

ORIGINAL RESEARCH

## ANXIETY AND DEPRESSION IN POSTMENOPAUSAL WOMEN ATTENDING TERTIARY CARE HOSPITAL

Farheen Sultana<sup>1</sup>, Ragini Muddasani<sup>2</sup>, Anurag Srivastava<sup>3</sup>

<sup>1</sup>Assistant Professor, Department of Psychiatry, Osmania Medical College/Institute of Mental Health, Hyderabad, Telangana, India

<sup>2</sup>Assistant Professor, Department of Psychiatry, Osmania Medical College/Institute of Mental Health, Hyderabad, Telangana, India

<sup>3</sup>Professor, Department of Psychiatry, Medicity Institute of Medical Sciences, Ghanpur, Medchal District, Telangana, India

### Corresponding Author:

Dr. Farheen Sultana, Assistant Professors, Department of Psychiatry, Osmania Medical College/Institute of Mental Health, Hyderabad, Telangana, India

### ABSTRACT

**Background:** To study the prevalence of anxiety and depression in postmenopausal women attending Medicity Institute of Medical sciences.

**Materials and Methods:** Out of 40 consecutive patients presenting to Medicity Institute of Medical Sciences, Ghanpur with history of menopause, 10 were excluded as they refuse to give consent, and 30 patients were taken into the study. A detailed history of the Patient was taken after taking the consent using the case proforma and were Diagnosed post-menopausal using 1yr criteria after the cessation of last menstrual period , both natural and surgical induced menopause were included, followed by assessment of the patients psychological profile using SCL90, Becks Depression Inventory, Hamilton Anxiety scales.

**Results:** In the study statistically significant increased rates of anxiety was found to occur in post-menopausal women ( $P = 0.000075$ ). In the study it was observed that Hamilton Anxiety scores were significantly high in surgical induced menopausal women when compared with natural menopause (unpaired T test  $p = 0.0446$ ). The study also shows that there was a significantly higher incidence of somatization on SCL90 subscale, in surgical induced menopause than natural menopausal women with a P value = 0.0001.

**Conclusion:** There was no statistically significant difference among natural menopause and surgical induced menopausal women on other subscales like OCD, Interpersonal sensitivity, hostility, phobic, Paranoid Ideation, or Psychoticism.

**Keywords:** Anxiety, Depression, Postmenopause, Hamilton Anxiety Scale, SCL90. Beck Depression Inventory.

## INTRODUCTION

Menopause refers to last menstrual period.<sup>[1]</sup> Menopause is defined as the time of cessation of ovarian function resulting in permanent amenorrhea.<sup>[2]</sup> Others have defined Menopause as 'the permanent cessation of menstruation resulting from loss of ovarian follicular activity'.<sup>[3]</sup>

In the majority of women, menopause is a natural event occurring, on average, at the age of 51.3 years.<sup>[4]</sup> An earlier menopause may be induced surgically by oophorectomy, often accompanied with hysterectomy, or as a consequence of premature ovarian failure. The time at which natural menopause is said to have occurred for an individual is a retrospective clinical diagnosis based on 12 months of amenorrhea from the woman's last menstrual period.<sup>[5]</sup> Natural menopause is not a singular event but a transition lasting on average 3.8 years. The transition begins with the perimenopause and this period, often referred to as the climacteric, commences at a mean age of 47.5 years. The menopause transition can be divided into early transition and late transition (also known as early and late perimenopause); early post menopause and late post menopause, with each stage marked by changes in hormonal status producing patterns of 'menopausal' symptoms.<sup>[5]</sup>

The menopause transition is an interesting example of a biopsychosocial process in that the majority of women experience some physiological changes, which may be influenced by a range of psychological, social and cultural factors. This makes menopause an important area for psychological research. For example, psychologists have been interested in the social and cultural meanings of menopause; that is, the way in which menopause is discussed and constructed by society and how this impacts upon experience of the menopause. Several studies reported that irritability, nervousness, and dysphoria increased in the transition to menopause, observations that are consistent with the possibility that fluctuations or rate of change of estradiol are associated with depressive symptoms in vulnerable women.<sup>[6]</sup>

