

Menopause-Related Quality of Life among Urban Women of Hyderabad, India

Aruna Kumari Yerra, Sudha Bala¹, Ranjith Kumar Yalamanchili², Rajiv Kumar Bandaru³, Archana Mavoori⁴

Departments of Obstetrics and Gynaecology,
¹Community Medicine,
²Orthopaedics, ³General Medicine and ⁴Dermatology, ESIC Medical College, Hyderabad, Telangana, India

Submitted: 03-Dec-2020
Revised: 10-May-2021
Accepted: 30-May-2021
Published: 27-Jul-2021

INTRODUCTION

Menopause signifies a normal aging process that brings transition in a women's life from the reproductive to nonreproductive phase. This physiological process is characterized by permanent cessation of the menstrual cycle because of the deficiency of estrogen due to ovarian failure.^[1] This brings about biological and behavioral changes that negatively affect the quality of life (QOL). QOL has been defined by the WHO as "the individual perception of their position in life in the context of the cultural and value systems in which they live and about their goals, expectation, standards, and concerns."^[2]

ABSTRACT **Background:** Menopause is regarded as the marker for various symptoms such as physical, psychological, vasomotor, and sexual impairing the quality of life (QOL). **Objectives:** To assess the menopause-related QOL and determine associated factors among postmenopausal women. **Materials and Methods:** A cross-sectional study was conducted among 378 postmenopausal women attending the obstetrics and gynecology department of a tertiary care hospital using a standardized menopause-specific QOL (MENQOL) questionnaire consisting of physical, vasomotor, psychosocial, and sexual domains. **Results:** The study included 378 women aged above 40 years, with majority belonging to the age group of 46–50 years. The total MENQOL mean score was found to be 19.35 ± 16.20 , with physical domain score the highest 14.89 ± 11.85 , followed by vasomotor 1.98 ± 3.83 , psychosocial 1.82 ± 3.29 , and the least as sexual domain with score of 0.624 ± 2.21 . Post menopausal women with age less than 50 years, No formal education, High socio-economic status, Home makers and duration of menopause less than 5 years was found to have statistical significant association with higher vasomotor domain score; No formal education, higher socio economic status and duration of menopause with greater than 5 years was found to be significant with higher sexual domain scores. **Conclusions:** Menopause may be associated with a decrease in QOL. Certain sociodemographic variables showed a statistically significant association with the vasomotor and sexual domains. Awareness and interventions that affect the modifiable factors may help in increasing the QOL at menopause.

KEYWORDS: Cross-sectional study, menopause-specific quality of life, postmenopausal women

It is the expected projection that globally by 2030, the number of postmenopausal women would increase to 1200 million.^[3] The average age for attaining menopause of an Indian woman is 46.2 years which is much less than their Western counterparts (51 years).^[4] Due to the increased life expectancy, women spend more than one-third of their lives in the postmenopausal period and experience various symptoms that lead to impaired QOL.

Address for correspondence: Dr. Sudha Bala, Flat No. 301, H No. 2-2-1075/A, Shubodaya Enclave, Baghambetpet, Hyderabad - 500 013, Telangana, India. E-mail: dr.sudhabala78@gmail.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Yerra AK, Bala S, Yalamanchili RK, Bandaru RK, Mavoori A. Menopause-related quality of life among urban women of Hyderabad, India. J Mid-life Health 2021;12:161-7.

Access this article online	
Quick Response Code: 	Website: www.jmidlifehealth.org
	DOI: 10.4103/jmh.jmh_272_20

Immediately after menopause, the women experience hot flushes, sweating, sleep disorders, and mental changes. A few years later, they experience symptoms due to atrophic changes in the urogenital system, sexual dysfunctions, cardiovascular changes, osteoporosis, and muscular articular complaints.^[5]

