THE AGE OF THE MENARCHE AND OF THE MENOPAUSE IN WHITE SOUTH AFRICAN WOMEN AND CERTAIN FACTORS INFLUENCING THESE TIMES

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In several countries investigations have been carried out to determine the average age of the menarche and of the menopause.[1,2,7,9-13,16-18,23-25] As long ago as 1862 Tilt[22] stated that women in tropical climates reached the menarche earlier than those living in temperate and cold countries. However, other investigators[5,13] have found the reverse to be the case; and sexual maturity is said to be retarded in animals kept in a hot, moist atmosphere.[15] Shaw[20] states that amongst the Esquimaux the average age of puberty is 23 years; Young,[26] on the other hand, maintains that the menarche is early in these people. Emily Kark[9,10] attributes an influence to social and economic conditions; investigating Indian girls in Durban, South Africa, she found that the menarche was significantly earlier in the well-to-do than in those less privileged.

It has often been stated that the earlier the menarche occurs, the later the menopause; this belief is probably based on clinical impressions, or on an idea that the short-lived ovary begins to function late and peters out early. But this has not been established. The correlation of the age of the menopause with the marital status and the number of pregnancies has also not been investigated.

It is obviously important to know what is normal and abnormal in these respects for women of different races in this country, not only from the point of view of assessing such deviations as precocious or delayed puberty or menopause, but also because of the increasing evidence that women with cancer of the uterus,[3,4,19,23] and women with 'pituitary-type' diabetes mellitus,[1,14,23] cease menstruating later than normal.

In view of these gaps in our knowledge and the conflicting reports in the literature, an investigation was carried out on a large series of White women in the Cape Province to determine (*a*) the age of the menarche, (*b*) the age of the menopause, (*c*) whether there is a correlation between the two ages in the same women, (*d*) whether the number of pregnancies and the marital status affect the menopausal age, and (*e*) whether the age of the menopause is different in women who develop cancer of the endometrium, cancer of the cervix, or diabetes mellitus.

Method

For the purpose of this analysis 1,000 random White women, who had already reached the menopause, where interrogated. These comprised White patients attending the medical and the casualty departments of the Groote Schuur Hospital, Cape Town, some of their visitors, and also patients seen at the gynaecological out-patient department for conditions which would obviously not affect menstrual function

(discharges, prolapse, etc.). In addition to these 1,000 women, who served as controls, the following groups of White patients were interrogated along the same lines, or the information was obtained from the records of the hospital:

1. 200 consecutive cases of carcinoma of the cervix.
2. 100 consecutive cases of carcinoma of the body of the uterus.
3. 100 consecutive post-menopausal women attending the diabetic clinic of the hospital.

A similar investigation was attempted on Bantu (African) women, but so far sufficient reliable data have not been obtained.

All patients who were uncertain about the age of the menarche or menopause, were excluded; likewise, only those who had lived in the Cape Province for most of their lives were included. The women were questioned about the age of the menarche, the age of the menopause, their marital status, and also about the number of children and abortions. Although in some cases menstruation ceased abruptly, there was more commonly an alteration in the cycle at the climacteric, with oligomenorrhoea and bouts of amenorrhoea—for this analysis the menopause was regarded as having occurred only when a year had elapsed with freedom from bleeding; any bleeding thereafter was recorded as post-menopausal bleeding. In cases where the age was given in terms of years and months, the nearest year was taken; that is to say, below 6 months was placed in the category of the preceding year and above 6 months in the subsequent year.

Age at Menarche

Fig. 1 shows the age of the menarche of the 1,000 control women; the average age was 14·6 years. This is slightly older than the figure given by most authors in other

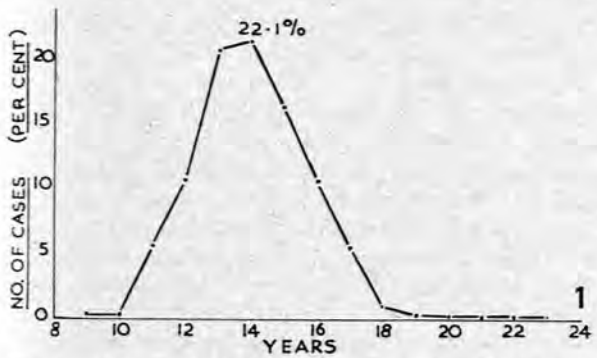

Fig. 1. Age at menarche (White women). Average age 14·6 years. Peak age 14 years. Before 13 years 17·8%. After 14 years 38·4%.

countries, who placed the average age between 13 and 14 years.[2,5,7,9-11,13,16-18,24 25] However, the peak ages are 13 and 14 years (together 43·8%). The detailed ages are tabulated in Table I. The ages ranged from 9 to 23 years; 17·8% started menstruating before 13 years and 38·4% after 14 years, so that on this basis a later menarche was more than twice as common as an earlier one.