The relationship between depressed mood, menopause and hot flushes is complex; in general, some studies have found a slight increase in depressed mood which subsides after the menopause, while other studies find no change. Another study reported that, depressed mood is more strongly associated with life events and stresses than hormone changes.<sup>[7]</sup> Nevertheless, women who are depressed tend to report hot flushes as more problematic, but the causal direction is unclear.<sup>[8]</sup> There is evidence suggesting that early abuse and neglect has an effect on later hot flush reporting.<sup>[9]</sup> This could be explained by the influence of early adverse experiences on the hypothalamic–pituitary axis, which has been shown to affect cortisol and diurnal rhythm of cortisol levels.<sup>[10]</sup>

Anxiety before the menopause is associated with the presence and severity of hot flushes; women with moderate or high anxiety levels were three and five times more likely to report hot flushes than women in the normal anxiety range.

### Aims and objectives

To study the prevalence of anxiety and depression in postmenopausal women attending Medici Institute of Medical sciences.

To study the difference in anxiety and depression among natural and surgical induced menopause

## MATERIALS & METHODS

### Patients and Methods

**Patients:** The study sample includes 30 consecutive menopausal patients attending the tertiary care hospital [Mediciti Institute of Medical Sciences, Ghanpur] or admitted in the Department of gynaecology, Dept. of psychiatry or any other department with menopause.

This is an observational cross sectional study to examine the psychological profile of patients presenting to the tertiary care with a menopause.

**Methods:** Out of 40 consecutive patients presenting to Mediciti Institute of Medical Sciences, Ghanpur with history of menopause, 10 were excluded as they refuse to give consent, and 30 patients were taken into the study. A detailed history of the Patient was taken after taking the consent using the case proforma and were Diagnosed post-menopausal using 1yr criteria after the cessation of last menstrual period, both natural and surgical induced menopause were included, followed by assessment of the patients psychological profile using SCL90, Becks Depression Inventory, Hamilton Anxiety scales.

Patients received standard treatment which was outside the study protocol.

**Place of Study:** Mediciti Institute of Medical Sciences Hospital, Ghanpur, Medchal mandal.

Period of Study: 1 and half years – JAN 2015 to JULY 2016

### Inclusion Criteria:

1. All menopausal patients with history of 1 year cessation of menstrual cycles, presenting to tertiary care hospital.
2. 25-65 years

### Exclusion Criteria:

1. Unconscious or critically ill patients
2. Patients who underwent surgical or medical treatment for ovarian and uterine carcinoma
3. Patients who are unwilling or unable to give informed consent

### Instruments Used:

1. SCL-90
2. Becks Depression Inventory
3. Hamilton Anxiety Rating Scale.

## RESULTS

**Table 1: Socio Demographic Data**

Individuals	Number
Post-Menopausal Women	30(100%)
Background	
Rural	30 (100%)
Urban	0
Type of Family	
Nuclear	21(70%)
Joint	9 (30%)
Marital Status	
Married	20 (66%)

Widowed	10 (34%)
Parity of Women	
Nulliparous	1(3.33%)
1-3	21(70%)
4-6	7(23.3%)
7 And More	1(3.33%)
Children Staying With Women	
Yes	25(83.3%)
No	4(13.3%)
Na	1(3.33%)

The study consisted of all (30) post-menopausal women, and are from rural background, 21(70%) are living in nuclear family and 9(30%) in joint family. Among them 20(66%) are married and 10(34%) are widowed. Among study sample 1(3%) women is nulliparous, 21(70%) of the women have 1-3 children, 7(24%) of them have 4-6 children, and 1(3%) have 7 and above children. 25(83%) women are staying with children and 4(13%) are staying alone or with their spouses.

**Table: 2 Age Distribution**

Age group	Number
20-29	1(3.33%)
30-39	6(20%)
40-49	8(26.6%)
50-60	15(50%)
Grand Total	30

The study group consist of 15(50 %) of women in the age group 50 – 60 which is highest. Among other age groups 8(27 %) were in the age group 40-49, 6(20%) in 30-39 and 1(3%) in age group 20-29.

