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# Age at natural menopause and menopausal symptoms among rural women of Amritsar (Punjab)

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## ABSTRACT

**Background:** To study the median/mean age at natural menopause and menopausal symptoms among rural females of district Amritsar (Punjab).

**Materials and Methods:** In the present study, 100 post-menopausal women ranging in age from 40-60 years were included. Median age was calculated by probit analysis and mean age by recall method. A pre-tested questionnaire was used for studying menopause and symptoms associated with menopause. The data was presented as percentage.

**Results:** Median/mean age at natural menopause among rural women was found to be 48.86 ±2.12/49.95 ±3.12 years. In the present study, the most frequently reported menopausal symptoms were aching in muscles and joints (88.75%), fatigue (81.25%), decrease in physical strength (75.00%) and aches in head and neck (62.50%).

**Conclusion:** Median age at menopause in rural females of Amritsar was lower than the females of developed countries but higher than the other Punjabi populations. In this study, a majority of females (80%) reported one or more post-menopausal symptoms and the most common clinical symptoms associated with menopause were aching in muscles and joints, followed by fatigue, decrease in physical strength, aches in head and neck, poor memory/concentration, urine leakage during laugh and cough, increased urine frequency, hot flushes, night sweats and weight gain, but these women consider the symptoms as a natural change of life.

**Key Words:** Amritsar, median/mean age, menopausal symptom, post-menopausal women, rural women.


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## 1. INTRODUCTION

According to World Health Organization (WHO, 1996), the term 'natural menopause' is defined as the permanent cessation of menstruation resulting from the loss of ovarian follicular activity. Natural menopause is recognized to have occurred after 12 consecutive months of amenorrhoea for which there is no other obvious pathological and physiological cause. Worldwide, the age at which natural menopause occurs is between 45 and 55 years. In developed countries, the average age at menopause is about 51 years (Pal et al., 2013; Lu et al., 2007; Changa et al., 2005; Kazem et al., 2004; Luoto et al., 1994) while according to Indian Menopause Society (IMS, 2008), the average age at menopause of Indian women is 47.5 years. Some researchers (Aarti, 2011; Dhillon et al., 2006; Rizk et al., 1998; Randhawa et al., 1987; Singh and Ahuja, 1980) from developing countries have also reported that the average age of menopause among females is around 45 to 50 years. A number of studies (Parazzini, 2007; Bernis and Reher, 2007; Gold, 2001; Damodaran et al., 2000; Kato et al., 1998; Stanford et al., 1987; Mckinlay et al., 1972) have shown that biological, sociocultural and lifestyle factors affect the age of menopause.

Besides being a major cause of cardiovascular diseases in post-menopausal women, menopause produces a wide range of effects on a woman's behaviour and psyche resulting in extremely unpleasant symptoms like aching in muscles and joints, fatigue, hot flushes, night sweats, decrease in physical strength, perspiration, aches in head and neck, weight gain, increased facial hair, avoiding intimacy, depression, short breath and urine leakage during laugh and cough. These symptoms decrease their quality of life and sense of well-being. The prevalence of each of these symptoms varies across rural, urban, socioeconomic and ethnic groups. Most of the information on prevalence of menopausal symptoms has been obtained from the developed countries and sparse information is available from developing countries like India (Khokhar et al., 2012; Pathak and Parashar, 2010; Kaur and Talwar, 2009; Sidhu et al., 2005; Singh and Arora, 2005). Hence, the present study was undertaken to estimate median/mean age at natural menopause and to screen the prevalence of various menopausal symptoms among the rural females of Amritsar so that awareness can be created among rural post-menopausal women about the discomforts caused by menopause.

## 2. MATERIALS AND METHODS

The data for this cross-sectional study was collected at random from rural women of Amritsar district of Punjab (India) ranging in age from 40-60 years. First of all, 150 women were taken into confidence, then the information regarding age, continuation/ cessation of menstrual cycle and menopausal symptoms was collected from each subject during interview. Out of 150 women, 100 women reported 12 continuous months of amenorrhoea without hysterectomy or other procedures that would have stopped their menses were classified as naturally menopausal/ post-menopausal (WHO, 1996) and included in the present study. 50 women, who were above the age of 40 years and menstruating irregularly i.e. peri-menopausal, were excluded from the study. A sample recheck from 50 subjects was carried out to ascertain the validity of collected information before conducting the actual interview. In-depth interviews were conducted among 100 post-menopausal women for collecting information about clinical symptoms of menopause experienced by them during the last six months. Consent was taken orally from each subject. Each interview took about 30 minutes. Median age at menopause of

