MODERNIZATION AND THE FERTILITY TRANSITION, EGYPT, 1975

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ABSTRACT

This study investigates regional marital fertility differentials in Egypt and their relationship to the level of modernization of the region: defined as economic development and social and cultural change. The intermediate variables (Davis and Blake, 1965) underlying these regional levels and patterns of marital fertility are determined and their relation to the level of modernization of the region is also evaluated. In order to assess the nature of the recent decline in the crude birth rate in Egypt, the long term fertility and mortality levels are discussed. The prospects of a fertility transition in Egypt are assessed in terms of the current fertility level and pattern, the extent of deliberate fertility regulation, the urban-rural fertility differential and differentials by socioeconomic status.

The study draws from Easterlin's model of social and economic determinants of marital fertility as a frame of reference. The model's basic social and economic intermediate variables (denoted Cn, Cd, and CR) are evaluated, and the model's interpretations of cross-sectional marital fertility differentials by socioeconomic status and the long term fertility trend are empirically verified.

Cultural, Social and Economic Background

Egypt is an interesting case for the study of the fertility transition for several reasons. First, the population of Egypt has inhabited for centuries a very limited area of the country - that of the fertile Nile valley and the Nile delta. The inhabited area constitutes only 6 percent of a country of one million square kilometers. This has led to a very high population density of 865 persons per square kilometer of inhabitable land (according to the 1976 Population and Housing Census). This density is paralleled only by the positions of Java in Indonesia, Japan and north-western Europe. The high overall density level in the country was compounded in urban areas by considerable rural-urban migration since the early 1920's. The migrants proceeded in a stepwise fashion, from village to town and from town to large cities, particularly to the capital city. This has led to a very rapid urban growth in Egypt. Between 1960 and 1966, Cairo, the capital city, was growing at an average annual rate of 4.5 percent, with 35 percent of the net growth due to migration. In 1882, about 19 percent of the population was enumerated in urban areas and by 1976 this figure has risen to 44 percent. One of the major theses of the demographic transition model is that the low fertility in the now-developed countries may have come about through increases in the size and influence of the urban sector.[1] Although the determinants of urban growth in Egypt were not quite the same as those in the Western experience, i.e. mainly industrialization, the effects of such a process of excessive urban growth, or the so-called over-urbanization,[2] or over-concentration[3] on the diffusion of modern reproductive norms

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[1] J.A. Banks (1968), "Population Change and the Victorian City," Victorian Studies 11: 277-289.

[2] K. Davis and H.H. Golden (1954), "Urbanization and the Development of Pre-Industrial Areas," Economic Development and Cultural Change 3:1, October:6-26.

[3] J. Abu-Lughod (1965), "Urbanization in Egypt: Present State and Future Prospects," Economic Development and Cultural Change 13:3, April:313-343.

may be the same. Sovani[4] argues that urban centers in less developed countries could play a significant role in the diffusion of modern ideas, values and life styles. The economic character of urban life, with its repercussions on the economic value of children, has also been emphasized as one of the determinants of rural-urban fertility differentials.

Second, demographers and economists have been concerned about the implications of rapid population growth in Egypt since the beginning of the 20th century and prior to the post-World War II population explosion precipitated by the imported technology of public health and chemotherapy. Craig,[5] in 1917, questioned the feasibility of maintaining the balance between people and land by the year 1970. At that time, Craig was concerned with an average annual rate of population increase of about 1.2 percent; by the mid-1960's the rate was 2.5 percent. W. Cleland[6] (1936) argued that the Malthusian principle of the differential rates of growth of the means of resources and people seems to find a certain measure of support in the experience of modern Egypt. It would be of interest to see the responses to the mounting population pressure, and the repercussions of a sustained mortality decline lasting for more than one generation in Egypt on the trend of fertility. Infant and child mortality, though surely lower than in the past are still relatively high and some interpretations of the "theory" of demographic transition take the decline of these as a precondition for any fertility response.

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[4] N.V. Sovani (1964), "The Analysis of Over-Urbanization," Economic Development and Cultural Change 12:2.

[5] Cited in C. Issawi, Egypt in Revolution: An Economic Analysis (London: Oxford University Press, 1963).

[6] W. Cleland (1936). The Population Problem in Egypt (Lancaster: The Science Press).

Third, Egypt is predominantly a Moslem society, with a Coptic Christian minority of about 6 percent of the total population (according to the 1976 Population Census). Islamic values and institutions are viewed (D. Kirk, 1966)[7] as having a positive effect on natality. Among the general factors listed in this regard are the conservative nature of Moslem societies, or their resistance to change, and their conscious resistance to modern (often identified as Christian) influences which threaten the integrity of Islam. It has been argued that three specific prescriptions of the Moslem doctrine favor high birth rates: marriage institutions, emphasis on sexuality, and subordination of women. Strong kin ties are among the Islamic ideals which are reflected through the preference for such family patterns as an extended family, endogamous marriages and polygamy in the traditional Moslem societies (H. Korson,[8] 1979; R. Patai,[9] 1971). The effect of these cultural institutions on marital fertility and their transformation through modernization will be investigated in this study.

Economic, Social and Cultural Changes (1800-1975)

Modernization efforts started in Egypt early in the nineteenth century, and were specifically intensified in the last thirty years. Among the factors that have induced a considerable cultural and social change in Egypt is its early and prolonged exposure to "Western" influences. The first exposure - after 400 years of

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[7]Dudley Kirk (1966), "Factors Affecting Moslem Natality," in B. Berelson et al., eds., Family Planning and Population Programs: A Review of World Developments, (Chicago: University of Chicago Press):561-579.

[8]J.H. Korson (1979), "Endogamous Marriage in a Traditional Moslem Society, West Pakistan. A Study in Intergenerational Change," in George Kurian, ed., Cross-Cultural Perspectives of Mate-Selection and Marriage, Contributions in Family Studies No. 3 (Westport, Conn.: Greenwood Press).

[9]R. Patai (1971), Society, Culture and Change in the Middle East (Philadelphia: University of Pennsylvania Press).

stagnation under the Turkish rule - was during the "French Campaign," 1799-1801. Immediately after that, modernization efforts were intensified during the regime of Mohamed Aly who attempted to copy the European model of development. Besides the significant changes in agriculture, specifically the introduction of cotton with perennial irrigation by canals, the main thrust of these efforts was toward industrial-military development. After 1840, there was a shift toward the promotion of foreign trade and internal commerce via the improvement of the transportation system. This led to the shift from a subsistence economy to a market economy in most of the rural communities. The first railroad line was built in 1857, and the Suez Canal was opened for international trade in 1869. The second period of direct "Western" influences started in 1882 with the British colonization, and resulted in an organic integration of Egypt into the world market system. Vast amounts of foreign capital were invested in the principal banks, insurance companies, trade organizations, the industrial sector and a few large plantations. Alan R. Richards (1976)[10] argues that the agrarian technical changes (irrigation) introduced in Egypt by the British administration have resulted in increased regional inequalities due to the "location specific" nature of these technical changes: "Those areas of upper Egypt still using the basin system of irrigation continued to be left behind." On the other hand, cultural and intellectual life in urban communities continued to be dominated by "Western" ideology and life styles (Hussein, 1978).[11] This long term drift toward the adoption of the modern European cultural value system

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[10]A.R. Richards (1976), Accumulation, Distribution and Technical Change in Egyptian Agriculture: 1800-1940. Summaries of doctoral dissertations in the Journal of Economic History XXXVI:1.

[11]Mahmoud Hussein (1977), Class Conflict in Egypt: 1945-1970 (New York: Monthly Review Press), translated.

was counteracted by a religious organization (Muslim Brotherhood) that arose between the two World Wars. This group called for the "rejection of the degrading moral and political values inspired by the destructive influence of the 'West'... and advocated new values based on a return to Islam" (Hussein, 1977).

By the end of World War II, the urban middle-class stratum was slim but socially influential. It is this urban middle-class that has grown tremendously in Egypt since 1952, and gained the benefits of the new regime's efforts in social and economic developments.[12] Of prime importance in this respect was the expansion in free education up to and including college, and health services down to the smallest village. Although its annual per capita income of $250-$300 places Egypt among the poorer countries of the world, the extent of social development places her quite above the ranking indicated by her relatively low per capita income (U.N., 1972)[13]

The magnitude of social change, social mobility and improvements in the status of women that has occurred since the 1950's can be indicated from two indices. The first is the literacy rate, which increased from 25.0 percent in 1947 to about 30 percent in 1960, and rose to 44 percent in 1976. The proportion of the population 10 years and over that holds intermediate qualifications has also risen from 6 percent in 1960 to 16 percent in 1976. The rise in the proportion of this category was even higher among females - from 3.3 percent in 1960 to 11.6 percent in 1976.

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[12] J.C. Caldwell contends that it is this urban middle-class that has adopted modern marriage and fertility patterns and caused all the record low birth rates in the mid-1960's up to the early 1970's. "Fertility Transition with Special Reference to the ECWA Region" (1979), unpublished.

[13] United Nations, Research Institute for Social Development, Contents and Measurement of Socioeconomic Development, D.V. McGranahan et al. (New York: Praeger Publishers, 1972). The development index for Egypt (1959/60) was 34 which places her at a higher level than countries with higher per capita income such as Libya, Iran, Turkey, Guatemala, Dominican Republic, etc.

The second index is the female share among those enrolled in different levels of education. The rise in the female share reflects a favorable attitude on the side of the parents towards their daughters' pursuit of a higher educational level. For example, while the females' share in total population enrolled in intermediate education was 20.6 percent in 1953-54, it jumped to 35.1 percent in 1975/76. Similarly, the proportion of females in secondary education increased from 15 percent in 1953/54 to 34 percent in 1975/76. The female share of total students enrolled in colleges was 20.4 percent in 1953/54 and increased to 31 percent in 1975/76. The proportion female in elementary education, however, was rising more slowly. From the above figures it appears that females will attain an equal share (50 percent) in school enrollment in the near future in Egypt. In 1975 the absolute number of females enrolled in various levels of education was 2.4 million, compared to 631 thousand in 1953/54, which is an impressive expansion indeed (CAPMAS, Statistical Yearbooks: 1952 to 1977).

The Data

The data used in this study come from retrospective pregnancy histories of 12,169 currently married women interviewed in the National Fertility Survey (NFS) conducted in Egypt during 1974-75. The World Fertility Survey (WFS) core questionnaire was used in the survey. The survey had a national scope and covered all of the Egyptian governorates except the Suez Canal and Sinai zones. A two-stage probability sampling design was used and the number of selected primary sampling units was 92 wards and the capital of Markaz in the urban stratum, and 102 villages in the rural stratum, see appendix.

The study findings will be presented in the following order: the long term fertility trends; current fertility levels and patterns; the extent of family limitation; fertility differentials by rural-urban residence, regions and socio-

economic status; and levels of intermediate variables, infant mortality, family size norms and contraceptive use in the regions and the stage of modernization in the region.

The cross-sectional data are segregated into five sub-populations, each comprising households of a large geographic region that has a distinct level of sociocultural and economic development. The classification scheme is basically a rural-urban one. However, a locational dimension has been added to it - specifically Northern and Southern Egypt (known as Lower and Upper Egypt, respectively). The reason for this is that Southern Egypt, both the rural and urban areas, is still the most traditional society in Egypt. Current fertility there is at a high level and is in a natural regime, particularly in rural areas. Infant and child mortality levels are the highest in the country. Islamic institutions, values and attitudes, such as strong kin ties, strong son preference, large family size norms, endogamous marriages, extended family, polygamy, low levels of females' education and participation in labor force are holding very strongly in Upper Egypt (see Table 1: derived from the NFS). On the other hand, the Northern Regions, being subjected to the modern influences, diffused from the two primate cities (Cairo and Alexandria), are more modernized than the Southern regions. Small towns and cities of the Nile Delta in Northern Egypt were found to have the lowest level of infant mortality. The fifth region is a metropolitan one comprising Cairo and Alexandria with the relatively highest level of modernization in Egypt. The proportion of households in each of these regions was as follows (according to the NFS):

1. Cairo and Alexandria 16.8%
2. Urban, Lower Egypt 14.9%
3. Urban, Upper Egypt 14.5%
4. Rural, Lower Egypt 30.0%
5. Rural, Upper Egypt 23.8%

Table 1.

Indices of Social, Cultural and Economic Development (Modernization), for Currently Married Women (14-49) by Region, Egypt, NFS (1975).

INDEX	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.	EGYPT
Percent of Wives who ever worked	15.5	11.4	10.9	3.6	3.7	7.9
Percent of Wives who never attended school	56.3	63.5	63.8	86.4	91.9	75.9
Percent of Husbands who never attended school	34.8	45.1	40.7	71.8	79.9	59.0
Percent of Husbands in non-agricultural activities	94.1	73.9	81.6	25.0	25.5	52.3
Percent of Dwellings lit by electricity	84.9	67.2	64.3	16.0	7.1	40.1
Percent of Dwellings with piped water	84.2	54.9	52.7	8.2	5.9	33.9
Percent of Wives with rural background	13.3	22.8	18.9	92.2	90.6	57.4
Percent of Husbands with rural background	14.0	21.4	17.8	97.1	95.7	60.0
Percent of couples who are first cousins	18.0	13.0	23.0	17.0	28.0	20.0
Percent of Wives with Neutral Attitudes towards sex of child	73.0	61.0	48.0	52.0	35.0	52.0

The level of modernization runs in a descending order from region 1 to region 5, and on a striking continuum-like scale (see Table 1).