Age at Menopause

The ages of the 1,000 women at the menopause is shown in Fig. 2. The average age of the menopause was 48·7 years, but there is a striking peak (17·9% of the total) at 50 years.

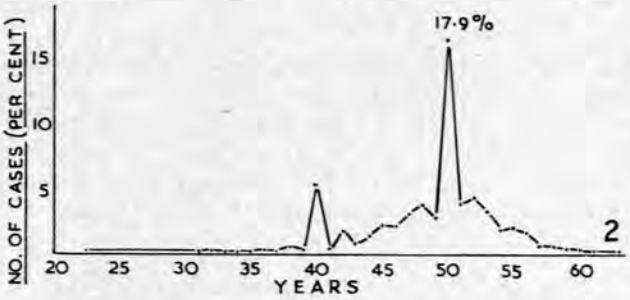

Fig. 2. Age at menopause (White women). Average age 48·7 years. Peak age 50 years. Before 50 years 45·2%. At 50 years 17·9%. After 50 years 36·9%.

The details are listed in Table II; 36·9% continued to menstruate after the age of 50 years (7% after the age of 55 years) and in 45·2% the menopause occurred before the age of 50 years. (13·9% were aged 40–45 years when the menopause set in, 2·9% 35–40 years, and 1% below the age of 35 years.)

Although the peak incidence is at exactly the same age (50 years) as that found by other authors,[23] yet all the evidence shows that *the menopause tends to occur later in South African women than in women in other countries* (Table III). Thus the Medical Women's Federation investigation[12] showed that of 966 women, 71% ceased menstruating before 50 years and 29% thereafter. Of 536 patients,[23] Way found that 65% ceased to menstruate before 50 years, and 35% thereafter. The figures for South African women, by comparison, are 45·2% and 54·8%.

Age at Menarche in Relationship to Age at Menopause

Table I shows the ages of the menarche and the average age of the menopause in each group. This indicates that *the age of the menarche does not appear to have any significant bearing on the age of the menopause*. A more detailed analysis of the women who started menstruating unusually early and unusually late also casts considerable doubt on the idea that a late menarche is followed by an early menopause and an early menarche by a late menopause. Of the 211 cases who began menstruating at 16 years or later, all except 8 had a menopause which was of average age or even late. What is more, of these 8, the menopause was not particularly early (3 at 36 years and 1 at 34 years,) except in 3 women, who ended their menstrual life at 32 years, 31 years and 23 years respectively. Again, Table I shows that those who began menstruating early did not have a late menopause; of the 3 who had the menarche at 10 years, the menopause was at 47 years, 45 years and 38 years respectively, while those who began at 9 years ended at 38, 50 and 53 years respectively.

Further evidence of the lack of association between the menarchal and menopausal ages is furnished by Table II. Of the 10 women who reached the menopause under the age of 35 years, only 1 had the menarche late, i.e. at 17 years, the others having been 15 years or younger when menstrual function began.

Marital Status and Age at Menopause

Amongst the 1,000 women there were 70 unmarried ones. Their ages at menopause are shown in Table IV. The peak age is again 50 years, and this is striking. The percentage of women who had the menopause before 50 years and later (45·7% and 54·3% respectively) is little different from the control group (see Table IX for comparisons).

Number of Pregnancies and Age at Menopause

There were 125 women who had never borne live children when they reached the end of their reproductive years. The ages of the menopause in this group are shown in Table V. Of these, 55·2% reached the menopause before 50 years of age. This indicates that women who have never borne live children tend to have an earlier menopause than women who have had children (see Table II).

