Life Beyond Reproductive Years: Examining Menopausal Symptoms, Its Predictors and Management in India

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1. Introduction

Menopause signifies the permanent cessation of the menstrual cycle. However, the period leading up to menopause, known as perimenopause phase, begins well before menopause itself. During perimenopause, women may experience symptoms such as hot flashes, mood swings, anxiety, joint pain, heart discomfort, bladder problems, and vaginal dryness, indicating their approach towards menopause (Mahajan et al., 2012; Santoro et al., 2021; Santoro & Chervenak, 2004; Senanayake, 2000). Research has shown variability in the reporting of menopausal symptoms across different cultures, regions, and ethnic groups (Lock, 1998; Loh et al., 2005; Santoro & Chervenak, 2004). For instance, women of Asian origin, such as those from Japan and China, report fewer symptoms compared to women in Western countries (Avis et al., 2001; Beyene, 1986; FLINT & SAMIL, 1990; Lock, 1994; Lock & Kaufert, 2001). Culture significantly influences our diet, lifestyle habits, sexuality, healthcare, and various social factors, which can impact the menopausal experience and its associated symptoms(Pitkin, 2010). It was found that there is a variation of menopausal symptoms and its occurrences across different cultures. These variations may be attributed to the symptoms themselves or might be due to physiological changes associated with aging(Obermeyer, 2000). Menopause in India has different perspectives. In contrast to the Western countries, menopause is often considered a taboo subject in India and it is rarely discussed. However, in India women frequently regard menopause as natural process, equating it with ageing(A. Singh & Arora, 2005). With ageing, they often gain more respect and power within the family as elders.

Moreover, menopause frees women from the restrictions on attending various religious and cultural events(Kelly, 2011; A. Singh & Arora, 2005). In India, during menstruation, women are often prohibited from participating in these events, which are deemed pure, as menstruating women are considered impure or polluting. With rise in life expectancy, more women will transition through perimenopausal and menopausal phases and enter into post-menopausal phase. The average age at menopause is found to be lower in India compared to Western countries (Ahuja, 2016), indicating that Indian women begin experiencing menopause-related symptoms and aging earlier. Although there have been some clinical studies on the symptoms and morbidities women face during this phase, there has been a dearth of research to understand the predictors of these symptoms and its management. Many women do not report their symptoms due to associations with old age, taboos, or the belief that menopause signifies the end of menstrual suffering (Dasgupta & Ray, 2009; Jai Prakash & Vinoda N Murthy, 1981; A. Singh & Arora, 2005; V. Singh & Sivakami, 2014). Studies have shown that women from Western countries report more symptoms than those in Asian or Southeast Asian countries. Most studies on menopausal symptoms are region-specific and focus primarily on the symptoms themselves (Agarwal et al., 2019; Bairy et al., 2009; Borker et al., 2013), without focussing on the particular predictors of menopausal symptoms or management of menopause for a healthy life. A study on Eastern India found out residence, education, breastfeeding practices to be the significant predictors of menopausal symptoms with a rural-urban variations (Dasgupta & Ray, 2009). Another regional cross-sectional study in rural South India found that the majority of women experience vasomotor and somatic symptoms, yet they are unaware that these symptoms are due to menopause(Aaron et al., 2002). In a study on North-India, it was found that there is a variation of menopausal symptoms across working and non-working groups. The study found that working women suffers from more psychological symptoms and non-working women experiences more somatic symptoms (Kakkar et al., 2007).

Thus, in this context, this study aims to explore various menopausal symptoms among women, its variation and its predictors in India using a large-scale dataset, as well as the management of menopause among women in India.

2. Methods

2.1 Data Source

The study used secondary data source - Longitudinal Ageing Study in India (LASI) (NPHCE, 2020) Wave One data to analyse different symptoms of menopause among the peri-menopausal women and also to study the morbidities among them. The Longitudinal Ageing Study in India (LASI) (NPHCE, 2020) Wave One data is a nationally representative survey of 73,396 older adults aged 45 years and above across all states and union territories of India. The LASI Wave One Survey data was used for the study as it is the only large-scale data which provides information on the mid-life health of women.

