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A MENSTRUAL ANOMALY: CALENDAR CYCLING IN A MALAY POPULATION

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SUMMARY

Women in an urban, Malay population reported menstrual period lengths that tended to coincide with the lengths of the calendar months in which the periods began. This pattern may be related to the calendar-month pay periods for the population.

INTRODUCTION

In studying the health of a population, any departure from normal of a physical characteristic of that population should be viewed with concern for it may well indicate underlying pathological conditions. This report describes just such a departure from normal, and attempts to ascertain the underlying pathological conditions leading to abnormality.

A study of menstrual records collected from an urban, Malay population revealed a form of menstrual period timing that has not been reported previously. Most of the women in the study reported that their menstrual period began on the same day of the month each month. One women, for example, might regularly begin her period about the 17th day of each month, and another, on the third day. With this form of cycling, the length of each menstrual cycle varies and is identical to the length of the calendar month in which it begins.

This pattern is radically different from that observed in previous studies. In one of the earliest studies of the timing of menstruation, Geist [1] reported that "the most striking finding was the fact that the menstrual period did not occur regularly on any specific day." Following this observation, the question of calendar cycling disappeared from the literature. Subsequent studies [1,2,3,4,5,6,7,8] found, for the most part, a mean cycle length of 28-29 days (although with notable variation around the mean), considerably shorter than the 30-31 day cycle that occurs with calendar cycling. With one exception, the sample populations in these studies were drawn from European and North American populations consisting primarily of students and nurses. Ogino, [8] however, in three separate studies conducted in Japan, reported longer mean cycles: 30.3, 30.6, and 31.4 days.

MATERIALS AND METHODS

The data in the present study were collected in a Malay squatter community located near the center of Kuala Lumpur, Malaysia. The population at the time of the study (1974-1975) consisted of approximately 1600 persons, living in 305 family households. At least one person in each household was employed, usually in a poorly paid, low-skilled job such as labourer or clerk. The community was well established and the population was fairly stable. All were Muslims.

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As part of a broader study of infant and fetal mortality in the community, a census of all the households was conducted, and 203 married premenopausal women were asked if they would provide data on the timing of sexual intercouse and menstruation. Most agreed, and 88 provided menstrual data for three or more menstrual cycles. The number of cycles they reported ranged from 3 to 12 (average: 7.6). The data were recorded on calendars with tear-off sheets for each day. The sheets were collected every 14 days by a Malay woman field worker.

RESULTS

Results of the initial analysis of menstrual periods of the women in the study indicated an average cycle of 30.3 days, considerably longer than expected. Variation from this mean was minimal, with a standard deviation of .50 days. Further examination of the data showed a clear, although imperfect, tendency for each women to begin menstruation on a specific calendar day, even in February when the length of the calendar month shifts abruptly. In no case did the average length of a women's menstrual period vary significantly from the average length of the months in which the periods occurred.

In an attempt to measure the relationship, a correlation coefficient was calculated for each woman, comparing cycle length to the length of the month in which each cycle began. Of the 88 correlation coefficients, four were slightly negative. Of the 84 that were positive, 18 were significantly positive ($P \leqq .05$) and 40 were highly significantly positive ($\leqq .01$). For most of the remaining 26 women, the correlation coefficients were greater than .5, but because of the small number of menstrual periods, these coefficients were not statistically significant. None of the women reported a 28-day ("normal") pattern.

Among the 667 menstrual periods recorded, the correlation between length of cycle and length of the month in which it began was .46, which was highly significant ($P \leqq .01$). In 53 percent, length coincided with the calendar length, and in 84 percent, it was within one day of calendar-month length. Although the average length of cycle is 30.4 days those beginning in February (28 days) had the closest cycle-to-calendar agreement: 65 percent. For those beginning in 30-day months, the figure was 46 percent, and for 31-day months, 54 percent. These data are presented in Table I and summarized in Fig. 1.

TABLE I
MENSTRUAL CYCLE LENGTH BY LENGTH OF CALENDAR MONTH IN WHICH CYCLE BEGINS

	Length of Calendar Month		
Length of Cycle (days)	28-day (%)	30-day (%)	31-day (%)
24	1.4	0.5	0.3
25	1.4	0.0	0.3
26	1.4	0.5	0.5
27	18.8	3.5	0.3
28	65.2	6.5	1.3
29	5.8	22.1	4.8
30	2.9	46.2	13.5
31	1.4	12.6	54.4
32	1.4	5.5	16.5
33	0.0	1.5	4.8
34	0.0	0.0	2.0
35	0.0	1.0	0.5
36	0.0	0.0	0.0
37	0.0	0.0	0.5
$\geqq$ 38	0.0	0.0	0.5
Total	100.0	100.0	100.0
N =	69	199	399

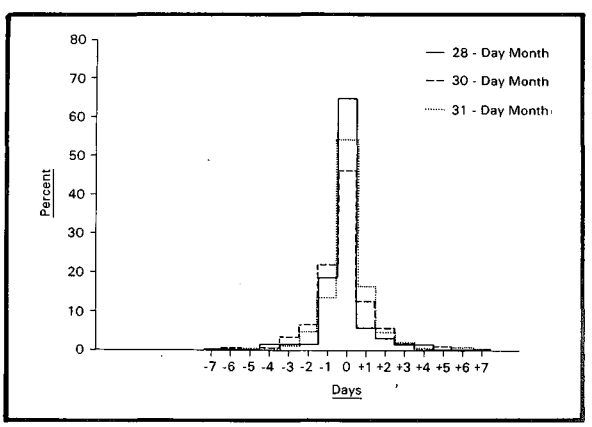

Fig. 1 Percent distribution of difference between menstrual cycle length and length of calendar month in which the cycle commenced.