There is also considerable variation in the reporting of menopausal symptoms across the world. In the United States of America, it is estimated that as many as 85% of postmenopausal women experience menopause-related symptoms in their lifetime, predominantly vasomotor symptoms. Among Nigerians, the most commonly reported symptom was joint and muscular discomfort (59%). Egyptians reported the most prevalent postmenopausal symptoms as joint pain (90%), sleep problems (84%), and physical and mental exhaustion (80%). Southeast Asian women reported a high prevalence of joint and muscle pains.^[6-10] There are many factors such as sociodemographic, cultural, psychological, and lifestyle that affect individual perceptions regarding these symptoms.^[11]

The menopause-specific QOL (MENQOL) questionnaire introduced in 1996 is a tool to assess health-related QOL in postmenopausal women. An inherent assumption of the MENQOL is that disease states and conditions such as menopause, which produce symptoms, may disrupt emotional, physical, and social aspects of an individual's life, which must be considered concomitantly with treatment decisions.^[12]

Indian women perceive menopausal symptoms as a normal physiological manifestation of the aging process and do not seek medical intervention. These perceptions are mainly due to family commitment and the cultural silence to discuss sexual and reproductive problems due to social stigma.^[13] Reproductive Maternal Neonatal Child Health Plus Adolescent Program provides a continuum of care to women but does not include women beyond reproductive age and does not cater to the health needs of postmenopausal women.^[14] Moreover, the concept of health has evolved over the centuries with an emphasis on improving the QOL.

Such studies related to the postmenopausal QOL are limited in urban Telangana, so there is a need for these studies considering large variations in sociocultural milieu across India. Therefore, an attempt has been made to assess the QOL among postmenopausal women using MENQOL.

MATERIALS AND METHODS

Study design and study setting

A cross-sectional study was conducted on women above the age of 40 years for 4 months in the department of obstetrics and gynecology at a tertiary care hospital in Hyderabad, Telangana, India.

Study subjects

Operational definition

Natural menopause was defined as the natural cessation of the menstrual period for 12 months or longer.

Inclusion criteria

All the women over the age of 40 years who have attained natural menopause and who consented to the study were included.

Exclusion criteria

Women who had premature or surgically induced menopause and women with diabetes mellitus, hypertension, thyroid disorders, and major psychiatric disorders such as schizophrenia and mental retardation were excluded from the study.

Sample size

Taking the prevalence of most common symptom of physical domain as 68%, among the women older than 40 years in a study conducted at selected areas of Karnataka,^[15] the sample size calculated was 378 (with 5% absolute precision and 10% nonresponse rate).

Sampling method

A simple random sampling technique was adopted to select the patients using a random number of table numbers based on tokens given to those who were attending the outpatient block during the camp days arranged at this tertiary health-care institution.

Data collection tools

Data were collected using a camp-based approach (publicized through wallpaper and pamphlets at OPD and fixed the dates of camps) which was conducted six times at our premises to achieve the desired sample with a predesigned and pretested interview questionnaire schedule consisting of sociodemographic variables and duration of menopause. Menopause-related QOL was evaluated using MENQOL questionnaire which is a 29-item questionnaire, each item assessing the impact of one of the four domains of menopausal symptoms, experienced by the women in the previous month. The first three items fall in the vasomotor domain of MENQOL, items 4–10 in the psychosocial domain, items 11–26 are related to the physical domain, and items 27–29 to the sexual domain of MENQOL. Each item is scored as present or not, and if present, how bothersome on a seven-point Likert scale (0 – not

bothersome to 6 – extremely bothersome). The scores of all four domains constitute a composite (total) score of QOL of menopausal women. The symptoms related to the sexual domain among the widows and separated women were excluded during analysis. The validated questionnaire was translated from English to vernacular language (Telugu) by a language expert and back translated to English which reasonably resembled the original one. Pilot testing was done in local language before administering.

Ethical considerations

After obtaining institutional ethical committee clearance (ESICMC/F0138/06-2019), the significance of the study was explained to all the participants, and written informed consent was taken.

Statistical analysis

Data were entered in Microsoft Excel (version, 2016) and analyzed. Descriptive statistics such as frequency, percentages, mean, and standard deviations were used. The mean scores of four domains among menopausal women were depicted. Association of variables and domains was also analyzed using an independent *t*-test, and $P < 0.05$ was taken as statistically significant. Internal consistency was measured by Cronbach's alpha for each domain, and factor analysis was conducted in exploratory nature to find the interfactor correlations for the domains.