2.2 Variables

In LASI, there is no direct question related to menopausal symptoms. However, data on different symptoms are available. The classification of menopausal symptoms has been done by adopting the Menopausal Rating Scale (MRS) (*About MRS - ZEG Berlin GmbH*, n.d.). The MRS has classified menopausal symptoms into three categories- somatic, psychological and urogenital. Similarly, our study has also adopted the same classification from the MRS scale and classified the menopausal symptoms into three main categories. The somatic symptoms included women who had hot flushes, ever had chest pain/ discomfort, trouble in falling asleep in past one month and pain and stiffness in joints in past two years. The psychological symptoms included women who had mood swings/irritability, feel depressed, severe fatigue/exhaustion in past two years. Lastly, the urogenital symptoms included women who had vaginal bleeding, foul smelling vaginal discharge and dry vagina causing painful

intercourse. Thus, the variable ‘menopausal symptoms’ was classified into women with no symptoms, psychological, somatic, urogenital, psychological &somatic, psychological & urogenital, urogenital &somatic and all symptoms.

In LASI, there are also information available on women-specific morbidities among menopausal women in the age group 45-59 years for the last twelve months period. For this study, women having women-specific morbidities has been divided into three categories- women with ‘no problems’, ‘gynaecological morbidities’ were considered to be those women who had been diagnosed with specific reproductive-related issues such as vaginal bleeding, foul smelling vaginal discharge, uterus prolapses, fibroids/cysts, dry vagina causing painful intercourse and ‘other morbidities’ including hot flashes, mood swings/ irritability and others. Since LASI only provides data on ‘treatment/consultation’ for women-specific morbidities only, the study used the data to understand management of menopause or its related issues among women.

The independent variables included different socio-demographic variables like five-year age group, place of residence, highest level of education, MPCE quintile, religion, social group, region and current marital status; reproductive variables like number of pregnancies, undergoing hysterectomy; disease-specific variables like anaemia (in past two years), ever diagnosed with hypertension and diabetes; and behavioural- related variables like ever smoked/used smokeless tobacco and ever consumed alcoholic beverages.

2.3 Methodology

Bivariate analysis was carried out to understand the proportion of menopausal symptoms among women and across different socio-demographic characteristics. Bivariate analysis was also carried out to study the different women-specific morbidities and seeking treatment for women-specific morbidities across different socio-demographic characteristics.

Binary logistic regression was carried out to identify the specific predictors of menopausal symptoms among women aged 45-59 years. This model is used to model the dichotomous outcome variable. It explains the log odds of the outcome, which are modelled as a linear combination of the predictor variable. The formula for basic binary logistic regression is:

$$\textbf{Logit}(y) = \ln(\text{Odds}) = \ln(P/1-P) = \alpha + \beta x$$

For the regression analysis, the dependent variable (menopausal symptoms) was classified into a binary variable i.e. women not having any symptoms, coded as 0 and women having any symptoms, coded as 1.

The statistical analyses were carried out by using Stata MP 16.0 software.

2.4 Conceptual Framework

The conceptual framework (Figure 2) was formulated based on the evidence from the existing literature. This framework elucidates the mechanisms underlying menopausal symptoms and its management among women in India. It was hypothesized that menopausal symptoms were influenced by various factors at individual and socio-cultural level. It was assumed that these two- level factors might lead to variation in the occurrence of different menopausal symptoms among women which will affect the management of menopause. After the occurrence of menopausal symptoms, the women might ignore the symptoms by not seeking any medical treatment for it or they can manage it through home remedies or perceiving the symptoms to be normal which may affect their health status. Alternatively, some women might choose to consult a healthcare professional upon experiencing symptoms. This might result in their treatment for symptom management, or they may opt against any form of treatment, which may ultimately affect their overall health status.

