

## Reproductive profile of vegetarian and non-vegetarian women

SHIVANI CHANDLA AND KIRAN GROVER

Accepted : September, 2008

### ABSTRACT

A sample of 200 postmenopausal women (100 vegetarians and 100 nonvegetarians) above the age of 50 years from various localities/ strata of Ludhiana city of Punjab were randomly selected. The observations on socio-economic status revealed that majority of the subjects (68% vegetarians and 71% nonvegetarians) were housewives with business as their family occupation. All of them were engaged in sedentary life style pattern. Information regarding reproductive profile depicted that the mean age of menarche was 14.11 years in vegetarians as compared to 12.78 years in nonvegetarians. Menstrual cycle was found to be regular in majority of the subjects. Further, 60 per cent vegetarians and 61 per cent nonvegetarians were married by the age of 17-21 years and majority of the subjects were in the age group of 18-22 years at the time of their first pregnancy. The data further showed that mean age of menopause was 47.08 years in vegetarians as compared to 48.04 years in nonvegetarians. Seventy seven per cent of nonvegetarians experienced gradual cessation of period as against 63 per cent of vegetarians. The prevalence of menopausal symptoms was high in nonvegetarians (90%) as compared to vegetarians (60%). The main symptoms experienced were hot flushes, mood changes and night sweats. Further, clinical symptoms such as pain in joints, visual impairments and high blood pressure were reported to be common in 75 per cent nonvegetarians and 69 per cent vegetarians. The presence of chronic diseases as obesity, diabetes, hypertension and cardiovascular were reported to be lower in vegetarians (45% vs 65%) subjects.

See end of the article for authors' affiliations

Correspondence to:

**KIRAN GROVER**

Department of Food and Nutrition, College of Home Science, Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA

**Key words :** Clinical symptoms, Menarche, Menopause, Menopausal symptoms, Reproductive profile.

Menopause is a reproductive milestone in a woman's life. It is a natural ageing process that marks the end of woman's reproductive years. It does not arrive suddenly and takes around 3-4 years beginning with perimenopause, when body starts running out of eggs, ovulation becomes sporadic, hormone levels fluctuate and cycle becomes unpredictable. Therefore, age at menopause is not same for all the women. Multi-factors such as birth weight, age of menarche, family history, socio-economic status, period of breast feeding etc. play an important role in predicting woman's age at menopause. Most women enter menopause between the age of 45-55 years, an average of about 51 years. However, in developed countries median age of menopause is about 50 years and about one third of life span is spent after menopause (Krishna, 1998). Medical opinion has always projected menopause as malady because of its association with a variety of acute and chronic conditions. Estrogen produced by the ovaries is crucial for the healthy functioning of a woman's reproductive system. Decreased production of this hormone can produce variety of symptoms. Reproductive factors rather than socio-economic and behavioral factors appeared to be associated with weight change during menopause (Chisato, 2002).

The right type of diet can help a woman to battle many of these risks and discomforts. There are substantial

evidences suggesting that vegetarianism is a healthy food practice which can lower the risk of a number of chronic diseases. Therefore, the present study was planned to study the reproductive profile including the prevalence of risks and discomforts associated with menopause in vegetarian and nonvegetarian women.

### METHODOLOGY

The study was conducted in Ludhiana city of Punjab state. Two hundred (100 vegetarians and 100 nonvegetarians) postmenopausal women above the age of 50 years from various localities / strata were randomly selected for the survey.

#### *Criteria for selection of the subjects:*

Vegetarian : Excluding meat, poultry and fish from their diet.

Nonvegetarian : Including all food categories.

The interview schedule was developed to obtain the desired information. The reliability / feasibility of the schedule was worked out by pretesting on ten subjects (5 vegetarians and 5 nonvegetarians). Based on the response received during pretesting, certain necessary changes were incorporated in the schedule. Hence, the pretested and reconstructed schedule was used to collect ultimate data for present study.

**Collection of data:**

The required data were collected through personal interview technique using the especially structured schedule. The reference year of the study was 2005-2006. The information was collected on general, socio-economic, life style and physical activity pattern and various symptoms experienced during menopausal process. The other characteristics like reproductive and menstrual history, age of menarche, age of menopause were also recorded. The data were analyzed with the help of various simple statistical tools such as mean, standard error (SE), percentage etc.

