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## AN INVESTIGATION OF THE MENOPAUSE IN ONE THOUSAND WOMEN

In October, 1926, a subcommittee was appointed by the Council of the Medical Women's Federation for the purpose of investigating, from the clinical aspect, phenomena associated with the menopause. The data on which this report, which is here published in full, is based were collected on 1220 questionnaire forms, each of which was filled in by a medical woman as the result of a personal interview with the individual from whom the information was obtained. The inquiry referred to women in whom five years or more had elapsed since the cessation of the menses. Their ages, when interviewed, varied from 29 to 91.

### The Report

In order that the source of the data should include women of normal health and in all conditions of life, the subjects of the questionnaire were, as far as possible, other than patients. They included married and single women of various social status, leading an ordinary home life, women engaged in or retired from the various professions, intellectual and manual occupations and domestic work. They lived in cities, industrial areas, and rural districts in various parts of England and Scotland. Many of them were in public assistance institutions in different parts of the country. Apart from the advantage of the ease with which large numbers could be thus approached, it was thought that they would represent a good average of health in view of the fact that their presence in these institutions was determined by matters of finance, or accident, or death of relations, rather than by their own health.

Our inquiry was spread over a period of five years, and when completed the 1220 questionnaire forms were sent to a statistician, Mr. W. T. Russell, who compiled many tables of figures and wrote a full analytical report, which is quoted freely in the following paragraphs. We are greatly indebted to Mr. Russell for this work, without which the real values of our material could not have been obtained. He found 1197 of the schedules sufficiently complete for use in the investigation; 835 of these referred to married, and 362 to single women. Here, in order to reduce the quotation of figures to a minimum,

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percentages only are given and they are, as far as possible, incorporated in the text, which deals with the main points of general interest emerging from the investigation. These are considered under the following headings:—

1. The proportion of women free from menopausal symptoms.
2. The frequency of the following symptoms: flushing, hæmorrhage, giddiness, headache, nervous instability, pain in breasts, "rheumatic" pains, changes in the thyroid gland, obesity.
3. Incapacity due to the menopause.
4. Age of onset and cessation of the menses.
5. The effect of the following factors on the prevalence of symptoms and age at the menopause: age of onset of the catamenia, miscarriage and childbearing, menstrual history, previous health.
6. Comparison of the points mentioned above in married and unmarried women.

#### THE PROPORTION OF WOMEN FREE FROM MENOPAUSAL SYMPTOMS

Of the total number of women questioned, 15·8 per cent. stated that they had passed through the menopause without any symptoms. The frequency in the case of single women was 20·4 per cent. and of married women 13·8 per cent., a difference of 6·6 per cent., which, when tested against the usual criteria for statistical significance is of importance and is not due to chance.

#### SYMPTOMS ASSOCIATED WITH THE MENOPAUSE

(a) *Flushing*.—Of all the symptoms associated with the menopause, flushing was the most frequent. It occurred in 62·3 per cent. of the total number, and in 4·8 per cent. of these cases it was the only symptom noticed. The intensity of the flushing varied very much. In some it was barely perceptible, others complained of severe "heats" accompanied by sweating many times during the day and night. Many of the women regarded the inconvenience of flushing a trivial matter compared with the discomfort they had suffered from blushing in their youth. Others considered it the most serious and weakening of the symptoms associated with the menopause. The duration of the flushing period was also very varied. In the majority it occurred on and off for a period of about two years, in many cases it lasted five to ten years, while a considerable number, even some in their seventies and eighties, said that they had never been entirely free from flushing since the change of life. It was a common experience for the flushing to occur or to be more marked during a state of fatigue or of debility after an illness.

(b) *Other symptoms*.—Of the other symptoms inquired into it must be explained that under the

heading "rheumatic" pains are grouped cases of arthritis and fibrositis, it being found impossible to differentiate between these conditions in many of the histories obtained. The term hæmorrhage was used for all cases in which excessive uterine loss was noted, either on one or more occasions or extending over several periods.

