



A Critical Evaluation of Some Prominent Variables on Menopause in Indian Women

Vanaja V.¹, Murugan A.²

¹Associate Professor in Mathematics, S.T. Hindu College, Nagercoil, TN

²Associate professor in Zoology, S.T. Hindu College, Nagercoil, 629002
(²dr.a.murugan@gmail.com)

Abstract- Menopause is the closing ceremony to the reproductive age of a woman. Before and after the end of this event she has to face many physical, physiological, psychological, and biological upheavals / upsets. Of course, it is one of the iceberg transitional phases in a woman's life cycle, there after her reproductive system starts dysfunctional once for all. The present study is a systematic approach to analyze the significance of certain anthropometric measures and menopause in women. The mean menopausal age of the subjects is 47.28 ± 4.5 yrs, while the lowest and the highest menopausal ages are 29, 63yrs respectively. A strong association is noticed between BMI, puberty age, marital status, parity, length of menstrual cycles and menopausal ages of the study subjects.

Keywords- Amenorrhea, body mass index, parous, perimenopause

I. INTRODUCTION

Natural or physiological menopause is associated with a part of women's normal ageing process and the period preceding this event is referred to as perimenopause. The average age of onset of menopause is 51 yrs, but it may vary among women which are decided by a group of factors. Menopause is one of the prime transitional periods in women's life.

A complete arrest of ovarian follicular activity and the following permanent cessation of menstruation is termed as menopause [1]. Amenorrhea for one year without any pathological or psychological reasons is said to be a natural menopause [2]. The early age of onset of natural menopause is decided by a group of risk factors. A bundle of such risk factors are reproductive factors like early menarche [2 - 4], low parity [3,5,6] and short menstrual periods [7,8] and life - style factors such as low body mass index (BMI) [9 - 11], and marital status [12, 13] and so on. There are minor variations in the extent of such factors and its impact on this multifactorial event (i.e.) normal menopause.

To ascertain the potential role of some of the risk factors like reproductive and life - style factors on the early onset of this biological event in Indian women, the available

information are very rare. Hence the present study is carried out to understand the role of some prominent risk factors like BMI, puberty age, marital status, length of the menstrual cycle and parity on the onset of menopause at specific ages in the study population

II. MATERIALS AND METHODS

The present study is carried out during the period 2011 - 12 in Kanyakumari District, Tamil Nadu, India. A total of 3000 menopausal women who have just crossed the menopausal period with rural, semi - urban and urban backgrounds in 81 places with a distance of approximately 50 Km on road is used for the study. The population is with a lowest age of 29 yrs and the highest age is 69 yrs and the mean menopausal age is 47.28 ± 4.5 yrs.

A door to door survey is carried out [14] with standard questionnaire to collect the basic information about the menopausal women. Priority has been given to human values and the Ethics committees' recommendations have been strictly followed during the survey.

The respondents are divided into 3 categories (viz.) early menopausal (29 - 44 yrs), normal menopausal (45 - 55 yrs) and late menopausal (56 - 63 yrs) subjects. The cause(s) of menopause (i.e.) natural or surgical or by other means is confirmed by the information given by the respondents.

Standard method is used to measure the BMI [15]. The role of age at menarche, length of the menstrual cycles, marital status and parity on the onset of menopause has been also analysed. Statistical interpretations are also made to analyse the validity of the data [16].

III. RESULTS

The study subjects are categorized as early (29 - 44 yrs), normal (45 - 55 yrs) and late (56 - 63 yrs) menopausal women. They are also grouped into different sects based on their menarche ages. The subjects' lowest and highest menarche ages are 10, 19 yrs respectively. Out of 3000 menopausal women, 244 (8.13%) have attained puberty in their pre - teen

years (10 – 12 yrs of age) and the rest 2756 (91.87%) reached menarche in their teen ages (13 – 19 yrs of age). There are 797 (26.57%) early menopausal women, where 6 (0.19%) are detected as medical menopausal women and the remaining 791 (99.81%) show natural menopause.

It is further evident from table.1.that, a great majority (i.e.) 2146 (71.53%) are normal menopausal women, where 111 cases have experienced with pre – teenage puberty and the remaining 2035 (94.83%) women reached puberty in their teenages. In the late menopausal category, out of 57 (1.9%) cases, 5 (8.77%) women have attained puberty in their pre – teen periods and the rest 52 (91.23%) subjects' puberty age is 13 – 19 years.

The relationship between body mass index and menopausal age of the respondents are depicted in table.2. The percentage distribution of under, normal and overweight categories are 7.4 (222 cases), 47.43 (1423 subjects), 45.17 (1355 women) respectively. There are 163 early, 54 normal and 5 late menopausal women in underweight, 368 early, 1041 normal and 14 late menopausal women in normal weight and 266 early, 1051 normal and 38 late menopausal women in over weight category.