**RESULTS AND DISCUSSION****General information:**

The data regarding general profile of the subjects showed that 61 per cent vegetarians and 65 per cent nonvegetarians were in the age group of 50-55 years. Most of the subjects from both the groups in vegetarians (90%) and nonvegetarians (85%) belonged to general class. A high percentage of vegetarians and nonvegetarians *i.e.* 62 and 56 per cent were Hindu. The level of education was recorded to be high in vegetarians as compared to nonvegetarians. Thirty per cent of vegetarians were postgraduate against 16 per cent of nonvegetarians. Further, majority of subjects (76% vegetarians and 73% nonvegetarians) were having nuclear family system with average family size upto 5 members.

**Socio- economic status:**

The information on socio-economic status of the subjects depicted that most of the subjects in both the groups had business as their main family occupation with average monthly income upto Rs. 20,000. For majority of the subjects in both groups expenses on the marriage of children was the main liability and 46 per cent of nonvegetarians used to enjoy membership of one or other club against only 26 per cent of vegetarians.

**Life style and physical activity pattern:**

The observation on life style and physical activity pattern of the subjects revealed that all of them were engaged in sedentary life style pattern. Vegetarians were having more working but less sleeping and recreation hours as compared to nonvegetarians. The data showed that 10 per cent vegetarians were doing heavy exercise as compared to 15 per cent of nonvegetarians and 22 per cent of vegetarians were regular in exercise as against 16 per cent of nonvegetarians.

**Reproductive profile:**

The data regarding the age at menarche (Table 1 and Fig. 1) revealed that the onset of menarche in 47 per cent vegetarians was between 13-14 years followed by 42 per cent between 15-16 years. On the other hand, the onset of menarche in 48 per cent of nonvegetarians subjects was between 11-12 years, followed by 45 per cent between 13-14 years. The observation therefore revealed that nonvegetarian subjects had early menarche *i.e.* with a mean age of  $12.78 \pm 1.17$  years as compared to vegetarian subjects with a mean of  $14.11 \pm 1.28$  years.

Information on regularity of periods showed that 82 per cent of vegetarians as compared to 90 per cent of nonvegetarians had regular periods. Ouyang *et al.* (2005) reported that the incidence of menstrual irregularity was less *i.e.* 4.9 per cent among nonvegetarians as compared to 26.5 per cent among vegetarians.

The information on marriage profile of the subjects revealed that most of the subjects got married by the age of 17-21 years *i.e.* (60% vegetarians and 61% nonvegetarians), followed by 22-26 years (25%

**Table 1 : Reproductive profile of the subjects (Percentage)**

Particulars	Vegetarian (n=100)	Nonvegetarian (n=100)
<b>Age at Menarche (yrs)</b>		
11-12	11	48
13-14	47	45
15-16	42	7
Mean	14.11	12.78
<b>Regularity of Periods</b>		
Regular	82	90
Irregular	18	10
<b>Age at Marriage (yrs)</b>		
17-21	60	61
22-26	25	23
≥27	15	16
<b>Age of Pregnancy (yrs)</b>		
18-22	58	59
23-27	33	34
28-32	9	7
<b>Type of delivery</b>		
Normal	88	93
Cesarean	12	7
<b>Age of menopause (yrs)</b>		
35-39	5	1
40-44	2	1
45-49	69	72
50-54	24	26
Mean	47.08	48.04
<b>Mode of cessation of period</b>		
Gradual	63	77
Rapid	37	23