An interesting point emerges from this study. Of the 930 married women who had been through their entire reproductive lives, 51 had never conceived. *Thus the incidence of sterile marriages in this series was* 5·5%, *which is much lower than the figure given for England*—10%[21] *or* 11·7%[8] *and for America*—12%.[6]

Carcinoma of Body of Uterus and Age at Menopause

The 100 cases of carcinoma of the body of the uterus who were post-menopausal were analysed separately. The ages of the menopause are shown in Table VI. Only 26% ceased menstruating before the age of 50 years, whereas 30% were 50 years of age and 44% over 50 years. Comparing this with the figures for the control group (45·2%, 17·9% and 36·9% respectively) *the menopause is seen to occur later in women who subsequently develop carcinoma of the body of the uterus.* The comparisons are made in Table IX.

Carcinoma of Cervix and Age at Menopause

The ages of the menopause in 200 cases of carcinoma of the cervix are set out in Table VI. The percentages who reached the menopause before, at and after 50 years of age were 38%, 19% and 43% respectively. This indicates a *slightly later menopausal age* than in control women, but this feature is not so striking as in cases of carcinoma of the body of the uterus (see Table IX).

Age at Menopause in Diabetes Mellitus

Of 100 consecutive post-menopausal 'pituitary-type' diabetic patients seen at the diabetic clinic, as shown in Table VIII, 39% ceased menstruating before the age of 50 years, 15% at 50 years and 46% after 50 years of age. The diabetic, then, tends to have a later menopause than the normal woman. This phenomenon is not so marked as in cases of carcinoma of the body of the uterus; the tendency is about the same as in cases of carcinoma of the cervix (see Table IX).

SUMMARY AND CONCLUSIONS

1. Information on the average age at the menarche and the menopause in South African women of different races is defective. Likewise the relationship of the age at the menarche to the age at the menopause has not been ascertained in any country; nor has it been established whether the marital status and number of pregnancies affect the age of the menopause.

2. In view of these gaps in our knowledge 1,000 White South African women were investigated. In addition, 100 cases of carcinoma of the body of the uterus, 200 cases of carcinoma of the cervix and 100 diabetic patients (all White) were studied to ascertain whether the menopausal ages of these patients differ from those of the control group. Similar investigations on Bantu African women were tried, but sufficient accurate data have not yet been obtained.

3. The menopause tends to occur later in South African women than in women in other countries. The average age is 48·7 years, but the peak incidence (17·9%) is at 50 years; 45·2% reach menopausal age before 50 years, 17·9% at 50 years and 37·9% after 50 years.

4. The age of the menarche differs little in South African women from that of women in most other parts of the world. If anything the menarche is slightly later in this country. The average age is 14·6 years. On the basis that an age of 13 or 14 is average, a late menarche (38·4% after 14 years) is more than twice as common as an early one (17·8% before 13 years).

5. The idea that the earlier the menarche occurs the later the menopause, and the later the menarche the earlier the menopause, is not supported by the facts brought out in this investigation.

6. The marital status does not appear to affect the age of the menopause to any great extent.

7. Women who have never conceived, however, tend to reach the menopause earlier than those who have had children or abortions.

8. Women who develop carcinoma of the body of the uterus in the post-menopausal era tend to have a later menopause than women in a control group; the same phenomenon was observed in a series of cases of carcinoma of the cervix and 'pituitary-type' diabetes mellitus, but not to as marked a degree as in patients with endometrial carcinoma.

9. The proportion of married South African White women who pass through their whole reproductive life and remain sterile is 5·5%. This is much lower than the proportion in England and America.

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TABLE I. AGE OF MENARCHE AND AVERAGE AGE OF MENOPAUSE

No. of Cases	*Age of Menarche*	*Average Age of Menopause*
3	9	47
3	10	43·3
51	11	49·8
121	12	48·6
217	13	48·6
221	14	48·5
173	15	48·9
117	16	49·0
61	17	49·7
23	18	48·3
5	19	49·4
2	20	47
1	21	34
1	22	50
1	23	52
1,000	14·6 (average)	48·7 (average)

178 (17·8%) before 13 years
384 (38·4%) after 14 years

TABLE II. AGE OF MENOPAUSE AND AVERAGE AGE OF MENARCHE

No. of Cases	*Age of Menopause*	*Average Age of Menarche*
3	23	13 (b)
1	31	17 (a)
3	32	14 (c)
1	33	13 (a)
2	34	15 (d)
1	35	14 (a)
5	36	16 (e)
4	37	14·3 (f)
10	38	12·7
9	39	13·3
52	40	14·4
7	41	13·9
35	42	11·8
16	43	13·8
29	44	14·5
41	45	13·7
41	46	13·8
60	47	14·0
75	48	14·2
57	49	13·8
179	50	14·2
74	51	14·3
83	52	13·9
64	53	14·3
38	54	14·4
40	55	14·1
31	56	14·4
13	57	14·7
11	58	13·7
6	59	16 (g)
6	60	13·8 (h)
2	61	12·5
1	63	16

