

CHAPTER 7

Menopause: A Biocultural Event

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The few existing data on menopausal experiences of women in non-Western cultures suggest that menopausal women in Western cultures report more symptoms than women in non-Western cultures. In the cross-cultural literature, the rarity or complete absence of menopausal symptoms in non-Western cultures was thought to be due to the fact that menopause precipitates a positive role change for women in these cultures (Flint 1975; Griffin 1977, 1982). A change from high to low status is assumed to correlate with experience of menopause as negative and incapacitating, while improvement and freedom from cultural taboos associated with childbearing years at middle age correlate with positive or indifferent attitudes and thus reports of fewer symptoms (Flint 1975).

In comparing the menopausal experience of Mayan women with those of women in Western, industrialized cultures, however, one may mistakenly attribute the differences to different attitudinal factors and to gain or loss in status at middle age. In Mayan society, a woman's role change and gains in status do not correlate with menopausal age. As described earlier, a woman's status in Mayan society does not depend solely on her chronological age. Rather, it is a result of an interrelation of factors such as age and the marital status of her sons, both of which are independent of onset of menopause.

The data suggest the following hypothesis instead: the Mayans' positive attitude towards menopause and aging accounts for the lack of psychological symptoms in the Mayan women as compared to Western women. But the hypothesis does *not* explain the absence of hot flashes among Mayan women, a symptom said to be due to hormonal changes that are universal. This absence raises a question about the link between hormonal change and hot flashes.

Comparing the menopausal experiences of Western and non-Western women is difficult and gives rise to misleading conclusions if social, economic and

cultural differences are not taken into account. Comparisons of menopausal experiences of women from different nonindustrial societies may provide us with the means for distinguishing the physiological, social and cultural manifestations of menopause.

COMPARISON OF THE REPRODUCTIVE HISTORIES OF MAYAN AND GREEK WOMEN

Comparisons of the data from these two groups indicate both similarities and some marked differences between women in the two cultures. The women seem to share similar cultural values regarding many beliefs and practices about menstruation and childbearing, but had differences in their childbearing patterns, experiences with menopause, as well as in their diets and the ecological niche in which they lived.

Similarities

The information indicates that women in both cultures were concerned much more with menstruation and factors related to child birth than with menopause. Like Mayan women, the Greeks also have taboos and restrictions related to menstruation and childbearing. For example, rural Greek women believe that menstruation is a curse as a result of Eve's sin. Consequently, among Greek peasants, a menstruating woman and a woman who just gave birth are not allowed to participate in religious activities because they are considered "unclean" and contaminated. Mayans believe that a menstruating woman can cause disaster and induce sickness in a newborn baby. Moreover, in both cultures, citrus fruit, cold drinks, and bathing are forbidden during menstruation because they were believed to stop the menstrual flow. Both groups use a variety of herbs to treat menstrual irregularities and different illnesses. Some of these herbs are used by both groups for similar ailments. For example, both Mayans and Greeks used oregano to treat menstrual irregularities.

Women in both cultures perceive menopause as a life stage free of taboos and restriction, which, consequently, offers increased freedom to participate in many activities. For example, Greek women could participate fully in church activities, and Mayan women moved freely without anxiety about inducing sickness in others. Because the risk of pregnancy was no longer present, both groups reported that they felt more relaxed about sexual activities, thereby improving their sexual relationships with their husbands. The women also stated that they felt relieved from the fear of unwanted pregnancies, as well as from the monthly menstrual flow, which was considered bothersome.

The data also indicate that in both cultures, the roles of good mother, housekeeper, and hard worker are highly valued. In both societies, old age is associated with increased power and respect. Particularly for a woman, status increases with age, as her sons marry and establish their own families. The mother-in-law, both in Mayan and Greek culture, occupies the most

authoritative position as the head of the extended family households of her married sons. Moreover, older women are believed to possess special healing skills. Therefore, in both Mayan and Greek villages, the older woman of the family is the first to be consulted when a family member gets sick, particularly her grandchildren. In both cultures, healing is one of the older woman's nurturing roles as a mother and as a carrier of old traditions (Campbell 1964; Blum and Blum 1965; Elmendorf 1976; Steggerda 1941; Redfield 1941).