Table.3. implies the impact of marriage on menopausal age in the subjects. It is clear from the table that 621 (20.7%) women got married in their teenages (16 – 19 yrs), where 157 women (25.28%) attained early, 447 (71.98%) normal and 17 (2.74%) late menopause. In married menopausal women of 20 – 29 yrs category, there are 632 (26.66%) early, 1699 (71.66%) normal and 40 (1.68%) late menopausal subjects. All the 8 (0.27%) are found as early menopausal subjects.

The relationship between parity and menopausal age of the women are shown in table.4. It is quite obvious from the table that 104 (3.47%) subjects including 71 (68.27%) early menopausal, 31 (29.81%) normal and 2 (1.92%) late menopausal subjects are found as nulliparous women. The rest 2896 (96.53%) are parous women. In this category 337 (11.23%) women are having one child each and the remaining 2559 (88.37%) women are multiparous with a minimum of 2 and a maximum of 6 children. The percentage wise distribution of the multiparous women with 2, 3, 4, 5 and 6 children are 36.93, 27.9, 11.64, 6, 2.83 respectively.

The duration of menstrual cycles and menopausal age of the subjects are illustrated in Fig.1. Out of 3000 menopausal women 375 (12.5%) possessed short menstrual cycles (cycle length is < 2 days) where 316 (84.27%) cases are found as early menopausal women and 59 (15.73%) experienced normal menopause. In normal menopausal group out of 2327 (77.57%) subjects (cycle length is 3 days) 413 (17.57%) are early, 1896 (81.48%) are normal and 18 (0.77%) are late menopausal women. 68 (22.82%) early, 191 (64.09%) normal and 39 (13.09%) late menopausal subjects had long menstrual cycles (cycle length is > 3 days).

IV. DISCUSSION

Menopause is a crucial event in every woman's life. It not only changes the physical, physiological, psychological and biological aspects of life but also changes the every single aspect of her life. The hormone driven changes totally alter her perimenopausal and menopausal life.

Approximately 10% of women will have their regular menstrual periods up to the time of their final menopausal period (FMP) [17]. More over 91% of women with 6 months of amenorrhea will be subsequently determined by the post – menopausal period [18].

The median age at menopause is reported as 51 yrs by researchers [17, 19], whereas it is 47.28 ± 4.5 yrs in our subjects. One report says approximately 1% of women will reach menopause by age 40, 10% by age 46 and 90% by age 55 yrs [17]. Our study contradicts this report and 26.27% subjects reached menopause at the age of 29 - 44 yrs, 71.53% in 45 – 55 yrs and 1.9% at 56 - 63 yrs.

Earlier studies reveal that women with lower BMI are associated with earlier natural menopause [11, 20, 21], but yet another study contradicts this finding [8]. A negative impact of BMI on early menopausal subjects is seen in our subjects. The association between BMI and menopausal ages is highly significant ($P = 0.000001$)

Global research shows a strong association between marital status and age at menopause on women. Reports say married women attained natural menopause in later ages [17, 22 – 26] and unmarried women had earlier onset of menopause [5,12,13,27]. Our unmarried subjects experienced early menopause. Marital status and menopausal ages are strongly associated ($P = 0.000001$).

Previous studies report that nulliparous or women having few children are associated with earlier menopause [3,6,28,29] and increasing parity is related to later menopause [18]. It is true in our study also. There is a strong positive association is seen between parity and menopausal ages ($P = 0.000001$).

It is evident from the studies that early age menarche has been linked with early menopause [2 – 4]. Our study corroborates these findings and most of our early menopausal subjects have attained puberty in their pre – teen period. Early menarche and early menopause are dependent ($P = 0.000001$ this is less than 0.001). Earlier studies explain the association between short menstrual periods and early menopause [7,8]. It is true in most of our pre – teen menarche respondents ($P = 0.000001$).

V. CONCLUSION

Menopause transition produces moderate to severe changes in women, however it is unable to reach a conclusion on the impact of reproductive and lifestyle factors on this multifactorial event. The possible functional role of some of the reproductive and lifestyle factors on the onset of menopause in specific ages is brought to light by the present study. Large scale studies are essential to analyze and interpret

the role of the above mentioned risk factors on menopause beyond doubt.