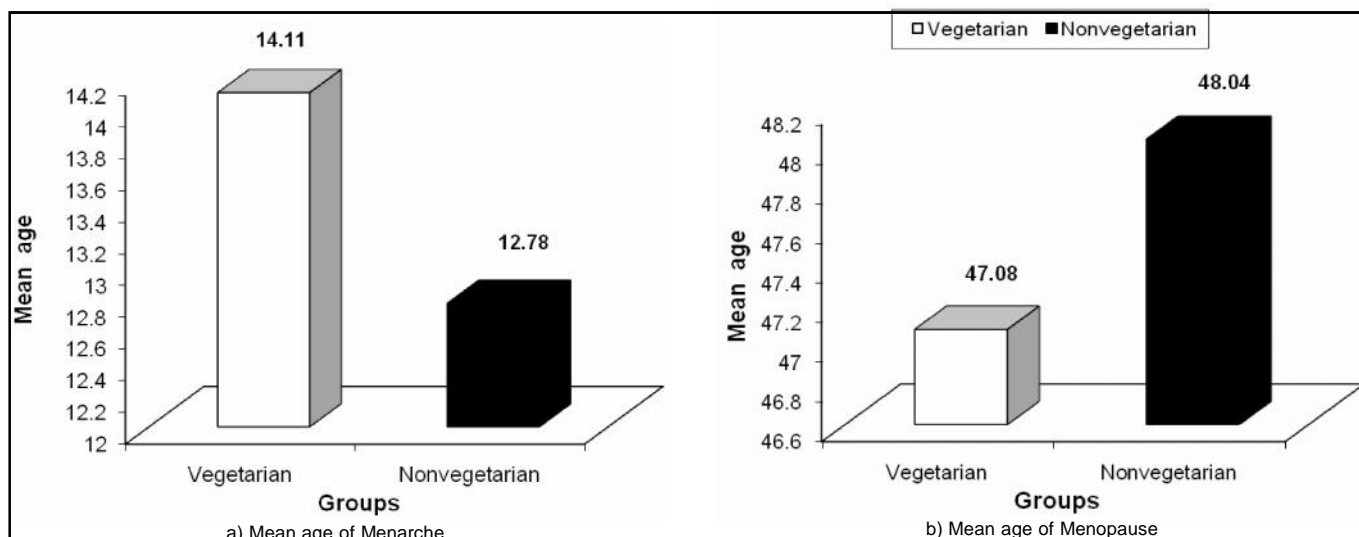


Fig. 1 : Reproductive profile of the subjects

vegetarians and 23% nonvegetarians) and remaining 15 per cent of vegetarians and 16 per cent nonvegetarians were married by the age of above 27 years.

Information on pregnancy status of the subjects revealed that majority of vegetarians (58%) and nonvegetarians (59%) were in the age group of 18-22 years at the time of their first pregnancy and 33 per cent vegetarians and 34 per cent nonvegetarians were in the age group of 23-27 years. A very few *i.e.* 9 per cent vegetarians and 7 per cent nonvegetarians were found to be in the age group of 28-32 years. Majority of the subjects in both the groups (88% vegetarians and 93% nonvegetarians) were having normal delivery.

The perusal of data presented in Table 1 and Fig. 1 further revealed that age of menopause among vegetarians (69%) was 45-49 years followed by 50-54 years in 24 per cent of vegetarians. However, the age of menopause was found to be 45-49 years in 72 per cent nonvegetarian subjects followed by 50-54 years in 26 per cent of the subjects. The mean age of menopause was observed to be  $47.08 \pm 2.89$  yrs in vegetarians as compared to  $48.04 \pm 2.03$  yrs in nonvegetarians. Similarly, Sharda *et al.* (2005) reported median age at menopause to be  $47.54 \pm 2.31$  years. The findings of the present study reported early menopause in vegetarians as compared to nonvegetarians.

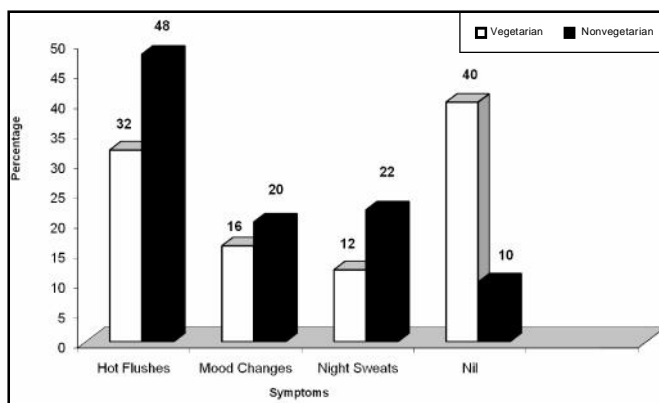
The information revealed that 63 per cent vegetarians had gradual cessation of periods as compared to 77 per cent nonvegetarians. Whereas remaining 37 per cent and 23 per cent, respectively experienced a rapid cessation of periods.