TABLE I.—Showing frequency of symptoms

	Percentage frequency amongst—		
	Total women.	Married women.	Single women.
No symptoms .. ..	15·8	13·8	20·4
Flushing .. ..	62·3	64·8	59·1
Hæmorrhage .. ..	20·9	22·6	17·1
Giddiness .. ..	39·7	42·3	34·3
Headache .. ..	44·6	45·9	41·7
Nervous instability ..	30·9	30·4	32·0
Pain in breasts .. ..	6·3	6·7	5·0
"Rheumatic" pains ..	23·7	24·9	21·0
Change in thyroid ..	2·0	1·8	2·5
Miscellaneous .. ..	1·3	1·1	1·9
Obesity .. ..	34·2	39·4	22·7

As will be seen in Table I., flushing, headache, giddiness, obesity, and nervous instability were in numerical order the most frequent among the married women. The sequence in the case of single women was flushing, headache, giddiness, nervous instability, and obesity. "Rheumatic" pains and hæmorrhage were next in frequency in both groups, and pains in the breast and changes in the thyroid were at the lower end of the scale. Greater frequency, in varying degrees, was shown, in the case of married women, of all the following symptoms: flushing, headache, giddiness, "rheumatic" pains, hæmorrhage, pains in the breast, and obesity. In the last-mentioned, the relative disparity was very marked, the percentage value for single women being only 57 per cent. of that found for married women. On the other hand, there was a slight excess (5 per cent.) in the proportion of nervous instability amongst single as compared with married women, and, although the actual number of thyroid changes was very small in the two groups, the proportion among the single was 39 per cent. greater than that among the married.

#### INCAPACITY DUE TO THE MENOPAUSE

Under the heading "incapacitated" were grouped all the women who, on account of some disturbance of health attributed to the menopause, were obliged to lie up or absent themselves from their work on one only or on more occasions. The proportion was



10.3 per cent. In this there was little difference between the married and single women, the percentage being 10.9 and 9.1 respectively.

In view of the general impression acquired from the literature on the subject, it was somewhat surprising to find that approximately 900 out of 1000 unselected women stated that they had carried on their daily routine without a single interruption due to menopausal symptoms. In support of these assertions, it may be added that one of the difficulties in collecting data for the investigation from other than patients has been the uncertainty of heads of departments in business houses as to which of the women employed should be questioned, since in so many over 50 years of age no signs of having passed the "change of life" had been detected. A similar problem was experienced in approaching women of all classes, who, in daily contact with others, had revealed no menopausal disturbance, such as irritability of temper commonly thought to be inseparable from this phase of a woman's life.

#### AGE OF ONSET AND CESSATION OF MENSES

In questioning a number of women, most of whom were over 50, it may be surmised that it was not possible to get accurate information of events and sensations which had occurred over 35 years previously. It was, however, found that, even in the very old women, recollection as to the age of onset and the early experiences of menstruation were firmly fixed. It was not at all uncommon for the exact date and day of the week of the first occurrence of menstrual discharge to be remembered. This was not so with regard to details concerning the "change of life." Several were unable to state their exact age at the last period, even if only five years previously, though the large majority could give definite information as to age and symptoms.

It was found that the ages of onset of menstruation ranged from 9 to 21 years. In the age-group 13-15 years, inclusive, 55 per cent. of the total observations were located. In approximately 13 per cent. of the whole series, the menstrual periods did not begin until after the age of 17 years. The age of the last period ranged from 23-60 years, excluding one who stated that she continued to menstruate regularly until she was 66, and another until she was 73. Cases of artificially induced menopause were not included. The proportion of women who had their last period before reaching their 40th year was 8 per cent. In the ensuing five years, 22.5 per cent. reached their menopause, and between 45 and 55 years 64.7 per cent. of the total cases occurred. At the age of 55 and upwards, the proportion fell to less than 5 per cent. The maximum frequency for both single and married

women occurred at 50 years. But the marked excess in this age-group, followed by the marked defect in age-group 51, as seen in Table II., is in part due to the tendency for women whose memories were not accurate to state their age in "round figures." A similar tendency is exhibited around the ages 40 and 45.

