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Inter-Relationships Between Socio-Demographic Factors, Lactation and Postpartum Amenorrhea

A recent study reported the effects of such socio-demographic factors as age, parity, education and place of residence on lactation and post-partum amenorrhea for a sample of women who have ever accepted an intra-uterine device prior to June, 1966 in Taiwan's family planning program[1] (hereafter referred to as IUD acceptors). With the help of similar data for a general sample of all married women in Taiwan, (hereafter referred to as All Mothers), the present study specifically investigates: (1) how the resumption of menstruation following the birth of a child is affected by the duration of lactation; (2) how socio-demographic factors like age, parity, education and place of residence affect the length of lactation and (3) how these socio-demographic factors and the length of lactation affect the period of postpartum amenorrhea. In addition, we study here the effects of two other important factors on the duration of lactation and the period of amenorrhea. These factors are: number of modern consumer items owned by the couple, and whether or not the child survived up to the date of interview. By using the multiple regression analysis we estimate the overlapping effects between sociodemographic factors and lactation on the period of amenorrhea. We also estimate their net effects and assess their relative importance for the period of postpartum amenorrhea.

The effect of response biases on the relationship between lactation and amenorrhea is explored. It is suggested that detailed probing is essential for proper understanding of the relationship between the duration of lactation and the period of postpartum amenorrhea.

THE DATA

The data for this study are taken from the reports of about 5,000 married women included in the second National Probability Survey of all married women between the ages of 20 and 39 years living/in Taiwan. This survey aimed mainly at collecting information about fertility histories of Taiwanese women and their knowledge of, attitude towards, and practice of contraception. The survey was conducted in 1967 by the Taiwan Institute of Family Planning with technical assistance from the University of Michigan Population Studies Center and the resident staff of the Population Council, New York. Some preliminary results from this survey were reported by Chang and Jain in 1969.[2] Detailed analysis is being carried out by the staff of the Taiwan Institute of Family Planning and the University of Michigan Population Studies Center.

Seven questions about the practice of breast feeding and the period of postpartum amenorrhea were asked in respect of last but one live birth. Thus, women with at least two live births are included in the present analysis and the data refer to the last completed birth interval. Additionally, information was available about women's age at last but one birth, parity, education, place of residence, number of modern consumer items owned, and whether or not the child survived till the interview.

Our data have a few limitations which should be noted since they may affect our results and their interpretation:

1. First, about 6% women got pregnant before resuming menstruation indicating that for some women ovulation precedes the resumption of menstruation. The corresponding percentage for Western women is between 3% and 9%. These women are excluded from the persent analysis because for them the data about the period of postpartum amenorrhea are not available.
2. Second, 38% mothers in this sample said that their milk flow was insufficient and 70% said that they used supplementary feeding before weaning. These women have different lactation and amenorrhea histories than others. However, the sufficiency of milk flow and the use of supplementary feeding does not have any significant effect on the relationships between socio-demographic factors, lactation and amenorrhea.
3. Since women with 0 or 1 live birth are excluded from the present analysis, women with shorter completed first birth interval will have better chance of being included in the analysis. This may introduce a small negative bias in the estimation of average duration of lactation and average period of amenorrhea.
4. The information regarding the periods of lactation and amenorrhea available for the present analysis are basically similar to those available for the earlier sample of IUD acceptors. This similarity restricts the scope of the present analysis in exploring the two way causal relationship and curvilinear relationship between the periods of lactation and amenorrhea.

Most of the results regarding the relationships between socio-demographic factors, lactation and postpartum amenorrhea for the present sample of all mothers are quite similar to those reported earlier for a restricted sample of IUD acceptors. For this reason, we first present briefly some of the important relationships involved and then concentrate on differences in the results of two samples, some of the new findings, and problems arising in this type of analysis.

