe menopausal symptoms increase the chance of poor health-related quality of life [5], thus affecting the life expectancy.

In India, the majority of the post-menopausal women's health issues have been addressed for North-Indian women and a few reports are available from South India.[6-9] Very little information was available on post-menopausal women health issues in North-East India. Thus, the present study aimed to determine the menopausal problems among two small population groups belonging to rural and urban sections of Tripura, a state of North-East India.

Sudipta Pal, Nutritional Biochemistry and Toxicology Laboratory, Department of Human Physiology, Tripura University, Suryamaninagar, West Tripura, India, Email: sudiptapal@tripurauniv.ac.in

How to cite this article: Pal S. A community based comparative study on menopausal health issues of urban and rural women of Tripura, North-East India. Indian J Physiol Allied Sci. 2023;75(1):12-18.

Conflict of interest: None

Submitted: 18/12/2022 **Accepted:** 08/01/2023 **Published:** 20/02/2023

MATERIALS AND METHODS

Study Area

A community based, door-to-door descriptive survey was performed among the post-menopausal women living in Tripura's urban and rural areas from January to June, 2022. Data on rural women were collected from the selected regions; village panchayat of Majlishpur, Jirania District, Khowai and Mohanpur Districts of West Tripura, and on urban women from the municipality wards of Agartala city, under the Agartala Municipal Corporation. After permission and consent from the targeted participants, all those women having menopause for more than one year and not having any communicable disease below the age of 60 years were included in the study. However, women with menopause due to unnatural causes such as surgical removal of ovary or due to radiotherapy for cervical cancer and those having anti-depressants or anxiolytic drugs for mental retardation were excluded from the study.

Table 1: Socio-demographic status, reproductive and menstrual histories of the rural and urban menopausal women of Tripura

Parameters	*Rural menopausal women (n=200) (%)*	*Urban menopausal women (n=200) (%)*	*Significance level (α 0.05)*
Employment status			
Working women	18	38	X^2=9.92, df=1,
House wives	82	62	p=0.0016
Literacy status			
Literate	76	94	X^2=12.7, df=1,
Illiterate	24	6	p=0.0004
Residential status			
Concrete house	36	88	X^2=57.38, df=1,
Mud-built house	64	12	p=0.0001
Number of extended family members			
1-4	54	58	X^2=0.34, df=2,
5-8	40	36	p=0.8437
≥ 9	6	6	
Reproductive histories			
Age at menarche (years)	13.57 ± 1.45	13.7 ± 1.36	p>0.05
Age at marriage (years)	20.0 ± 2.67	27.76 ± 4.49	p<0.001
Age at menopause (years)	43.09 ± 1.47	46.62 ± 1.55	p<0.001
Menstrual histories			
Regular menstruation	80%	88%	X^2=2.38, df=1,
Irregular menstruation	20%	12%	p=0.1229
Bleeding length			
≤5 days	54	66	X^2=3, df=1,
≥5 days	46	34	p= 0.0833
Problems during menstruation			
Pain	54	58	X^2=7.26, df=3,
Heavy discharge	66	60	p=0.0641
Scanty discharge	34	40	
Others (PCOS)	6	20	

Sample Setting

The questionnaire was tested among 50 women in a pilot study and the prevalence of menopausal symptoms was found to be 75%. According to the formula of sample size: $n = 4\ pq/l^2$, where p = crude prevalence (75%), q = (100-p) = (100-75) = 25, l = 10% of p = 7.5 (allowable error). The required sample size was found to be 133. A total number of 411 menopausal women were randomly chosen as per the inclusion and exclusion criteria mentioned; 205 from the urban areas and 206 from the rural areas. Among the rural group, two women declined to participate and four did not fulfill the eligibility criteria. In the case of the urban group, four women skipped from the survey for personal reasons and one was excluded due to exclusion criteria. Finally, the survey included 400 menopausal women, 200 from the urban area and 200 from the rural part of Tripura.