**Table 1**
Total number of subjects contacted, percentage of subjects who attained menopause and median/mean age at menopause

| Age at menopause | No. of subjects | Cumulative frequency (Years) | Percentage prevalence | Probit analysis |
|---|---|---|---|---|
| 43 | 01 | 01 | 01 | 2.67 |
| 44 | 02 | 03 | 03 | 3.12 |
| 45 | 04 | 07 | 07 | 3.52 |
| 46 | 05 | 12 | 12 | 3.83 |
| 47 | 09 | 21 | 21 | 4.19 |
| 48 | 14 | 35 | 35 | 4.61 |
| 49 | 17 | 52 | 52 | 5.05 |
| 50 | 12 | 64 | 64 | 5.36 |
| 51 | 01 | 65 | 65 | 5.39 |
| 52 | 11 | 76 | 76 | 5.71 |
| 53 | 07 | 83 | 83 | 5.95 |
| 54 | 06 | 89 | 89 | 6.23 |
| 55 | 08 | 97 | 97 | 6.88 |
| 56 | 03 | 100 | 100 | 9.91 |

Median age at menopause = 48.86±2.12 years.
Mean age at menopause = 49.95±3.12 years.



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**Table 2**
Percentage prevalence of menopausal symptoms in rural females of Amritsar

| Symptoms | No. of subjects | Percentage Prevalence |
|---|---|---|
| Vasomotor | | |
| Hot flushes | 39 | 48.75 |
| Night sweats | 37 | 46.25 |
| Perspiration | 15 | 18.75 |
| Psychosomatic | | |
| Aching in muscles and joints | 71 | 88.75 |
| Fatigue | 65 | 81.25 |
| Decrease in physical strength | 60 | 75.00 |
| Aches in head and neck | 50 | 62.50 |
| Insomnia | 20 | 25.00 |
| Short breath | 03 | 03.75 |
| Psychological | | |
| Feeling nervous/anxious | 30 | 37.50 |
| Depression | 13 | 16.25 |
| Poor memory/concentration | 45 | 56.25 |
| Urinary | | |
| Increased urine frequency | 40 | 50.00 |
| Urine leakage during laugh and cough | 44 | 55.00 |
| Other problems | | |
| Increased facial hair | 19 | 23.75 |
| Weight gain | 32 | 40.00 |
| Avoiding intimacy | 10 | 12.50 |

these women have been computed through probit analysis and mean age was estimated by recall method.

Menopausal symptoms were classified according to Pal et al. (2013), Rokhade et al. (2013) and Dasgupta and Ray (2009). into five groups i) vasomotor symptoms (includes hot flushes, night sweats, and perspiration), ii) psychosomatic symptoms (includes aching in muscles and joints, fatigue, decrease in physical strength, insomnia, short breath, and aches in head and neck), iii) psychological symptoms (includes depression, poor memory/concentration, and feeling anxious / nervous), iv) urinary symptoms ( increased urine frequency and urine leakage during laugh and cough), and v) other problems ( increased facial hair, weight gain and avoiding intimacy). The percentage prevalence of all menopausal symptoms was also calculated.

## 3. RESULTS

Frequency distribution of rural females, according to natural age at menopause, is shown in Table 1. It is apparent from this table that the youngest women to experience natural menopause was 43 years old while the oldest one was of 56 years. From the percentage distribution, it is evident that only 7% of women had experienced menopause up to 45 years of age whereas 76% of women experienced menopause up to 52 years of age and the percentage prevalence of menopausal women increases rapidly thereafter. Probit analysis of the status quo method data yielded median age at menopause of rural women of Amritsar as 48.86±2.12 years. Similarly, mean age at menopause calculated as 49.95±3.12 years.

Table 2 shows the menopausal symptoms experienced by rural females of Amritsar. Among the study group, the prevalence of aching in muscles and joints was the highest (88.75%), followed by fatigue (81.25%), decrease in physical strength (75.00%), aches in head and neck (62.50%), poor memory/concentration (56.25%), urine leakage while laugh and cough (55.00%), increased urine frequency (50.00%), hot flushes (48.75%), night sweats (46.25%) and weight gain (40.00%). The other symptoms associated with menopause in the present study were feeling nervous/anxious (37.50%), insomnia (25.00%), increased facial hair (23.75%), perspiration (18.75%), depression (16.25%), avoiding intimacy (12.50%) and short breath (3.75%).