Lactation and a menorrhea

About 95% of all mothers have breastfed their child at least for some time. Among those who breasted their child, the mean duration of postpartum amenorrhea was about 10 months for the whole sample. Breastfeeding made a substantial difference in the average length of amenorrheic period. On an average, breastfeeding delayed the resumption of menstruation by about seven months. These figures are quite close to those obtained for the sample of IUD accepoters even after adjusting for the differences in age distribution of women in the two samples. (Table 1)

The average period of amenorrhea by the duration of breastfeeding is shown in Figure 1 for all women as well as separately for younger women (less than 30 years of age) and for older women (30 or more years of age). The association between the period of amenorrhea and the length of lactation is very weak if the length of lactation is less than six months or more than 21 months. However, the relationship between'the two periods is almost linear if the length of lactation is between 6 and 21 months. Mathematically, the relationship between the period of amenorrhea in months (Y) and the length of lactation in months (X) can be expressed by the linear regression equation: Y = 4.2+.42 X. In this relationship, the duration of loctation explains about 21% variation in the period of amenorrhea. Control for age, in terms of two broad age groups, does not change this relationship as shown in Figure 1 and by the two linear regression equations: T=4.0+.42 X for younger women, and Y = 5.2 + .40 X for older women. .

For the sample of IUD acceptors we checked for the possibility of curvilinear relationship and the two way causal relationship between lactation and amenorrhea. The results for IUD acceptors indicated that the curvilinear part of the relationship is not significant. The results also indirectly indicated one way causal relationship running from lactation to amenorrhea for a substantial majority of IUD acceptors. For the present sample of all mothers, we do not have any additional data to check for the two way causal relationship between lactation and amenorrhea and the results for linear relationship between the two variables are about the same for both the samples. On the basis of these observations, we assume that the relationship between lactation and amenorrhea is linear and that the length of lactation affects the period of amenorrhea.

Influences of Demographic and Social Factors

In the present analysis, six factors are included for a study of their effects on the period of lactation and amenorrhea. These are: Women's age at the birth of the child to which the data refer, parity, education, place of residence and the number of modern consumer objects owned by the couple, and the survival status of the child at interview. The first four of these were also included in the analysis of the sample of IUD acceptors, except that in the present analysis the education of wife is measured in terms of number of completed school years, whereas in the analysis of the sample of IUD acceptors women's education was used as a "dummy" variable. The place of residence is used as a "dummy" variable in the analysis of both samples; living in urban areas is assigned a value of one and living in rural areas is assigned a value of zero.

The ownership of modern consumer items is used as an index of the life style of the couple; this includes their present level of living and their desire to enjoy a modern living style. The survival status of child at interview is used as a combined index of infant and child mortality; the coding system does not permit separation of the two.

The zero order correlation matrix presented in the upper panel of Table 2 indicate that all of the six demographic and social factors are significantly associated with the duration of lactation and the period of amenorrhea. A multiple regression analysis clearly indicates that the relationship between lactation and amenorrhea is not an artifact of their joint relationships with these six factors. The relationship between lactation and amenorrhea is slightly affected after controlling for these pertinent variables. .(See partial regression coefficients in the upper panel of Table 3).

Both age and parity are associated with longer duration of lactation and longer period of amenorrhea. In a multiple regression analysis, however, age is found to be more important than parity both for the length of lactation and the period of amenorrhea. (See partial regression coefficients in standard form in Table 3)

All the three social factors are associated with shorter lactation period and shorter period of amenorrhea. (See zero order correlations in Table 2). In a multiple regression-analysis, however, wife's education is found to be more important than either modern objects or residence for the lactation period, whereas ownership of modern objects seem to be more important for the period of aminorrhea. (See partial regression coefficients in ' standard form in Table 3),

About 95% of all children under reference survived up to interview. The remaining 5% died during their infancy or childhood. It may be emphasised that this variable indicates the combined effect of infant and child mortality.

The survival status of child is associated with both the longer duration of lactation and the longer period of amenorrhea (zero order correlation between survival status and lactation is .232; and between survival status and amenorrhea is .116). The positive relationship between survival status of the child and the duration of lactation is understandable. The positive association between the survival status of child and the period of amenorrhea seems to be mainly due to their joint association with lactation. (Partial regression coefficient in standard form of amenorrhea on survival statu's controlling for lactation is .010).