Study Design

Eligible women were interviewed using a semi-structured, oral based questionnaire. Institutional ethical clearance was taken prior to conducting the study. The women participants in this interview-based survey signed the declaration/ consent statement for willingly participating in the study. The questionnaire was based on the guideline of the menopause rating scale (MRS), a health-related quality of life (HRQoL) scale to assess the severity of menopausal symptoms. The MRS is an internationally well-accepted protocol.[10] The MRS form was downloaded from the following website http://www.menopause-rating-scale.info and asked for the 11 questions verbally to each of the participants in Bengali language. The answer was recorded in the scheduled format by the author. The questionnaire included data on socio-demographic variables, menstrual and reproductive history of the participants, vasomotor, psychosomatic, psychological, urogenital symptoms and other problems like post-menopausal bleeding, vaginal dryness and itching and prevalence of fracture and joint pain. Additionally, responses regarding habitual like consumption of alcohol and smokeless tobacco and stress management practices were also recorded.

Statistical Analyses

Data were analyzed by GraphPad software by Dotmatics (www.graphpad.com/quickcals/chisqured1. Chi-square/). The chi-square test and two-tailed t-test were performed to analyze the comparison between rural and urban women in case of non-parametric and parametric data, respectively. Non-parametric data were evaluated by Chi-square test, $p \leq 0.05$ was considered statistically significant and no association between the observed variables, whereas $p \geq 0.05$ was considered statistically insignificant and an association between the variables. Parametric data (ages at menarche, marriage and menopause) were evaluated by 't' test. $p<0.001$ was considered statistically significant differences between the mean values of the observed variables among the rural and urban women.

Results and Observations

Socio-demographic Status

The mean ages of the rural and urban participants were 53.98 and 53.9 years, respectively. About 38% of the urban women were employed and 82% of the rural women were homemakers (Table 1). A higher literacy rate (94%) was found

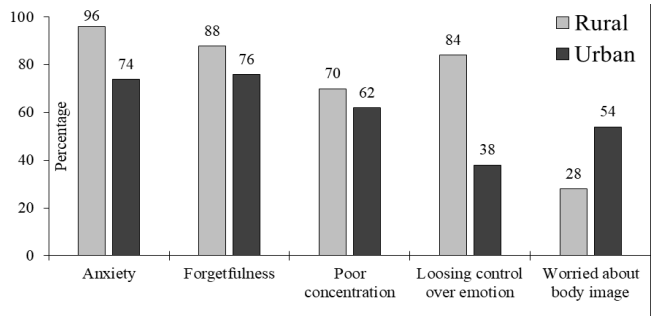

Figure 1: Percentage of menopausal women suffering from psychological symptoms such as anxiety, forgetfulness, poor concentration, losing control over emotion and worried about their body images

among the urban participants compared to rural women (76%). The urban participants lived in concrete houses (88%), but majority of the rural participants lived in mud-built houses (64%). The number of family members in most of the households of both groups varied between one to four (rural 54% and urban 58%), 36–40% of them had family members in between five to eight, and only 6% of the studied population of both the groups had family members more than nine.

Reproductive and Menstrual Histories

The mean age at menarche of the rural and urban women were the same (rural-13.75 years, urban 13.7 years; $p>0.05$), but differed significantly in the mean age at marriage ($p<0.001$) and menopause ($p<0.001$),(Table 1). The mean age of menopause of the studied population varied between 43–47 years, with 13% attaining menopause before the age of 40 years. About 80% of the urban women and 88% of the rural women had regular menstrual cycles, and the rest experienced amenorrhoea during the last six months of their menstrual cycle. The frequency of reporting menorrhagia was higher among rural women. Almost 54% of the rural women and 66% of the urban women experienced menstrual bleeding periods of ≤5 days ($p=0.083$). More than half of the studied population was reported to have dysmenorrhea during the last one year of the pre-menopausal period. About 50% of the rural women suffered moderate to severe pain in the first two days, whereas 20% of the urban women reported moderate to severe pain on the first day of menstruation only. Additionally, 66% of the rural women and 60% of the urban women reported to suffer from heavy menstrual discharge. During their menstrual period, 20% of urban women and 6% of rural women experienced irregular bleeding and polycystic ovarian syndrome. There was a significant association between pain, heavy discharge and scanty discharge ($p=0.064$) between the rural and urban menopausal women regarding their various menstrual problems (Table 1).