**Symptoms and discomforts experienced by of the subjects:**

The observations on menopausal symptoms (Table 2 and Fig. 2) revealed that majority of subjects in both the groups (32% vegetarians and 48% nonvegetarians)

Table 2 : Symptoms and discomforts experienced by the subjects during menopause (Percentage)

Particulars	Vegetarian (n=100)	Nonvegetarian (n=100)
<b>Menopausal symptoms</b>		
Hot Flushes	32	48
Mood Changes	16	20
Night Sweats	12	22
Nil	40	10
<b>Clinical symptoms</b>		
Pain in joints	22	20
Common Fractures	4	-
Visual impairments	15	8
High Blood Pressure	28	47
Nil	31	25
<b>Change in weight</b>		
Same	15	9
Increased	83	91
Decreased	2	0
<b>Approximate gain ( kg)</b>		
2-3	16	17
4-5	37	40
6-8	30	34
<b>Pattern of weight gain</b>		
Upper body	67	76
Lower body	12	11
Uniform	4	4



**Fig. 2 : Symptoms and discomforts experienced by subjects during menopause**

experienced hot flushes as a main menopausal symptom. Mood changes were recorded in 16 per cent and 20 per cent vegetarians and nonvegetarians, respectively. Whereas night sweats was experienced by 12 per cent of vegetarians and 22 per cent of nonvegetarians. Interestingly, higher percentage of vegetarians *i.e.* 40 per cent as compared to 10 per cent nonvegetarians reported the absence of such symptoms during menopausal process. Riaz (2002) reported that the decreased estrogen production during menopause produces a variety of symptoms like hot flushes, night sweats and urinary symptoms in menopausal women.

Clinical symptoms such as pain in joints, visual impairments and high blood pressure were reported to be common in both the groups. Out of all these symptoms, high blood pressure was the most prevalent among the subjects. Forty seven per cent of nonvegetarians were reported to have this symptom as compared to 28 per cent vegetarians. Other symptoms, such as pain in joints and visual impairment during menopausal process were experienced by 22 per cent and 15 per cent vegetarians than that of 20 per cent and 8 per cent nonvegetarians. On the whole, 31 per cent vegetarians in comparison to 25 per cent nonvegetarians were found to be clinically healthy during this process. In view of menopause,

Anonymous (1999) reported that majority of the subjects feel menopause as a natural transition whereas few of them term it as a medical condition.

Data regarding change in weight showed that majority of subjects in both the groups (83% and 91%) gained weight during menopausal process. The weight of only 15 per cent vegetarians and 9 per cent nonvegetarians, respectively remained same *i.e.* no change in weight after menopause. Approximate gain was observed to be 4-5 kg in 37 per cent vegetarians and 40 per cent nonvegetarians followed by 6-8 kg in 30 per cent vegetarians and 34 per cent nonvegetarians. The pattern of weight gain was observed in upper part of body by majority of the subjects in both the groups (67% vegetarians and 76% nonvegetarians).

Authors' affiliations:

**SHIVANI CHANDLA**, Department of Food and Nutrition, College of Home Science, Punjab Agricultural University, LUDHIANA (PUNJAB) INDIA

## REFERENCES

- Anonymous** (1999). Women's knowledge and attitudes towards menopause. [www.menopauseonline.com](http://www.menopauseonline.com).
- Chisato, N.** (2002). Weight change in relation to natural menopause and other reproductive and behavioral factors in Japanese women. *Amr. J. Epidemiol.*, **12**: 237-241.
- Krishna, V.** (1998). Menopause. *J. Obs. Gyn. Ind.*, **48**: 218-221.
- Ouyang, F.** Perry, M.J., Venners, S.A. and Chen, C. (2005). Menstrual differences due to vegetarian and nonvegetarian diets. *Amr. J. Clin. Nutr.*, **53**: 879-885.
- Riaz, M.N.** (2002). Soybean as functional foods. *Tech. Bull. Assoc.* p2.
- Sharda, S.,** Kaur, A. and Singh, M. (2005). Age of menopause in elderly women of Amritsar, Punjab. *J. Hum. Ecol.*, **18**: 49-51.

\*\*\*\*\*  
\*\*\*\*\*