Comparison between 'all mothers' and 'IUD acceptors'

From the comparison of the results presented above for the sample of all mothers with similar. results for the sample of IUD acceptors, one might conclude that most of the relationships belween socio-demographic factors, lactation and amenorrhea, are the same for both the samples (See Jain and others, 1970, for the results for the sample of IUD acceptors).[1] In fact, this seems to be the case as far as the pattern of relationships are concerned. For example, (a) the duration of lactation and the period of amenorrhea are positively associated, (b) age and parity are positively associated with the period both of lactation and of amenorrhea, (c) age seems to be more important than parity, (d) such social factors as wife's education, place of residence, and ownership of modern objects, are negatively associated with the period both of lactation and of amenorrhea, and (e) the association of these social factors with the period of amenorrhea seems to be mainly due to their joint association with the length of lactation.

However, it is interesting to closely examine the differences in the magnitudes of these relationships for the two samples. Let us first consider the effects of demographic factors (age and parity) on lactation and amenorrhea. No doubt, for both samples, age and parity are associated with the longer duration of lactation and the longer period of amenorrhea. However, the magnitude of relationships for the sample of all mothers is lower than that for the sample of IUD acceptors. (Compare the zero order correlation coefficients and partial regression coefficients in standard form for the two samples in Table 4). These differences could either indicate that the effects of age and parity on lactation and amenorrhea for the sample of all mothers are different than those shown for the sample of IUD acceptors and/or that they are due to some response biases.

In the sample of IUD acceptors, the data about breast feeding and amenorrhea referred to the last .birth, whereas in the sample of all mothers the data refer to the last but one live birth. Consequently, the recallperiod for reporting the duration of lactation and the period of amenorrhea in the sample of all mothers is longer than that in the sample of IUD acceptors. The recall period is more than 3 years for 82% of all mothers as compared to only 47% of the IUD acceptors (Table 5). It is plausible that the longer recall period for all mothers .has., lead to more stereotyped responses or at least more error in reporting the lengths of lactation, and amenorrheic periods (for example heaping at multiples of 6 months) as compared to the IUD acceptors. If this is true, the variances of lactation period and amenorrheic period should decrease with the length of recall period. However, this plausible explanation is not supported by the mean and variance of lactation and amenorrheic periods presented in Table 6 for different lengths of recall period. On the contrary, the variances of lactation and amenorrheic periods for longer .recall periods are slightly higher than, or equal to, the corresponding variances for shorter recall periods. This check seems to indicate that the differences in magnitude of correlations in two samples are not entirely due to the response biases in reporting the lengths of lactation and amenorrheic periods.

Are these differences real and due to the age slectivity of IUD acceptors? Let us consider the differences in age distribution of women in the two samples, .when age is measured at the birth of the child to which the data refer. IUD acceptors seem to be somewhat older than all mothers. .The average ages (when age is measured at the live birth to which data refer) of women in two samples being 29.2 years and 26.7 years respectively; 54 % of women in the sample of IUD acceptors were less than 30 years of age as compared to 74% in the sample of all mothers. In view of these differences, we compare the mean duration of lactation and average length of amenorrheic period in two samples for the four quinquennial age groups. (Table 7). Mean length of lactation period is about the same for women in both the samples in all age groups except among those 35 years of age or more. On the other hand, the younger women in the sample of all mothers have longer period of amenorrhea than their counterparts among the IUD acceptors, which may be due to the fact that the IUD acceptors are selected for higher parity than other women of some age. Consequently, IUD acceptors will have a shorter birth interval and probably also shorter period of amenorrhea than other women. This effect is pronounced among younger women. The differences in average periods and age distribution of women in two samples were obscured when we compared the overall observed and standardized averages in the two samples. (Table 1).

A plausible explanation for the differences in magnitude of zero order correlations between age, lactation, and amenorrhea for the two samples seems to be the selectivity for age in the sample of IUD acceptors and slightly different effect of age on the duration of lactation and the period of amenorrhea in the two samples.