Psychosomatic and Vasomotor Symptoms

The psychosomatic symptoms like dizziness (urban-58%, rural-54%), palpitation (urban 44%, rural 66%), finger numbness (urban 46%, rural 70%), tingling of fingers (urban 42%, rural 74%), headache (urban 32%, rural 56%), irritability (58% urban, 80% rural), insomnia (urban 70%, rural 80%), cold hands and feet (urban 28%, rural 36%) and overweight (urban 20%, rural 40%) were significantly higher among the rural women than the urban counterpart (Table 2). There was a significant association between the numbness and tingling of fingers and cold and hand feet in the studied menopausal women of both rural and urban counterparts ($p=0.164$). Additionally, 80% of the urban and 86% of the rural menopausal women were suffering from muscle and joint pain, respectively, whereas 32% of both reported having breast pain. The observed frequency of muscle/joint and breast pain equals to the expected count ($X^2=0.056$). Additionally, palpitation, headache, irritability and sleep disturbances were significantly associated with each other in rural and urban menopausal women ($p=0.445$). Rural women were more likely to be affected by hot flushes (86%) and night sweats (64%) in comparison to urban women (Table 2).

Psychological Symptoms

The rural women were frequently suffering from anxiety (urban 74%, rural 96%), forgetfulness (urban 76%, rural 88%) and lack of concentration (urban 62%, rural 70%). The problem of losing control over emotion (urban 38%, rural 84%) seemed to be two-fold higher among rural women. However, urban women (54%) were more worried about their body image than rural women (28%) (Figure 1). Overall, the results depicted a significant difference between the prevalence of various psychological symptoms among rural and urban menopausal women ($X_2=24.25$, $p < 0.05$).

Urinary Problems

The increased urine frequency (urban 24%, rural 56%) and urine leakage during cough and laugh (urban 16%, rural 38%) were higher among the rural participants. The burning urinary sensation was more common in rural menopausal women (44%) than the urban women (20%). A significant association between those symptoms were observed ($p=0.979$) (Table 2).

Genital Problems

A small percentage of the menopausal women from both groups experienced occasional post-menopausal bleeding. Vaginal dryness and itching were more prevalent in rural women (55%) than their urban counterparts (28%) (Table 2).

Bone Health Issues

Fracture was common among rural women (32%) compared to urban women (19%). The prevalence of osteoporosis was more in the upper age groups (55–60 years) in both rural and urban menopausal women in comparison to the early stages of post-menopause. A significant association between the prevalence of fracture, osteoporosis and joint pain among the rural and urban menopausal women populace were observed in the study ($p=0.39$) (Table 2).

Table 2: Vasomotor, psychosomatic, urinary, genital symptoms and problems of fracture, osteoporosis and joint pain of the rural and urban menopausal women of Tripura

