

THE RELATIONSHIP BETWEEN FAMILY TYPE AND FERTILITY

KANTI PAKRASI

AND

CHITTARANJAN MALAKER

The large increase in the total population of India between 1951 and 1961 has been correctly described as "phenomenal."¹ The probability of success of any developmental measure initiated in India must be appraised against the immediate background of staggering population growth. The Planning Commission is anxious for a substantial reduction in the population so that the Five Year Plans of the country will have a genuine chance for success. Great effort and enormous amounts of money are being expended to strike at the root of problem of population increase.

In keeping with this situation, researchers are striving to sift out the factors responsible for the conspicuous fertility differentials among the general population. The fertility of Indian couples of different social and economic strata have been subjected to meticulous investigation. Several studies have been carried out in different parts of India to pinpoint the role of several cultural, economic and demographic variables assumed to induce the high birth rate.²

The results of these studies serve to point out differences in fertility according to socioeconomic status and geographic location, the major cultural and demographic factors associated with high or low reproduction and the effect of deliberate limitation of reproduction. The evidence now available, however, does not offer any clue to

understanding the persistent 2.2 per cent annual population growth in India. The stage at which controlled fertility affects fertility differentials is yet to begin in the under-developed societies in the country.³

During the past two decades population experts have focused their attention on the rapid and massive population growth in India. Davis⁴ attempted an exposition of fertility on the basis of rural-urban, class and religious differentials to evaluate the prospects for an early decline. Chandrasekhar⁵ pointed out various sociological factors that were presumed to influence the population increase. He commented that "the very low level of living, the absence of a prolonged period of education or training, the existing social attitudes that encourage a large family, the joint family, the want of nationwide contraceptive clinical service, and above all, the psychological reason that encourages every man to look to his wife and sex intimacy as the only relaxation and recreation in an otherwise dull and unexciting life of a relentless struggle to make both ends meet—all these are contributing factors." Thus the sociological factors associated with high fertility in Indian families have already been highlighted, and this may provide a proper perspective for future demographic research. Because reproduction is one of the primary functions of the family, the organizational pattern of the family itself is of special significance in the study of fertility, particularly within the traditional establishment of Asian society.

Kiser and Whelpton⁶ have so well established the value of studying fertility patterns in terms of the socioeconomic status of the couples concerned that this variable has become an essential ingredient in later fertility studies. In defining socioeconomic status, however, the attribute of family orientation of the couples under investigation was given hardly any consideration. Factors such as annual earnings, occupation, education, monthly rental value, food habits, place of work, attitude on birth control and children's future education have frequently been employed to measure the behavior toward reproduction. The crucial factor in the relationship between fertility and the kind of family in which the couple lives, acts and

procreates, with all familial prerogatives and obligations, has yet to receive the attention and utilization merited by its importance.

That the role of the family is immediately related to the reproduction functions of couples living in nonindustrial and agrarian societies has already been stressed.⁷ Lorimer⁸ was one of the few pioneers to indicate the significance of that social truth when he dwelt upon the relation of cultural conditions to fertility. According to him, large, cohesive families in an Asiatic society serve not only to protect prestige and collective economic security, but also to provide the constituent members with a "source of deep emotional security." The cultural context of this society is such that the families representing "group family life" are commonly "idealized" and, according to Lorimer, are "likely to be conducive to high fertility." His explanation for high reproduction rates in large, cohesive families, including traditional joint (extended) units, remains to be substantiated by empirical findings from the contemporary rural or urban societies of India.

The academic and professional interest shown by experts continues in their search for the probable interrelations between various social and demographic factors, including the factor of family structure and human fertility.⁹

Following Lorimer, demographers extended their efforts to point out various "cultural barriers" against fertility reduction, particularly in underdeveloped societies.¹⁰ As to the nature of such a barrier in India, "The relation of the family pattern to birth rate is obvious. In large traditional families such as the joint family in India . . . the normal economic deterrents against the arrival of that extra baby do not operate."¹¹ The primary contention of Chandrasekhar appears to be that the large family units (extended or joint) in India are culturally equipped to accommodate any "extra baby" of the young parents, and thus serve as "an incentive to higher birth rate." In agreement with him are the views of Davis¹² who also had the occasion to correlate the pattern of joint family establishment with the high rate of reproduction in the peasant-agricultural societies of the underdeveloped areas of the world.

Other recent studies¹³ have focused on the relationship between the extended (joint) type of family pattern and high fertility. These studies have been initiated in several different types of communities in different states in India, and the data from the studies indicate that the women living in joint families are less fertile than are those in simple (nuclear) families. The connection between extended (joint) families and high fertility is, thus, a controversial but exciting issue.