Long Term Demographic Trends

With few exceptions, the registered crude death rate fluctuated within a narrow range between 1906 and 1945, followed by a rather noticeable decline from 26.8 per thousand during the period 1940-44, to 23.0 per thousand in 1945-46. Since then, the registered death rate has been falling continually until it reached 13.7 in the period 1970-74, that is, half the level in 1940-44. The recorded rate in 1976 is 11.7 per thousand. The decade of the most rapid decline in general mortality was 1945-55 which raised the rate of population growth to unprecedented levels. Of extreme importance is the decline in the infant mortality rate which fell from 162 per thousand live births in 1940 to 127 in 1947, a drop of 35 deaths per thousand live births in 7 years. By 1960 the infant death rate had reached a sort of a plateau of 109 per thousand - a drop of 18 deaths per thousand babies in 13 years, and by 1973 the rate was 98 per thousand. So, the swift decline in mortality after the Second World War seems to have lost its momentum by the mid-1960's. This is reflected in the estimated values for life expectancy at birth (both sexes) which rose from 31.5 years in 1940 to 48.8 years in 1960 and to 49.7 years in 1965 (Valaoras, 1972).[14]

With respect to fertility, Egypt is considered atypical in the Arab world in that the registered birth rates suggest that its fertility has been relatively

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14 V.G. Valaoras (1972), Population Analysis of Egypt, 1935-1970: with Special Reference to Mortality, Occasional Paper No. 1, Cairo Demographic Centre.

low during most of this century and perhaps for an even longer time (P. Caldwell, 1977).[15] The crude birth rate has been fluctuating roughly between 42 and 44 per thousand since 1906 with a few exceptions of temporary decline in 1918-19, the early 1940's, and 1956-58 - reflecting the effects of the world-wide influenza epidemic, the Second World War, and the Suez War, respectively. The only period of considerable length for which records show a noticeable decline in the birth rate was that between 1963 and 1972, during which the rate fell from 43.0 to 34.1 per thousand, a 21 percent decline in 9 years. The rate has turned upward again since 1973 but has not reached the pre-1963 level. The registered birth rate for 1979 is 39.0 per thousand.[16]

The Trend of Lifetime Fertility, 1960-1975

Table (2) shows the mean parity for currently married women in 1960 and 1975 by age and marriage duration. In almost every cell of the table, a married woman tends to have a lower mean parity in 1975 than in 1960. Also, the differences shown should be taken as a minimum estimate of the decline, since in the 1960 Population Census the women were asked to report their live births from current marriage only, while in the NFS (1974-75) mean parities are from all their marriages. While a woman with completed fertility (30 years of marriage or more) in 1960 had 6.64 live births, on the average, a woman after the same duration in 1975 had only

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[15] Pat Caldwell (1977), "Egypt and the Arabic and Islamic World," in J.C. Caldwell, ed., The Persistence of High Fertility, Volume II (Canberra: Department of Demography, Australian National University), pp. 593-658.

[16] The vital rates given in this section are the official registered ones and they have been shown by various studies to suffer from under-reporting, particularly in the earlier periods. The registration was improving over time and is estimated to be now 90 percent complete for live births and a little lower than 90 percent for deaths.

Table 2.
Mean Number of Children Ever-Born to Currently Married Women by Age of Woman and Period Since First Marriage, Egypt: 1960, 1975.

Age	YEAR	0 - 4	5 - 9	10-19	20-29	30 +	All Durations[1]
Under 20	1960	0.412					0.412
	1975	0.616					0.616
20 - 24	1960	0.876	2.374				1.450
	1975	1.019	2.214				1.508
25 - 29	1960	0.938	2.708	4.314			3.012
	1975	1.070	2.523	3.782			2.754
30 - 34	1960	0.908	2.676	4.858			4.239
	1975	1.000	2.712	4.442	(5.088)		4.031
35 - 39	1960	0.792	2.524	5.263	6.669		5.568
	1975	---	2.308	4.869	5.168		5.143
40 - 44	1960	0.689	1.974	4.643	6.411		6.042
	1975	---	---	4.217	6.268		5.884
45 - 49	1960	0.583	1.664	3.993	6.330	7.100	6.424
	1975	---	---	3.911	6.174	7.087	6.342
50 & over	1960	0.608	1.093	2.339	4.942	6.551	6.312
	1975	---	---	---	4.772	6.199	6.011
All Ages[2]	1960	0.780	2.567	4.794	6.240	6.642	4.571
	1975	0.973	2.434	4.387	6.075	6.333	4.373

(1) The 1960 all durations mean parities are standardized for distribution by marriage duration on the basis of the 1975 distribution by age and duration of marriage.

(2) The 1960 all ages mean parity is standardized for distribution by age group on the basis of the 1975 NFS data.

--- Less than 25 cases in the base
( ) 25 - 49 cases in the base.

Source: 1960: Population Census of Egypt, 1960, Vol. II, Table 51, pp. 313-317.
1975: The National Fertility Survey, 1974-75.

6.33 children, a difference statistically significant at 0.01 level (the standard deviations are 2.9 and 3.0 respectively). Similarly, women married for 10-19 years had 0.41 children fewer in 1975 than in 1960, also statistically significant at 0.01 level. The 1960 mean parities shown in Table (2) and Figure (1) were standardized for age-duration distribution, on the basis of the 1975 distribution. This was done because the NFS data showed a shift in the distribution of currently married women by duration of marriage towards smaller proportions of women in shorter durations (less than 19 years). Since women at short durations of marriage tend to be highly reproductive and contribute considerably to annual live births, such a change tends to depress period fertility measures - even if duration-specific marital fertility rates are the same. However, after adjusting for the change in marriage-duration distribution between 1960 and 1975, age-duration specific mean parities are found to be lower in 1975 than in 1960. The decline is small but genuine. Also further evidence will be given to show that age specific marital fertility rates (ASMF) have declined due to deliberate family limitation, particularly in urban Egypt.

Current Level of Marital Fertility

A clear picture of the current fertility level and pattern can be drawn from the mean number of children born in the five years preceding the survey date to women who have been continuously in the married state for the past five years (WFS, Report No. 1, 1977). Table (3) shows these averages in urban and rural Egypt as well as in the 5 regions. It appears from the table that the highest mean number of births during the past five years is 1.056 per woman, age 15-49, in rural upper Egypt and the lowest is 0.660 per woman in Cairo and Alexandria. The rates in the three other regions fall consistently, age for age, in between the former two regions. In other words, the level of current fertility in a region is inversely

related to the level of modernization of the region. From these means an attempt was made to estimate age schedules of marital fertility by applying the interpolation coefficients devised by Grabill and Cho[17] to derive age-specific fertility rates from census data on own-children. The application made here has not been attempted before, and is evidently subject to several biases especially in the first two age-specific rates. In other words, the multipliers were meant to be applied to all women rather than those who are currently married and in their first marriage. Thus the extent of bias will depend on how the proportion married increases with age and approaches unity. However, it is taken here as a practical approximation and the age schedules derived look quite plausible and fit nicely to Coale and Trussell's model of marital fertility (1975).[18] The derived ASMF schedules are given in Table (4) and Figure (2). The ASMF curves reflect the same systematic negative association between current fertility and stage of modernization of the region. The interesting features of the fertility curves are the ecological succession of the five curves from the most modernized region to the most traditional one, and the crossing over of these curves at age group 20-24, which reverses the order of succession, i.e. with the most modernized region on the top and the least modernized at the bottom. As will be shown later, this suggests a positive correlation between the level of natural fertility and development. Figure (3) shows the time trend in ASMF rates during the period 1947-1975. The rates for 1947 and 1960 were estimated by Coale, Hill and Trussell (1975)[19] from the census

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[17]W.H. Grabill and Lee J. Cho (1965), "Methodology for the Measurement of Current Fertility from Population Data on Young Children," Demography, volume 2, p. 62, Table 1.

[18]A. Coale and T.J. Trussell (1978), "Technical Note: Finding the Two Parameters that Specify a Model Schedule of Marital Fertility," Population Index 44:2:203-243.

[19]A. Coale, A. Hill and T.J. Trussell (1975), "A New Method of Estimating Fertility Measures from Incomplete Data," Population Index 41:2:207-208.

Table 3

Mean Number of Children Born in the Past Five Years to Women Who Have Been Continuously In the Married State for the Past Five Years by Current Age, Egypt, NFS, 1975.

(per 1000)

Current Age	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
Under 20	1222	---	1222	---	---	---	1333	1167
20 - 24	1692	1688	1695	1592	1781	1688	1802	1568
25 - 29	1526	1468	1575	1396	1468	1541	1616	1522
30 - 34	1258	1139	1368	946	1150	1352	1356	1382
35 - 39	961	794	1113	610	826	987	1068	1164
40 - 44	518	420	628	283	513	484	590	681
45 - 49	261	198	332	142	176	304	318	351
50 - 54	86	55	112	27	98	51	124	95
All Ages	932	815	1041	660	855	954	1028	1056
N	8204	3927	4275	1428	1283	1217	2403	1873

Table 4

ASMF Rates of Continuously Married Women by Age and Region, Egypt, NFS, 1975.

(per 1000)

Age	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
15 - 19	327	159	327	150	169	158	353	306
20 - 24	334	373	337	356	386	377	353	316
25 - 29	278	251	294	227	249	281	296	292
30 - 34	225	195	253	153	199	242	247	261
35 - 39	148	120	176	87	134	144	167	188
40 - 44	73	58	92	38	67	73	86	99
45 - 49	23	17	30	13	11	30	29	31

FIG. 1 : Mean Number of Children Ever-Born to Currently Married Women by duration of marriage[a], Egypt, 1960 and 1975.

[a] The mean parity in 1960 was reported for current marriage only. The means are standardized for age composition on the basis of the 1975 distribution.

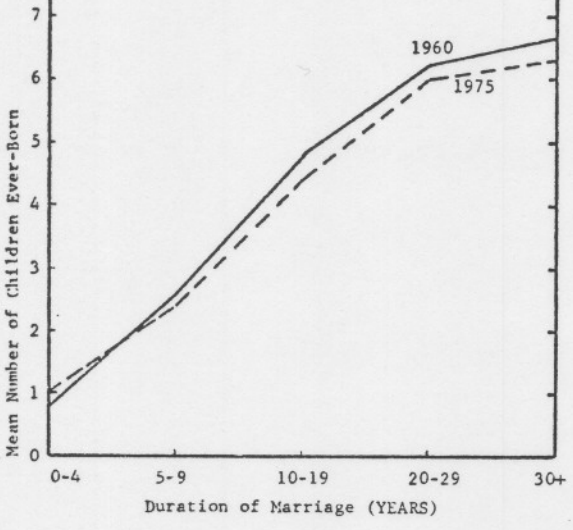


FIG. 2 : ASMFR by Region, Egypt, NFS (1974-75)

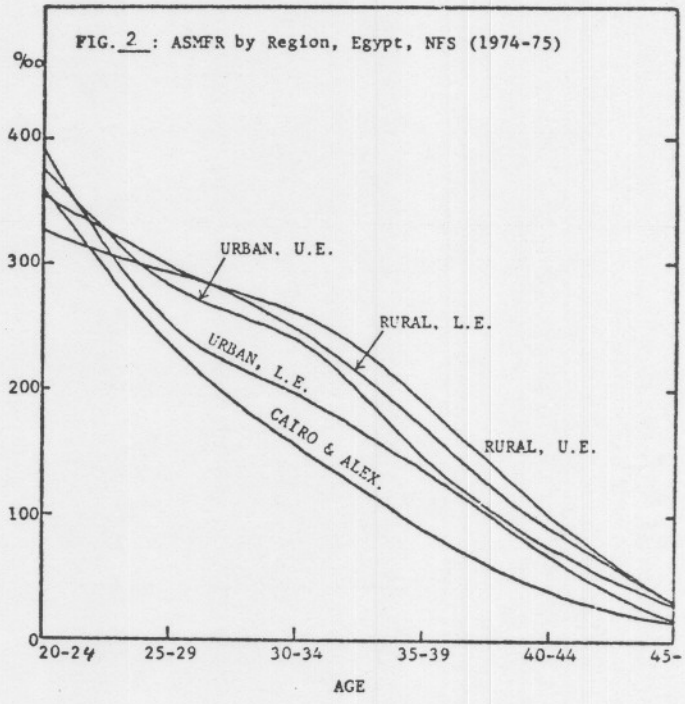
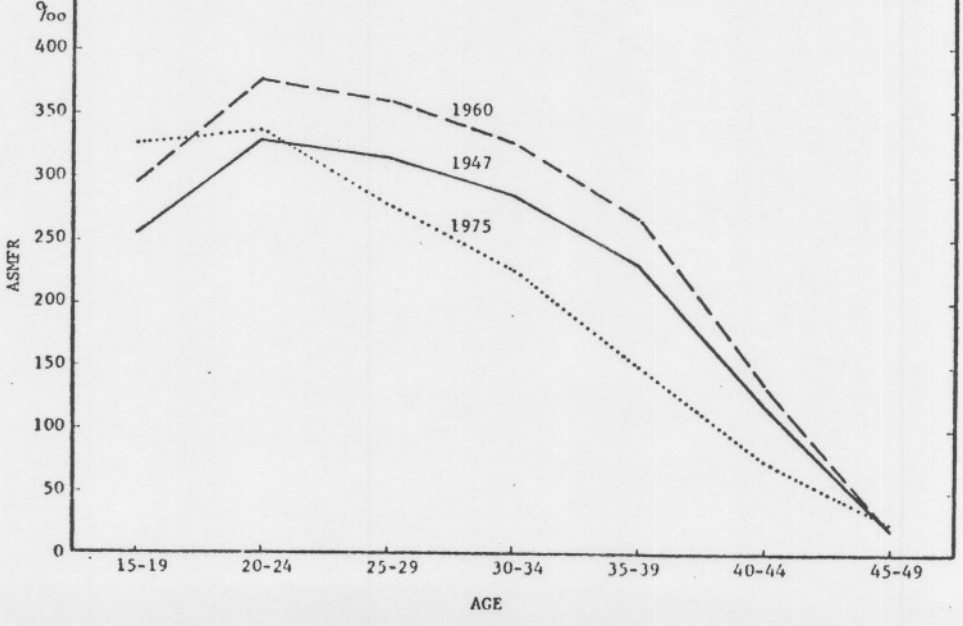


FIG. 3 . Age Specific Marital Fertility Rates, Egypt, 1947, 1960, 1975.