RESULTS

Sociodemographic characteristics of study participants

The study population included 378 women above the age of 40 years. The mean age was found to be 56.81 (9.697) years. Majority of the women were married 263 (69.5%), homemakers 273 (72.2%), and with no formal education among 104 (71.7%). Socioeconomic status as per modified BG Prasad's classification^[16] is detailed in Table 1. The mean duration since menopause was found to be 11.44 (8.21) years.

Assessment of quality of life based on menopause-specific quality of life questionnaire

The prevalence of at least one of the physical symptoms was found among 279 (73.8%), at least one of the psychosocial symptoms in 159 (42.1%), at least one of the vasomotor symptoms in 121 (32%), and sexual symptoms in 58 (21.8%) women. Table 2 gives a detailed prevalence of rating from 0 to 6 on a Likert scale for all the four domains.

Table 1: Sociodemographic characteristics of study participants (n=378)

Sociodemographic variable	n (%)
Occupation	
Semi professional	1 (0.3)
Clerical/shop owner/farmer	11 (2.9)
Skilled	14 (3.7)
Semi-skilled	25 (6.6)
Unskilled	54 (14.3)
Unemployed/housewife	273 (72.2)
Education	
No formal education	104 (71.7)
Primary school	14 (9.7)
Middle school	10 (6.9)
High school	9 (6.1)
Intermediate	2 (1.4)
Graduate	4 (2.8)
Postgraduate	2 (1.4)
Marital status	
Married	263 (69.5)
Unmarried	2 (0.5)
Widow	100 (26.6)
Separated	13 (3.4)
Classification of socioeconomic status as per modified BG Prasad's	
Class I	26 (6.9)
Class II	49 (13)
Class III	72 (19)
Class IV	142 (37.6)
Class V	99 (23.5)

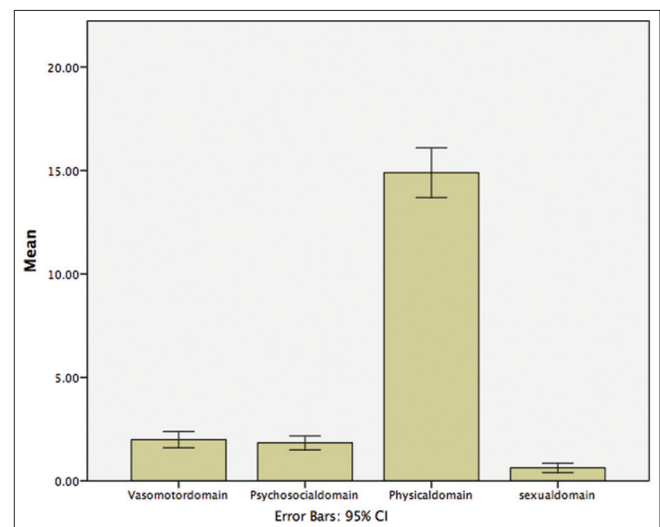


Figure 1: Distribution of mean scores of various domains of menopause-related quality of life

Mean domain scores of menopause-specific quality of life

The mean score of each domain of MENQOL was used as the overall subscale score, and the low mean score indicated better QOL. Figure 1 enlists the four domains

Table 2: Prevalence of menopause-related symptoms-domains as per menopause-related quality of life