TABLE II.—Showing the age-incidence in individual years of those women who had their menopause between the 38th and 52nd year

Age in years.	Married	Single.	Total women.	Age in years.	Married	Single.	Total women.
38	13	3	16	46	48	19	67
39	12	2	14	47	39	18	57
40	63	29	92	48	61	30	91
41	26	9	35	49	56	23	79
42	38	11	49	50	114	53	167
43	39	16	55	51	26	16	42
44	21	7	28	52	55	23	78
45	71	25	96	(38-52) Total.	682	284	966

The next questions considered were the possibility of any inter-relation between the ages of onset and cessation of the menses, also whether the age of menopause was affected by childbearing. By various methods of calculation and correlation, it was proved that there was no relationship exhibited in the data between the menstrual and menopausal ages of either married or single women. When menstruation began at 13, the mean age of cessation was 47.3; when it began at 18, it was 47.5. Although the mean age at menopause declines for menstrual ages over 19, not much importance can be attached to the decrease, as the values are based on small numbers. It was also found, by statistical analysis, that childbearing exerted no influence whatever on the age at the menopause. It was noted, however, in taking the histories, that a considerable number of women stated that they had not menstruated since their last confinement, although this was definitely earlier in some cases than the usual menopause age.

#### EFFECT OF CERTAIN FACTORS ON THE PREVALENCE OF SYMPTOMS

(a) *Age at the last period.*—In most instances there was little evidence that age was an influential factor in the occurrence of symptoms. There were, however, certain exceptions. The proportion of the cases of hæmorrhage increased with the age. On the other hand, there was a suggestion that obesity declined with the age.

(b) *Number of miscarriages.*—Among women who had had no miscarriage there was a tendency for the occurrence of menopausal symptoms to be relatively



less than amongst women who had had miscarriages especially with regard to pains in the breast, "rheumatic" pains, and obesity, but there was little evidence that an increase in the number of miscarriages accentuated the prevalence of symptoms.

(c) *Number of pregnancies.*—There was a tendency for the individual symptoms to be relatively more frequent amongst women who had conceived. There is, however, no substantial evidence to show that the proportion of symptoms increased with the number of conceptions, except in the group of women who had ten or more pregnancies. Amongst the 837 married women, 15.5 per cent. were never pregnant, 38.5 per cent. had 1-3 pregnancies, 7.4 per cent. had ten or more. In the last group, in which the proportion of symptoms was significantly higher, were included—

6	women	who	had	14	pregnancies.
5	"	"	"	15	"
2	"	"	"	16	"
1	"	"	"	17	"

There was, however, one symptom—namely, nervous instability—which was unaffected by pregnancy in the data. The prevalence of this symptom was just as high amongst the nullipara as amongst those who had had many children. In all probability it was a condition which prevailed among a class of women long before the menopausal age was reached

#### RELATIONSHIP BETWEEN MENSTRUAL AND MENOPAUSAL SYMPTOMS

In previous paragraphs we discussed the relationship between the menstrual and the menopausal ages, and found that for all practical purposes they were unrelated—a knowledge of the one being of little use in predicting the onset of the other. These

TABLE III

Menstruation.	Married menopause.			Single menopause.			All women menopause.		
	N.	S.	Total	N.	S.	Total	N.	S.	Total
Normal	193	106	299	76	22	98	269	128	397
Severe ..	201	268	469	106	114	220	307	382	689
Total ..	394	374	768	182	136	318	576	510	1086

N. = normal; S. = severe.

two physiological phases were then considered from another aspect. Is a woman who suffered from dysmenorrhoea more likely to suffer from symptoms during the menopause than a woman

in whom menstruation was normal? To answer this question, the menstrual and menopausal data were sorted into categories, as shown in Table III.