**Table 3: Education**

Education	Number
Illiterate	12(40%)
Literate	18(60%)
Grand Total	30

Chi Square = 0.533, P-VALUE = 0.46534832 which is Statistically Not Sinificant.

In present study 12(40%) are illiterate and 18(60%) are literate. In literates sample representing high school are 4(13.33%) and primary school are 14(46.6%).

**Table: 4 Employment status**

Employment Status	Number
Employed	17(56.6%)
Un Employed	13(43.3%)
Grand Total	30

Chi Square = 0.323, P-Value = 0.56981031 Which Is Statistically Not Significant.

In present study, most study subjects were employed 17(56.66%), and the unemployed were 13(43.3%).

**Table: 5 Socioeconomic status**

Bgprasad 2013	Number
I - Rs. >5156	3(10%)
II - Rs. 2578-5155	10(33.3%)
III - Rs. 1547- 2577	11(36.6%)
IV - Rs. 773-1546	6(20%)
Grand Total	30

Two Tailed P Value Is Less Than 0.0001 Which Is Statistically Significant. T Value = 9.8702, Df = 58.

In the present study 3 (10%) patients belonged to BJ Prasad SES-I (socio economic status-I) (i.e. per capita income > 5156), 10 (33.3%) belonged to SES-II (i.e. per capita income 2578-5155), 11 (36.6%) belonged to SES-III (i.e. per capita income 1547-2577), 6 (20%) belonged to SES-IV (i.e. per capita income 773-1546).

**Table: 6 Menopausal Cause**

Cause of menopause	Number
Natural	15(50%)
Surgical	15(50%)
Grand Total	30

Chi Square = 35.877, P-Value = 0.00001 which is Statistically Significant.

The study samples consist of equal number of patients in both natural and surgical induced menopause that is 15 (50%).

**Table 7: Reason for Hysterectomy**

Reason for Hysterectomy	Number
Fibroid	9(60%)
Menorrhagia & Dub	5(33%)
Leukorrhoea	1(6.66%)
Grand Total	30

Yates Chisquare = 10.14, Yates P Value= 0.00628242 Which Is Statistically Significant.

The study sample showed that majority of the women undergoing hysterectomy is due to fibroid 9(60%), followed by menorrhagia and DUB 5 (33%) and 1(6.66%) due to leucorrhoea.

**Table 8: Age at Menopause**

Age Groups	Natural	Surgical
<30	0	1(6.66%)
31-40	0	14(93.33%)
41-50	1(6.66%)	0
51 -60	14(93.33%)	0

The study sample consisted of surgical induced menopausal women more 14(93.3%) in the age group of 31 – 40, and also in the age group below 30 that is 1(6.66%). Majority of the natural induced menopausal women 14(93.3%) is in the age group 51-60, and a less number that is 1(6.66%) in the age group 41-50.

The mean age of natural induced menopause is 53.2, and surgical induced menopause is 35.67. The standard deviations of natural and surgical group are 2.40, and 3.48 respectively.

**Table 9: Clinically Diagnosable Depression in Patients**

Depressed	Number
Yes	17(56%)
No	13(44%)
Grand Total	30

The study sample found 17 (56%) of menopausal women to be depressed than non- depressed 13(44%).

**Table 10: Clinically Diagnosable Anxiety in Patients**

Anxious	Number
Yes	19(63%)
No	11(37%)
Grand Total	30

The present study depicted that 19(63%) of women were clinically anxious and 11 (37%) to be not anxious.

**Table 11: BDI Severity in Postmenopausal Women**

Row Labels	Count of BDI Severity
Normal	10(33%)
Mild Mood Disturbance	8(26.6%)
Borderline Clinical Dep	1(3.33%)
Moderate	6(20%)
Severe	5(16.6%)
Grand Total	30

In the present study, BDI severity scores, it's shown that 8(26.6%) had mild mood disturbances followed by moderate 6(20%) and severe 5(16.6%). And 10(33%) was found to be normal and 1 borderline depressed.

**Table 12: Ham –A Severity in Post-Menopausal Women**

Ham –A Severity	Number
Normal	12(40%)
Mild	7(23.33%)
Moderate	5(16.6%)
Severe	6(20%)
Grand Total	30

In the present study, HAM A severity scores, it's shown that majority that is 7(23.3%) had mild depression followed by moderate 5(16.6%) and severe 6(20%). And 12(40%) was found to be normal.