1947, 1960 Estimated by Coale, Hill and Trussell, 1975
1975 Estimated from NFS (1974-75)



data, while those for 1975 are estimated from NFS data as explained above. It is clear from the figure that while the level of marital fertility at each age was rising during the period 1947-1960, the trend was downward between 1960 and 1975. The determinants of this time trend will be dealt with later.

The Extent of Fertility Regulation

If the decline in marital fertility is real, one should find evidence of deliberate fertility control. The first point to check then was to look for evidence of contraceptive use. Indeed, the NFS data indicate a remarkable extent of fertility control in Egypt (see Table 5 and Figure 4). About one-third of the currently and continuously married women age 15-49 years have ever-used at least one method of contraception (any method except prolonged breastfeeding). The figures do not refer, of course, to the mean duration of use or efficiency of such use. The table also shows that while about one-half of the couples have ever-used contraceptives in urban Egypt, only about 15 percent have done so in rural Egypt. The figure also shows how the extent of contraceptive use by age in each region is systematically related to the level of development of the region. A positive relation is evident from the figure. Notice also that women in the middle ages 30-39 use contraceptives more than younger or older women - the peak of the curves is for women 30-34 years of age. This may be due to the fact that women 30-34 years of age in 1975 have married approximately between 1960 and 1964 - the period during which the National Family Planning Program was established in Egypt.

To display the extent of deviation of the observed fertility age curves from that of natural fertility (L. Henry, 1961),[20] the index values of ASMF, i.e. with

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[20] Louis Henry (1961), "Some Data on Natural Fertility," Eugenics Quarterly 8: 81-91.

the rate for age group 20-24 = 100, were calculated and plotted on Figure (5), along with the natural fertility schedule n(a), empirically derived by Coale and Trussell.[21] The figure reveals a systematic deviation of the observed fertility schedules from the n(a) schedule with age, presumably due to deliberate fertility control. The figure also shows the positive relation between the extent of deliberate fertility control and the level of modernization of the region.

The next step in the analysis was to estimate Coale and Trussell's index, m, of deliberate fertility control[22] from the derived ASMF schedules. The index 'm' measures indirectly the extent of deliberate fertility control from the departure of observed ASMF rates, r(a), from the n(a) function.[23] A value of 'm' around 0.20 suggests the absence of deliberate fertility control. The estimated 'm' values are given in Table (6) and Figure (6). The estimated value of 'm' is 0.38 for the whole country, which indicates a modest extent of fertility control, while it equals 0.59 in urban Egypt which indicates a moderate degree of fertility regulation, compared to a value of 0.22 in rural Egypt reflecting a predominantly natural fertility regime. At the regional level the value of 'm' is 0.86 in Cairo and

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[21] A.J. Coale and T.J. Trussell (1974), "Erratum," Population Index 42:572.

[22] Op. cit. (1978) in footnote 18.

[23] The model is:

$$r(a) = M \cdot n(a) \cdot e^{m\, v(a)}$$

Where, M is a scale factor to adjust for the fertility level,
v(a) is an empirically derived standard age pattern of fertility control.

Table 5

Percentage of Contraceptives Ever-Users[1] by Age and Region, Egypt, NFS, 1975.

Age	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
15 - 19	5.7	13.4	1.6	19.6	15.4	6.1	1.7	1.5
20 - 24	17.4	34.6	6.4	48.4	32.3	24.5	8.2	3.9
25 - 29	33.1	52.3	15.1	63.1	56.2	36.8	19.9	8.9
30 - 34	42.5	67.1	19.3	78.3	65.4	55.5	26.9	9.3
35 - 39	41.0	65.3	18.7	73.1	65.4	55.5	28.4	7.8
40 - 44	40.3	57.5	21.2	69.7	56.7	43.5	30.6	8.4
45 - 49	32.3	46.9	16.2	55.0	45.2	36.9	22.0	8.2
All Ages	33.2	53.7	14.9	64.5	53.6	41.3	21.0	7.3
N	9065	4276	4789	1523	1404	1349	2681	2108

(1) Women Currently Married in First Marriage

Table 6

Coale-Trussell Index 'm' of Deliberate Fertility Regulation by Age and Region, Egypt, NFS, 1975.

Current Age	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
25 - 29	0.396	0.875	0.234	1.087	0.883	0.669	0.338	0.095
30 - 34	0.346	0.603	0.188	0.901	0.565	0.366	0.277	0.075
35 - 39	0.432	0.664	0.276	0.933	0.552	0.542	0.361	0.169
40 - 44	0.354	0.539	0.198	0.809	0.433	0.415	0.271	0.114
45 - 49	-0.178	0.021	-0.331	0.157	0.279	-0.285	-0.289	-0.378
All Ages 'm'	0.377	0.592	0.221	0.863	0.495	0.453	0.300	0.125
Mean Square Error	0.0010	0.0050	0.0010	0.0045	0.0083	0.0041	0.0013	0.0008
M	0.721	0.744	0.728	0.713	0.739	0.786	0.755	0.696

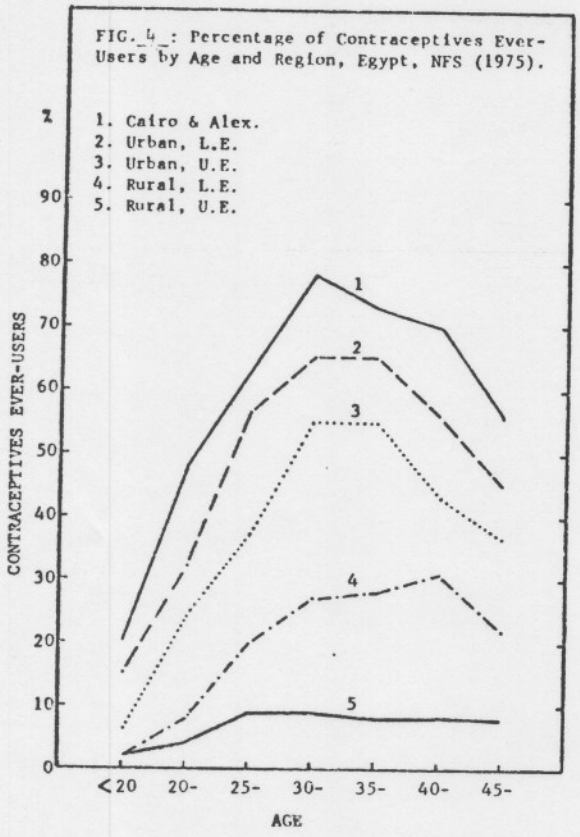


FIG. 4 : Percentage of Contraceptives Ever-Users by Age and Region, Egypt, NFS (1975).

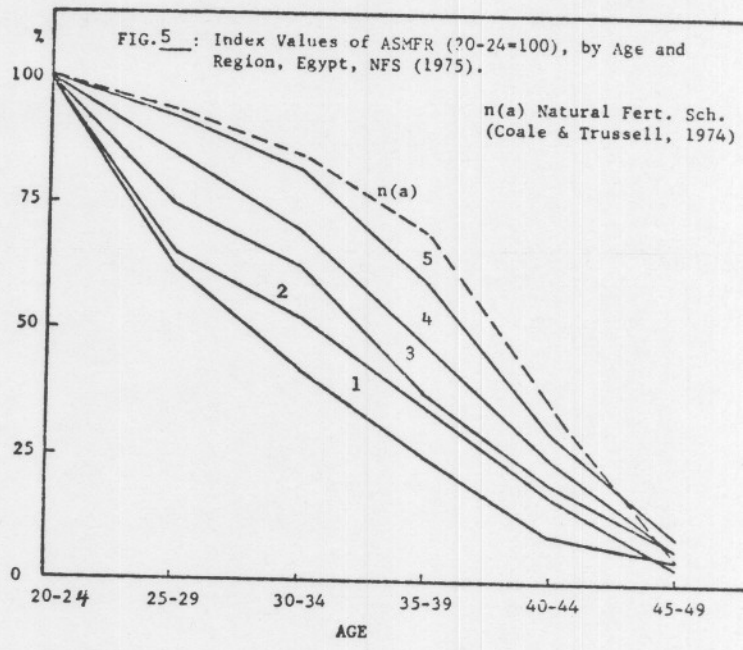


FIG. 5 : Index Values of ASMFR (20-24=100), by Age and Region, Egypt, NFS (1975).

n(a) Natural Fert. Sch. (Coale & Trussell, 1974)

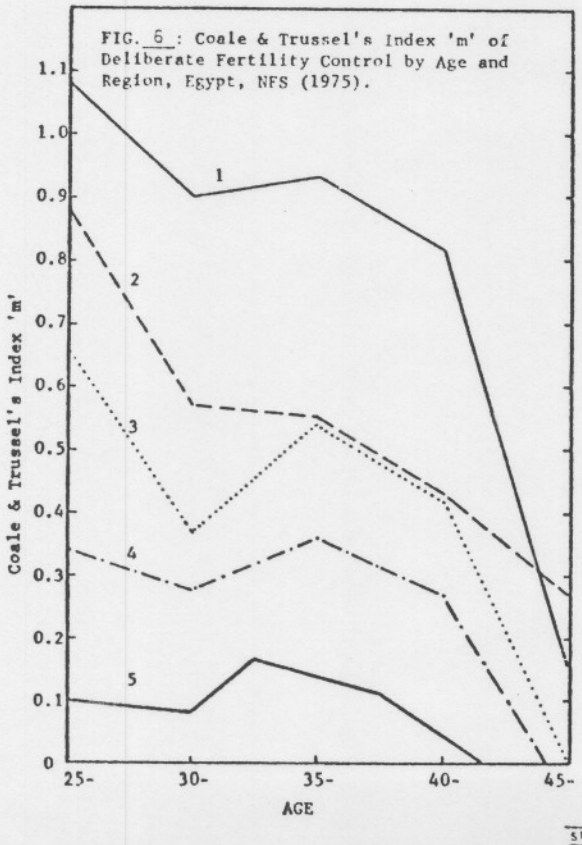
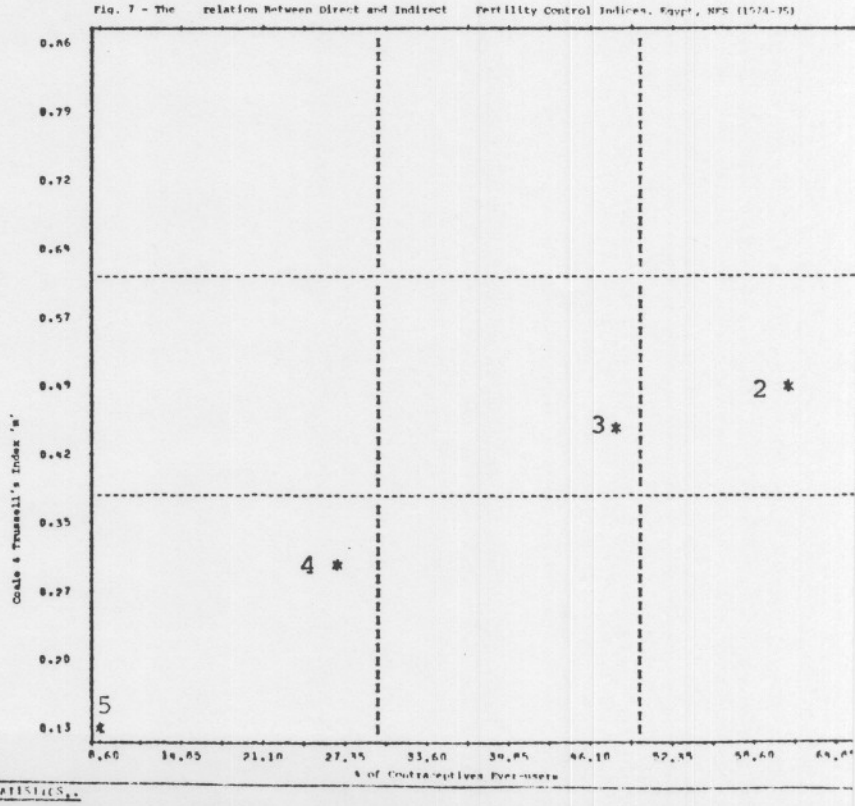


FIG. 6 : Coale & Trussel's Index 'm' of Deliberate Fertility Control by Age and Region, Egypt, NFS (1975).



STATISTICS,

CORRELATION (R) =	0.93978	; R SQUARED =	0.87391	; SIGNIFICANCE =	
STD ERR OF EST =	0.11296	; INTERCEPT (A) =	0.01919	; SLOPE (B) =	
PLOTTED VALUES =	5	; EXCLUDED VALUES =	0	; MISSING VALUES =	

Alexandria, 0.50 in urban lower Egypt, 0.45 in urban upper Egypt, 0.30 in rural lower Egypt, and 0.13 in rural upper Egypt. Again, the value of 'm' in each region is directly related to the level of modernization of the region, and the value is consistent with the reported proportions of contraceptive users in the region. Plotting both direct and indirect indices of fertility control (i.e. proportion of contraceptive ever-users and 'm' index respectively) on a scattergram (see Figure 7), revealed a strong correlation between both (Pearson's R=0.93 and was highly significant), which enhances the credibility of both.