Domains	Likert scale rating						
	0, n (%)	1, n (%)	2, n (%)	3, n (%)	4, n (%)	5, n (%)	6, n (%)
Vasomotor							
Hot flushes	284 (75.1)	26 (6.9)	30 (7.9)	8 (2.1)	23 (6.1)	5 (1.3)	2 (0.5)
Night sweats	297 (78.6)	20 (5.3)	13 (3.4)	1 (0.3)	33 (8.7)	12 (3.2)	2 (0.5)
Sweating	297 (78.6)	19 (5)	10 (2.6)	4 (1.1)	35 (9.3)	9 (2.4)	4 (1.1)
Psychosocial							
Being dissatisfied with my personal life	333 (88.1)	17 (4.5)	13 (3.4)	2 (0.5)	11 (2.9)	1 (0.3)	1 (0.3)
Feeling anxious	322 (85.2)	17 (4.5)	13 (3.4)	5 (1.3)	17 (4.5)	3 (0.8)	1 (0.3)
Experiencing poor memory	318 (84.1)	24 (6.3)	12 (3.2)	6 (1.6)	17 (4.5)	1 (0.3)	0
Accomplishing less than I used to	354 (92.9)	13 (3.4)	5 (1.3)	2 (0.5)	4 (1.1)	0	0
Feeling depressed	309 (81.7)	28 (7.4)	23 (6.1)	10 (2.6)	8 (2.1)	0	0
Being impatient with others	317 (83.9)	40 (10.5)	8 (2.1)	4 (1.1)	7 (1.8)	2 (0.5)	0
Feeling wanting to be alone	370 (97.1)	5 (1.3)	2 (0.5)	0 (0)	1 (0.3)	0	0
Physical							
Flatulence	282 (74.8)	31 (8.2)	10 (2.7)	14 (3.7)	19 (5)	14 (3.7)	7 (1.9)
Aches in muscle and joints	73 (19.2)	13 (3.4)	16 (4.2)	55 (14.6)	136 (36)	53 (14)	32 (8.5)
Feeling tired or worn out	216 (57.3)	17 (4.5)	24 (6.4)	24 (6.4)	67 (17.8)	23 (6.1)	6 (1.6)
Difficulty sleeping	256 (67.7)	33 (8.7)	14 (3.7)	24 (6.3)	34 (9)	14 (3.7)	3 (0.8)
Aches in back of neck or head	247 (65.3)	28 (7.4)	26 (6.9)	18 (4.8)	41 (10.8)	18 (4.7)	0
Decrease in physical strength	157 (41.5)	49 (13)	58 (15.3)	39 (10.3)	67 (17.7)	5 (1.3)	3 (0.8)
Decrease in stamina	156 (41.3)	36 (9.5)	57 (15.1)	45 (11.9)	73 (19.3)	7 (1.8)	4 (1.1)
Feeling lack of energy	219 (57.9)	50 (13.2)	34 (9)	17 (4.5)	52 (13.8)	3 (0.8)	3 (0.8)
Dry skin	322 (85.2)	20 (5.3)	8 (2.1)	7 (1.9)	18 (4.8)	3 (0.8)	0
Weight gain	344 (91)	11 (2.9)	6 (1.6)	10 (2.6)	5 (1.3)	2 (0.5)	0
Increased facial hair	349 (91.6)	14 (3.7)	8 (2.1)	5 (1.3)	2 (0.5)	0 (0)	0
changes in appearance, texture, or tone of your skin	359 (95)	13 (3.4)	1 (0.3)	0	4 (1.1)	0	1 (0.3)
Feeling bloated	315 (83.3)	17 (4.5)	8 (2.1)	9 (2.4)	15 (4)	8 (2.1)	6 (1.6)
Low backache	238 (63)	40 (10.6)	35 (9.3)	28 (7.4)	20 (5.3)	6 (1.6)	11 (2.9)
Frequent urination	309 (81.7)	14 (3.7)	7 (1.9)	13 (3.4)	18 (4.8)	8 (2.1)	9 (2.4)
Involuntary urination when laughing or coughing	341 (90.2)	8 (2.1)	8 (2.1)	15 (4)	3 (0.8)	2 (0.5)	1 (0.35)
Sexual							
Change in sexual desire	337 (89.2)	16 (4.2)	9 (2.4)	6 (1.6)	5 (1.3)	3 (0.8)	2 (0.5)
Vaginal dryness during intercourse	361 (95.5)	2 (0.5)	1 (0.3)	2 (0.5)	6 (1.6)	4 (1)	2 (0.5)
Avoiding intimacy	349 (92.3)	14 (3.7)	1 (0.3)	7 (1.9)	3 (0.8)	2 (0.5)	2 (0.5)