. All the three social factors are associated with the shorter periods of lactation and amenorrhea as indicated by negative zero order correlations (Table 2),. However, the entire association between these indicators of life style and the. period of postpartum amenorrhea is not explained by their joint association with the duration of lactation. This is shown by (a) significant partial regression coefficient, in standard form, of amenorrhea on modern objects after adjusting for the effects of lactation and age in respect of all women and of those who breastfed the child, and (b) significant partial regression coefficient, in standard form, of

amenorrhea on education after adjusting for age and parity for those who did not breastfeed the child (Table 3). The results for all mothers indicate that social factors might have some direct effect, independent of demographic factors and lactation, on the 'resumption of menstruation. This fact was obscured in the analysis for the sample of IUD acceptors which may be due to the selectivity of IUD acceptors for age ; or to the differences in social factors used in analysis of two samples.

. For a better understanding of inter-relations between demographic factors (age and parity), social factors (education, ownership of modern, objects and place of residence) and lactation, and their independent and Joint effects on. the period of amenorrhea, the total variation in the period of amenorrhea explained by these factors has been divided into seven components in Table 8.

All the six factors considered explain about 22.4% of the total variation in the period of amenorrhea. Lactation alone explains 76% of the total variation. Demographic factors explain about *4%* and the social factors, about 3% of the total variation in amenorrhea. The remaining 17% is explained jointly by these factors in different combinations.

This analysis indicates that the duration of lactation is the most important factor for the resumption of menstruation. Nevertheless, the demographic factors and the social factors do have some independent effect on the period of postpartum amenorrhea. The association of' demographic factors with amenorrhea independent of lactation is understandable because of their biological nature. However, the association of social factors with amenorrhea independent of lactation and demographic factors is a little difficult to explain; possibly these factors reflect the differences in "dietary, emotional and psychological patterns among women of
different social groups.

Problems for Consideration

The association between breastfeeding and resumption of menstruation, which is not explain ed by their joint association with socio-demographic factors, is well established for different populations. However, there still remains some problems which require further exploration. For example, (I) To what extent lactation delays the resumption of menstruation,? (2) Is there two way causal relationship between lactation and amenorrhea ? (3) How is the observed relationship between lactation and amenorrhea affected by the response biases in reporting their durations ? and (4) What other possible factors account for the variations in the period of postpartum amenorrhea ?

On the basis of empirical evidence presented in this study and elsewhere by other researchers (Jain and others, "1970[1]; Salber and others, 1966[4]; Potter and others, 1965[5]; Tietze, 1961[s]). It can be said that prolonged lactation delays the resumption of menstruation, though the relationship is not perfect. Among Taiwanese women, for example, the average period of postpartum amenorrhea is about four months in the absence of breastfeeding as compared to about 11 months for those who breastfed the child for at least one month..

Prolonged lactation cannot delay the resumption of menstruation indefinitely. After a certain time, menstruation-'returns irrespective of whether or not the child is being breastfed. For example, the average period of amenorrhea increases with the ' length of lactation upto about 21 months of lactation and rernains' virtually constant thereafter (Figure 1) On the

average, the resumption of menstruation is delayed by less than one month by prolonging the period of lactation by two months. This type of overall picture emerges by considering the asociation between the duration of lactation and the period of postpartum amenorrhea for all women put together, assuming one way causal relationship between lactation and amenorrhea. We do not know whether or not the resumption of menstruation curtails the period of lactation voluntarily or involuntarily.

How is the observed association between lactation and amenorrhea affected by the response bias in reporting their durations ? Let us now examine the possibility of response bias in another way. If the duration of lactation had some effect on the resumption of menstura-tion, one would expect an increase in the average psri0d of postpartum amenorrhea with an increase in the duration of lactation irrespective or whether women weaned before or after the resumption of menstruation. This does not seem to be the case once we divide women into four groups: (1) those who did not breastfeed the child at all ; (2) those who weaned before the resumption of menstruation; (3) those who reported the same month for weaning and resumption of menstruation ; and (4) those who weaned after the resumption of menstruation. The results for these four groups are summarized in Table 9.