The second procedure to evaluate the presence of deliberate fertility control was to calculate the parity progression ratios, which indicate the proportion of married women having at least n children who proceed to have a subsequent child, i.e. to have at least n + 1 children. In other words, they represent the growth frequencies of families of different sizes, at the level of the group of women studied (R. Pressat, 1972). Tables (7), (8) and (9) show these ratios for three marriage cohorts: women married before 1945, those married in the period 1955-60, and those married between 1960 and 1964. Parity progression ratios for the oldest marriage cohort, given in Table (7), indicate that these women proceed to build up their families at the same rate (level and pace) in rural and urban Egypt. The emergence of a differentiated urban pattern is observed among women of the second cohort, with lower ratios among urban women after the second parity (see Table 8). The youngest marriage cohort, in urban areas, evidently proceed to build up their families at a slower pace than in rural areas. Also, women in the youngest marriage cohort show differentiated patterns by region. The slower "tempo" of fertility among this young cohort has to do partly with the fact they started their marital life at the time of establishment of the National Family Planning Program (in 1965), hence they had greater access to contraceptive knowledge and use. However, this has to do also with their better level of education, which was an outcome of a

Table 7

Parity Progression Ratios (a_x) for Women Married Once and Continuously (married prior to 1945) for 30 years and over, Egypt, NFS, 1975.

(per 1000)

(x)	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
0	966	965	966	960	969	980	973	955
1	980	982	978	978	984	990	979	976
2	962	967	959	957	977	965	955	964
3	934	940	928	929	950	945	942	907
4	902	906	897	897	927	903	893	903
5	846	869	825	860	850	889	824	825
6	797	787	807	763	827	774	814	796
7	730	761	698	755	781	764	715	668
8	678	677	678	705	630	683	680	671
9	631	659	600	673	663	655	580	625
10	535	566	497	621	574	491	462	533
11	497	561	408	---	---	---	---	---
N	2120	1043	1075	374	324	293	630	443

--- Less than 50 cases in the base

Table 8

Parity Progression Ratios (a_x) for Women Married Once and Continuously (1955-60 marriages), by Region, Urban-Rural Egypt, NFS, 1975.

(per 1000)

(x)	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
0	969	965	973	958	968	980	972	975
1	981	984	978	961	995	995	983	971
2	949	936	962	895	972	934	964	960
3	898	883	912	862	878	902	914	910
4	799	761	882	680	767	818	837	828
5	709	696	720	670	601	778	719	719
6	581	559	597	455	602	562	550	667
7	450	430	464	---	480	390	442	490
8	383	310	433	---	---	---	396	471
9	388	---	---	---	---	---	---	---
N	1458	710	748	238	219	201	430	317

Table 9

Parity Progression Ratios (a_x) for Women Married Once and Continuously (1960-64 marriages), by Region and Urban-Rural Residence, Egypt, NFS, 1975.

(per 1000)

(x)	EGYPT	URBAN EGYPT	RURAL EGYPT	CAIRO & ALEX.	URBAN L.E.	URBAN U.E.	RURAL L.E.	RURAL U.E.
0	961	964	957	967	976	947	958	957
1	963	959	967	947	955	970	966	969
2	884	855	911	773	854	916	924	894
3	732	677	781	649	638	733	770	794
4	574	528	610	476	559	517	582	641
5	412	387	429	333	380	---	476	375
6	313	337	299	---	---	---	330	254
7	416	---	---	---	---	---	---	---
N	1736	842	894	274	250	245	498	398

--- less than 50 cases in the base

fifteen-year effort in expanding education since 1952. The fact that the reproductive experience of the young cohorts - those married for less than 30 years - is truncated, does not invalidate our inference about the slowing of the "tempo" of fertility in urban Egypt. In other words, for incomplete fertility cohorts, we are not judging whether urban women are spacing their births or terminating their reproductive careers from the analysis of their parity progression ratios.

Urban-Rural Fertility Differentials

In 1956 El-Badry,[24] by carefully examining the 1947 Population Census cumulative fertility data concluded that "no evidence was found in the census or vital statistics data to support the assumption of lower fertility in urban than in rural Egypt." In 1965, he noted[25] that registered crude birth rates were significantly higher in urban areas than in rural ones during the period 1945-1955. The average rate during that period was about 50 per thousand in urban areas compared to 45 in rural areas. This relative rise in urban fertility coincided with the sharp decline in mortality after the Second World War and up to the late fifties. This period also witnessed noticeable improvement in the level of living in general and in health care in particular. In the same study, El-Badry reported that the 1960 Census data showed higher age standardized parity levels in the urban governorates

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[24] M.A. El-Badry (1956), "Some Aspects of Fertility in Egypt," The Milbank Memorial Fund Quarterly 34:1:22-43.

[25] M.A. El-Badry (1965), "Trends in the Components of Population Growth in the Arab Countries of the Middle East: A Survey of the Present Information," Demography 2:140-186.

than in the non-urban governorates. By the mid-1950's it seems that the upward trend in urban fertility began to lose momentum. The registered birth rates in urban Egypt started to fall slowly between 1955 and 1963 and then rapidly between 1964 and 1970 (Khalifa, 1978).[26] This was reflected in the birth rate at the national level as mentioned earlier. So, by 1975, the secular decline in urban fertility resulted in the reversal of the 1960's urban-rural fertility differentials. The NFS data show that incomplete cumulative fertility is lower in urban Egypt than in rural Egypt (see Table 10 and Figure 8). Urban women married for a period of 15 to 19 years have on the average 4.7 live births while rural women have 5.0 live births, i.e. a small difference of 0.3 live births, but statistically significant at 0.01 level. The differences between rural and urban mean parities of women in durations (5-9) and (10-14) years are also in the same direction with about the same magnitude. Women in the shortest duration, though, show the reversed differentials, which may be due to the differences in the levels of natural fertility. The difference was also found to be statistically significant at 0.01 level. On the other hand, women in durations of marriage 30 years or more reflect the urban-rural differentials that prevailed in the 1960's. Urban women in this duration had 6.45 live births compared to 6.13 for rural women and the difference is statistically significant at 0.01 level. Women in durations (20-24) and (25-29) years of marriage however, showed no significant differences in their mean parities by urban-rural residence.

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[26] A.M. Khalifa (1978), "Rural-Urban Fertility Differences and Trends in Egypt, 1930-70," pp. 77-94 in J. Allman, ed., Women's Status and Fertility in the Muslim World (New York: Praeger Publishers).

Regional Fertility Differentials

The NFS showed significant regional differences in lifetime as well as in current fertility. Mean parities by age of the mother and marriage duration in each of the 5 regions are given in Table (11). These means have been standardized in each region for the duration of marriage distribution on the basis of the whole country distribution. As shown in the table, young married women in different regions tend to reproduce at more or less the same level. However, differences begin to appear between regions at age group 25-29, and more clearly age group 30-34 and duration 10-14. Urban women tend to curtail their fertility, a little, at these age groups relative to rural women. Urban areas in lower Egypt - mainly small and medium size towns and cities, emerge as having higher fertility levels, especially at older ages. Rural areas of upper Egypt, on the other hand, show a relatively depressed level of fertility due to lower levels of natural fertility determinants, as will be shown later. The magnitude of these regional differences in cumulative fertility is shown in Figure (9), for the most modernized (Cairo-Alexandria) and the second traditional (rural lower Egypt) regions. It is worth noting here that the mean parities of women 40-44 years of age - and less markedly of women 45-49 years - increase slightly from region 5 to region 1, indicating a positive relation between lifetime fertility and the level of modernization of the region due mainly to differences in natural fertility. Women age 50 and over in 1975 - mostly married before 1945 - show moderately higher levels of parity in urban lower and upper Egypt than in the two rural regions. This is perhaps due to their higher levels of natural fertility, since these women have passed through the decade of rapidly falling mortality and rising fertility, while in their most reproductive ages. The low level of parity of these women in Cairo and Alexandria may be due to their (limited) use of contraceptives and to rural migration to these two cities.

Table 10.

Mean Number of Children Ever-Born Alive to Currently Married Women by Community of Residence (Urban-Rural), Age and Duration of Marriage, Egypt, NFS, 1975.

Age	Locality	Duration of Marriage 0 - 4	5 - 9	10-14	15-19	20-24	25-29	30 +	All Durations*
Under 20	U	0.674							0.674
	R	0.585							0.585
20 - 24	U	1.084	2.222						1.523
	R	0.974	2.210						1.454
25 - 29	U	1.131	2.508	3.640					2.659
	R	0.984	2.537	3.843					2.722
30 - 34	U	(1.243)	2.574	3.774	5.078				3.819
	R	(0.654)	2.914	4.101	5.212				4.045
35 - 39	U		2.059	3.260	5.089	6.039			4.826
	R		(2.625)	3.901	5.451	6.279			5.183
40 - 44	U			(2.852)	4.116	5.958	6.603		5.660
	R				4.945	5.967	6.712		5.709
45 - 49	U					5.686	6.437	7.394	6.281
	R					5.651	6.228	6.724	5.953
50 & over	U					---	4.988	6.338	6.087
	R					(3.641)	5.106	6.085	5.850
N	U	737	894	822	720	670	626	1155	5624
	R	976	1007	975	847	799	624	1312	6545
All Ages**	U	0.975	2.368	3.553	4.696	5.808	6.092	6.453	4.264
	R	0.948	2.454	3.780	5.013	5.908	6.058	6.133	4.279

Locality: (U) Urban; (R) Rural.

* Standardized for distribution by marriage duration on the basis of the whole country distribution

** Standardized for distribution by age on the basis of the whole country age composition

Table 11.

Mean Number of Children Ever-Born Alive to Currently Married Women by Age, Duration of Marriage, and Region, Egypt, NFS (1974-75)

Age	Region	Duration of Marriage 0 - 4	5 - 9	10-14	15-19	20-24	25-29	30 +	All Durations*
Under 20	1	(0.809)							(0.809)
	2	0.513							0.513
	3	0.674							0.674
	4	0.580							0.580
	5	0.589							0.589
20 - 24	1	1.036	2.208						1.489
	2	1.051	2.324						1.544
	3	1.177	2.146						1.548
	4	1.019	2.340						1.532
	5	0.912	2.065						1.359
25 - 29	1	1.114	2.490	3.430					2.571
	2	1.127	2.544	3.638					2.674
	3	1.123	2.500	3.835					2.725
	4	1.048	2.587	3.839					2.753
	5	(0.867)	2.463	3.845					2.669
30 - 34	1		2.581	3.519	5.000				3.633
	2		2.804	3.736	5.178				3.825
	3		2.357	4.103	5.074				3.885
	4		2.873	4.150	5.234				4.043
	5		2.951	4.035	5.175				3.985
35 - 39	1		---	3.160	4.523	5.620			4.317
	2		---	(3.677)	5.100	6.138			4.815
	3		---	(2.941)	5.683	6.500			5.092
	4		(2.346)	3.971	5.396	6.400			5.075
	5		---	3.811	5.513	6.168			5.025
40 - 44	1				(3.548)	5.462	6.223		5.125
	2				(5.111)	6.089	7.058		5.909
	3				---	6.344	6.683		5.859
	4				4.883	6.181	6.651		5.774
	5				(5.065)	5.709	6.785		5.636
45 - 49	1					(5.167)	6.480	7.138	6.140
	2					---	6.427	7.728	6.316
	3					---	6.427	7.283	6.165
	4					5.758	6.215	7.290	6.153
	5					(5.488)	6.244	6.124	5.735
50 & over	1						(4.581)	6.079	5.709
	2						---	6.601	6.169
	3						---	6.445	6.032
	4						(5.313)	6.137	5.816
	5						(4.891)	5.987	5.652

Region: 1.Cairo & Alex.; 2. Urban, L.E.; 3. Urban, U.E.; 4. Rural, L.E.; 5.Rural, U.E.

*Standardized for distribution by duration of marriage on the basis of the whole country in the row.

The NFS data show that 13 percent of currently married women (in first marriage) in Cairo and Alexandria have spent their childhood in a village; and almost one-third of the couples were migrants. So, it seems that if it were not for internal migration, the level of urban fertility might have been lower. However, if it were not for internal migration, the national fertility level would most likely have been higher.

Fertility Differentials by Socioeconomic Status

The NFS indicates significant cross-sectional fertility differentials by wife's education and husband's occupation. However, differences by wife's education were sharper than by husband's occupation, a finding that was arrived at also by Abu-Lughod (1965)[27] by using the 1960 Census data for Cairo City. Abu-Lughod contends that occupation of the husband is either a poor indicator of socioeconomic status in Egypt - which she believes to be the case - or that the causal connection between fertility and husband's occupation operates through the intervening variable of the wife's education. The NFS shows generally a negative relationship between socioeconomic status (measured by husband's occupation) and fertility in urban Egypt, but a positive relationship is found in rural Egypt. Thus, wives of own-account farmers (tenants and owners) have, at each age group, higher mean parities than wives of agricultural wage-laborers. Similarly, the fertility level of workers' wives in the lowest socioeconomic status, agricultural wage laborers, is higher in semi-urban communities than in rural ones. These differentials presumably reflect the positive impact of better living conditions on fertility. The underlying factors here are perhaps better levels of nutrition and medical care, enjoyed by families in the higher socioeconomic groups in rural areas and favorable environmental conditions in urban regions.