Menopausal symptoms	*Rural (n=200) (%)*	*Urban (n=200) (%)*	*X^2 /p value Significance level (α 0.05)*
Vasomotor symptoms			
Hot flushes	86	50	X^2=0.071, df=1
Night sweats	64	40	p=0.789
Psychosomatic symptoms			
Dizziness and lethargy	54	58	-
Numbness of fingers	70	46	X^2=3.608, df=2
Tingling of fingers	36	42	p=0.1646
Cold and hand feet	36	28	
Headache	56	32	X^2=2.647, df=2
Insomnia	80	70	P=0.2662
Rapid heartbeat (palpitation)	66	44	
Irritability	80	58	-
Muscle pain	86	80	X^2=0.056, df=1
Breast pain	32	32	p=0.813
Increase in body weight	40	20	-
Urinary symptoms			
Increased urine frequency	56	24	X^2=,0.042, df=2 p=0.979
Urine leakage during cough and laugh (incontinence)	38	16	
Burning urinary sensation	44	20	
Genital symptoms			
Post-menopausal bleeding	12	14	X^2=3.426, df=2 p=0.18
Vaginal dryness and itching	55	28	
Bone health issues			
Fracture	32	19	X2=1.882, df=2
Joint pain	86	80	p=0.39
Osteoporosis	48	41	
(45-50 years)	5	4	
(50-55 years)	11	9	
(55-60 years)	32	28	

Taking Tobacco, Alcohol, Oral Contraceptives

The respondents denied having any alcohol consumption. About 84% of the rural women agreed to have smokeless tobacco daily in betel quid with tobacco or zarda, whereas 56% of the urban women confessed to smokeless tobacco. About 6% of the rural women and 22% of the urban women took oral contraceptives (Table 3).

Table 3: Consumption of alcohol, smokeless tobacco and oral contraceptives by the rural and urban menopausal women, awareness of women regarding menopausal reason and stress management practices

Life style and stress management practices	*Rural (n=200) (%)*	*Urban (n=200) (%)*	*Significance level (α 0.05)*
Consumption of alcohol	0	0	
Intake of smokeless tobacco	84	56	X^2=8.64, df=1, p= 0.0033
Taking oral contraceptives	6	22	X^2=10.63, df=1, p=0.0011
Responses regarding reason for menopause			
Hormonal changes	35	89	X^2=71.7, df=1, p=0.0001
Divine reason	54	2	
Unknown	11	9	
Stress management practices	12	55	
Free hand exercise/ brisk walking	7	44	X^2=2.441, df=1, p=0.1182
Yoga/Pranayama	5	11	

Awareness of Women

About 54% of the rural women thought that the main reason for menopause was divine, 35% said that the reason was due to hormonal changes and normal aging, and the rest did not answer any specific reason for menopause (Table 3). Among the urban women, 89% knew the menopausal cause is the hormonal changes after mid-age, 2% mentioned divine cause and the rest did not know the reason. There was no association between given responses regarding menopausal reasons by the urban and rural women populace ($p < 0.05$).

Physical Activities and Stress Management Practices

About 18% of the rural participants were involved in agriculture, brickfields, construction and tea plucking (Figure 2), whereas 40% of the urban women were engaged mostly in office work. Rests of them were engaged in household activities (Table 3). About 55% of urban women used to do some physical exercises and meditation 3 to 5 days per week for stress management and healthy life, whereas only 12% of rural women do physical exercise and meditation.

Discussion

Rural-urban differences in menopausal ages and its symptoms were noticed among a small population of menopausal women of Tripura. The mean menopausal age of the studied urban women was same as reported by the pan-

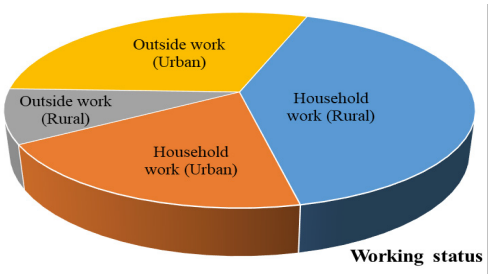

Figure 2: Percentage of the rural and urban menopausal women doing household and outside activities. Rural women were engaged in agricultural, brick field work, tea plucking, office and private jobs, whereas urban women mostly engaged in office and private jobs under outside work category