*Widow and separated women were excluded for analysis of sexual symptom

in a box plot. Mean scores of the physical domain were found to be highest, followed by vasomotor and psychosocial domain scores. Reliability coefficients were constructed for each domain, and Cronbach's alpha for vasomotor domain was 0.880, psychomotor domain 0.661, physical domain 0.821, and sexual domain 0.833. On principal component analysis, item number 4- Being dissatisfied with personal life, Item number 7 - accomplishing less than one used to and item number 22- Changes in appearance, Texture and Tone of skin were found to have eigenvalues <0.4. The correlation between factors is shown in Table 3. These results indicated a degree of correlation varying from 0.15 (vasomotor, psychosocial, and sexual domains) to 0.45 (physical domain).

To compare the association between various domains and sociodemographic variables, an independent sample

Table 3: Interfactor correlations of menopause-related quality of life after factor analysis

	Vasomotor	Psychosocial	Physical	Sexual
Vasomotor	1.000	0.158	0.458	0.167
Psychosocial	0.158	1.000	0.426	0.069
Physical	0.458	0.426	1.000	0.161
Sexual	0.167	0.069	0.161	1.000

t-test was used which is detailed in Table 4. A statistically significant association was found with $P < 0.05$ between the age and the psychosocial, physical, and sexual domains. Menopausal women had higher education and significantly lower scores in the vasomotor and sexual domain. Women with higher socioeconomic status had higher mean scores in vasomotor, physical, and sexual domains. The longer duration of menopause was significantly associated with vasomotor, psychosocial,

Table 4: Domains' mean scores of menopausal women according to sociodemographic characteristics

Variables	Vasomotor	Psychosocial	Physical	Sexual
Age (years)				
≤50	3.17±4.24	1.72±2.58	14.37±12.22	0.60±1.56
>50	1.43±3.42	1.87±3.58	16.02±10.81	0.63±2.46
<i>P</i> *	0.001	0.208	0.998	0.565
Education status				
Formal education	1.65±3.48	1.92±3.44	14.46±12.12	0.50±2.06
No formal education	3.23±4.72	1.45±2.63	16.53±10.69	0.97±2.70
<i>P</i> *	0.004	0.115	0.873	0.005
Socioeconomic status				
Class I	6.0±4.92	1.38±1.89	23.15±9.04	1.92±3.87
Class II-V	1.69±3.57	1.85±3.37	14.28±11.81	0.52±2.01
<i>P</i> *	0.00001	0.252	0.144	0.0002
Duration of menopause (years)				
<5	3.38±4.60	1.41±2.32	14.23±11.95	0.53±1.74
>5	1.35±3.26	1.99±3.64	16.58±11.52	0.83±3.02
<i>P</i> *	0.0002	0.021	0.437	0.020
Occupational status				
Professional	1.55±3.36	1.52±2.96	14.78±12.02	0.590±1.57
Homemakers	3.17±4.72	1.94±3.44	15.54±11.74	0.654±2.45
<i>P</i> *	0.0001	0.151	0.754	0.454

**P* value <0.05 has statistical significance

and sexual domain scores. Working women had better scores for all four domains in our study.

DISCUSSION

The study included 378 women with the highest mean score of physical domain. There was a statistically significant association between vasomotor and sexual domain mean scores with educational and socioeconomic status. More aged women had poor QOL for all domains except for the vasomotor domain. Similarly, a significant association was found between longer duration of menopause, vasomotor, psychosocial, and sexual domain mean scores. All the domain mean scores were found to be the lowest among working women. Psychosocial domain is having slightly below the acceptability reliability level of 0.70, which indicates that addition of few items may improve this reliability coefficient in future studies. On Factor analysis, We found item number 4- Being dissatisfied with personal life, Item number 7 - accomplishing less than one used to and item number 22- Changes in appearance, Texture and Tone of skin having very low Eigen values and contributing very less to the scoring domains of MENQOL questionnaire.