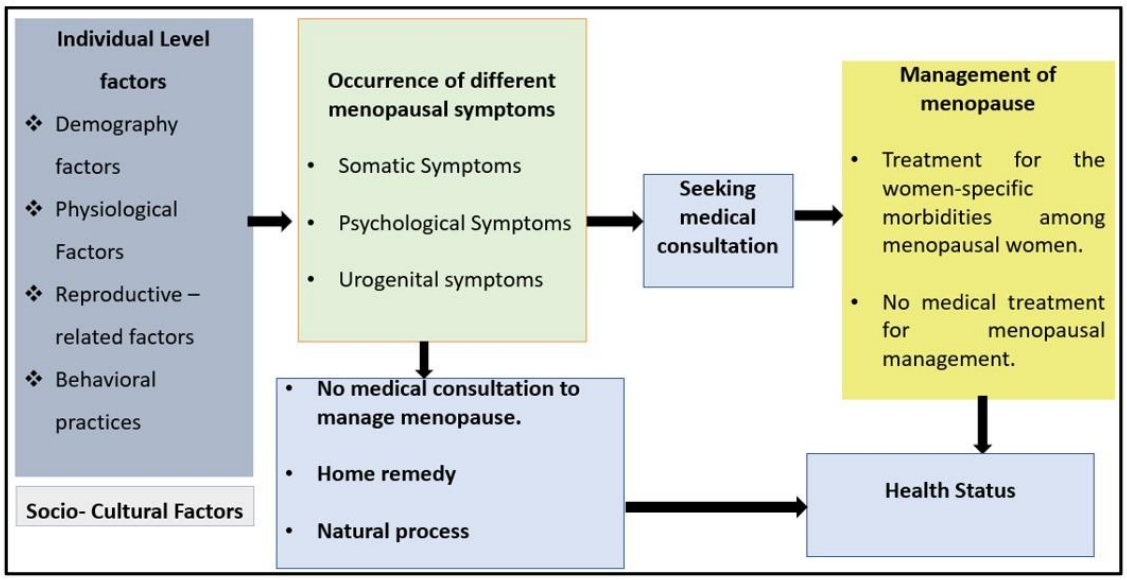

Figure 1. Conceptual Framework showing mechanisms of menopausal symptoms and its management among women in India.

3. Results

3.1 Occurrence of menopausal symptoms

The occurrence of menopausal symptoms (Table 1) among women was divided into eight distinct categories: those experiencing 'no symptoms,' 'psychological symptoms,' 'somatic symptoms,' 'urogenital symptoms,' 'psychological & somatic symptoms,' 'psychological & urogenital symptoms,' 'urogenital & somatic symptoms,' and 'all symptoms.' The analysis revealed that only 20 percent of women aged 45-59 years had no menopausal symptoms, suggesting that approximately 80 percent of women experiencing some kind of menopausal symptoms. Psychological and somatic symptoms had the highest prevalence (around 38 percent), followed by somatic symptoms which was experienced by 26 percent of women, and 10 percent had experience some kind of psychological symptoms. Urogenital symptoms were

found to have lower prevalence i.e. less than 1 percent of women experienced it. The prevalence of women experiencing all symptoms was found to be 4 percent.

Table 1 Women aged 45-59 years undergone menopausal symptoms (classified) in India, LASI wave-1

Menopausal Symptoms	**Percent**	**Total**
No symptoms	19.7	3,619
Psychological symptoms	9.82	1,804
Somatic symptoms	25.79	4,736
Urogenital symptoms	0.58	107
Psychological & somatic symptoms	37.95	6,971
Psychological & urogenital symptoms	0.62	113
Urogenital & somatic symptoms	1.33	245
All symptoms	4.2	772
Total		**18,367**

3.2 Predictors of menopausal symptoms among women in India

Binary logistic regression was conducted to assess the influence of various independent variables on menopausal symptoms, as outlined in Table 2. The regression analysis categorized variables into five main groups: socio-demographic factors, reproductive-related variables, disease-specific variables and behaviour-related variables.

The odds of experiencing menopausal symptoms were 1.22 times higher among women aged 50-54 years compared to those aged 45-49 years indicating a positive association between

women's age and menopausal symptoms. Urban residents exhibited lower odds (0.87) of experiencing menopausal symptoms compared to rural residents. Women with higher education had reduced odds (0.60) of experiencing menopausal symptoms. However, women belonging to rich wealth quintile had higher odds (1.22) of menopausal symptoms. Christian women were more likely to have menopausal symptoms, while women belonging to ST groups were less likely to do so.

Regionally, the odds of experiencing menopausal symptoms were highest in the Eastern region (1.52) and lowest in the Southern region (1.26) compared to the Western region. Currently married women had lower odds (0.79) of experiencing menopausal symptoms.

Among reproductive factors, women with three or more pregnancies had higher odds (1.26) of experiencing symptoms compared to those with no pregnancies. The adjusted odds were higher for women who had undergone hysterectomy. Anaemic women in the past two years had significantly higher odds (3.35) of experiencing menopausal symptoms. Chronic diseases like hypertension (1.78) and diabetes (1.29) were significant predictors of menopausal symptoms.