It will be observed that the proportion of normal menstruation with severe menopause in married women was 106/299 (35.45 per cent.); in single women, 22/98 (22.45 per cent.); and among all women, 128/397 (32.24 per cent.). The proportion of severe menstruation with severe menopause in married women was 268/469 (57.14 per cent.); in single women, 114/220 (51.82 per cent.); and among all women, 382/689 (55.42 per cent.).

The differences between these values—35.45 per cent. and 57.14 per cent. for married; 22.45 per cent. and 51.82 per cent. for the single; 32.24 per cent. and 53.42 per cent. for all women—are greater than those which are likely to arise by mere chance. Hence we conclude that according to these data there is some evidence that a normal menstruation tends to be followed by a normal menopause and vice versa, and that the association is slightly more defined amongst single women than married women.

It must be borne in mind that the majority of women from whom these figures were obtained, being over 55, had not so much opportunity for healthy development open to them as have girls of the present day. 57.5 per cent. of them were troubled with some menstrual disability, whereas the proportion of cases of dysmenorrhoea amongst young women is now much smaller. If then a normal menstruation is found to be associated with a symptomless menopause, there may be reason to hope that in the future there will be less disturbance of health at the "change of life."

#### PREVIOUS HEALTH AND MENOPAUSAL SYMPTOMS

Notes as to previous health were made in the schedules for the purpose of examining whether this factor influenced in any way the type of menopausal symptoms. In many cases the histories were indefinite, and the value of statements regarding past illnesses were difficult to assess. It was interesting to note, for instance, the importance attached to "heart trouble" by some who had reached a ripe old age. Several of the old women, including one in her 90th year complained that they had "always suffered from a weak heart," though their health had been otherwise good—no credit being allowed to the maligned organ for the fact that it still continued to beat. The records of previous health were, however, classified under "good," "fair," and "bad," and when the necessary calculations were made from this crude basis, it was found that there was only a small degree of relationship between the previous health and the



type of menopausal symptoms, the coefficient of contingency being 0.203 for married and 0.137 for single women.

#### SUMMARY

From the analysis of the data the following points emerge:—

1. The proportion of women who carried on their usual occupation without any interruption due to symptoms attributed to the menopause was 89.7 per cent., the difference between the married and unmarried groups being insignificant.

2. The percentage of women free from all menopausal symptoms was 15.8. The percentage of women relatively free, flushing being the only symptom, was 20.6. The proportion in each case was greater in single than in married women.

3. Greater frequency in the following symptoms were found amongst married women: flushing, headache, giddiness, "rheumatic" pains, hæmorrhage, pains in the breast, and, markedly so, obesity. In nervous instability and change in the thyroid, the larger proportion was amongst the unmarried.

4. There was little or no correlation between the age of onset of menstruation and the age at the last period for either married or single women. Notwithstanding that a considerable number of women stated that the menses had not recurred after the last confinement—which was, in some cases, definitely earlier than the usual menopause age—the analysis showed that childbearing, even when allowance was made for age at marriage, in no way influenced the age at the menopause.

5. There was some evidence that normal menstruation tended to be followed by a normal menopause, and a history of dysmenorrhœa by more marked menopausal symptoms. This was slightly more defined for single than married women.

6. Previous health was a factor of no marked importance in influencing the onset or severity of menopausal symptoms.

The members of the subcommittee who presented the above report to the Council of the Medical Women's Federation were as follows: Lady Barrett, M.S. (chairman), Prof. Winifred Cullis, D.Sc., Dr. Letitia Fairfield, London; Miss Ruth Nicholson, M.S., Liverpool; Dr. Mona Macnaughton, Newcastle-on-Tyne; Dr. Cecilia F. Williamson, Ipswich; and Dr. Alice E. Sanderson Clow (hon. sec.), Cheltenham.

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