Various studies conducted across different parts of the world reported a variation in the prevalence of menopausal symptoms. In contrast to our study, Whiteley *et al.* in United States National Health and Wellness Survey, among women aged 40–64 years, reported the prevalence of vasomotor symptoms to be

highest with hot flushes in 87.4% and night sweats in 66.6%, followed by insomnia in 60% of menopausal women. The overall mean score of menopausal symptoms was found to be 4.8 ± 2.7 . The study showed a significant association between educational status and menopausal symptoms. It also confirmed that women with menopausal symptoms experienced an impaired QOL.^[17] Smail *et al.*, in their study among Emirati women aged 40–64 years, reported vasomotor symptoms in about 61%, psychosocial in 48.8%, physical in 42.3%, and sexual symptoms in 33.3% with no significant association with sociodemographic variables.^[18] 82.1% of Egyptian postmenopausal women above 40 years complained of joint and muscular discomfort, 69.6% physical and mental exhaustion, and 53.6% women complained of hot flushes as major symptoms in a study conducted by Nashwa N Kamal.^[19]

Sajitha, in her study at Kollam district of Kerala, India, using the Greene Climacteric Scale reported the symptoms in the physical domain (70.5%) as the major symptom, followed by psychosocial (56.7%), vasomotor (49.3%), and sexual dysfunction (10.2%). The study also showed a statistically significant association with low socioeconomic status.^[20] In contrast to our study, Singh has reported vasomotor symptoms as the dominant domain being affected among 1211 (75.3%) women and psychological symptoms by 999 (62.01%), physical ailments by 515 (32%), and genitourinary

symptoms by 250 (15.53%) in her study conducted in urban India.^[21] All these variations may be due to cultural diversity existing globally. In Arab countries, the menopausal period is considered a “desperate age,” which means the end of women’s lives, as they no longer have the ability to reproduce and Where as Indian women perceive menopause as a normal phenomenon with physical symptoms experiencing more due to the ageing process, and hide the sexual symptoms due to taboos and associated cultural beliefs. On the contrary, women in the Western world consider menopausal symptoms, especially vasomotor, to be more bothersome.^[22] This demonstrates the role of education and working status with experiencing menopausal symptoms.

Our study results showed a total MENQOL mean score of 19.35 ± 16.20 , with a physical domain mean score of 14.89 ± 11.85 (highest), followed by a vasomotor score of 1.98 ± 3.83 , the psychosocial score of 1.82 ± 3.29 , and the sexual domain mean score of 0.62 ± 2.21 (lowest). Our results are similar to that of a study conducted by Madan *et al.* on postmenopausal women of an urban resettlement colony of East Delhi, India. The study reported a physical domain mean score of 3.05 ± 0.917 , vasomotor domain mean score of 2.08 ± 1.610 , the psychosocial score of 2.03 ± 1.352 , and sexual domain mean score of 1.38 ± 1.113 .^[23] Gayathry Nayak also found the highest median in physical domain 3.1 (2.09, 4.36), followed by psychosocial domain 2.71 (2, 4), vasomotor 2.33 (0, 4.59), and sexual 0 (0, 2.67) in her study using MENQOL on postmenopausal women of coastal Karnataka, India.^[15] Senthilvel *et al.* of Kochi, India, have demonstrated the overall MENQOL mean score of 112.47 ± 28.80 . The majority of the menopausal women in their study experienced physical symptoms with a mean domain score of 62.05 ± 17.82 .^[24] Similar findings were supported by Singh where the updated executive summary of Indian menopause society (2019–2020) has confirmed that the joint pain experienced by postmenopausal women is higher compared to premenopausal adding an importance of association with menopausal status.^[25] Similar to our study Forouhari *et al.*, in a case–control study among Iranian women aged between 44 and 55 years, found the mean physical domain score as the highest (47 ± 21.8) and the mean sexual domain score (7.5 ± 1.722) as the lowest, which is in contrast to our study.^[26] Bojar *et al.*, in their study on the female inhabitants of eastern Europe, using the Greene Climacteric Scale found a psychosocial domain mean score of (9.1 ± 5.5) among Poland inhabitants, followed by 6.1 ± 6.3 in Belarus population, 9.4 ± 5.7 in Ukrainians, and 9.4 ± 5.7 among Slovaks. They reported a physical domain mean

score of 6.3 ± 3.8 , 4 ± 3.5 , and 5.6 ± 3.6 among Polish, Belarus, and Ukraine inhabitants, respectively.^[27] These variations can be explained by the difference in the methodology adopted, individual responses, and effect of socioeconomic and educational status, genetic, and lifestyle factors on the perception of menopausal symptoms by the women.