For the first two groups (including 22% of all women) the duration of lactaion does seem to have caused the delay in the resumption of menstruation. These women resumed menstruation, on an average, 3 to 4 months after they ceased lactating. For the third group, the average period of lactation is equal to the average period of amenorrhea because they reported the same month for weaning and resumption of menstruation. This group consists of two types of women : (a) those who weaned and resumed menstruation in the same month though they might have weaned before or after resuming menstruation ; and (b) those who spuriously reported the same month for weaning and resumption of menstruation. These two groups cannot be separated. However, one third of these women reported 12 months as the duration of lactation and the period of amenorrhea, a convenient unit for reporting the age of child when weaned and when resumed menstruation,

The fourth group includes about 60% of all women, who said that they weaned after resuming menstruation. These women, on an average, lactated for 16 months but resumed their menstruation when the child was only 8 months old. Among those who breastfed at all, this group of women have, on an average, breastfed the child longest but resumed their menstruation fastest. This is quite puzzling if breast feeding has some minimum effect on delaying resumption of menstruation. Obviously, for this group of women the duration of lactatation has a different effect on the period of postpartum amenorrhea. Alternatively, it is possible that this is simply an artifact of selectivity because women who resume menstruation very early in spite of breast feeding have a greater chance of being included in this group than in any other group. Even so, reasons for this peculiar behaviour are possible. Whatever may be the case, it needs to be further explored because the relative prepondence of this group greatly affects the overall relationship between lactation and amenorrhea. Some of the possible reasons for this peculiar relationship are indicated below.

It is possible that these women breastfed the child only partially *i.e.* they had started using supplementary feeding when the child was quite young. Their milk flow may not have been adequate ; in other words, the lactation may not have been established effectively. To

explore this possibility we need to have further information on the sufficiency of milk flow (probably by asking questions about the daily frequency of breast feeding) and the duration for which the milk flow remained sufficient. In retrospective field surveys, it is quite difficult to establish the sufficiency of milk flow because of the post-facto nature of requisite information. We also need to know the time when they start using supplementary food for the child.

There is, however, another possibility for the shorter period of amenorrhea for this group of women. About 25% of these women resumed menstruation in the first or the second month after the childbirth. (The comparative figures for the second and the third group of women who did breastfeed their child are 1% and 3% respectively). It is possible that most of these women had confused the normal blood flow after the child birth, which may last upto 40 days, with the resumption of menstruation. In such a case, the average period of post-partom amenorrhea would mainly be affected for the fourth group of women and would be greater than that reported here. Again further probing is required to distinguish the nor-malblood flow from the resumption of menstruation. This will, however, explain only a part of the differences in the average period of postpartum amenorrhea between the three groups of women who did breastfeed their child.

For a better understanding of the association between lactation and amenorrhea we have to look into the physiological connections between lactation and resumption of menstruation. It is possible that lactation does not have any direct effect on resumption of menstruation and that lactation delays resumption of menstruation only indirectly through creating some harmonal imbalance which delays ovulation, -The relationship between ovulation and menstruation may not be as simple as it appears. It is also possible that some other factors connected with hereditary, health and emotional and psychological status of women are even more important for resumption of menstruation than lactation *per se*.

Simple questions about the duration of lactation and the period of postpartum amenorr-hea are not enough for a proper understanding of their inter-relationships. Probing is essential first to establish the one way or two way causal relation between lactation and amenorrhea, and second, to minimize the effect of response biases in reporting their durations. In addition, some other factors such as hereditary, health, and emotional and psychological status of women, relevant to physiological changes need to be related to the lactation and menstruation.

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Average Period of Postpartum Amenorrhea by Period of Lactation and Age of Women : Sample of all Mothers