Regarding behaviour-related variables, women who had ever smoked or used smokeless tobacco had higher odds (1.41) of experiencing menopausal symptoms compared to non-users.

Table 2 Binary logistic regression analysis showing odds ratio and 95% confidence interval (CI) for menopausal symptoms among women aged 45–59 years in India, LASI wave-1

Predictors	**Odds Ratio (95% CI)**
Socio-Demographic Factors	
Five-year age group (in years)	

45-49®	
50-54	1.10 (1.00-1.20) *
55-59	1.22 (1.11-1.34) **
Place of residence	
Rural®	
Urban	0.87 (0.79-0.95) **
Highest level of Education	
No education®	
Primary/middle	1.00 (0.92-1.10)
Secondary	0.79 (0.68-0.92) **
High school/above	0.60 (0.51-0.69) **
MPCE quintile	
Poor®	
Middle	1.09 (0.98-1.21)
Rich	1.22 (1.12-1.34) **
Religion	
Others®	
Hindu	1.12 (0.93-1.35)
Muslim	1.09 (0.87-1.35)
Christian	1.35 (1.08-1.70) *
Social Group	
SC®	

ST	0.78 (0.68-0.89) **
OBC	0.95 (0.85-1.07)
General	1.10 (0.97-1.25)
Region	
West®	
North	1.41(1.23-1.61) **
Northeast	1.40 (1.20-1.64) **
Central	1.49 (1.29-1.73) **
East	1.52 (1.32-1.74) **
South	1.26 (1.11-1.42) **
Current marital status	
Others®	
Currently married	0.79 (0.72-0.88) **
Reproductive-related variables	
Number of pregnancies	
No pregnancies®	
1-2 pregnancies	1.09 (0.90-1.32)
3-4 pregnancies	1.26 (1.04-1.52) *
5 and more pregnancies	1.26 (1.04-1.53) *
Undergone hysterectomy	
No®	
Yes	1.44 (1.27-1.65) **

Disease-specific variables	
Anaemia (in past two years)	
No®	
Yes	3.35 (2.60-4.33) **
Ever diagnosed hypertension	
No®	
Yes	1.78 (1.61-1.96) **
Ever diagnosed diabetes	
No®	
Yes	1.29 (1.12-1.48) **
Behavioural-related variables	
Ever smoked/used smokeless tobacco	
No®	
yes	1.41 (1.26-1.58) **
Ever consumed alcoholic beverages	
No®	
yes	1.17 (0.96-1.44)

Note:®=Reference category;

Dependent Variable-Women undergoing menopausal symptoms(0=No,1=Yes)

Menopausal symptoms include any somatic, psychological or urogenital symptoms.

**p<0.01*p<0.05; CI= Confidence Interval

3.3 Prevalence of women-specific morbidities among menopausal women in India

Table 3 depicts the percentage of women-specific morbidities pertaining to menopausal women aged 45-59 years in India. The findings indicate that 6 percent of women experienced various gynecological morbidities, encompassing symptoms like vaginal bleeding, foul smelling vaginal discharge, uterine prolapse, fibroids/cysts, and vaginal dryness leading to painful intercourse. Moreover, approximately 10 percent of women were identified as experiencing other morbidities such as hot flashes, mood swings/irritability, and related concerns. It was found that 85 percent of women were observed to be free from any women-specific health complications.

Table 3 Women-Specific morbidities among menopausal women aged 45-59 years in India, LASI wave-1

Women's health problems	Percent	Total
No Problem	84.62	15,695
Any gynaecological morbidity	5.74	1,065
Other morbidity	9.63	1,787
Total	**100**	**18,547**

3.4 Management of menopause

Menopause and its associated health issues can be managed through various methods. Common methods to manage it include medicalization of menopause, or the use of indigenous practices and home remedies. However, LASI data provides information only on treatment sought by

women or medical consultations for women-specific morbidities among women. Therefore, in this section on managing menopause, only treatment-seeking behaviour is considered.

Table 4 shows information regarding women aged 45-59 who underwent treatment to manage women-specific morbidities. The results showed (Table 4) that among women facing menopause- related morbidities, 36 percent sought treatment. Of these, 52 percent sought treatment for gynecological morbidities, while 26 percent sought treatment for other health problems.