The NFS data also showed that a minimum number of years of schooling, between six to nine years at least, are required before any dramatic differences in fertility

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[27] J. Abu-Lughod (1965), "The Emergence of Differential Fertility in Urban Egypt," The Milbank Memorial Fund Quarterly 43:2:235-253.

appear. Table (12) shows the mean parities of women currently in their first marriage by duration of marriage and highest educational level attended. Considering first mean parities over all durations of marriage (less than 30 years), standardized for the duration of marriage distribution, we notice the expected negative relationship between fertility and education. The only exception to this systematic relationship is the rise in fertility as women's education increases from "able to read and write" to elementary education. One explanation for such a deviation might be that the improvement in the level of natural fertility of these (selected) women with education outweighs the effect of their limited deliberate fertility control. It will be shown later that women's fecundity is positively related to education due perhaps to better health and nutrition.

Restricting the analysis to continuously married women was followed to eliminate the disturbing effects on fertility of differential marriage disruption rates by education. Looking at fertility differentials by education at each duration of marriage reveals almost the same pattern. In the youngest duration, 0-9 years, illiterate women have lower mean parity than those who can just read and write or those who have attended elementary school only, once again probably reflecting differences in natural fertility. Differences in fertility between the latter two categories of education are, however, not significant. Beyond elementary education, though, fertility is consistently inversely related to education. In the second duration of marriage, however, the negative association emerges starting with those who have attended elementary school. Among women married for at least 30 years, the small number of women with preparatory and secondary education does not allow reliable inferences to be drawn. Similar fertility differentials by wife's

education were also reported by El-Badry and Rizk (1965)[28] and Abu-Lughod (1965)[29] by using the 1960 Population Census data. While El-Badry found evidence of somewhat lower fertility among only a limited number of educated people in urban areas in 1947, he and Rizk reported that the 1960 Population Census data indicated conclusively a negative relationship between fertility and education in urban areas, and a positive relationship in rural Egypt. Abu-Lughod, by using the 1960 Census data of Cairo, found a significant inverse relationship between fertility and education and contends that these differentials had most likely existed in Cairo for at least one generation.

To simplify the comparison and increase stability of estimated parameters, educational categories were collapsed into three: those who have never attended school; those who never attended school but can read and write, and those who attended up to intermediate school only; and those who attended secondary school or over. The mean parities of these three groups, by duration of marriage, are shown in Figure (10). From the graph, an inverse relation between fertility and education is the consistent pattern. Moreover, the graph suggests that marked declines in fertility emerge only after at least 9 years of education. The lower fertility levels among the better educated women reflect their higher levels of contraceptive use relative to the less educated, as will be shown later. Table (13) was designed to investigate whether the negative relation between fertility and education holds true in rural as well as in urban areas. As expected, in urban

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[28] M.A. El-Badry and H. Rizk (1965), "Regional Fertility Differences between Socio-Economic Groups in the U.A.R.," in Proceedings of the World Population Conference, Belgrade, Yugoslavia, 1965, volume II (New York: United Nations, 1967).

[29] Janet Abu-Lughod (1965), op. cit. in Footnote 27.

Table 12.

Mean Number of Children Ever-Born to Currently Married Women (in First Marriage) by Duration of Marriage and Highest Educational Level Attended, Egypt, NFS, 1975.

Duration of Marriage	Highest Educational Level Attended: Never at School	Read and Write	Elementary School	Preparatory School	Secondary School	College & over
0 - 9	1.73	1.82	1.81	1.72	1.54	1.53
10-19	4.62	3.94	4.46	3.68	2.96	(2.42)
20-29	6.28	6.43	6.31	4.80	(3.57)	---
30 and over	6.61	(5.86)	6.66	---	---	3.67
Durations (0-29)[a]	3.93	3.77	3.92	3.21	2.57	2.36
N	8240	300	1708	228	364	151

a Standardized for distribution by duration of marriage on the basis of the whole country distribution

Table 13.

Mean Number of Children Ever-Born to Currently Married Women (in First Marriage) by Duration of Marriage, Highest Educational Level Attended and Residence (Urban-Rural), Egypt, NFS, 1975.

Duration of Marriage	Highest Educational Level Attended: Never at School		Read & Write, Elementary and Preparatory		Secondary, College & over	
	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL
0 - 9	1.858	1.671	1.847	1.699	1.545	---
10-19	4.616	4.625	4.028	5.000	2.815	---
20-29	6.441	6.160	5.873	7.278	(3.561)	---
30 and over	6.985	6.335	6.246	(7.318)	(3.769)	---
Durations[a] (0-29)	4.024	3.880	3.667	4.317	2.517	---
N	3082	5158	1573	663	506	9

a Standardized for distribution by duration of marriage on the basis of the whole country distribution.

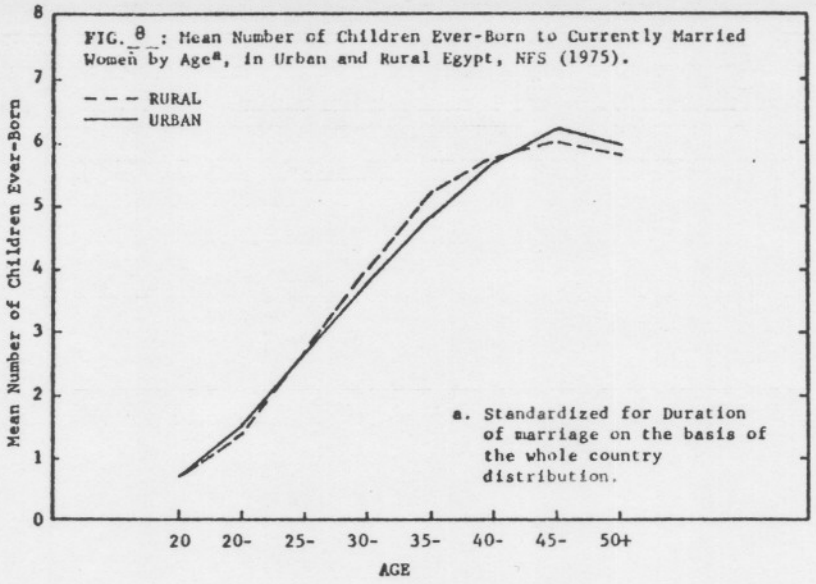


FIG. 8 : Mean Number of Children Ever-Born to Currently Married Women by Age[a], in Urban and Rural Egypt, NFS (1975).

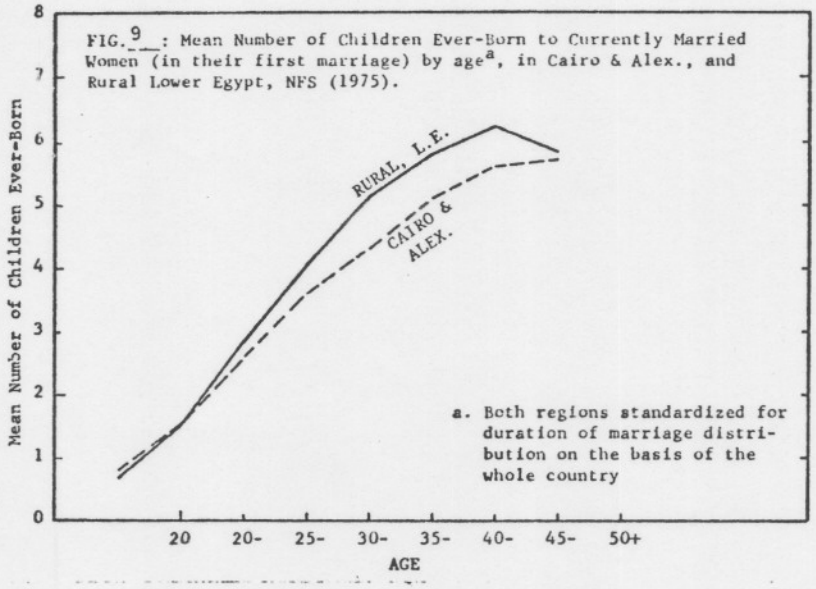


FIG. 9 : Mean Number of Children Ever-Born to Currently Married Women (in their first marriage) by age[a], in Cairo & Alex., and Rural Lower Egypt, NFS (1975).

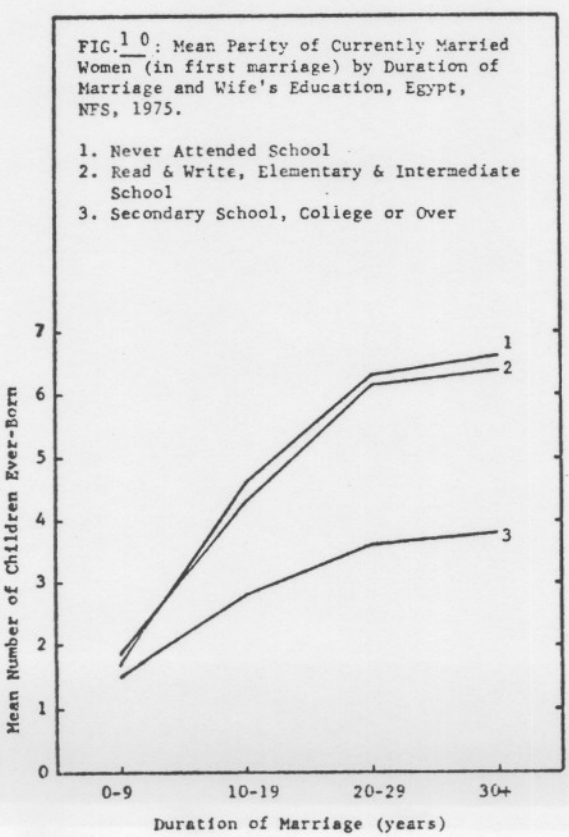
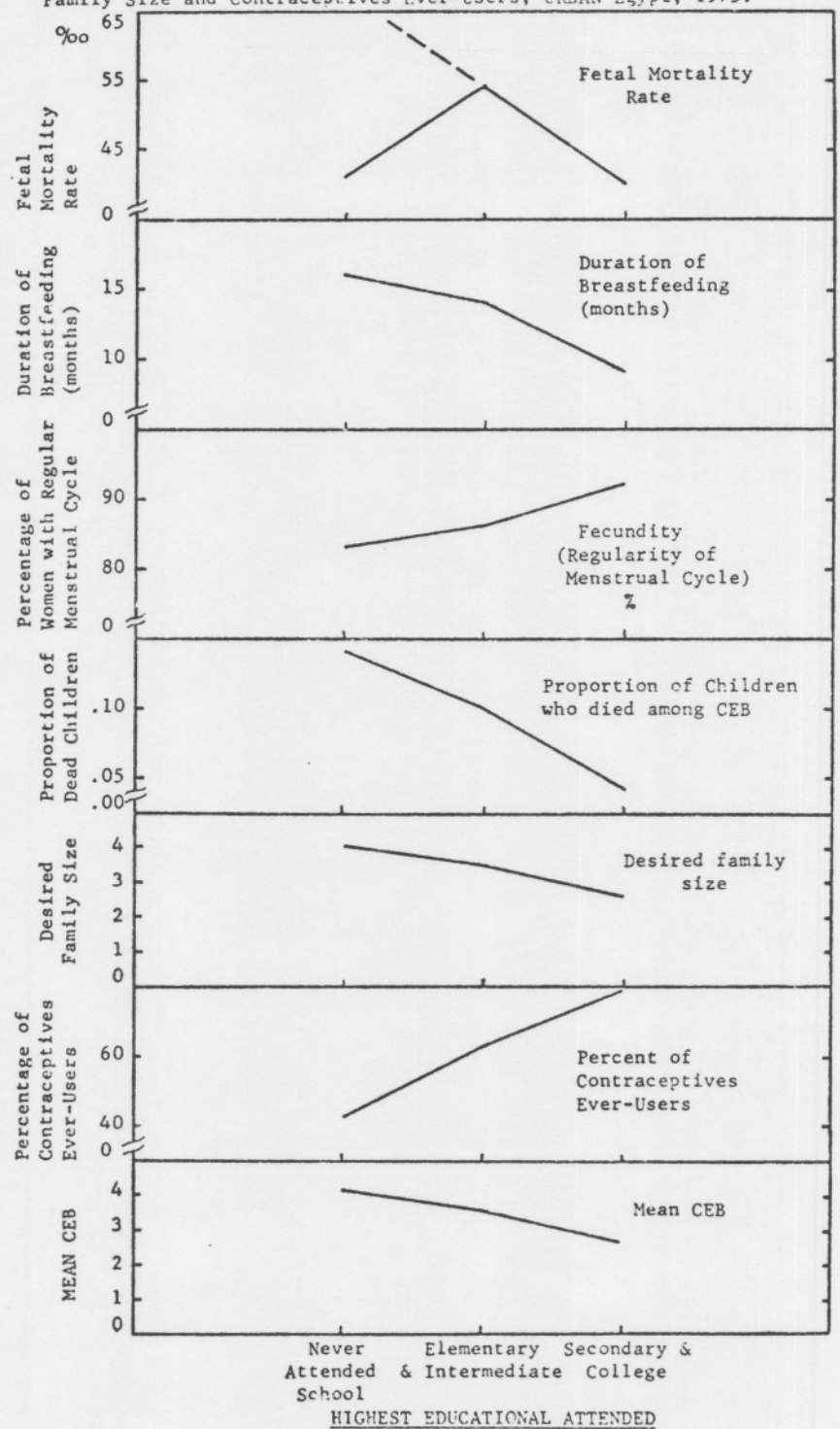


FIG. 10 : Mean Parity of Currently Married Women (in first marriage) by Duration of Marriage and Wife's Education, Egypt, NFS, 1975.

areas the negative relation is the consistent pattern at each duration of marriage, due to differences in contraceptive use with education. On the other hand, a positive relation is found in rural areas, which reflects differences in natural fertility with education, as the better educated women have higher levels of natural fertility. Moreover, differences in fertility level by rural-urban residence controlling for education are also observed. Thus, illiterate women have higher parity levels in urban Egypt than in rural Egypt, at each duration of marriage except the second, again reflecting perhaps better health care - especially prenatal - and nutrition in urban areas. Women with intermediate level of education have lower fertility in urban areas than in rural ones, due to differences in contraceptive use by residence. The number of women with secondary or higher education in rural areas was too small to allow similar comparisons.