452 (45·2%) before 50 years
179 (17·9%) at 50 years
369 (36·9%) after 50 years

(a) 1 case only (b) 11,13,15
(c) 12, 13, 17 (d) 15, 15
(e) 13, 15, 16, 18, 18
(f) 13, 14, 14, 16
(g) 13, 15, 16, 17, 17, 18
(h) 11, 12, 15, 15, 15, 15

TABLE III. COMPARISON OF MENOPAUSAL AGES IN SOUTH AFRICAN WOMEN AND WOMEN IN OTHER COUNTRIES

	Before 50 years	*50 years and after*
This series (*a*)	45·2%	54·8%
Way[23] (*b*)	65%	35%
MWF[12] (*c*)	71%	29%

(*a*) 1,000 women. (*b*) 536 women. (*c*) Medical Women's Federation, 966 women

TABLE IV. UNMARRIED WOMEN

Age of Menopause	*No. of Cases*	%
36	1	1·4
37	1	1·4
38	2	2·9
39	0	0
40	3	4·3
41	0	0
42	1	1·4
43	0	0
44	4	5·7
45	4	5·7
46	4	5·7
47	6	8·6
48	3	4·3
49	3	4·3
50	17	24·3
51	9	12·9
52	3	4·3
53	3	4·3
54	1	1·4
55	2	2·9
56	2	2·9
57	0	0
58	1	1·4
	70	100

Before 50 years 45·7%
50 years and after 54·3%

TABLE V. MARRIED WOMEN WHO NEVER BORE LIVE CHILDREN

Age of Menopause	*No. of Cases*	%
23	1	0·8
32	1	0·8
33	0	0
34	1	0·8
35	0	0
36	3	2·4
37	1	0·8
38	2	1·6
39	1	0·8
40	10	8·0
41	1	0·8
42	2	1·6
43	2	1·6
44	5	4·0
45	10	8·0
46	8	6·4
47	9	7·2
48	4	3·2
49	8	6·4
50	19	15·2
51	11	8·8
52	9	7·2
53	5	4·0
54	1	0·8
55	3	2·4
56	3	2·4
57	1	0·8
58	2	1·6
59	0	0
60	1	0·8
61	1	0·8
	125	100·0

Before 50 years 55·2%
50 years and later 44·8%
Incidence of sterility in 930 married women 5·5%

TABLE VI. CARCINOMA OF THE BODY OF THE UTERUS (100 CASES)

Age of Menopause	*No. of Cases*
45	4
46	6
47	8
48	3
49	5
50	30
51	7
52	13
53	8
54	6
55	4
56	2
62	3
63	1

Before 50 years 26%
At 50 years 30%
After 50 years 44%
50 years and later 74%

TABLE VII. CARCINOMA OF THE CERVIX (200 CASES)

Age of Menopause	*No. of Cases*	%
35	2	1
40	6	3
41	2	1
42	4	2
43	4	2
44	10	5
45	6	3
46	6	3
47	8	4
48	18	9
49	10	5
50	38	19
51	14	7
52	18	9
53	22	11
54	10	5
55	10	5
56	4	2
57	2	1
58	2	1
59	2	1
60	0	0
61	2	1

Before 50 years 38%
At 50 years 19%
After 50 years 43%
50 years and later 62%

TABLE VIII. DIABETES MELLITUS (100 CASES)

Age of Menopause	*No. of Cases*
37	1
38	2
39	1
40	3
41	2
42	6
43	3
44	4
45	1
46	1
47	8
48	5
49	2
50	15
51	13
52	7
53	8
54	5
55	2
56	3
57	4
58	2
59	2
60	0

Before 50 years 39%
At 50 years 15%
After 50 years 46%

TABLE IX. AGE OF MENOPAUSE IN CONTROL AND OTHER GROUPS

	Before 50 years	*50 years and later*
Control series (1,000 women)	45·2%	54·8%
Unmarried (70 women)	45·7%	54·3%
Women who had never been pregnant (125 women)	55·2%	44·8%
Carcinoma of body of uterus (100 cases)	26%	74%
Carcinoma of cervix (200 cases) ..	38%	62%
Diabetes mellitus (100 cases)	39%	61%

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