Table 4 Sought treatment for women-specific morbidities among menopausal women aged 45-59 years in India, LASI wave-1

Sought Treatment	Percent	Total
Any gynaecological morbidity	52.49	1,065
		100
Other morbidity	25.91	1,787
		100
Total	**35.83**	**2,852**

3.5 Socio-demographic variations of seeking treatment for women-specific morbidities among women

Table 5 shows the prevalence of menopausal women who received treatment or medical assistance for women-specific morbidities, based on a total sample size of 2852 women.

Treatment for morbidities among the menopausal women is categorized into gynaecological and another morbidity. Through bivariate analysis, it was determined that the highest percentage of women seeking medical attention for gynaecological morbidities (62 percent) and other morbidities (31 percent) were in the 45-49 age group. A significant difference between urban and rural areas was observed regarding treatment for gynaecological morbidities, with 76 percent of urban women seeking treatment compared to 50 percent of rural women. Predominantly, women with higher education levels (93 percent) and those from rich wealth quintile (70 percent) sought treatment for gynaecological morbidities. On the other hand, for other morbidities, a higher percentage of those with higher education (42 percent) and from rich wealth quintile (34 percent) sought treatment. The percentage seeking treatment was significantly higher among Christian and Muslim women, as well as among those belonging to the OBC social group. Regionally, the highest percentage seeking treatment for gynaecological morbidities was in the southern region (85 percent), while the lowest was in the Eastern region (39 percent). For other women-specific morbidities, treatment-seeking was highest in the Western and Southern regions and lowest in the North-Eastern region.

Table 5 Treatment for women-specific morbidities by selected socio- demographic characteristics among menopausal women aged 45-59 years in India, LASI wave-1

Age groups	Treatment for gynaecological morbidity (%)	Total	Treatment for other morbidity (%)	Total
45-49y	61.9	492	30.5	825
50-54y	55.9	321	26.3	508
55-59y	56.9	252	29.0	454

Place of residence				
Rural	49.7	690	28.8	1305
Urban	75.9	375	29.3	482
Education level				
No education	49.0	593	25.5	958
Primary/middle	57.2	262	28.8	597
Secondary	76.1	47	44.3	118
High school/above	93.0	163	42.4	114
MPCE quintile				
Poor	50.6	405	25.0	638
Middle	46.8	173	24.6	384
Rich	70.1	487	34.4	765
Religion				
Hindu	55.0	786	29.1	1441
Muslim	72.3	227	31.0	233
Christian	80.9	16	18.5	43
Others	49.8	36	24.7	70
Social group				
SC	45.0	208	24.1	388
ST	43.2	84	21.4	119
OBC	69.2	520	32.2	714
General	54.4	253	29.7	566
Region				
North	54.2	128	21.2	224
Northeast	59.5	13	17.8	59

Central	51.7	297	33.2	423
East	39.0	257	26.3	482
West	70.8	137	33.4	267
South	85.4	234	31.0	331
Total		**1065**		**1787**

Note: Includes weighted percentage.

4. Discussion

This paper analysed the prevalence and determinants of menopausal symptoms using large-scale data sets. It challenges the common belief that menopausal symptoms are minimal in Asian countries (Avis et al., 2001; FLINT & SAMIL, 1990; Lock & Kaufert, 2001). However, this paper shows that around 80 percent of women had experienced some kind of menopausal symptoms. There might be some core symptoms which may appear consistently across different cultures and can be related to hormonal changes which can be found in every women (Obermeyer, 2000). Literature suggests that the menopausal symptoms and its management vary socio-culturally. However, the information on menopausal symptoms collected in LASI such as hot flushes, mood swings and others are mainly based on the Western medical classification, which has restricted us to look at those symptoms only. However, the Indian women based on their socio-cultural background could have experienced some other symptoms and might not report more of these "classical" menopausal symptoms adopted from the Western countries (Beyene, 1986). Culturally, the interpretation of menopausal symptoms and its prevalence may differ in India which we were unable to capture from LASI data. This study found that, compared to Western countries, the prevalence of symptoms like hot flushes in

India was quite low (around 5 percent), whereas a high percentage of women in Western countries reported such symptoms.