To sum up, the NFS data consistently indicate that fertility varies inversely with wife's education in urban areas, and directly in rural ones. The switching of the correlation coefficient sign from negative to positive in some studies has posed a sort of a puzzle in demographic analysis. This has been related many times to the poorer quality of data, specifically to omissions of remote vital events, for rural or illiterate women. However, the NFS provides evidence that this might not always be the case. The NFS data show that if we are dealing with something close to a natural fertility situation, we may actually find a positive correlation between fertility and education. Figure (11) illustrates the various channels through which one of the most powerful instruments of modernization, namely education, can affect both potential and desired fertility as defined by Easterlin's framework (this framework will be discussed below). To eliminate environmental effects, the analysis is restricted to urban women only, those in continuous first marriage for less than 30 years. The indices shown in Figure (11) are all standardized for

FIG.11 : Wife's Education[1], Determinants of Natural Fertility, Desired Family Size and Contraceptives Ever-Users, URBAN Egypt, 1975.



(1)Women married continuously for less than 30 years,all figures are standardized for marriage duration distribution on the basis of the whole urban sample distribution.

variations in the duration of marriage distribution by education, on the basis of the whole urban area marriage duration distribution. From the figure, it is clear that the higher the level of the wife's education, the lower is the level of her foetal losses and the mean duration of breastfeeding, and the higher is the level of her fecundity - as measured by the regularity of the menstrual cycle. The combined effect of these three intermediate variables raises the level of the woman's natural fertility with education. Better educated women usually come from relatively better-off families that provide them with better standards of living during their childhood and adolescence, i.e. better health care and nutrition, etc. This seems to show up in their higher fecundity after marriage. Similarly, a large proportion of better educated women join the labor force after marriage and thus add to their families' income and raise, relatively, the living conditions of the family. Hence, in the absence of fertility control practices, a positive correlation between fertility and education may be observed. On the other hand, education induces a series of attitudinal and behavioral changes conducive to lower fertility, as the NFS shows. Thus, better educated women were found to desire a smaller family size and to have more neutral attitudes towards the sex of the child. They tend also to be more independent in their decision-making and in the choice of their mates. Thus, we find a smaller proportion of them in endogamous marriages - usually arranged by the parents, particularly first-cousin marriages. Moreover, better educated women were found to have lower levels of infant and child mortality, i.e. they need a smaller number of live births to achieve a desired family size. Hence, better educated women tend to be highly motivated to use contraceptives once they achieve their target family size. The NFS shows that better educated women do use contraceptives more frequently than less educated women. Hence, in the presence of contraceptive use one may find a negative correlation between

fertility and education as shown in Figure (11).

The Level of Modernization of the Region and the Level of the "Intermediate" Variables Underlying Observed Fertility Levels

Another main concern of this study is to examine the relationship between the level of modernization of the region and the level of observed fertility and the underlying "intermediate" variables determining this level. As mentioned earlier, the segregation of the population into five regions has proven to be a useful procedure in revealing five distinct sub-populations at successive stages of socio-cultural and economic development, or modernization (as shown in Table 1).

The mean parities of currently married women, in their first marriage, in each of the five regions, by duration of marriage and the wife's education, are given in Table (14). Once again, the table displays the same pattern of fertility-education relationship by residence (that is, negative in the three urban areas and positive in the two rural ones) discussed in detail before. Let us consider now how the level of lifetime fertility relates to the level of modernization of the region, controlling for education. What we will notice is a strikingly consistent positive relation between modernization and fertility among illiterate women, paritcularly those in the first and the last durations of marriage, i.e. women most likely to be in a natural fertility regime. In the two middle durations of marriage (10-19) and (20-29) years, the direct relationship is interrupted only in the two most modernized regions, namely Cairo and Alexandria and urban lower Egypt. Fertility levels in these two regions are lower than in the other regions, mainly due to deliberate fertility control even among illiterate women. Relatively higher age at first marriage in these two regions may explain only a small part of these differences. On the other hand, regional fertility differentials among women with intermediate levels of education follow an opposite trend, with the lowest level of fertility in the most

Table 14.
Mean Number of Children Ever-Born to Currently Married Women (in First Marriage) by Duration of Marriage, Level of Education and Region, Egypt, NFS, 1975.

Duration of Marriage	Region[a]	Highest Educational Level Attended: Never at School	Read & Write, Elementary and Preparatory	Secondary, College & over
0 - 9	1	1.866	1.786	1.550
	2	1.933	1.811	1.540
	3	1.794	1.969	1.518
	4	1.709	1.754	---
	5	1.625	1.588	---
10 - 19	1	4.457	3.745	2.494
	2	4.569	4.083	(3.296)
	3	4.828	4.313	(3.235)
	4	4.655	4.838	---
	5	4.585	5.368	—
20 - 29	1	6.231	5.306	(3.433)
	2	6.447	6.207	---
	3	6.650	6.500	---
	4	6.231	6.897	—
	5	6.083	(8.306)	
30 & over	1	7.053	5.544	---
	2	7.015	6.860	---
	3	6.911	(7.073)	---
	4	6.394	(7.903)	—
	5	6.228	---	—
Durations[b] (0-29)	1	3.917	3.395	2.375
	2	4.039	3.760	2.647
	3	4.128	3.979	---
	4	3.924	4.181	---
	5	3.828	4.673	---
N	1	991	619	253
	2	1050	507	122
	3	1040	446	131
	4	2830	459	8
	5	2329	205	1

a) The Region Code: (1) Cairo & Alex.; (2) Urban, L.E.; (3) Urban, U.E.; (4) Rural, L.E.; (5) Rural, U.E.

b) Standardized for distribution by duration of marriage on the basis of the whole country distribution.

modernized region and the highest in the most traditional one. This negative relation between fertility and the level of modernization of the region is related to regional differences in the extent of contraceptive use (see Table 5 and Figure 4).

Considering now the level of other "intermediate" variables, aside from contraceptive use, i.e. the determinants of natural fertility, we notice that the level of fecundity, as indicated from the proportion of women with regular menstrual cycle, is positively related to modernization. Figure (12) shows that the proportion of women with regular ovulation is higher in urban regions than in rural regions, particularly among women under 20 years of age and those over 35. Two related indices exhibit the same relationship with modernization, the first is the proportion of wives with irregular menstrual cycle (i.e. sub-fecund) among those menstruating, and the second is the proportion who stopped menstruating by age. In both cases, the level of sterility and sub-fecundity is slightly higher in rural areas than in urban areas (see Figures 13 and 14). On the other hand, the rate of foetal mortality per 1000 pregnancies (all periods of gestation) was found to be higher, for most age groups, in urban regions than in rural regions (see Figure 15). The indicated levels of foetal loss by the NFS of 55 per thousand pregnancies is most likely underestimated, especially in rural areas. Some evidence was found (see Figure 11) suggesting better reporting of foetal losses among better educated women. Also, reliable comparative figures for less developed countries range between 100 and 120 foetal deaths per 1000 pregnancies. According to theoretical models, actual foetal losses are estimated to be as high as 200 per thousand or more (Coombs, Freedman, and Namboothiri, 1969).[30] The intermediate variable that showed a wide range of variation among the 5 regions was the mean duration of breastfeeding

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[30] L. Coombs, R. Freedman and P.N. Namboothiri, "Inferences About Abortion from Foetal Mortality Data," Population Studies 23:2, July 1969:247-265.

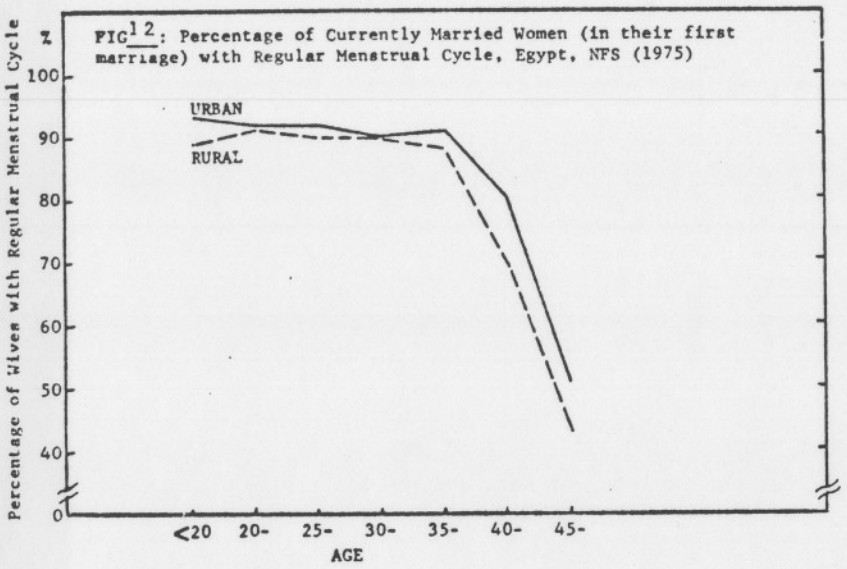
FIG 12: Percentage of Currently Married Women (in their first marriage) with Regular Menstrual Cycle, Egypt, NFS (1975)
Percentage of Wives with Regular Menstrual Cycle
%
100
90
80
70
60
50
40
0
URBAN
RURAL
<20
20-
25-
30-
35-
40-
45-
AGE

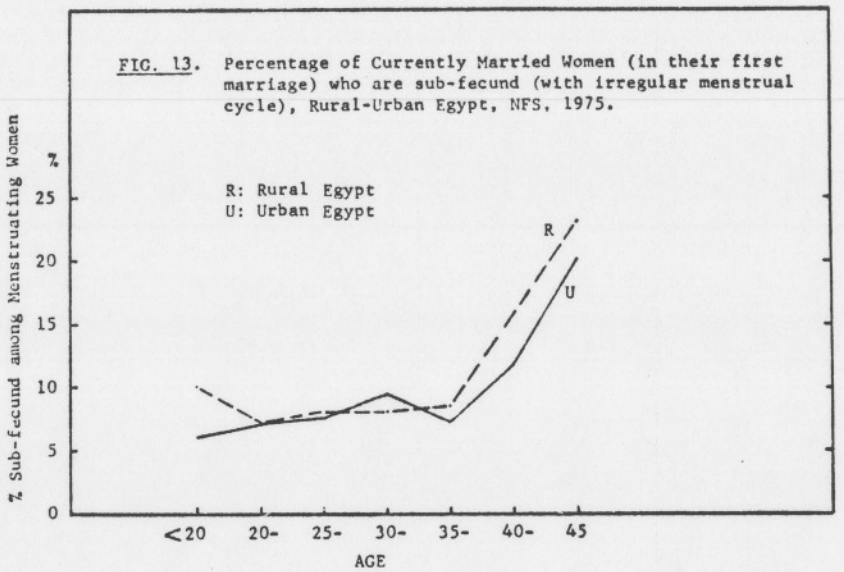
FIG. 13. Percentage of Currently Married Women (in their first marriage) who are sub-fecund (with irregular menstrual cycle), Rural-Urban Egypt, NFS, 1975.
R: Rural Egypt
U: Urban Egypt
% Sub-fecund among Menstruating Women
%
25
20
15
10
5
0
R
U
<20
20-
25-
30-
35-
40-
45
AGE

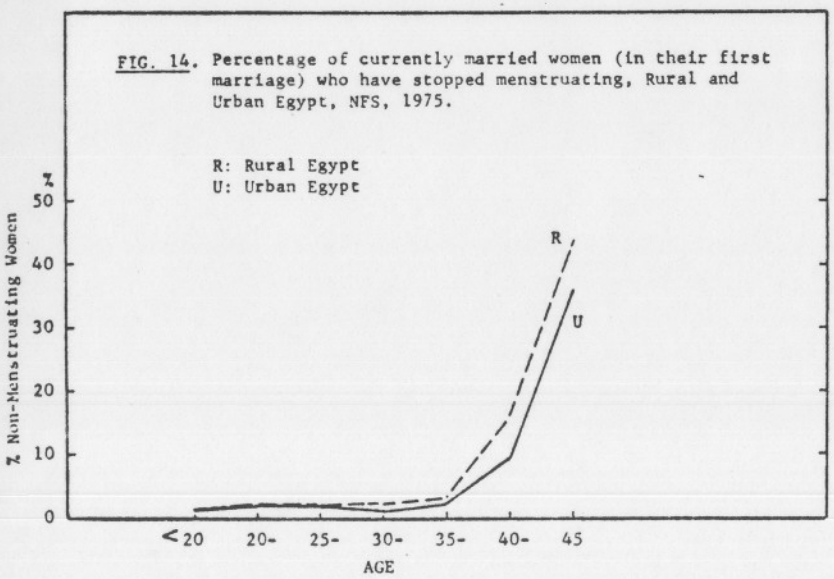
FIG. 14. Percentage of currently married women (in their first marriage) who have stopped menstruating, Rural and Urban Egypt, NFS, 1975.
R: Rural Egypt
U: Urban Egypt
% Non-Menstruating Women
%
50
40
30
20
10
0
R
U
<20
20-
25-
30-
35-
40-
45
AGE