Differences

The data also indicate marked differences between the Mayan and Greek women in relation to menopausal experience and childbearing patterns. The average reported age for onset of menarche for both cultures was approximately the same: 13 for Mayan women and 14 for Greek women. However, the average age for onset of menopause was 42 for the Mayans and 47 for the Greeks. With regard to the age for onset of menopause (see Table 6.2), the age difference between the two groups is quite striking. The Mayan women clustered between the ages of 36 and 45, while the Greek women clustered between the ages of 46 and 55.

Moreover, Mayan women did not associate menopause with any physical or emotional symptomatology. The only recognized physiological event associated with menopause is the cessation of menstruation. Among the Mayan women, menopause is welcomed and expressed with such phrases as "being happy," "free like a young girl again," "content and good health." No Mayan woman reported having hot flashes or cold sweats. Anxiety, negative attitudes, health concerns, and stress for Mayan women were associated with the childbearing years, not with menopause. Menopause was not a negatively perceived concept. Women were pleased to get rid of their periods; thus, premenopausal women in the study looked forward to the onset of menopause.

On the other hand, menopausal experiences among rural Greek women seem to bear more resemblance to the experiences of women in Western, industrialized societies. Even though the postmenopausal and menopausal women reported being relieved from the taboos and restrictions of childbearing years at menopause, overall it was perceived negatively by the premenopausal women. The premenopausal women expressed anxiety and anticipated possible

Table 6.1
Comparison of the Distribution of Menstrual Stages of Mayan and Greek Women

Menstrual Stages	Mayan (N = 107)		Greek (N = 96)	
	N	Percent	N	Percent
Premenopausal	36	33.6	30	31.3
Menopausal	36	33.6	31	32.3
Postmenopausal	35	32.7	35	36.5

Table 6.2
Comparison of the Distribution of Age at Onset of Menopause
for Mayan and Greek Women

Age at Onset	Mayan (N = 71) x = 42.0		Greek (N = 66) X = 47.0	
	N	Percent	N	Percent
30–35	5	7.0	2	3.3
36–40	25	35.3	6	9.0
41–45	30	42.3	19	28.8
46–50	8	11.3	25	37.8
51–55	3	4.2	14	21.1

health problems with menopause and were not looking forward to its onset. There is respect and status gain for older women in Greek culture, but getting old was perceived by some Greek women as tantamount to dropping out of the main stream of life. Therefore, some Greek women, particularly the premenopausal group, associated menopause with growing old, diminution of energy, and a general downhill course in life. In striking contrast to the Mayan women, Greek premenopausal women reported anxiety and a negative affect in association with menopause.

Greek postmenopausal and menopausal women reported hot flashes and some cold sweats similar to women in Western, industrialized societies (see Table 6.3). Greek women, however, differed from women from Western, industrialized countries in their perceptions and management of menopausal hot flashes. Greek women did not perceive hot flashes as a disease symptom and did not seek medical intervention. While they had a variety of herbs to treat menstrual pain and discomfort, they had none for hot flashes. They felt that it was a natural phenomenon causing a temporary discomfort that would

Table 6.3
Comparison of the Distribution of Menopausal Symptoms
for Mayan and Greek Women

Menopausal Symptoms	Mayan (N = 71)		Greek (N = 66)	
	N	Percent	N	Percent
Headache	22	31.0	28	42.4
Dizziness	25	35.2	28	42.4
Hot Flashes	0	0	48	72.7
Cold Sweats	0	0	20	30.3
Hemorrhage	13	18.3	8	12.1
Insomnia	0	0	20	30.3
Irritable	0	0	10	15.2
Melancholia	0	0	3	3.0

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stop with no intervention. Symptoms such as irritability, melancholia, and emotional problems were not expected in the normal process of menopause; these symptoms were said to appear only with premature menopause, that is, if it occurred before age 40.