**Table 13: Scl90, Secondary Subscale Comparision**

S. No	Subscale	Mean Factor Scores
1	Somatization	2.109
2	Ocd	0.286
3	Interpersonal Sensitivity	0.156
4	Depression	1.411
5	Anxiety	1.45
6	Anger- Hostility	0.348
7	Phobic Anxiety	0.173
8	Paranoid Ideation	0.082
9	Psychoticism	0.113
10	Gsi	0.860

In the present study, The factor scores of subscales of SCL 90 scores are as follows, mean of somatization subscale was highest that is 2.109, followed by anxiety 1.45, and depression 1.41. The means of various other subscales are as follows ocd 0.286, interpersonal sensitivity 0.156, anger- hostility 0.348, phobic anxiety 0.173, paranoid ideation0.082, psychoticism 0.113, and GSI 0.860.

## DISCUSSION

### Socio Demographic Data

The study consisted of all (30) post-menopausal women. The Sample in the current study came from a predominantly rural population, mostly from nuclear families. This reflects the population being catered to by the hospital where this study took place, a rural centre with rural catchment area.

This study found that 20(66%) of patients were married at time of presentation and 10(34%) were widowed. The parity status of most of the women 21(70%) fall under 1-3, 7(23.3%) women had 4-6 children, 1(3.3%) had children 7 and above, 1(3.3%) were nulliparous. The nulliparous woman with menopause was due to surgical induced menopause because of menorrhagia. This finding is in collaboration with other Indian studies, Vijay Lakshmi S. et al, found that majority of women, 70 %, had 1-3 children, 26% had 4-6 children, and nulliparous women were 3 %.<sup>[11]</sup>

The majority of the women, 25(83%), stay along with their children, 4(13%) of women stay alone without their children. Till few decades ago, when average age of women in India was less than 60, condition of older women was never even mentioned. But now with fast growing elderly population, increased life expectancy and higher percentage of elderly women in Indian elderly population, issues concerning elderly women cannot be ignored any longer. If ignored today, this may turn in to a major social development challenge.

### **Age Distribution**

The study group consist of majority that is 15(50 %) of women in the age group 50 – 60. This finding is in collaboration with other studies which predicts the average age of menopause.

In western countries the average age of onset of menopause is 51 year. According to menopause society of India the average age of onset of menopause is 48.26 years.<sup>[11]</sup>

In the present study, among other age groups 8(27 %) were in the age group 40-49, 6(20%) in 30-39 and 1(3%) in age group 20-29. In the present study the early age of onset of menopause can be attributed to surgical induced menopause. A study conducted in 2005 study found the prevalence of premature menopause in India to be around 11%, far higher than levels recorded in Western countries, which range from 1 to 4%.<sup>[12],[13]</sup> The present study shows far higher prevalence than other studies.

### **Education**

In the present study, illiterates are 12(40%) and literates are 18(60%). Among literates, 14(47%) are educated up to primary school and 4(13%) are educated up to high school. This finding is in concordance with the national literacy rate in women that is 65%. [Chi square = 0.533 and the P value = 0.4653] which is statistically not significant.

As there are more literates in the study that is 18 (60%), a possible reason may be that, as this is a hospital based study, rather than a community-based one, literate people may be more aware of the nature of the problem and be more likely to seek help.

### **Employment Status**

In present study most are employed 17(57%) which is more than the other group i.e. unemployed 13(43%). This finding is in collaboration with the Telangana employment report in women which is 53% Hence when the study sample is compared with Telangana population, [Chi-square = 0.323, P-value = 0.56981031]

Which is statistically not significant?

### **Socioeconomic Status**

Socioeconomic status is determined by the total family income per month. BG Prasad socioeconomic scale is widely used to determine the socioeconomic status of study subjects in health studies in India. In the present study 3 (10%) patients belonged to BJ Prasad SES-I (socio economic status-I) (i.e. per capita income > 5156), 10 (33.3%) belonged to SES-II (i.e. per capita income 2578-5155), 11 (36.6%) belonged to SES-III (i.e. per capita income 1547-

2577), 6 (20%) belonged to SES-IV (i.e. per capita income 773-1546). Majority of the women that is 70% belonged to SES-II and SES-III.