The findings reveal that a high proportion of women had somatic and psychological menopausal symptoms, while urogenital symptoms were less common. Similar results were found in another study, which reported lower incidences of vasomotor and sexual symptoms (Bairy et al., 2009; Islam et al., 2015). In India, cultural taboos around menopause and menarche often prevent women from discussing their reproductive or sexual health issues, even within their families. Regression analysis shows that, beyond education, age, and other socio-demographic factors, higher numbers of pregnancies, hysterectomy, anaemia, diabetes, hypertension, and smoking or tobacco use are significant predictors of menopausal symptoms. A study in Eastern India also identified residential and literacy status, duration of breastfeeding, and husband's awareness of menopausal status as relevant factors (Dasgupta & Ray, 2009). On the other hand, higher education is linked to a decreased likelihood of experiencing symptoms, while wealthier individuals are more likely to report them. Another study found that a smaller proportion of highly educated women in Asian countries report menopausal symptoms(Dennerstein et al., 2010). This could be because better-educated women are more aware of their health and seek help to manage symptoms. Interestingly, the likelihood of experiencing menopausal symptoms is lower in the Southern region but higher in the Eastern region of India. In the Indian context, where the average age of menopause tends to be relatively low, undergoing hysterectomy at an early age may exacerbate the onset and severity of menopausal symptoms (Ghosh & Syamala, 2024; Kundu & Acharya, 2024). Moreover, certain habits such as tobacco use and alcohol consumption might increase these symptoms. The development of chronic conditions, including diabetes and hypertension—often associated with poor dietary habits and a sedentary lifestyle may further increase the severity of symptoms experienced by women during the perimenopausal and menopausal stages (Ahuja, 2016).

Additionally, the study examines the management of menopause, particularly gynecological morbidity. Management of menopause can be done by different methods. In the Western countries menopause is highly medicalized. One popular method to manage menopause in the Western countries is mainly through the Hormone Replacement Therapy (HRT) (Bell, 1987; Hyde et al., 2010; Meyer, 2001). While HRT has benefits, its long-term use has been criticized due to potential side effects such as breast cancer and heart disease (Meyer, 2001). Historically, menopause has been associated with the loss of femininity, and medicalization is often seen as a way to maintain youthfulness indefinitely (Elson, 2002; Hickey et al., 2022; Zita, 2018). LASI data only provides information on seeking treatment for management of menopause. Thus, we were restricted to look on management of menopause only to seeking treatment, though there is a scope to look at it from other aspects from the primary data. The findings from our study showed that treatment sought is more prevalent in the Southern region, likely due to better health infrastructure and education in the South, leading to lower prevalence of symptoms (Ranjan Pradhan et al., n.d.). The Eastern region, including less developed states like Bihar, Orissa and Jharkhand, has limited healthcare access, especially for impoverished and rural populations. Thus, women there experienced more symptoms but seeking treatment to manage menopause among them is quite low. Moreover, the average age of menopause in the Eastern region is quite low, around 44 years, suggesting that women experience perimenopausal symptoms at a much younger age(Ahuja, 2016; Ghosh & Syamala, 2024). Thus, this region is experiencing a triple-burden of early age at menopause, malnutrition and high fertility which needs to be addressed (Bharati et al., 2019; Ghosh & Syamala, 2024; Kushwaha et al., 2020).

The study also highlights a disparity in seeking treatment, with most women seeking treatment for gynecological morbidities mostly belonging from affluent, urban backgrounds with higher education levels. This indicates treatment affordability as a major concern for seeking

treatment. Many women delay seeking treatment until it become serious. Thus, it was found that treatments for less severe morbidities like dry vagina, vaginal discharge, mood swings, and hot flashes are less common compared to treatments for more serious conditions like uterine prolapse and fibroids/cysts. In the process, women continue to suffer in silence unless the problem becomes serious.

This study, used large-scale data to categorize menopausal symptoms and identify their predictors, also explores the management of menopause in India. It aims to identify groups needing better menopause management. Further research is needed to understand the culturally specific symptoms or other ways of menopausal management by Indian women, and primary data can provide these insights, and additional insights into the medicalization of menopause. The study raises important questions about the culturally specific aspects of women's experience and management of menopause.

5. Conclusion

There is a general belief that in India, women experience fewer menopausal symptoms. However, this study highlights that the majority of women in India years have experienced some kind of menopausal symptoms. Geographical variation was found in both prevalence of menopausal symptoms as well as the in seeking treatment for morbidities among menopausal women. These variations might be due to diverse cultural and social norms influencing how menopausal symptoms are reported and managed. Women typically seek treatment only when their conditions, particularly gynecological morbidities, become severe. This indicates that in a patriarchal society like India, women often neglect their health problems and feel uncomfortable discussing them with others.

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