CONCLUSIONS

This comparison suggests that the existence or lack of physiological symptoms cannot be explained in terms of role changes at midlife or by the removal of cultural taboos. Greek women and Mayan women in the study seemed to share similar cultural values regarding beliefs and practices of menstruation and childbearing, but have very different menopausal experiences. If menopausal hot flashes and osteoporosis are hormonally induced physiological phenomena, differences in their occurrence should be related to cultural and environmental factors that could affect the production of a hormone such as estrogen. Two such factors could be the diet and fertility patterns which showed such striking differences in the two cultures. In the following, I consider these two factors, diet and fertility patterns, as possible explanations for the variation between the Greek and Mayan women in the experiences of the physiological symptom of menopause, namely, hot flashes.

Hypothesis

Mayan and Greek women differed strikingly in their diet and in their childbearing patterns. Could the differences between their actual experience of menopause in the sense of physiological phenomena be related to these differences? The question is how do childbearing patterns and diet affect reproductive hormones, and in turn, how do such hormones affect the appearance of the physiological phenomena?

For Mayan women, pregnancy was a stressful experience. Because they did not use any birth control, many were pregnant at regular two-year intervals. They married early and continued to bear children until menopause. They all breast-fed their children until they attained age one and one-half or two. Mayan women rarely had a steady menstrual cycle because successive pregnancies and long periods of amenorrhea due to lactation were so common. Unlike Mayan women, Greek women had few pregnancies; they married in their late twenties or early thirties, used birth control, and planned their family size. They breast-fed only six to nine months, and they tended to have steady menstrual cycles.

Moreover, these two cultures also differed in their ecology, which affects diet. The Mayans live in a semitropical environment, a lowland with poor soil, and used a slash-and-burn technique of farming. The climate in Chichimila is generally humid and hot, with temperatures sometimes reaching 110°F. On the other hand, the Greeks live in a rugged mountainous area. The climate in the Greek village varies among seasons: it has short, cold winters with

temperatures at times below freezing; temperate, mild springs and falls; and summers with highs of only 80°F. Even though the land cannot be called fertile, the small plots of land that the Greeks use for farming have more top soil than that of the Mayans. Finally, the Greeks have draft animals and produce a greater variety of foods than do the Mayans.

Another striking difference between the two cultures is their diets. The Mayan diet consists of corn, beans, tomatoes, *chaya* (a green leafy plant), some radishes, squash, *camote* (sweet potatoes), very little animal protein and no milk products. The Mayans are reported to have a high incidence of vitamin deficiency and anemia (Balam 1981). Greeks, on the other hand, have a wide variety of nutrients: wheat, cheese, milk, eggs, olives, a variety of wild greens, legumes, plenty of meat and fish, fruit and wine.

Diet

The important role that diet plays in growth and development is well-documented. Poor nutrition allied with chronic infections before puberty is known to have a permanent affect on stature. Malnutrition during childhood slows down skeletal development and delays sexual maturity, such as the onset of menarche in girls. For example, menarche is reported to be earlier in women from well-off families than those from underprivileged families. The number of children in a family and the family's social class have also been related to the onset of menarche because these variables correlate with nutritional status (Frish and McArthur 1974; Eveleth and Tanner 1976). It has been documented that nutrition plays a role in reproduction: it affects conception, fetal mortality, and health of the newborn and the length of postpartum susceptibility. As Frish and McArthur (1974) assert, poor nutrition delays menarche, lengthens the period of adolescent sterility and postpartum amenorrhea, and lowers fecundity.

Not only is the onset of menarche related to a woman's nutritional status, but menstrual activity continues to be affected by nutritional factors throughout a woman's reproductive life. In premenopausal women, the regularity of the menstrual cycle is controlled by neurotransmitters and levels of biogenic amines. However, environmental changes such as fasting or excessive weight loss can inhibit cycling, ovulation, and pituitary response to luteinizing-releasing hormone and thyrotropin-releasing hormone. Thus diet, through modification of brain function as measured by electro-encephalographic activity and sleep patterns or by direct action alters hormone metabolism (Hill et al. 1980; Merimee and Fineberg 1974; Akesode, Migeon and Kowarski 1977; Hurd, Palumbo and Gharib 1977).