The average per capita per month income of the study group was found to be 3455 which is significantly variable from the per capita of Telangana. In the recent Telangana income report. Per capita income of Telangana was found to be 1.29 lakhs per year, which are 10,750 per month.

### **Menopausal Cause**

The present study sample consists of equal number of patients in both natural and surgical induced menopause that is 15 (50%). In a study conducted in India, it was shown that the rate of premature menopause was 11%.<sup>[78]</sup>

The Chi-square = 35.877, P-value= 0.00001 which is statistically significant when compared with national study. The study results are in concordance with other rural area study conducted in Andhra Pradesh which showed high incidence 32% of hysterectomy.<sup>[14]</sup>

In developing countries, moreover in rural areas, the myth that —Surgery is the option and —the only remedy is impressed upon the patient, even for minor gynaecological complaint. For that matter, hysterectomy is being recommended for any complaint/s in the body and also as a measure to prevent cervical cancer in due course. Thus an artificial, detrimental and unusual clinical situation is being created with these aggressive interventions, even as we are yet to understand how to deal with natural menopause.<sup>[15]</sup>

### **Reason for Hysterectomy**

The study sample showed that majority of the women undergoing hysterectomy is due to fibroid 9(60%), followed by menorrhagia and DUB 5 (33%) and 1(6.66%) due to leucorrhoea, which is in concordance with Many other studies which have found fibroid to be the leading cause of hysterectomy.<sup>[14]</sup>

In a study conducted across AP, Most common indication for hysterectomy was found to be fibroid i.e. in 26 women(45%), followed by menorrhagia from other causes i.e. in 18 women (31%).<sup>[14]</sup>

Hence when the study sample is compared with this study, Yates' chi-square = 10.14, Yates P-value = 0.00628242, which was found to be statistically significant.

Of late, hysterectomy among pre-menopausal women in India is being raised as a matter of concern by women's health activists. Several news reports and few studies have substantiated that women are being subjected to hysterectomy in an unscrupulous manner for the health conditions which do not warrant surgical treatment. Hence, women in India are facing dual situation, where on one hand, accessing good quality health care within physical proximity is still challenging for several women, on the other hand, unnecessary surgical interventions for gynaecological morbidities is also becoming a norm.<sup>[16]</sup>

### **Age at Menopause**

The study sample consisted of surgical induced menopausal women more 14(93.3%) in the age group of 31 – 40, and lesser number in the age group below 30 that is 1(6.66%). Majority of the natural induced menopausal women 14(93.3%) is in the age group 51-60, and a less number, that is 1(6.66%) in the age group 41-50.

The mean age of natural induced menopause is 53.2, and surgical induced menopause is 35.67. The standard deviations of natural and surgical group are 2.40, and 3.48 respectively.

Two tailed P value < 0.0001 which is found to be statistically very significant, and T value = 16.078 with DF= 28 and standard error of difference = 1.091.

This finding is in concordance with other studies in which average age of menopause is 51.3.<sup>[4]</sup>

### **Clinically Diagnosable Depression in Post-Menopausal Women**

The study sample found 17 (56%) of postmenopausal women to be depressed. This when compared with the National Comorbidity Study reported 30- day estimates of major depression for women aged 45–54 years of 5.0 %,<sup>[167]</sup> is found to be statistically significant (Chi Square = 61.3516, P < .00001).

Although there are many biological causes for depression like hormonal changes, decrease in oestrogen, which plays a role in regulation of serotonin. However, in the study it was found that many women reported lack of supportive environment from their husbands and children. Factors like decrease sleep, or disturbance of sleep,

### **Clinically Diagnosable Anxiety in Post-Menopausal Women**

Table 10 depicts that 19(63%) of women were clinically anxious and 11 (37%) to be not anxious. In a study conducted by NUJHS India, it was found that anxiety was (34.50%) prevalent.<sup>[17]</sup> [Chi-Square = 15.6863 and P-value = 0.000075] which is statistically significant.