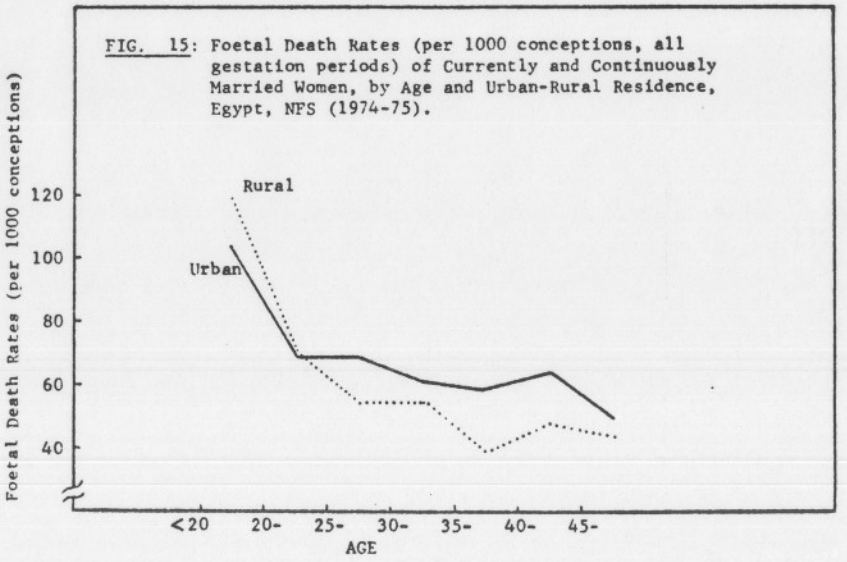
FIG. 15: Foetal Death Rates (per 1000 conceptions, all gestation periods) of Currently and Continuously Married Women, by Age and Urban-Rural Residence, Egypt, NFS (1974-75).
Foetal Death Rates (per 1000 conceptions)
120
100
80
60
40
Rural
Urban
<20
20-
25-
30-
35-
40-
45-
AGE

of the last surviving child (up to age 5), i.e. not biased by differential infant and child mortality though may be biased by the age distribution of the last born children (see Figure 16). Bongaarts' (1978)[31] analytical study of determinants of natural fertility contends that variations in lactational amenorrhea explain most of the over-time or cross-community differences in natural fertility levels, while variations in foetal loss, fecundity or frequency of intercourse accounts for few or none of the differences. L. Henry (1961) also contends that differences among populations in the length of the "idle" period, which he relates to differences in lactation practices, may be responsible for observed differences in the level of natural fertility among populations.

Culturally determined practices such as prolonged breastfeeding, which is the norm in Moslem societies, do change gradually with modernization. Evidence was found in the NFS (Figure 14) that better educated women breastfeed their children for shorter durations. Evidence was found (not presented here) that the proportion of women who ever-breastfed the last child decreases also with education. Educated women tend to supplement, or substitute completely, breastfeeding with bottle-feeding. The NFS data show also that the duration of breastfeeding is shorter in the most modernized regions - by about 6 months - than in the most traditional region (see Figure 16). Hence, the depressed level of life-time fertility in rural areas of Egypt, particularly in upper Egypt (see Table 14, Column 1), must be related to the combined effect of mainly prolonged breastfeeding, and to a lesser extent to lower fecundity and higher rates of intra-uterine mortality. But what are the underlying factors behind these

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[31] John Bongaarts (1978), "A Framework for Analysing the Proximate Determinants of Fertility," Population and Development Review 4:1, March:105-132.

FIG.16: Mean Duration of Breast-feeding Last Surviving Child (Women with children age less than 5 years) by Age of the Mother and Region, Egypt, NFS (1974-75)

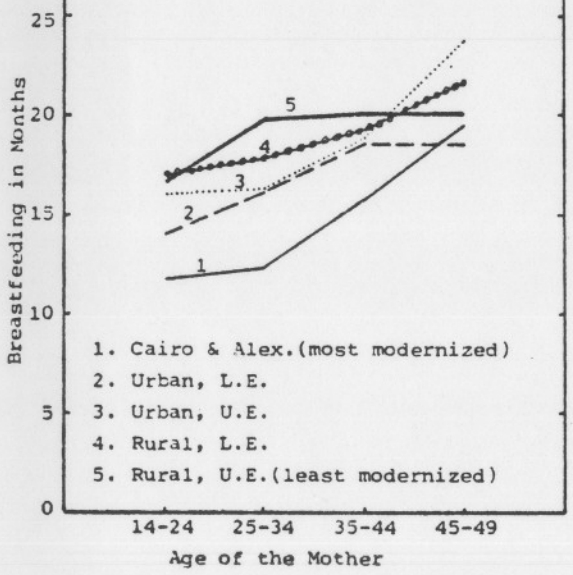


FIG. 17: Proportion Dead of Children Ever-Born by Duration of Marriage and Region, Egypt, NFS (1974-75)

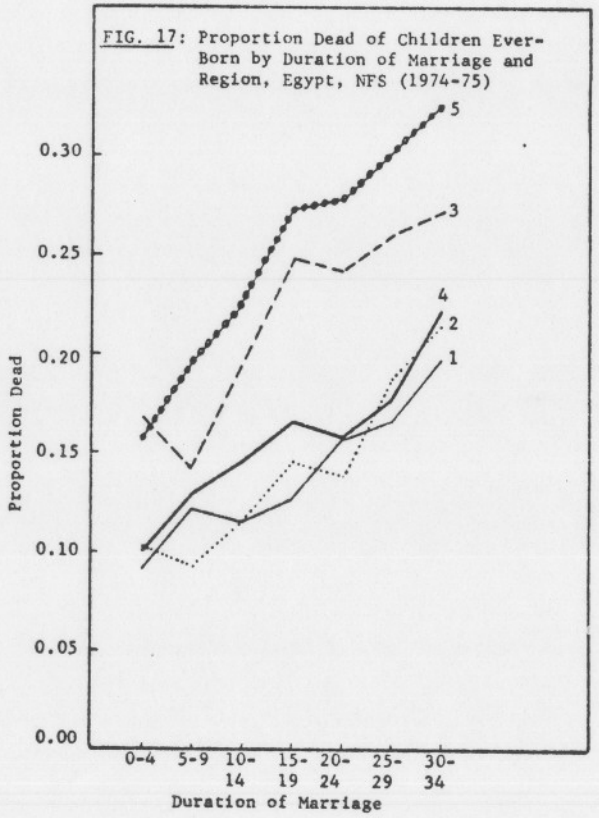
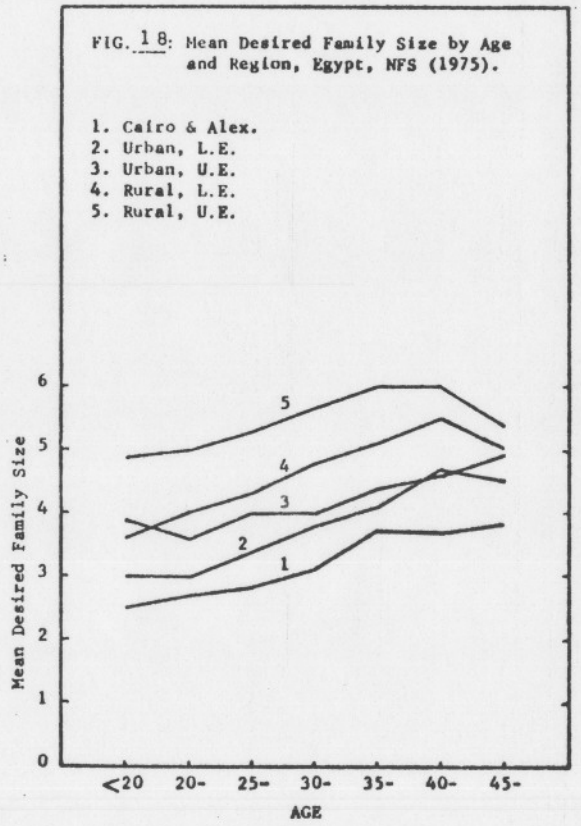


FIG. 18: Mean Desired Family Size by Age and Region, Egypt, NFS (1975).



intermediate variables? Is it the environmental factors that govern the level of nutrition and health? Bongaarts (1979)[32] failed to find conclusive evidence of such a relationship in the existing biomedical and demographic research. Although the present analysis did not deal with measures of nutrition and health, there is some evidence of a moderate association between socioeconomic status, environment and fecundity factors.

Easterlin's 'Synthesis' Model of the Social and Economic Determinants of Marital Fertility

The above analysis was guided with the propositions of Easterlin's model,[33] though this was not expressed explicitly thus far. The regional differentials in marital fertility and their relationship with the stage of modernization of the region and the underlying intermediate variables determining these levels, as well as the cross-sectional fertility differentials by socioeconomic status all fit the model's predictions.

According to the model, changes that accompany modernization such as increased urbanization and education; improved health and nutrition; increased exposure to the mass-media; higher per capita income and rising aspirations for standards of living, modern goods, etc., are viewed as eventually affecting fertility negatively through 'socioeconomic-intermediate' variables, specifically the demand for children (denoted Cd), the potential number of surviving children parents are capable of having in the absence of deliberate fertility control (denoted Cn), and the psychic and

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[32]John Bongaarts (1979), "Malnutrition and Fecundity: A Summary of Evidence," Center for Policy Studies Working Paper (New York: The Population Council).

[33]R.A. Easterlin (1978), "The Economics and Sociology of Fertility," in Charles Tilly, ed., Historical Studies of Changing Fertility (Princeton University Press): 57-133.

pecuniary costs associated with fertility regulation (denoted CR). Modernization, according to the model, tends to decrease both the demand for children (operationally measured by desired family size) and the costs of fertility regulation, while it tends to increase the supply of children (Cn). The latter is a function of the increased natural fertility and the chances of child survival. Hence, couples are viewed as being pushed toward a situation of "excess" or "unwanted" fertility, i.e. a situation where Cn exceeds Cd. The higher the level of "excess" fertility (Cn-Cd), the higher the level of motivation for the couples to use contraceptives, given the cost of fertility control. Couples tend to cross the "threshold" of fertility regulation when the benefits of regulation outweigh its cost. Couples whose level of supply falls short of their desired family size are viewed as having no motivation to regulate their fertility. The transition from a pre-modern to a modern fertility situation involves, through alternative paths, the shift from a situation where most couples are in a "deficit" fertility situation, i.e. where $Cn < Cd$, to an intermediate situation where most couples are in an "excess" situation. The model views a transitional stage of a rising fertility, due to the improvement in the level of natural fertility. This situation induces the shift from a natural fertility regime to a regulated fertility one with the decline in costs of fertility regulation. Couples are viewed as eventually heading to a "perfect" contraceptive society where observed fertility is mainly determined by desired fertility and coincides with it.

The previous analysis has shown that the level of natural fertility tends to increase with modernization, whether of the region or of the socioeconomic group within the region. The NFS data also show that the level of infant and child mortality varies considerably among the regions and is negatively related to the level of economic development and sociocultural change in the region (see Figure 17). This tends, coupled with the increased natural fertility, to raise Cn

with modernization. Looking at family size preferences in the five regions, as shown by the NFS, reveals that they vary inversely with the level of modernization of the region (see Figure 18). The overall-ages mean desired family size in Egypt is relatively moderate, 4.4 children. However, it varies considerably by residence: it amounts to 5 children in rural areas compared to 3.7 in urban areas. Younger wives in urban areas prefer smaller families than older wives, while there are slight age differentials in rural areas. Also, continuously married women in Cairo and Alexandria prefer a family size that is 2.2 children less than that preferred by wives in rural upper Egypt. As a brief presentation of Easterlin's interpretations of the long term fertility trend, Table (15) shows the percentage distribution of the currently married women, 35-45 years of age, by the "excess-deficit" fertility situation, or the balance between actual number of surviving children and the desired number of surviving children, and their ever-use of contraceptives in the five regions. Ideally one should evaluate the level of motivation in terms of the difference between desired family size (Cd) and the number of surviving children the parents would have in the absence of any voluntary control of fertility (Cn). The results are again highly consistent with the previously outlined interpretations. Women in the least modernized region are in a natural fertility regime and are predominantly in a "deficit" fertility situation. On the other hand, those in the relatively modernized region - Cairo and Alexandria - are moderately regulating their fertility with a sizeable proportion in an "excess" or balanced situation ($Cn \geq Cd$).

Modernization also involves a gradual transformation, or evolution, of culturally determined marriage patterns, attitudes and traditions, in a direction favorable to the fertility transition (Freedman, R., 1961-62; 1963).[34] The NFS

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[34] R. Freedman, "The Sociology of Human Fertility," Current Sociology 10/11:2, 1961-62:35-68; and, "Norms for Family Size in Underdeveloped Countries," Proceedings of the Royal Society-B, vol. 159, 1963: 220-245.

Table 15

Percentage Distribution of Currently Married Women, in their first marriage, 35-45 years of age, according to the balance between the actual number of surviving children they have (C) and the desired number of children they would like to have (C_d), and their ever-use of contraception, in five "macro" communities in Egypt at different stages of modernization, Egypt, NFS, 1975.