India survey on age at menopause (46.1 ± 4.9 years), whereas the mean menopausal age of the rural menopausal women of Tripura was similar as reported for the middle part of India.[4] In comparison to the National average,[11] the women of the studied groups had almost the same age at menopause (44.85 years), with 13% of women attained menopause prior to 40 years of age. The rural-urban difference in the menopausal ages as observed in the present study corroborated findings from Mexico and Spain.[12,13] Other variables such as parity, education and occupation were significant predictors of the age at menopause.[4,11,14] Premature menopause might be due to early onset of menarche or hormonal irregularity. Moreover, genetic predisposition might also contribute to primary ovarian insufficiency (POI) to promote early menopause.[15] Genome-wide association studies (GWAS) on common genetic risk factors help in elucidation of the genetic reasons in variation of reproductive traits and diseases influencing reproductive lifespan, fertility and related outcomes in women.[15] The present study revealed that 32% of the rural post-menopausal women suffered from fractures, and 48% reported osteoporosis. Earlier menopause is supposed to be related with higher risk of cardiovascular and osteoporotic disorders.[16,17] Prevalence of osteoporosis in Asian women due to vitamin D deficiency was reported earlier.[18] Poor nutrition, menstruation irregularity in peri-menopausal period and ages at marriage are also contributory factors for decreased bone density. Regarding anti-resorptive therapy, the suffered women said that they were advised to take multivitamin formulations as well as calcium supplements by the physician, but very few of them followed precautionary measures either due to poor economic condition or negligence.

Quality of life is one of the important determinants for menopausal symptoms. There was significant association between the literacy and employment status of the rural and urban women as reflected by their employment status. A number of reports claimed a significant association between lower educational achievement and socioeconomic status with an earlier menopause.[19,20] The prevalence of hot flushes among the studied rural women was higher in comparison to the urban counterpart; hot flushes appeared to be higher than the global range as reported by Fuh *et al.*[21] More rural menopausal participants experienced night sweat during sleep due to changes in circulatory adjustments, psychological and vasomotor functioning. The present study is also in conformity with the earlier studies of Mathew *et al.*,[7] reported a significant variation in the prevalence of hot flushes among the rural and urban menopausal women in Etawah village, Uttar Pradesh, India. Rural-urban, racial and cultural differences in various physiological and psychosomatic symptoms were also noticed in a few surveys in India and outside countries.[22-24] Additionally, room temperature, recalled weight at 18 years of age, frequent intake of coffee are also the predictors of hot flushes and night sweat in post-menopausal women.[25]

Moreover, numbness of fingers and cold hand and feet were ubiquitous symptoms in the rural menopausal women, whereas the tingling of fingers was more common in the urban group. The rural menopausal women were more irritable compared to the urban women, whereas both almost equally suffered from dizziness and lethargy symptoms. There was significant association between palpitation, headache and sleep disturbance among the studied population. It was further revealed that vasomotor and psychosomatic symptoms were more prevalent among the women in the early menopausal period between 43 to 46 years, whereas psychological symptoms except depression and some other symptoms like weight gain, dryness of skin were more prevalent among women in the late post-menopausal period between 47 to 60 years. This could be because of difference in the number of populations in the specific age group of women and also due to the fact that with more years passed in menopausal stages, women become more adapted to the problems.

The psychological symptoms were more among the rural women except worried about body image. The prevalence of psychological symptoms in lower socioeconomic strata was also reported earlier.[26] Other societal factors, including domestic violence, may be one of the hidden reasons for severity in psychological symptoms in rural menopausal women. Other than that, low-socio-economic status and lack of stress-coping practices might make them more susceptible to psychological stress. Additionally, an increase in the body weight in post-menopausal women correlates obesity related health complications. This is supported by the report of Singhania et al., [27] stating that 35.5% of the post-menopausal women in Haryana, India, were overweight or obese. A South Korean survey report stated about 48.65% of the studied menopausal women to be overweight.[28] Greater BMI was found to be associated with severe vasomotor symptoms.[29,30] Urban-rural variation in body weight gain might be because urban women, being more concerned about their body images, used to do physical exercises and yoga regularly, which helped them to manage overweight and psychological stress. This fact was supported by an earlier pilot study of Sung *et al.*, signifying the role of meditation in alleviating menopausal symptoms in the participants of the University of Brain Education, Cheonan, the Republic of Korea.[31]