Approaching middle age often brings increased stress, anxiety, and fear. This can partially be attributed to physical changes, such as decreasing levels of oestrogen and progesterone. Hot flashes, sweating, and other symptoms of menopause may cause disruptions.

Other factors like concerns about the health issue, hot flushes, and decline in sexual activity may contribute to developing anxiety in this age group.

### **BDI Severity in Postmenopausal Women**

In the present study, BDI severity scores, it's shown that 8(26.6%) had mild mood disturbances, moderate 6(20%) and severe 5(16.6%). And 10(33%) was found to be normal and 1 borderline clinical depression.

This when compared with The National Comorbidity Study reported 30- day estimates of major depression for women aged 45–54 years of 5.0 % The Chi square value =is 77.0218 and the P value <0.00001, which is statistically significant.

The significantly higher BDI scores in menopausal women may be attributed to combination of genetic, biological, environmental, and psychological factors, some women in this study believed that depression is a natural by-product of menopause and so did not seek help on their own account. Family members should encourage them to seek treatment rather than enduring their symptoms.

Many changes that occur with menopause are caused by middle age and are not necessarily directly caused by hormonal changes. Some women mentioned other factors like psychosocial stressors, children parting away for higher education or seeking independence, spouses being detached as possible contributing factors. Women entering menopause should also be aware of the signs of depression. Even women who do not experience depression can be affected by possible upheaval during this period in their lives.

### **Ham –A Severity in Postmenopausal Women**

The present table depicts the severity of Hamilton Anxiety Scale, it predicts that 12(40) % individuals are normal, 7 (23.3%) are mildly anxious, 6(20%) are severely anxious, and 5 (16.6%) are moderately anxious.

In a study conducted by NUJHS India, it was found that anxiety was (34.50%) prevalent.<sup>[17]</sup> Comparing the study sample with national study, The Chi square = 12.5313 and the P value=0.0004 which is considered to be statistically significant.

### **Sci90- Secondary Subscale Comparison**

The table predicts the factorized scores of SCL 90 and it was found that mean of somatization subscale was highest that is 2.109, followed by anxiety 1.45, and depression 1.41. The means of various other subscales are as follows OCD 0.286, interpersonal sensitivity 0.156, anger-hostility 0.348, phobic anxiety 0.173, paranoid ideation 0.082, psychoticism 0.113, and GSI 0.860.

The high factor score on somatisation subscale may be attributed to the increased psychological conflicts in menopausal women. Some of the stressors of particular concern to women in midlife include, caring for an elderly parent, occupational problems, marital changes and the death of a parent or loved one. These psychological unconscious conflicts may represent as physical pains and somatisation. Hence, more psychosocial support and healthy coping mechanisms are required for menopausal women. Many of the psychotherapies like cognitive behaviour therapy which enhances the coping skills in these patients are needed at community centres and other rural health centres.

### **Limitations of the Study**

- 1) The study design is cross sectional in nature. Longitudinal studies are required to find out whether depression is secondary to the onset of menopause.
- 2) This period of menopause coincides with many other factors like children moving away from the parents, either for higher education, or getting married, which can be one of the confounding factors for onset of depression and anxiety at this age.
- 3) Factors like socioeconomic status, employment status, and marital status may also be a confounding factor for depression, hence controlling for these confounding factors can reduce error.
- 4) The study is done in Tertiary care hospital, in rural area and may not represent the whole general population. Furthermore, there is an equal number of patients who underwent hysterectomy as natural menopause. These may potentially skew the sample towards depressed patients.
- 5) The study sample size is small, further larger studies are required to confirm the same..

### **CONCLUSION**

1. The study showed that there is statistically greater psychological morbidity in post-menopausal women.
2. There was a statistically significant, increased occurrence of clinically diagnosable depression in post-menopausal women ( $P < 0.00001$ ), when compared with the women of general population, despite the other confounding factors like literacy rate, employment status, which were not significantly different from the general population.