## 4. DISCUSSION

Median and mean age at menopause among rural females of the present study was 48.86±2.12 years and 49.95±3.12 years, respectively. According to National Family Health Survey-3 (NFHS-3) (2005-06), only 11.5% of women attain menopause before the age of 40 years and 65.1% of women experience menopause up to the age of 48 to 49 years, but in the present sample 52% of women attained menopause up to the age of 49 years. Comparing present data with some international studies, it was observed that the median age at menopause in Europe ranged from 50.1 to 50.8 years, in North America it ranged from 50.5 to 51.4 years, in Latin America it ranged from 43.8 to 53 years and in Asia, it ranged from 42.1 to 49.5 years (Palacios et al., 2010). According to Nichols et al. (2006), in a population based cohort of over 22,000 women from 3 regions of U.S, the median age of natural menopause was found to be 50.5 years. Median age at menopause of Thai women (Sukwatana et al., 1991) and Papua New Guinea women (Chompootweep et al., 1993) is lesser than Punjabi women of the present study while the results of the present sample are comparable with South African women (Okonofua et al., 1990). On the other hand, Japanese women (Kono et al., 1990), Iranian women (Kazem et al., 2004), American women (Hagstad, 1998), Australian women (Suzzane et al., 1995) and women from Finland (Luoto et al., 1994) had higher median age at menopause than the rural females of Amritsar of the present study.






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**Table 3**

Trend of age at menopause in various Indian populations

| Population | Sample size | Age group (years) | Age at menopause | | Investigator(s) |
|---|---|---|---|---|---|
| | | | Mean age (years) | Median age (years) | |
| Karnataka | 115 | 51-55 | 45.00±9.12 | – | Rokhade et al. (2013) |
| Urban Vadodadra | 131 | 30-60 | 45.45±4.8 | – | Gaur and Iyer (2013) |
| Hindu women (West Bengal) | 480 | 40-55 | 51.09±3.78 | – | Dasgupta and Subha (2013) |
| Rural area (Maharashtra) | 30 | 40-70 | 48.90±3.2 | – | Pal et al. (2013) |
| Bangalore | 189 | ≥40 | 49.70 | – | Madhukumar et al. (2012) |
| Puducherry | 500 | 40-65 | 45.00 | – | Poomalar and Arounassalame (2013) |
| Tiruvallur district (Tamil Nadu) | 780 | 40-58 | 44.49 | 44.00 | Dutta et al. (2012) |
| Shimla (Himachal Pradesh) | 100 | ≥40 | 44.54 | – | Mahajan et al. (2012) |
| Pune (Maharashtra) | | | | – | Ashok et al. (2013) |
| Perimenopausal women | 60 | 40-60 | 42.89 | | |
| Postmenopausal women | 60 | 40-60 | 53.68 | | |
| Vadodadra (Gujarat) | 147 | 48-68 | 47.74 | – | Christian et al. (2011) |
| Nagpur (Maharashtra) | | | | – | Sagdeo and Arora (2011) |
| Rural | 250 | 40-60 | 48.56±2.27 | | |
| Urban | 250 | 40-60 | 49.56±4.12 | | |
| Puna (Maharashtra) | 156 | 40-55 | 45.80 | – | Aarti (2011) |
| Jammu and Kashmir | 500 | – | 49.35 | – | Tandon et al. (2010) |
| Haridwar (Uttarakhand) | 129 | 30-65 | 46.82 | – | Kapur et al. (2009) |
| Women of Southern Karnataka | 352 | >40 | 48.70 | – | Bairy et al. (2009) |
| Kolkatta (West Bengal) | | | | – | Dasgupta and Ray (2009) |
| Rural | 110 | 45-55 | 46.14±4.47 | | |
| Urban | 70 | 45-55 | 46.14±4.47 | | |
| Kangra | 120 | 35-65 | 44.60 | – | Baghla and Sharma(2008) |
| Urban women (Jammu) | 117 | ≥40 | 47.35 | – | Sharma et al. (2007) |
| Mysore (Karnataka) | 130 | – | 46.63±0.53 | – | Dakshayani et al. (2007) |
| Women of Jammu | 117 | >40 | 47.35 | – | Sharma et al. (2005) |
| Urban Slum Mumbai | 174 | >35 | 42.56 | – | Pandit et al. (2005) |
| Women of Himachal Pradesh | 30 | >35 | 44.59 | – | Nagar and Dave (2005) |
| Rural Northern India | 558 | 35-55 | 44.10 | – | Singh and Arora (2005) |
| Women of Delhi | 201 | – | 46.70 | 48.00 | Kriplani and Banerjee (2005) |
| Rural South India | – | ≥40 | 43.40±3.9 | – | Nirmalan et al. (2004) |
| Sagar district (Madhya Pradesh) | 128 | – | 46.34±0.361 | – | Yadav et al. (2002) |
| Ahom women of Dibrugarh (Assam) | 87 | – | 46.32±0.27 | – | Sengupta and Rajkhowa (1996) |
| Jalpaiguri district (West Bengal) | 64 | 38-56 | 47.3±0.27 | – | Piplai (1991) |