Moreover, the rural women suffered more from increased urine frequency and burning urinary sensation, raised from the drastic change in the estrogen level. Additionally, stress incontinence may arise from anxiety, irritability and overweight. Vaginal dryness might be associated with unhappy sexual life in the studied population. Most rural women used to take smokeless tobacco, whereas 56% of the urban women confessed to having it. The anti-estrogen effect of tobacco was reported to promote premature menopause and the risk of osteoporotic fissure independent of bone mineral density score.[32,33] Additionally, the research work by Ansari et al. showed that almost all stages of pelvic organ prolapse are present in peri-menopausal and menopausal women belonging to age group of 41 to 50 years.[34] Menopause is related with prolapse severity and is symptomatic. The present study further revealed that 22% of the urban women and 6% of the rural group were taking oral contraceptives during their post-menopausal period to overcome pain related issues as per the gynecologist's advice. However, lifestyle modification, healthy diet and exercise are essential for better management of post-menopausal symptoms rather than taking hormonal therapy.

Conclusion

The rural menopausal women in the studied population attained menopause at little early age in comparison to the urban women. Significant variation in vasomotor, psychosomatic, psychological and other menopausal symptoms was observed among the rural and urban menopausal women indicating lifestyle variation as a dominant predictor for such consequences. The present study emphasizes on implementation of proper healthcare programs to help menopausal women for their better healthy lives. A large population study is further needed covering all the districts of Tripura to get more data on menopausal women's health issues in the state for the implementation of post-reproductive health programs. Frequent awareness programs are required to make menopausal women confident in managing their own problems through self-care measures. A dedicated menopausal clinic needs to be established in the current primary health care system to help these women live healthy and happy lives.

Acknowledgement

The present survey work does not require any help from any funding agency. The author sincerely acknowledges the Head of the Department of Human Physiology, Tripura University and the Councillor of the respective locality of survey under Agartala Municipal Corporation and Gram Panchayat Pradhan for giving permission in pursuing the present work.

Conflict of Interest

The author declares that there is no conflict of interest.