The modal date of beginning the cycle was determined for each woman and the distribution by date is presented in Table II. Two things are evident from these data: the first and the fifteenth were the most common beginning dates (20 percent), and beginning a cycle in the first half of the month was much more common than in the last

TABLE II
DISTRIBUTION OF BEGINNING DATES (MODES) OF CYCLES BY DATE IN MONTH

Date	Percent	Date	Percent
1	11.4	16	1.1
2	4.6	17	1.1
3	5.7	18	1.1
4	1.1	19	5.7
5	4.6	20	0.0
6	3.4	21	4.0
7	5.1	22	4.0
8	4.0	23	2.3
9	4.0	24	0.0
10	5.7	25	2.3
11	2.8	26	1.1
12	4.6	27	4.0
13	1.1	28	0.6
14	2.3	29	1.1
15	9.1	30	2.3
		31	0.0

half (67 percent vs. 31 percent).

The average number of days of menstrual flow was 5.1 and no relation between flow length, cycle length, or length of month was apparent.

DISCUSSION

Although these findings should be correct, the possibility of inaccuracies must be considered. The first possible source of error might be that the women were simply estimating the length of their menstrual periods to be a calendar month (the menstrual period is, in fact, referred to as the "monthly"). Several factors, however, militate against the likelihood of this explanation. First, although a few women might be making such estimates, it seems unlikely that all the women in the sample would be doing so. Furthermore, the calendar pages were collected every 14 days, so a woman would have to keep independent records of her "estimated" beginning date. The fact that only 11 women reported perfect calendar cycling would indicate that such independent record-keeping was not taking place. Also, before the daily data collection began, the women estimated their average period length at 29.5 days, considerably shorter than the observed average of 30.4 days. Finally, the records of sexual intercourse that were marked in the back of the same calendar pages revealed a pattern of frequency and timing that is in agreement with numerous other studies. Similarly, the data on length of menstrual flow are in agreement with results found elsewhere. It seems unlikely that the women would estimate one part of the data and report the other factually, especially when their participation was voluntary and they had no apparent reason to avoid the truth.

A more puzzling aspect of the data is that one quarter of the women claimed to use contraceptive pills, which should induce a 28-day cycle when properly used. If the menstrual data are correct, then either these women were, in fact, not using contraceptive pills, or they were using them improperly. The issue of contraception was an extremely emotional one at the time of the survey. Some women were known to have claimed that they used contraceptive pills in order to avoid an anticipated unpleasant discussion of family planning. Although no systematic study was made of effective use of contraceptives, anecdotal evidence from family planning workers suggests that Malay women were poor users of the pill. Two of the women claiming to use the pill became pregnant at the end of the study, but no systematic follow-up study of pregnancy was made among pill users and nonusers.

A final possibility, that the Malay field worker might have filled in some of the data herself to make up for lapses in data-recording of the respondents, is extremely remote. She was aware that a 28-day cycle was expected and, presumably, would have estimated periods of this length. In addition, each women tended to mark her own calendar pages in a distinct fashion, using a particular type of pen or pencil.

If the data are accurate, the next question concerns mechanisms that might be causing this pattern. It seems unlikely that the length of a recurring hormonal cycle is based directly on the irregular length of the months in a Gregorian calendar.

In considering alternative reasons, one area for investigation would lie in the economic life of the people. In Malaysia, urban employment follows a weekly rhythm, with a five and one-half day work week. Holidays for all religious events are based on the lunar calendar. The only influence of the Gregorian calendar is in fixing the date of payment of wages, once a month on the first, or sometimes bimonthly on the first and fifteenth. All government agencies and most private firms pay employees at this time. Employment in such agencies and firms was the main source of income for 90 percent of the families in the study sample.

Income for the remaining 10 percent, who were mostly in petty trading, would also vary monthly with the spending pattern of the majority.

This income pattern, coupled with the general level of poverty in the village, could produce sufficient psychological stress to alter menstrual patterns. Psychological stress is known to affect the timing and occurrence of menstruation, [9] although no studies have dealt with the particular situation described here.

A search of the literature revealed no other Asian studies that discuss either calendar cycling or the possible cause proposed here. A close examination of the Japanese menstrual data collected from urban teenage schoolgirls by Ogino [8] indicates that there were no sharp peaks at 30 or 31 days, but rather a flat curve centered between 30 and 31 days. This would be similar to shifting to the right the 28-day curve found by Chiazze *et al.* [3]

The results presented here led T. S. Osteria to examine records of 568 menstrual cycles collected in rural Bangladesh by the Cholera Research Laboratory. No evidence of calendar cycling was found in that agriculturally oriented population, although the mean cycle length was 31.9 days.

CONCLUSIONS

The data indicate the existence of a previously unrecognized form of menstrual cycling, but certain internal inconsistencies oblige some caution in making this interpretation. Without some form of external corroboration, firm conclusions from these data are not warranted.

Clearly, calendar cycling, if it exists, is neither an urban nor an Asian phenomenon. It should be found only in economically marginal urban populations that are paid on a calendar-month basis. The absence of any previous report could reflect simply that no studies have been done with this type of population, or that researchers were not looking for the phenomenon in the assembled data. If the present report will stimulate others to reexamine menstrual data drawn from similar populations, some more definite conclusions may become possible.

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