Differences in hormone production between populations have been partly accounted for by differences in diet (MacMahon et al. 1974). It has also been reported that diet affects ovarian function and adrenal activity, which could be increased by a high protein diet. Hill and his associates (1977) compared Japanese women with Caucasian women and concluded that different populations of comparable age might also have different plasma levels of hormones and

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that dietary factors, such as dietary fat intake, influence the hormone profile in women.

In another study of diet and menstrual activity, Hill and his associates (1980) compared South African black women with North American white women and concluded that the groups had different hormonal balances during the menstrual cycle. These hormonal differences are assumed to be related to genetic or environmental factors or to both of them. The South African black women maintained a diet high in carbohydrates supplemented with vegetable protein with low fat content. They were shorter and heavier in stature than the white women and maintained greater physical activity in their daily lives. Because physical activities such as running and aerobic exercises are also known to modify androgen metabolism (Kuoppasalmi et al. 1976), Hill and his colleagues assumed that the differences in hormonal activity between the South African black women and North American white women could be partially explained by differences in their levels of activity. However, a study of premenopausal and postmenopausal black South African women on a Western-type diet indicated hormonal changes different from the pattern associated with the high carbohydrate diet, which suggests that diet has the primary effect on pituitary activity.

Another study (Hill et al. 1976) also indicates that urbanization and Westernization may also produce changes in the hormone secretion in women through changes in diet. These studies indicate that nutritional patterns and the amount of animal fat consumed and body weight (Frish 1980) may influence hormone production.

Certainly, diet varies dramatically between the groups of Mayan and Greek women studied. Improvement in the diet of the rural Greek villages in the last two decades has resulted in the disappearance of marked nutritional deficiencies in Greece. For example, pellagra, which appeared before [World War II] in hundreds of cases yearly in Greece, is not seen now (May 1963). Protein malnutrition is seldom seen and severe cases of nutritional deficiency are rare in Greece.

The cultural practices of nutritional intake and ecological as well as economic limitations are major factors in the differences in diet between these two cultures. Although both groups are agrarian, differences exist in the ecological niches they inhabit and the types of food substances that they produce and consume. As discussed before, the Mayans live in a semitropical climate where the only method of farming is slash-and-burn. Their diet consists mainly of corn and beans. Overall, Yucatan is known to have poor soil and the few areas of land that are relatively arable are owned by the middle-class Ladinos who use the land to raise livestock for profit. In recent years, the Eastern part of Yucatan (Tizimin and Panaba), which was mainly a maize growing zone, has been affected by the expansion of private land ownership, *parvifundismo* (Balam 1981). The Mayan peasants have been pushed off their communal lands to farm on poor soil while the semirich soil is used to grow feed for livestock.

Nutritional research in Latin America indicates that the proportion of maize and beans typically used by Latin Americans for meal combinations provides optimum amino acid complementarity for the two grains when they are eaten together (Maffia 1974). A national nutritional survey in Mexico (May and Donna 1972) indicated that because of the large amount consumed by the rural communities, corn is responsible not only for 70 to 80 percent of the energy supplied, but also for a large percentage of proteins, fats, and vitamins, especially thiamine. This survey also concluded that meat is not very commonly eaten in the rural parts of Mexico. Therefore, animal protein accounts only for 22.9 grams of the total 71.9 grams of protein. Carbohydrates and starches provide 75.2 percent of the calories, protein 14.5 percent and fats 10.3 percent. The protein comes mainly from corn and beans. Animal protein is in short supply and of low quality. Moreover, nutritional anemia is common in rural Mexico, in spite of an adequate level of iron in the diet. This is believed to be the consequence of malabsorption or losses due to parasites. Chavez and Rosado (1967) also found that in Merida, the state capital of Yucatan, 50 percent of the children examined showed signs of malnutrition. Overall, the survey found that the most important clinically expressed nutritional deficiency problems in Mexico are the result of riboflavin, niacin, and protein deficiencies.