References

1. Colditz GA, Willett WC, Stampfer MJ, Rosner B, Speizer FE, Hennekens CH. Menopause and the risk of coronary heart disease in women. N Engl J Med. 1987;316(18):1105-10. DoI: 10.1056/NEJM198704303161801.
2. Khosla S, Riggs BL. Pathophysiology of age-related bone loss and osteoporosis. Endocrinol Metab Clin North Am. 2005; 34(4):1015-30. DoI: 10.1016/j.ecl.2005.07.009.
3. Sharma S, Mahajan N. Menopausal symptoms and its effect on quality of life in urban versus rural women: A cross-sectional study. J Midlife Health. 2015;6(1):16-20. DoI: 10.4103/0976-7800.153606.
4. Ahuja M. Age of menopause and determinants of menopause age: A PAN India survey by IMS. J Mid-life Health. 2016;7(3):126-31. DoI: 10.4103/0976-7800.191012.
5. Shyu YK, Pan CH, Liu WM, Hsueh JY, Hsu CS, Tsai PS. Health related quality of life and healthcare resource utilization in Taiwanese women with menopausal symptoms: a nation-wide survey. J Nurs Res. 2012;20(3):208–18. DoI: 10.1097/jnr.0b013e318265619b.
6. Jain N, Mehra R, Goel P, Chavan BS. Sexual health of post-menopausal women in north India. J Midlife Health. 2019;10(2):70-4. DoI: 10.4103/jmh.JMH_38_18.
7. Mathew DJ, Kumar S, Jain PK, Shukla SK, Ali N, Singh DR. A cross-sectional study to assess the quality of life of peri-menopausal and post-menopausal women in rural Etawah, Uttar Pradesh, India. J Midlife Health. 2020;11(3):161-167. DoI: 10.4103/jmh.JMH_88_19.
8. Borker SA, Venugopalan PP, Bhat SN. Study of menopausal symptoms, and perceptions about menopause among women at a rural community in Kerala. J Midlife Health. 2013;4(3):182-7. DoI: 10.4103/0976-7800.118997.
9. Jayabharathi B, Judie A. Complementary health approach to quality of life in menopausal women: a community-based interventional study. Clin Interv Aging. 2014;9:1913-21. DoI: 10.2147/CIA.S70064.
10. Heinemann K, Ruebig A, Potthoff P, Schneider HP, Strelow F, Heinemann LA, Do MT. The Menopause Rating Scale (MRS) scale: a methodological review. Health Qual Life Outcomes. 2004;2:45. DoI: 10.1186/1477-7525-2-45.
11. Shyamala TS, Sivakami M. Menopause: An emerging issue in India. Econ Polit Weekly. 2005;40(47):4923-30. Available at https://www.epw.in/journal/2005/47/special-articles/menopause-emerging-issue-india.html
12. Bernis C, Reher DS. Environmental contexts of menopause in Spain: comparative results from recent research. Menopause. 2007;14(4):777-87. DoI: 10.1097/gme.0b013e31803020ff.
13. Malacara JM, Canto de Cetina T, Bassol S, *et al*. Symptoms at pre- and postmenopause in rural and urban women from three States of Mexico. Maturitas. 2002;43(1):11-9. DoI:10.1016/s0378-5122(02)00077-4.
14. Luoto R, Kaprio J, Uutela A. Age at natural menopause and socio-demographic status in Finland. Am J Epidemiol. 1994;139(1):64-76. DoI: 10.1093/oxfordjournals.aje.a116936.
15. McGrath IM, Mortlock S, Montgomery GW. Genetic regulation of physiological reproductive lifespan and female fertility. Int J Mol Sci. 2021;22:2556. DoI: 10.3390/ijms22052556.
16. Kelsey JL, Gammon MD, John EM. Reproductive factors and breast cancer. Epidemiol Rev. 1993;15(1):36-47. DoI: 10.1093/oxfordjournals.epirev.a036115.
17. Cranney A, Jamal SA, Tsang JF, Josse RG, Leslie WD. Low bone