REGION	N	TOTAL Percent (Both groups)	Natural Fertility Group				Regulated Fertility Group			
			TOTAL	I $C<C_d$	Ia $C=C_d$	II $C>C_d$	TOTAL	III $C>C_d$	IV $C=C_d$	IVa $C<C_d$
CAIRO & ALEX.	619	100	30.7	12.6	8.9	9.2	69.3	33.0	28.1	8.2
URBAN L.E.	532	100	42.0	16.4	15.4	10.2	58.0	20.7	28.4	(9.0)
URBAN U.E.	497	100	52.9	27.6	17.9	(7.4)	47.1	12.1	28.0	(7.0)
RURAL L.E.	947	100	72.1	33.8	26.3	12.0	27.9	7.1	17.5	(3.3)
RURAL U.E.	763	100	91.9	64.9	21.1	(5.9)	8.1	---	(4.5)	---
EGYPT	3358	100	61.3	33.3	18.9	9.1	38.7	13.4	19.8	5.5

--- Less than 25 cases
( ) between 25 and 49 cases

FIG. 19 : Percentage of Currently Married Women (in their first marriage) who have neutral attitude towards sex of child, by age and region, Egypt, NFS (1975)

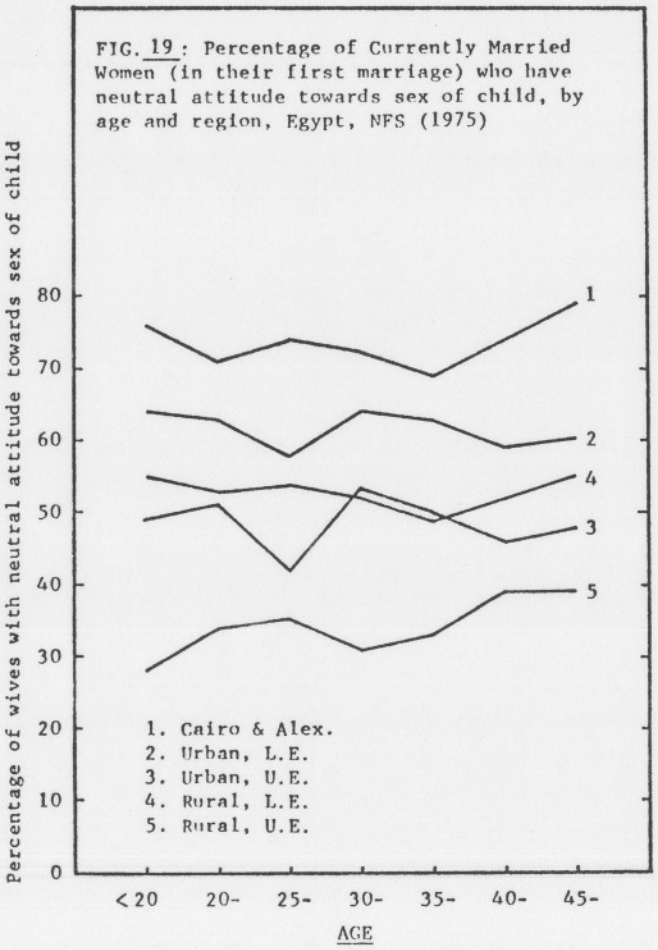
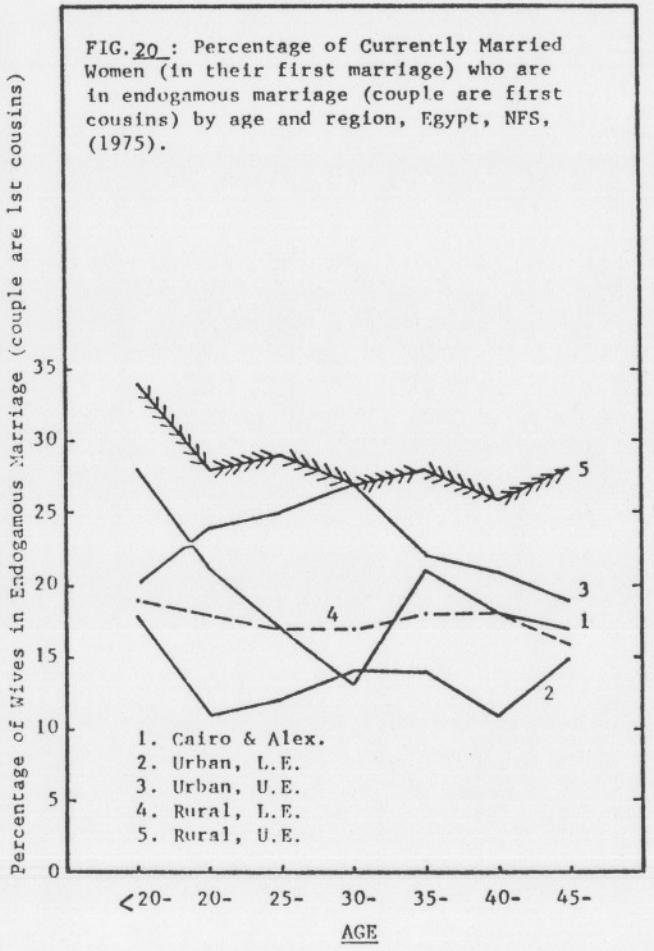


FIG. 20 : Percentage of Currently Married Women (in their first marriage) who are in endogamous marriage (couple are first cousins) by age and region, Egypt, NFS, (1975).



showed that marriage patterns such as endogamous marriages - specifically first cousin marriages - characteristic of the Middle Eastern culture, tend to be less frequent in the most modernized regions of Egypt (see Figure 19). The survey data showed also that wives in endogamous marriages tend to prefer a significantly larger family size, controlling for socioeconomic variables and residence. Similarly, the NFS showed that another cultural attitude, though not specific to Islamic culture, that of a strong male child preference, varies negatively with the level of modernization of the region. The proportion of wives without male bias in regard to the sex of the child - those who prefer equal or less number of males to females by age and region - are shown in Figure (20).

Summary

The long term demographic trends in Egypt appear now to be clearly consistent with the "demographic transition" model. Prior to 1945, fertility and mortality were at high levels and fluctuating slightly around a fairly stable level - the first phase of the transition. After the Second World War, mortality declined sharply and continued to fall rapidly for almost a decade - phase two. During that period fertility was apparently rising gradually, particularly in urban Egypt, perhaps due to the improving level of nutrition and health. Thus while there was no evident rural-urban fertility differential in Egypt up to 1947, in 1960 urban areas had higher fertility than rural ones. By 1975, however, urban cumulative fertility was slightly lower than rural fertility - the beginning of phase three.

The reported decline in parity levels between 1960 and 1975 should be taken as a minimum estimate, since the 1960 data refer to live births from current marriage only, while 1975 data are from all marriages. The decline in fertility between 1960 and 1975 was masked by two factors. The first, and probably a common factor, was the rise in natural fertility among young women. The second, and

perhaps common, was the shift in marital duration distribution towards older ages, which perhaps reflected the effect of falling mortality.

There are several reasons to believe that the recent fertility decline is genuine, even if small. First, parity levels in 1975 are lower than those in 1960, even controlling for changes in the marriage-duration distribution. Second, various indices of fertility control consistently indicate a moderate level of control, particularly in urban Egypt. These indices include the reported proportions of contraceptive ever-users, Coale and Trussell's index 'm,' and parity-progression ratios. Third, fertility differentials by urban-rural residence, by region and by socioeconomic status are identical to those observed in countries proceeding in the process of fertility transition. The historical pattern of transition is an early decline in urban fertility among the higher socioeconomic groups due to the practice of fertility control, followed by the diffusion of such practices towards lower socioeconomic groups. Fourth, the observed relationship between the level of motivation for contraceptive use as defined by Easterlin's model, and the actual use of contraceptives is consistent with the model's interpretations. The higher the level of modernization of the region, the higher is the level of motivation and the actual use of contraceptives. Similarly, the higher the socioeconomic status of the woman, the higher is the level of her motivation to regulate fertility and her actual use of contraceptives.

The study also offered an explanation of why fertility tends to be positively correlated with education in a natural fertility regime, while the typical negative association exists when in the presence of deliberate fertility regulation practices. The analysis suggests that modernization may be the best vehicle for the fertility transition, while the availability of contraceptives enchances it. Thus, modern fertility behavior is observed only in the relatively more modernized urban regions

of Egypt, and more so among marriage cohorts 1960-64 - the period of establishing the National Family Planning Programme. However, in the short run, modernization appears to defeat its purposes defined above, by raising the level of natural fertility. Yet, in the long run, its compensating mechanism, specifically shifting the population to a situation of 'excess' fertility and high motivation for fertility regulation compensates for the rise in natural fertility and induces the fertility transition.

Source of the Data

The data used in this study come from retrospective pregnancy histories of 12169 currently married women interviewed in the National Fertility Survey (1974-75). The reference year for this survey will be March-August 1975 in light of three field pre-tests conducted in November 1973, December 1973 and September 1974. These pretests served also as training vehicle for the field staff and the interviewers. The questionnaire was comprised of ten sections covering: respondent's background information; marriage history schedule; maternity practices; pregnancy history and level of fecundity; contraceptive knowledge and use; fertility planning and desired family size etc.; working history of the wife; husband's background information; housing conditions; economic condition and ownership of durable goods.

The Scope of the Survey: The survey has a national scope and covered all the Republic's zones except the Suez Canal and Sanai governorates.

The Sample Design: A two-stage probability sampling design was used. Units of the first stage were the smallest administrative units, i.e. the wards (shiakhas) or Markaz capitals in urban areas, and the villages in rural areas. Units of the second stage were households with at least one ever-married woman. The survey major geographical strata were: Cairo and Alexandria; Lower Egypt urban areas; Upper Egypt urban areas; Lower Egypt rural areas; Upper Egypt rural areas, and the Border Governorates.

The 1966 census data were used as a frame to select the first stage sampling units and distribute them on the strata in the following manner. In the Urban strata, the 1966 data served to calculate for each shiakha or Markaz capital the percentage of individuals 10 years of age and over with intermediate or higher

educational qualifications. The shiakhas in each governorate were arranged in ascending order according to this percentage, and the same procedure was followed to arrange the Marakes of capitals. If the size of a selected Shiakha or Markaz capital was less than 1500 households, the whole unit was enumerated to provide the frame for the second stage. However, if the size exceeded that, an area unit composed of a cluster of roads of approximately 1000 households was selected. This was deemed necessary to reduce the amount of enumeration work in large shiakhas and to ensure homogenous first stage units as far as the number of households was concerned. Thus 43 urban administrative units were selected, with at least two units from each governorate. Seven shiakhas were selected from Cairo and four from Alexandria (or 2.5% of the total shiakhas in the two cities). These shiakhas were selected by the systematic random sampling method and no kism was represented by more than one shiakha.

In the rest of urban strata, each governorate was represented by a shiakha in the governorate's capital and another in the Markaz capitals. The smallest shiakha and the smallest Markaz capital were chosen from each governorate, as these areas were also units of "the Measurement of Underregistration of Vital Events Survey," which required a complete census-enumeration for the sampled areas. Half of the selected units were surveyed in 1974 and the rest in 1975. The WFS sampling experts suggested in the course of the survey (in 1974) increasing the representation of the urban areas and an additional sample of 49 units were selected randomly and were covered in 1975.

In the rural areas, the villages were classified according to presence or absence of a health bureau and thus each of the two major stratum had two sub-strata. On the basis of the 1966 census, the villages were stratified according to their size (small, medium and large). A number of villages was selected in each of the six sub-strata for the sample equal to approximately 2.5% of the population of each sub-stratum.

The number of villages selected amounted to 102 villages, each selected from the sub-stratum by the systematic random method, with due care to represent all the governorates, and not to represent any markaz by more than one village. This led to the representation of the largest possible number of Marakes for the various strata.

In each of the selected first units a frame was prepared comprising a list of households' names and addresses. The number of households to be selected in the second stage of sampling in both urban and rural areas, was estimated on the basis of the available data on average maternity order in 1970. Such data was used to estimate the sample size that provides estimates of mean live birth order, with a tolerance percentage of error not exceeding 1.5% and a confidence interval of 95%. The overall sampling fraction was about 1.5% for Cairo and Alexandria and 3% for the other governorates. In the rural areas the sampling fraction was about 1.5%.

The sample size is 15655 ever-married women distributed as follows according to the marital status: 77.7% currently married, and 22.3% divorced and widowed. Out of the 12169 currently married women 10991 have married once and 1178 have married more than once. The 12169 currently married women were distributed on the five regions as follows:

Cairo and Alexandria	16.8%
Urban, L.E.	14.9%
Urban, U.E.	14.5%
Rural, L.E.	30.0%
Rural, U.E.	23.8%

The representation of the five geographic strata is more or less consistent with that shown by the 1976 Population Census for married women (Table 21 of the Preliminary Results of the Census Report, CAPMAS, December 1977). The urban stratum, however, is slightly overrepresented, as it comprised 46.2 percent of the sample size,

while the percentage shown by the 1976 census amounts to 44 percent. The educational status by duration of marriage in the whole country as well as in each region is consistent with the general distribution by education level indicated by the 1976 Population Census preliminary results, though such an assertion is only tentative and one has to look at the detailed final census results to make any conclusive statements.

In an attempt to check on any possible time trends between 1974 and 1975 "rounds" of the survey a number of indices for various variables relating to the level of fertility, contraceptive use, age and duration of marrage distributions, etc., were prepared for each year separately. The analysis shows no significant differences, which lends support to the representativeness and reliability of both rounds.

One aspect of the sampling design, however, requires a note, which is the selection of a cluster of households (a number of roads comprising about 1500 households) to be enumerated as a primary sampling unit, in some shiakhas with large population. The procedure is legitimately used in many social surveys in view of its practical advantages. However, the theoretical drawbacks of cluster sampling need not be repeated here. Limited information is available in this respect to allow further evaluation. However, the present investigation has shown a high degree of internal consistency within the NFS data, which suggest a reasonably well designed sample and survey execution (non-response rate never exceeded 5 percent). The age data, however, suffer from a moderate degree of age-heaping and preference of ages ending in zero. It was found that the reporting of duration of marriage is superior to that of age.