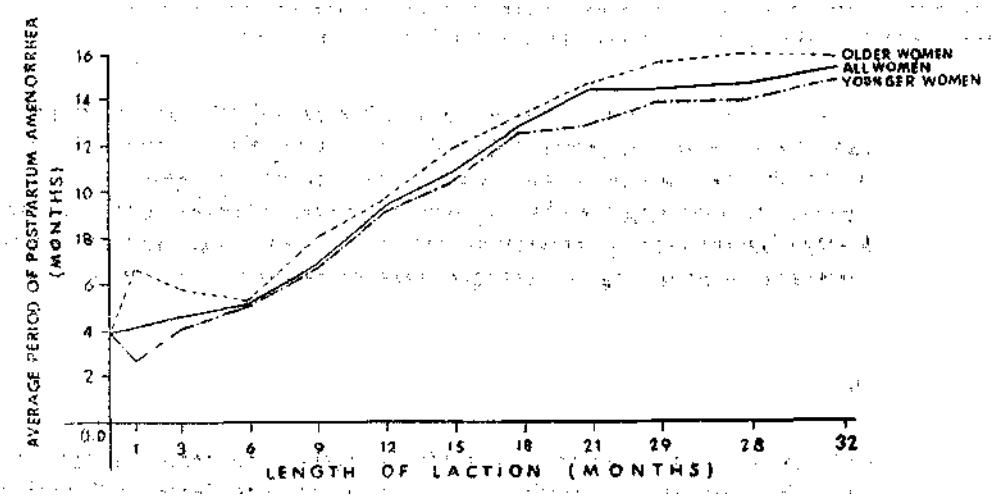

Figure 1.

Table. 1 : Mean Lengths of Lactation and Amenorrheie Periods for the Sample of All Mother and IUD Acceptors.

Sample	Period of Lactation Mean (Mos)	Number	Period of Amenorrhea No		Yes		Child was breastfed Total	
			Mean	No.	Mean	No.	Mean	No.
All mothers	15.0	4049	3.9	217	10.6	3751	10.1	3968
IUD Acceptors :								
Observed	15.7	3907	3.5	292	10.6	3872	10.1	4164
Standardized using age distribution of all .mothers	15.0	—	3.4	—	9.7	—	9.3	—

Source : All mothers—Probability sample of married women interviewed in 1966 : IUD acceptors—Jain and others, 1970.

Table 2 : Correlation Coefficient Between Selected Variables, for the Sample of All Mothers Classified by Whether or not They Breastfed the Child to Which the Data Refer—Sample Of All Mothers.

Variable	Variable (See Stub)					
	L.	A	P	E	M	R
		All Women				
Amenorrhea	.455	.148	.142	-.158	-.187	-.'038
Lactation		.112	.108	-.241	-.226	-.128
Age			.770	-.187	-.161	-.077.
Parity				-.217	-.187	-.098
Education					.559	.263
Modern objects, number*						.289
Residence						
			Breastfed the Child			
Amenorrhea	.403	.164	.157	-.143	-.185	-.30
Lactation		.150	.136	-.243	-.234	-.135
			Did not Breastfeed the Child			
Amenorrhea		.032	.022	-.183	-.071	-.050

* Ownership of bicycle, radio, radio with phonograph, motor cycle, sewing machine, daily newspaper subscription, private toilet, running water, time piece, electric fan, iron, or rice cooker.

Table 3 : Summary of Multiple Regression Analysis with Postpartum Amenorrhea or Lactation as the Dependent Variable, for the Sample of *All* Mothers Classified by Whether or Not They Breastfed the Child to Which the Data Refer

Variable or Statistic	Women Who		
	All Women	Breastfed	Did not breastfeed
Amenorrhea	Partial regression coefficients, standard form		
on—			
Lactation	.431	.374	-
Age	.059	.061	.038a
Parity	.390a	.048	-.063a
Education	.00la	.010a	-.258
Modern objects	-.088	-.100	.096a
Residence	.051	.054	-.010a
PCT. VAR. EXPLAINED	22.4	18.4	4.1
Lactation	Partial regression coefficients, standard form		
on—			
Age	.610	.097	
Parity	.00 la	.004a	
Education	-.151	-.141	
Modern objects	-.117	-.125	
Residence	-.050	-.056	
PCT. VAR. EXPLAINED	*7.6*	8.6	

a—coefficient is less than twice its standard error.

Table 4 : Summary of Multiple Regression Analyses with Lactation or Amenorrhea as Dependent Variable, and Age and Parity as Independent Variable, for Samples of All Mothers and 1UD Acceptors.

Statistic and Independent Variables	All Mothers		IUD Acceptors	
	Lactation	Amenorrhea	Lactation	Amenorrhea
Correlation coefficient				
Age	.112	.148	.197	.251
Parity	.108	.142	.178	.219
Partial regression coefficient std. form				
Age	.073	.094	.146	.197.
Parity	.051	.070	.070	.072
Pct. Variance explained by age and parity	1.4	2.4	4.1	6.5

Table 5 : Percentage Distribution of Women by Number of Years Between the Live Birth to which the Data Refer and Interview Date : Sample of All Mothers and JUD Acceptors.