The trends of age at menopause in various Indian populations show geographical diversity in the mean/median age at menopause (Table 3). Majority of Indian studies have reported only mean age at menopause. Therefore, in the current study, mean age was also calculated. Maximum mean age at menopause (53.68 years) was observed in Pune (Maharashtra) women (Ashok et al., 2010) and minimum age at menopause (42.56 years) was observed in urban slum Mumbai women (Pandit et al., 2005). Mean age at menopause of the present sample was comparable to Nagpur (Maharashtra) women (Sagdeo and Arora, 2005) and Bangalore women (Madhukumar et al., 2012). Even within Punjab there is wide variation in the mean/median age at menopause (Table 4). Maximum mean age at menopause (49.61 years) was observed in Punjabi Khatri working women (Sethi et al., 1996) and minimum age at menopause (43.8 years) was observed in rural women of Chandigarh (Puri et al., 2008). Median age at menopause of the present sample is higher than the Jat Sikh rural women of Punjab (Kaur, 2008). While comparing with some other Punjabi studies, it was found that mean age at menopause of the present sample was almost similar to urban and rural women of Roopnagar district (Kaur and Talwar, 2009) and Punjabi Khatri working women (Sethi et al., 1996).


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**Table 4**

Trend of age at menopause in Punjabi women

| Population | Sample size | Age group (years) | Age at menopause | | Investigator(s) |
|---|---|---|---|---|---|
| | | | Mean age (years) | Median age (years) | |
| Working women of Jalandhar | 265 | 30-60 | 46.55±4.50 | 46.06±4.85 | Khokhar et al. (2012) |
| Chandigarh | 564 | 40-60 | 47.91±3.16 | – | Pathak and Prashar (2010) |
| Punjabi females<br>Rural<br>Urban | <br>450<br>420 | <br>40-70<br>40-70 | <br>48.22±2.47<br>49.30±2.80 | <br>48.98±1.12<br>50.12±1.15 | Kaur and Talwar (2009) |
| Chandigarh<br>Rural<br>Urban | <br>226<br>302 | <br>≥40<br>≥40 | <br>43.80<br>45.30 | – | Puri et al. (2008) |
| Jat Sikh women<br>Rural<br>Urban | <br>500<br>500 | <br>36-81<br>36-81 | <br>46.74<br>46.91 | <br>46.67<br>47.54 | Kaur (2008) |
| Educated working women of Punjab | 539 | 40-50 | – | 47.54±2.31 | Sidhu et al. (2005) |
| North Indian rural area (Chandigarh) | 558 | 35-55 | 44.10 | – | Singh and Arora (2005) |
| Bazigar females of Punjab | 360 | – | 46.98 | – | Sidhu (2003) |
| Punjabi Khatri women<br>Working<br>Non-working | 387 | <br>20-80<br>20-80 | <br>49.61<br>46.86 | – | Sethi et al. (1996)[1] |
| Sikh Harijan women<br>Hindu Harijan women | 253<br>260 | 35-60<br>35-60 | 46.91<br>46.69 | – | Sidhu and Sidhu (1987) |
| Punjabi Sansi women | 60 | 40-55 | 45.28±3.30 | – | Sidhu and Sidhu (1987) |
| Gujar women of Punjab | 150 | 45-55 | 46.20 | – | Sidhu (1986) |
| Jat Sikh women<br>Bania women | 502<br>510 | –<br>– | 48.62<br>47.33 | – | Singal and Sidhu (1982) |
| Rural females of Amritsar | 100 | 40-60 | 49.95±3.12 | 48.86±2.12 | Present study |