3. It was observed that Beck's Depression Inventory scores were significantly high in surgically-induced menopausal women when compared with natural menopause (unpaired T test  $p < 0.0001$ ).
4. In the study statistically significant increased rates of anxiety was found to occur in postmenopausal women ( $P = 0.000075$ ).
5. In the study it was observed that Hamilton Anxiety scores were significantly high in surgical induced menopausal women when compared with natural menopause (unpaired T test  $p = 0.0446$ ).
6. The study also shows that there was a significantly higher incidence of somatization on SCL90 subscale, in surgical induced menopause than natural menopausal women with a P value = 0.0001.
7. There was no statistically significant difference among natural menopause and surgical induced menopausal women on other subscales like OCD, Interpersonal sensitivity, hostility, phobic, Paranoid Ideation, or Psychoticism.

## REFERENCES

1. Khan HG, Hallad SJ. Age at menopause and menopausal transition: Perspectives of Indian rural women. Available from: <http://www.epc2006.princeton.edu/download>. [Last accessed on 2011 Aug 27].
2. Howkins J. Bourne G. Perimenopause, menopause, premature menopause and postmenopausal bleeding. In: Paduvidri VG, Daftary SN, editors. Shaw's Textbook of Gynaecology. 14th ed. India: Elsevier; 2008. p. 37.
3. Burger HG. The endocrinology of the menopause. *J Steroid Biochemistry Molecular Biology*. 1999 Apr-Jun;69(1-6):31-5.
4. Avis NE, McKinlay SM. The Massachusetts Women's Health Study: an epidemiologic investigation of the menopause. *Journal American Med Womens Assoc*. 1995 Mar-Apr;50(2):45-9, 63.
5. Blake J. Menopause: evidence-based practice. *Best Pract. Res. Clin. Obstet. Gynaecol*. 2006 dec;20(6): 799–839.
6. Avis NE, Brambilla D, McKinlay SM, Vass K. A longitudinal analysis of the association between menopausal depression results from Massachusetts Women s Health study. *Annual epidemiology*. 1994 May; 4(3): 214-220
7. Bromberger J, Schott L, Kravitz H, Sowers M, Nancy E, Ellen B, et al. Longitudinal change in reproductive hormones and depressive symptoms across the menopausal transition. *Archives of General Psychiatry*. 2010 Jun; 67(6): 598-607.
8. Hunter M S, Mann. A cognitive model of menopausal hot flushes and night sweats. *Journal of Psychosomatic Research*. 2010 Nov;69(5):491-501.
9. Thurston R, Bromberger J, Chang Y, Goldberg E, Canowski M, Karen A. Childhood abuse or neglect is associated with increase vasomotor symptom reporting among midlife women. *Menopause*. 2008 Jan – Feb; 15(1): 16-22.
10. Cooper IA. The hypothalamic– pituitary–adrenal axis: Cortisol DHEA and mental and behavioura function. In A. Steptoe (Ed.) *Depression and physical illness*. Cambridge: Cambridge University Press; v2007 pp.280–298.

11. Sagar A, Borker P, Venugopalan P, Shruthi N. Study of menopausal symptoms, and perceptions about menopause among women at a rural community in Kerala, *Journal of Midlife Health*. 2013 Jul-Sep; 4(3): 182–187.
12. Conway G. Premature Ovarian Failure. *British Medical Bulletin*. 2000; S6 (3): 643-649.
13. Syamala T, Sivakami M. Menopause: An Emerging Issue in India. *EPW*. 2005 Nov; 40(47): 2349-8846.
14. K Radha, G Prameela, P Chandrasekharan, P Swathi, G Radha, Keerthana. Epidemiology of Hysterectomy - A Cross Sectional Study among Pilgrims of Tirumala. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*. 2015 Jul; 14(7) 2-5.
15. Kameshwari SV, Prakash V. Anveshi. A study of unindicated hysterectomies in Andhra Pradesh. May 7, 2013 Available from <http://www.anveshi.org.in/making-a-difference-a-study-of-unindicated-hysterectomies-in-andhra-pradesh/>
16. Sardeshpande N. Hysterectomy among Premenopausal Women and its impact on their Life. *International Research Journal of Social Sciences*. 2015 Apr; 4(4): 15- 22.
17. Vijayalakshmi S, Ramesh C, Eilean L. Menopausal Transition Among north Indian Women. *NUJHS* 2013 Jun; 3(2): 2249-7110.