Years	Percentage Distribution	
	All Mothers	IUD Acceptors
Total	100	100
1 year	+	2
2 years	4	21
3 years	14	30
4 years	30	19
5 years	14	10
6 or 7 years	19	10
8 or 9 years	12	5
10 years or more	7	3
Number of women	4413	4648

Table 6 : Mean and Variance of Lactation and Amenorrheic Periods by Duration Between Live Birth and Interview Sample of All Mothers.

Period between the birth of child to which the data refer and the interview (months)	Lactation Period*			Period of Amenorrhea		
	Number of Women	Mean	Variance	Number of Women	Mean	Variance
2-12						
13-24	5	13.00	47.99	4	11.00	41.49
25-36	157	11.26	32.90	155	4.80	12.82
37-48	567	12.20	25.83	545	7.67	25.54
49-60	645	14.07	28.69	628	9.31	10.37
61-72	566	15.07	38.49	544	10.97	40.78
73-84	416	15.05	45.13	407	11.14	41.69
85-96	359	16.28	40.65	362	11.08	39.51
97-108	254	16.54	23.06	266	10.71	41.33
109-120	226	16.47	60.53	224	11.60	44.12
121-132	212	16.02	39.41	207	11.71	34.84
133-144	156	16.87	45.45	159	10.93	41.13
145-156	145	14.91	46.18	140	10.78	37.15
157-311	113	14.80	51.12	109	10.66	47.45
	230	14.36	46.38	224	11.17	42.69
TOTAL	4051	14.70	39.73	3974	10.09	38.70

* Exclude those who did not breastfeed.

Table 7 : Mean Lengths of Lactation and Amenorrhea Periods by Age of Mother for the Samples of All Mothers and IUD Acceptors.

Mother's age at live birth to which data refer (years)	Period of lactation All Mothers Mean	No. (Mos)	of Lactation IUD Acceptors Mean	No. (Mos)	Period 0f All Mothers Mean	No. (Mos)	Amenorrnea IUD Acceptors Mean	No. (Mos)
Less than 24	1 4.0	,390	13.5	548	9.1	1181	7.2	602
25-29	15.0	1620	15.0	1556	10.2	1600	9.4	1663
30-34	16.1	813	16.4	1247	11.2	796	11.4	1312
35 or more	17.0	226	18.5	551	11.8	221	12.3	587
TOTAL	15.0	4049	15.7	3902	10.1	3908	10.1	4164

Table 8 : Breakdown of Total Variation in Amenorrhea Explained by Demographic Factors, Social Factors and Lactation — Sample of All Mothers.

Among all factors	TOTAL	°/o
Net effect of demographic factors*	0.8	4
Net effect of social factors**	0.7	3
Net effect of lactation	17.1	76
Overlap between demographic and social factors	0.2	1
Overlap between demographic factors and lactation	0.5	2
Overlap between social factors and lactation	2.2	10
Overlap between demographic, social factors and lactation	0.9	4
Total Pct. Variance explained by demographic, social factors and lactation	22.4	100

* Demographic factors include age and parity ;
** Social factors include education, modern objects and residence.

Table 9 : Some results about Lactation and Postpartum Amenorrhea for Four Groups of Women — Sample of All Mothers.

	Groups	Number of Women	Average Lactation	length of Postpart • um Amenor-rhea	Zero order correlation between lacta-tion and amen-orrhea	Linear regression Amenorrhea on Lactation: Inter-section	: Slope
1	Did not breastfeed	221	0	3.83	o	3.8	0
2	Weaned before resu-ming menstruation	667	12.46	15.8	0.828	4.4	0.96
3	Weaned and resumed menstruation simul-taneously	651	13.56	13.56	1.000	0	1.00
4.	Weaned after resuming menstruation	2429	16.12	8.26	0.436	2.0	0.39
	TOTAL	3968	14.19	10.1	0,455	4.2	0.42

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