Despite the balanced nutrient value of the average Mexican diet, the Mayans' social and economic position, together with the poor nature of the soil, an unpredictable ecosystem, the prevalence of parasites and the large family size, make it difficult to have enough corn and beans to meet the nutritional demands for an individual. In Chichimila, my observation was that people use few beans in their bean soup. Dishes such as *frijol colado* (mashed bean soup) were rarely prepared by most households because they require large amounts of beans. Most households eat their tortillas with a soup made from a few beans and water.

Because diet affects growth, development, and hormone production, malnutrition should be one of the variables studied in relation to the relatively early onset of menopause for Mayan women. In addition, the effect of the Mayan diet on menopausal symptomatology in general needs further investigation.

Furthermore, information from physicians providing services to both Greek and Mayan villages indicates that in neither culture does osteoporosis appear to be a problem. The mineral contents of the nutrients that these people eat and their daily physical activities also must be studied in relation to osteoporosis. Even though the Mayan diet is deficient in protein, people get an adequate supply of calcium derived from tortillas and from drinking water. For example, the lime water used to soak maize before grinding it into *masa* for tortillas, a practice common to the Mayans and other Latin American peoples, provides the needed calcium in the diet. A Mexican gets more than 500 mg of calcium per day from tortillas alone (Cravioto et al. 1945). Mayans also obtain calcium from their drinking water because of the abundant lime in their soil.

Green vegetables are also a source of calcium. One of the prominent newspapers in Yucatan, *Diario de Yucatan* (1981), had a profile on *chaya*: "El Mal

de Huesos y La Chaya" ("Bone Illness, Osteoporosis, and Chaya"). This article stated that a United States physician, Everett Smith, recommended that his readers eat *chaya*, a green leafy plant, as a means of preventing osteoporosis. *Chaya* is known to be a rich source of calcium and Vitamin A and it is one of the very few green vegetables that the Maya eat often.

The Greeks also have calcium in their diet from their use of milk and cheese, as well as from their drinking water. In the West, some physicians prescribe both high dietary intake of calcium and physical exercise as a way of preventing osteoporosis (Nordin 1982; Bachmann 1984). In addition to their dietary calcium intake, both Mayan and Greek village women of all ages maintain a high level of physical activity. They perform rigorous work at home and in the fields and walk long distances.

Fertility Patterns

A striking difference between the Mayan and Greek women is their fertility patterns. As discussed before, Mayan women marry early, have successive pregnancies, and experience long periods of amenorrhoea (because of prolonged lactation coupled with malnutrition). Therefore, Mayan women rarely experience a regular menstrual cycle.

The Mayan fertility pattern is typical of most nonindustrialized, traditional societies. For example, data from the !Kung hunters and gatherers in the Kalahari Desert suggest that given the fertility patterns of traditional societies, a woman would experience about 15 years of lactational amenorrhoea and about 48 menstrual cycles during her entire reproductive life, equivalent to four years (Konner and Worthman 1980). On the other hand, a woman in an industrialized society with a family size of two children, little or no breast feeding, and a short period of postpartum amenorrhoea (McNeilly 1979), can expect 35 of her 37 reproductive years to have consistent menstrual cycles (Short 1978).

Short (1978) also suggests that the reproductive patterns of the traditional, simple societies, such as those of the hunter-gatherer, most likely represent the situation to which human genes are best adapted. Therefore, because no evidence is found of a fundamental change in the reproductive biology of humans in millions of years, there may be significant biological consequences of the present low fertility pattern of women in industrialized societies. The phenomenon of estrogen dependency or deficiency at menopause also may be a result of the change in the reproductive pattern of women in modern industrialized societies. One hypothesis is that decreased childbearing with short periods of lactation and postpartum amenorrhoea possibly expose the body to more estrogenic stimulation and its sudden decline could be manifested in both hot flashes and bone density loss, or in just one of these phenomena.

Furthermore, repeated pregnancies and lactation are known to lead to frequent interruption in cyclic ovarian function (Neville 1983). For example, during pregnancy, the serum concentration of estrogens and total progesterone

levels are high. However, during lactation basal prolactin levels are elevated and progesterone and estrogens are suppressed (Martin and Hoffman 1983). Studies on lactation and hormone levels also indicate that prolactin levels of lactating women are high where breast milk forms all or a substantial portion of infant's diet (Madden et al. 1978; Konner and Worthman 1980).