Kristen B Van Dole in their study to evaluate the MENQOL questionnaire found reliability coefficient values for vasomotor 0.87, psychosocial 0.85, physical 0.88, and sexual domain to have 0.77, and found item number 6-poor memory, item number 7- accomplished less than i used to, item number 14-difficulty sleeping and item number 22- Changes in appearance, texture or tone of skin adding very less to the domains of MENQOL questionnaire using factor analysis.^[28] Nie *et al.* in their Chinese population found reliability analysis with Cronbach’s alpha value 0.84 for vasomotor, psychosocial 0.87, physical 0.89, and sexual domain with 0.86. Moreover, all items correlated more strongly with their own domains.^[29] To make the MENQOL questionnaire more efficient, such studies need the use of factor analysis to be conducive to the local setting.

Limitations of our study include further follow-up studies for confirmatory factor analysis after removal and further addition of items to strengthen the data and test the tools, especially focusing on women with low socioeconomic status, low education, and homemakers.

CONCLUSIONS

Menopause may be associated with a decrease in QOL. Certain sociodemographic variables showed a statistically significant association with the vasomotor and sexual domains. Awareness and interventions that affect the modifiable factors may help in increasing the QOL at menopause. To achieve all these, special gender-specific policies for this group are required to be included in already existing health programs in India.

Acknowledgment

If any, we would extend our thanks to the medicosocial workers and all the study participants for extending their support.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Ahmed Ebbyary NA, Lenton EA, Cooke ID. Hypothalamic-pituitary ageing: Progressive increase in FSH and LH concentrations throughout the reproductive life in regularly