This comparative picture of mean age at menopause reveals that rural females of Amritsar experience menopause later than the various Indian populations but earlier than the populations of the developed countries. Mean/Median age at menopause mentioned in these studies is not comparable due to variation in socio-economic status, genetic make-up and periodic dissimilarity, because it is apparent from the literature that genetic, dietary and environmental factors are the major determinants for the variation in age at menopause (Parazzini, 2007; Bernis and Reher, 2007; Gold, 2001; Damodaran et al., 2000; Kato et al., 1998; Stanford et al., 1987; Mckinlay et al., 1972).

The variation in menopausal symptoms in various populations probably exists due to progressive ageing, reduction in hormone levels, possible mid-life crisis, growing family responsibilities, education, cultural and various other factors during this period of life. About 80% rural females of the present study experienced one or more menopausal symptoms while 20% females reported no menopausal symptoms even they had not heard about these symptoms. Menopausal symptoms of these 80 females were categorized into five groups i) vasomotor symptoms (includes hot flushes, night sweats and perspiration), ii) psychosomatic symptoms (includes aching in muscles and joints, fatigue, decrease in physical strength, insomnia, short breath, and aches in head and neck), iii) psychological symptoms (includes depression, poor memory/concentration and feeling anxious/ nervous), iv) urinary symptoms (increased urine frequency and urine leakage during laugh and cough), and v) other problems ( increased facial hair, weight gain and avoiding intimacy).

Among rural women, psychosomatic symptoms, like aching in muscles and joints (88.75%), and fatigue (81.25%), were most commonly reported than the other menopausal symptoms. Sagdeo and Arora (2005) studied Nagpur women, and Poomalar and Arounassalame (2012) studied Puducherry women and found a higher incidence of psychosomatic complaints (>60%). Haines et al. (2005) conducted a study on Asian women and also observed the






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joint aches/pains as the most prevalent symptom in Korean women (76%) and Vietnamese women (96%). The difference in the prevalence of psychosomatic symptoms among these populations could be due to variation in food habits and lifestyle patterns. The prevalence of urinary symptoms, like urine leakage during laugh and cough and increased urine frequency was found to be 55.00% and 50.00%, respectively, among the studied females. Singh et al. (2005) and Kaur (2008) studied Chandigarh women and reported a very low prevalence of urinary symptoms as 15.70% and 10.65%, respectively, while Agwu et al. (2008) studied Nigerian females and reported the prevalence of urinary symptoms as 38.70%. Hafiz et al. (2007) studied Australian females and the prevalence of urinary symptoms was reported as 35.20%. The differences between the prevalence of urinary symptoms, which were observed between these populations, might be due to the women's attitude towards health and related problems. According to WHO (1996), hot flushes and night sweats are the main symptoms associated with menopause, also their prevalence varies in different populations. The combined prevalence of hot flushes and night sweats among rural women of Amritsar was 47.50% which was lower than the other Indian females (Dasgupta and Ray, 2009; Sharma et al., 2007; Shah et al., 2004; Sidhu et al., 2005; Avis et al. 2001) and Caucasian females (Lu et al., 2007; Greoneveld et al., 1996). This kind of national diversity was also observed in Malaysian women (Jahanfar et al., 2006).The present data shows that about 37% of women complained of psychological symptoms. The incidence of feeling anxious/nervous, depression and poor memory/concentration was found to be 37.50%, 16.25% and 56.25%, respectively. The incidence of psychological symptoms was less in rural females of Amritsar when compared to reports of Dasgupta and Ray (2009) and Pal et al. (2013). Reporting of sexual symptoms was very low in the present study as compared to Caucasian populations (Avis et al. 2011), because rural women of the study group were illiterate and it is social taboo among rural women to discuss reproductive and sexual health that could be the cause of low incidence. It is evident from the present study that the prevalence of menopausal symptoms among the rural women of Amritsar is quite high, but they rarely seek medical help for these menopausal problems. On the other hand, these women consider the symptoms as a natural change of life and they welcome the cessation of menstrual periods.

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