Women are usually infertile at least for four to eight weeks after the birth of an infant. However, lactation is known to prolong the infertility period due to the suppression of ovarian activity as a result of high levels of basal prolactin brought about by frequent suckling (McNeilly 1979). The duration of lactational infertility varies considerably from one society to another, being as short as two to three months in Western, industrialized societies, and as long as three years in the !Kung hunters and gatherers (Simpson-Herbert and Huffman 1981). The existing evidence suggests that high levels of prolactin has direct interference with ovarian steroid production (McNatty, Sawers and McNeilly 1974). Some believe that frequent suckling stimulus itself may be a factor in lactational infertility; however, whether it is prolactin alone or suckling stimulation or both, the fact is that ovulation is suppressed during lactation. For women in industrialized societies where the childbearing rate is low and breast feeding of short duration, the chances of exposure to high levels of prolactin and its biochemical effect is decreased.

The only biological effect of high levels of prolactin that we know about is amenorrhea. However, the adverse effect of continuous exposure of the endometrium and other reproductive tissues of the body to estrogenic stimulation has been documented. For example, estrogen is known to play a major role in the genesis of breast cancer; also postmenopausal women treated with estrogen replacement therapy have a high risk of endometrium carcinoma (Smith 1967; Ziel and Finkle 1975). Moreover, studies on cancer rates in parous and nulliparous women (Cole, Brown and MacMahon 1976) suggest that parity and age at first pregnancy may also alter the estrogen profile.

Although there are no cross-cultural studies specifically concerned with fertility patterns and their effect on bone density loss, some research has peripherally touched on the phenomenon. The few available data suggest that high parity does not predispose to osteoporosis or hip fracture (Garn 1970; Smith 1967; Daniell 1976; Aloia et al. 1983; Wyshak 1981). Aloia and coworkers (1983) suggest that relatively longer lactation also decreases the risk of osteoporotic fractures; although other studies have shown that lactation is associated with calcium depletion (Atkinson and West 1970; Wardlaw and Pike 1986). It has been proposed that reports of osteoporosis in lactating women were probably due to inadequate intake of calcium and vitamin D (Daniell 1976).

This raises questions about the extent to which frequent interruption in cyclic ovarian function due to successive childbearing, prolonged lactation, and amenorrhoea affect the production of reproductive hormones and the degree to which the latter may affect age at onset of menopause and the presence or absence of hot flashes or even osteoporosis.

CONCLUSION

This study has focused on the experience of menopause, its cultural significance and meaning, and its physiological manifestation in peasant women. The findings from this study indicate that the perception and experience of menopause vary among cultures. However, the findings also suggest that cultural factors such as status gain and removal of menstrual taboos are inadequate explanations for cross-cultural variation in the menopausal experiences of women. Besides the social role restrictions and cultural taboos of menstruation, women in nonindustrialized societies have strong similarities in their fertility patterns which in turn may also have effects on the biochemical transformation of the reproductive system.

Like other human developmental events, menopause is a biocultural experience. Therefore, this study points to the fact that research on menopause should consider biocultural factors such as environment, diet, fertility patterns, and exercise levels which could also affect the production and equilibrium of hormones in a woman's body. To do so, more comparisons of menopausal experiences of women from different nonindustrialized societies, as well as within industrialized societies, are needed.

In addition, the data from this study raise significant questions regarding the effect of frequent childbearing patterns and long periods of lactational amenorrhea on postmenopausal bone mass. The effect of frequent lactational amenorrhea on bone mass needs to be investigated.

Research efforts to understand the role of estrogen in the etiology of osteoporosis have been limited to samples in industrialized societies who rarely experience frequent childbearing and long periods of lactational amenorrhea. Cross-cultural studies addressing the above mentioned issues will contribute new insights into the study of menopause and the etiology of osteoporosis.

NOTE

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