- menstruating women. *Clin Endocrinol (Oxf)* 1994;41:199-206.
2. WHOQOL Group. Study protocol for the World Health Organisation project to develop a quality of life assessment instrument (WHOQOL). *Qual Life Res* 1993;2:153-9.
 3. WHO Scientific Group on Research on the Menopause & World Health Organization. (1981). Research on the menopause : report of a WHO scientific group [meeting held in Geneva from 8 to 12 December 1980]. World Health Organization. <https://apps.who.int/iris/handle/10665/41526> [Accessed on 07-07-2020].
 4. Ahuja M. Age of menopause and determinants of menopause age: A PAN India survey by IMS. *J Midlife Health* 2016;7:126-31.
 5. Stachoń AJ. Assessment of the perception of selected symptoms depending on the stage of menopause and the nature of menopause. *Menopause* 2013;12:315-20.
 6. Woods NF, Mitchell ES. Symptoms during the perimenopause: Prevalence, severity, trajectory, and significance in women's lives. *Am J Med* 2005;118 Suppl 12B: 14-24.
 7. Olaolorun FM, Lawoyin TO. Experience of menopausal symptoms by women in an urban community in Ibadan, Nigeria. *Menopause* 2009;16:822-30.
 8. Sweed HS, Elawam AE, Nabeel AM, Mortagy K. Postmenopausal symptoms among Egyptian geripausal women. *East Mediterr Health J* 2012;18:213-20.
 9. Bairy L, Adiga S, Bhat P, Bhat R. Prevalence of menopausal symptoms and quality of life after menopause in women from South India. *Aust N Z J Obstet Gynaecol* 2009;49:106-9.
 10. Waidyasekera H, Wijewardena K, Lindmark G, Naessen T. Menopausal symptoms and quality of life during the menopausal transition in Sri Lankan women. *Menopause* 2009;16:164-70.
 11. Fallahzade H, Dehghani Tafti A, Dehghani Tafti M, Hoseini F, Hoseini H. Factors affecting quality of life after menopause in women, Yazd 2008. *J Shaheed Sadoughi Univ Med Sci* 2011:552-8.
 12. Hilditch JR, Lewis J, Peter A, van Maris B, Ross A, Franssen E, et al. A menopause-specific quality of life questionnaire: Development and psychometric properties. *Maturitas* 1996;24:161-75.
 13. Bhutani S, Bhutani J, Bhutani P. Social issues in post menopausal women. *J Midlife Health* 2013;4:68-9.
 14. Syamala TS, Sivakami M. Menopause: An emerging issue in India. *Econ Polit Wkly* 2005;47:4923-30.
 15. Nayak G, Kamath A, Kumar P, Rao A. A study of quality of life among peri menopausal women in selected coastal areas of Karnataka, India. *J Midlife Health* 2012;3:71-5.
 16. Pandey VK, Aggarwal P, Kakkar R. Modified BG Prasad's Socio-economic Classification-2018: The need of an update in the present scenario. *Indian J Comm Health* 2018;30:82-4.
 17. Whiteley J, DiBonaventura MD, Wagner JS, Alvir J, Shah S. The impact of menopausal symptoms on quality of life, productivity, and economic outcomes. *J Womens Health (Larchmt)* 2013;22:983-90.
 18. Smail L, Jassim G, Shakil A. Menopause-Specific Quality of Life among Emirati Women. *Int J Environ Res Public Health* 2019;17:40.
 19. Kamal NN, Seedhom AE. Quality of life among postmenopausal women in rural Minia, Egypt. *East Mediterr Health J* 2017;23:527-33.
 20. Sajitha S. Menopause Related Symptoms and Correlates: A Community Based Cross Sectional Study in Kollam District, Kerala. Masters in Public Health [PDF]. Achutha Menon Center for Health Science Studies. Sree Chitra Tirunal Institute for Medical Sciences and Technology. Thiruvananthapuram, Kerala, India; October 2017. Available from: <http://dspace.sctimst.ac.in/jspui/bitstream/123456789/10879/1/6876.pdf>. [Accessed on 06-08-2020].
 21. Singh M. Early age of natural menopause in India, a biological marker for early preventive health programs. *Climacteric* 2012;15:581-6.
 22. Crawford SL. The roles of biologic and nonbiologic factors in cultural differences in vasomotor symptoms measured by surveys. *Menopause* 2007;14:725-33.
 23. Madan U, Chhabra P, Gupta G, Madan J. Menopausal symptoms and quality of life in women above 40 years in an urban resettlement colony of East Delhi. *Int J Med Sci Public Health* 2019;8:514-9.
 24. Senthilvel S, Vasudevan S, Anju PS, Sukumaran A, Sureshbabu J. Assessment of symptoms and quality of life among postmenopausal women in a tertiary care hospital in Kochi, South India: A hospital-based descriptive study. *J Midlife Health* 2018;9:185-90.
 25. Meeta M, Digumarti L, Agarwal N, Vaze N, Shah R, Malik S. Clinical practice guidelines on menopause: *An executive summary and recommendations: Indian menopause society 2019-2020. *J Midlife Health* 2020;11:55-95.
 26. Forouhari S, Khajehei M, Moattari M, Mohit M, Rad MS, Ghaem H. The effect of education and awareness on the quality-of-life in postmenopausal women. *Indian J Community Med* 2010;35:109-14.
 27. Bojar I, Lyubinets O, Novotny J, Stanchak Y, Tiszczenko E, Owoc A, et al. Intensification of menopausal symptoms among female inhabitants of East European countries. *Ann Agric Environ Med* 2016;23:517-24.
 28. Van Dole KB, DeVellis RF, Brown RD, Funk ML, Gaynes BN, Williams RE. Evaluation of the menopause-specific quality of life questionnaire: A factor-analytic approach. *Menopause* 2012;19:211-5.
 29. Nie G, Yang H, Liu J, Zhao C, Wang X. Psychometric properties of the Chinese version of the menopause-specific quality-of-life questionnaire menopause. *J N Am Menopause Soc* 2017;24:1-9.