mineral density and fracture burden in post-menopausal women. CMAJ 2007;177(6): 575-80. DoI: 10.1503/cmaj.070234.
18. Shaki O, Rai SK, Kashid M, Chakrabarty BK. Prevalence of osteoporosis in peri- and post-menopausal women in slum area of Mumbai, India. J Mid-life Health. 2018;9(3):117-22. DoI: 10.4103/jmh.JMH_84_17.
19. Lawlor DA, Ebrahim S, Smith GD. The association of socioeconomic position across the life course and age at menopause: The British Women's Heart and Health Study. BJOG 2003; 110(12):1078-87. PMID: 14664879.
20. Gold EB. The timing of the age at which natural menopause occurs. Obstet Gynecol Clin North Am. 2011; 38(3):425-40. DoI: 10.1016/j.ogc.2011.05.002.
21. Fuh JL, Wang SJ, Lu SR, Juang KD, Chiu LM. The Kinmen women-health investigation (KIWI): a menopausal study of a population aged 40-54. Maturitas 2001;39(2):117-24. DoI: 10.1016/s0378-5122(01)00193-1.
22. Goyal A, Mishra N, Dwivedi S. Comparative study of morbidity pattern among rural and urban post-menopausal women of Allahabad, Uttar Pradesh, India. Int J Res Med Sci 2017; 5(2):6707. https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Goyal+A%2C+Mishra+N%2C+Dwivedi+S.+Comparative+study+of+morbidity+pattern+among+rural+and+urban+postmenopausal+women+of+Allahabad%2C+Uttar+Pradesh%2C+India.+Int+J+Res+Med+Sci+2017%3B+5%282%29%3A670+7.&btnG=
23. Sharma S, Mahajan N. Menopausal symptoms and its effect on quality of life in urban versus rural women: A crosssectional study. J Midlife Health. 2015; 6(1):1620. DoI: 10.4103/0976-7800.153606.
24. Im EO, Chang SJ, Chee E, Chee W. The relationships of multiple factors to menopausal symptoms in different racial/ethnic groups of midlife women: the structural equation modelling. Women Health. 2019;59(2):196–212. DoI: 10.1080/03630242.2018.1450321.
25. Whelan EA, Sandler DP, McConnaughey DR, Weinberg CR. Menstrual and reproductive characteristics and age at natural menopause. Am J Epidemiol. 1990;131(4):625-32. DoI: 10.1093/oxfordjournals.aje.a115546.
26. Prairie BA, Wisniewski SR, Luther J, Hess R, Thurston RC, Wisner KL, *et al*. Symptoms of depressed mood, disturbed sleep, and sexual problems in midlife women: cross-sectional data from the Study of Women's Health Across the Nation. J Womens Health (Larchmt) 2015;24(2):119-26. DoI: 10.1089/jwh.2014.4798.
27. Singhania K, Kalhan M, Choudhary P, Kumar T. Association of menopausal symptoms with overweight and obesity among rural middle aged women in North India: A population based study. J Midlife Health. 2020;11(3):137-43. DoI: 10.4103/jmh.JMH_123_19.
28. Koo S, Ahn Y, Lim JY, Cho J, Park HY. Obesity associates with vasomotor symptoms in postmenopause but with physical symptoms in perimenopause: A crosssectional study. BMC Womens Health. 2017;17(1):126. DoI: 10.1186/s12905-017-0487-7.
29. Herber-Gast GC, Mishra GD, van der Schouw YT, Brown WJ, Dobson AJ. Risk factors for night sweats and hot flushes in midlife: results from a prospective cohort study. Menopause. 2013;20(9):953-9. DoI: 10.1097/GME.0b013e3182844a7c.
30. Gold EB, Sternfeld B, Kelsey JL, Brown C, Mouton C, Reame N, *et al*. Relation of demographic and lifestyle factors to symptoms in a multi-racial/ethnic population of women 40-55 years of age. Am J Epidemiol. 2000;152(5):463-73. DoI: 10.1093/aje/152.5.463.
31. Sung MK, Lee US, Ha NH, Koh E, Yang HJ. A potential association of meditation with menopausal symptoms and blood chemistry in healthy women: A pilot cross-sectional study. Medicine (Baltimore). 2020;99(36):e22048. DoI: 10.1097/MD.0000000000022048.
32. Shuster LT, Rhodes DJ, Gostout BS, Grossardt BR, Rocca WA. Premature menopause or early menopause: long term health consequences. Maturitus 2010; 65: 161-6. DoI: 10.1016/j.maturitas.2009.08.003.
33. Solberg LI, Maciosek MV, Edwards NM, Khanchandari HS, Goodman MJ. Repeated tobacco-use screening and intervention in clinical practice. Am J Prev Med 2006; 31: 62-71. DoI: 10.1016/j.amepre.2006.03.013.
34. Ansari MK, Sharma PP, Khan S. Pelvic organ prolapse in perimenopausal and menopausal women. J Obstet Gynaecol India. 2022;72(3):250-257. DoI: 10.1007/s13224-021-01524-8.

Peer-reviewed Certification

During the review of this manuscript, a double-blind peer-review policy has been followed. The author(s) of this manuscript received review comments from a minimum of two peer-reviewers. Author(s) submitted revised manuscript as per the comments of the assigned reviewers. On the basis of revision(s) done by the author(s) and compliance to the Reviewers' comments on the manuscript, Editor(s) has approved the revised manuscript for final publication.