TABLE I. PICTURES OUT THE PUBERTY AND MENOPAUSAL AGES OF THE SUBJECTS (N = 3000 SUBJECTS)

Puberty age(yrs)	Menopausal age (yrs)			Total
	Early 29-44	Normal 45 - 55	Late 56-63	
10	7 (87.50)	1 (12.50)	-	8(0.27)
11	21 (63.64)	12 (36.36)	-	33 (1.10)
12	100 (49.26)	98 (48.28)	5 (2.46)	203 (6.77)
13	138 (30.0)	315 (68.48)	7 (1.52)	460 (15.33)
14	178 (25.07)	522 (73.52)	10 (1.41)	710 (23.67)
15	172 (27.30)	449 (71.27)	9 (1.43)	630 (21.00)
16	137 (20.09)	524 (76.83)	21 (3.08)	682 (22.73)
17	35 (16.28)	178 (82.79)	2 (0.93)	215 (7.17)
18	5 (16.13)	26 (83.87)	-	31 (1.03)
19	4 (14.29)	21 (75.00)	3 (10.71)	28 (0.93)
Total	797 (26.57)	2146 (71.53)	57 (1.90)	3000 (100)

(Figures in parentheses are percentage values)

TABLE II. DENOTES THE BODY MASS INDEX AND MENOPAUSAL AGE OF THE SUBJECTS (N = 3000 SUBJECTS)

BMI	Menopausal age (Yrs)			Total
	Early 29-44	Normal 45 - 55	Late 56-63	
≤ 18.5	163 (73.42)	54 (24.32)	5 (2.25)	222 (7.40)
18.5 – 24.99	368 (25.86)	1041 (73.16)	14 (0.98)	1423 (47.43)
≥ 25	266 (19.63)	1051 (77.56)	38 (2.80)	1355 (45.17)
Total	797 (26.57)	2146 (71.53)	57 (1.90)	3000 (100)

(Figures in parentheses are percentage values)

TABLE III. EXPLAINS THE MARITAL STATUS ON MENOPAUSAL AGE IN THE SUBJECTS (N = 3000 SUBJECTS)

Age at marriage (yrs)	Menopausal age (yrs)			Total
	Early 29-44	Normal 45 - 55	Late 56-63	
16 – 19	157 (25.28)	447 (71.98)	17 (2.74)	621 (20.70)
20 – 29	632 (26.66)	1699 (71.66)	40 (1.68)	2371 (79.03)
Unmarried	8 (100)	-	-	8 (100)
Total	797 (26.57)	2146 (71.53)	57 (1.90)	3000 (100)

(Figures in parentheses are percentage values)

TABLE IV. POINTS OUT PARITY AND MENOPAUSAL AGE OF THE SUBJECTS (N = 3000 SUBJECTS)

Parity	Menopausal age (yrs)			Total
	Early 29-44	Normal 45 - 55	Late 56-63	
0	71 (68.27)	31 (29.81)	2 (1.92)	104 (3.47)
1	115 (34.12)	215 (63.80)	7 (2.08)	337 (11.23)
2	372 (33.57)	725 (65.43)	11 (0.99)	1108 (36.93)
3	155 (18.52)	663 (79.21)	19 (2.27)	837 (27.90)
4	51 (14.61)	292 (83.67)	6 (1.72)	349 (11.63)
5	25 (13.89)	149 (82.78)	6 (3.33)	180 (6.00)
6	8 (9.41)	71 (83.53)	6 (7.06)	85 (2.83)
Total	797 (26.57)	2146 (71.53)	57 (1.90)	3000 (100)

(Figures in parentheses are percentage values)

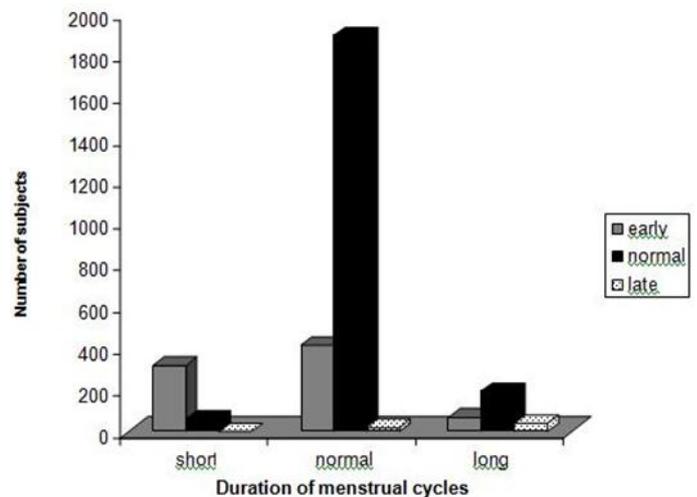


Figure 1. Illustrates the duration of menstrual cycles and menopausal age of the subjects

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