A study has been made to determine "whether the joint families in contemporary Indian setting have actually higher fertility than the single families."¹⁴ The conclusion reached is that for each one of three Hindu and three Muslim groups of rural West Bengal, "the average number of children in joint families is less than that in simple families when women of all ages are considered. This is also true for the majority of age categories of women." The author admitted that the observed differences on the average are "quite small and are not likely to be statistically significant." Nevertheless, the study deserves commendation since it attempts to cope with the problem by utilizing empirical data on Bengali women of seven villages of the state. Data accumulated in this paper have their own importance to interested researchers, even though the method employed to analyze the data is not strong enough to establish a statistically sound conclusion about the problem in question. *Standardized averages* should have been calculated to indicate the nature of actual differences in fertility of the women belonging to joint or simple families. As Table 1 shows, the results of such calculations indicate that fertility differentials of the women belonging to joint and simple families within a social group do not appear to be widely fluctuating.

The intrinsic fertility performance of women varies from age to age. For that reason, simple averages, as are given in the Nag paper,¹⁴ do not indicate the true fertility performance of the group or the fertility differentials between groups because of the difference in the proportion of women in the different age groups. Comparison of the standardized averages in Table 1 shows that the differentials diminish to an appreciable extent. Fertility differentials should be

TABLE 1. AVERAGE NUMBER OF CHILDREN BORN TO RURAL BENGALI WOMEN IN SIMPLE AND JOINT FAMILIES, ALL AGES, STANDARDIZED AND UNSTANDARDIZED FIGURES.

Family Type	Social Groups					
	Hindu Brahmin		Hindu Satchasi and Ghose		Other Hindus	
	Standardized Figure	Unstandardized Figure	Standardized Figure	Unstandardized Figure	Standardized Figure	Unstandardized Figure
Simple	4.32	4.66	4.04	4.17	3.32	3.75
Average age of women		32		29		29
Joint	3.93	3.82	3.97	3.89	3.31	3.02
Average age of women		32		28		29
	Sheik Muslim		Non-Sheik Muslim		Muslim Fishermen	
Simple	4.74	5.00	3.04	3.33	2.26	2.33
Average age of women		32		28		28
Joint	4.54	4.29	2.76	2.46	2.40	1.98
Average age of women		30		26		24

Source: United Nations World Population Conference, *Family Type and Fertility*, 1965, Table 1.

interpreted by taking into consideration the differences in the average ages of the women for different groups.

Because of the variation in the age at marriage for different castes and religious subgroups, marriage duration¹⁵ appears to be a more satisfactory norm for measuring fertility performances and their differentials. The factor of marriage duration helps to negate the variable of age difference between husband and wife.

To study the relationship between family type and fertility, another set of data was utilized that was collected from urban families of West Bengal. Families were selected from different areas of Calcutta. Composition of each family was carefully noted along with other characteristics—marital status, age, residential status, occupation and education—of the constituent members. For the fertility investigation, 1,018 couples from three major socioeconomic groups were studied in detail to gather a complete fertility history of each couple.¹⁶ Results are shown in Table 2.

TABLE 2. DISTRIBUTION OF SIMPLE AND JOINT FAMILIES BY DURATION OF MARRIAGE AND SOCIAL STRATA AMONG THE POPULATION OF CALCUTTA, WEST BENGAL, 1956-57.

<i>Social Class and Family Type</i>	<i>0-4 years</i>	<i>5-9 years</i>	<i>10-14 years</i>	<i>15 years and above</i>	<i>All Durations</i>
Class I					
Simple	29.4%	43.9%	47.2%	50.6%	42.8%
Joint	70.6%	56.1%	52.8%	49.4%	57.2%
Number of family units	34	66	53	85	238
Class II					
Simple	17.4%	33.6%	35.1%	55.7%	35.5%
Joint	82.6%	66.4%	64.9%	44.3%	64.5%
Number of family units	69	116	134	140	459
Class III					
Simple	50.0%	47.5%	55.4%	58.1%	52.8%
Joint	50.0%	52.5%	44.6%	41.9%	47.2%
Number of family units	20	82	128	91	321

The three socioeconomic groups, which were identified jointly on the basis of the husband's occupation and educational status, were:

- I. Higher professions and services: physicians, engineers, office executives, wholesale businessmen.
- II. Clerks, supervisors, retail traders.
- III. Manual laborers, skilled and unskilled.

Composition of the family unit of each couple under study was first carefully examined to place the unit under one of two broad types: 1. simple (nuclear) type composed of only the parents and their unmarried children, and 2. extended or joint (non-nuclear) type consisting of simple families plus one or more consanguineous relatives or other genealogically determinable relatives. To avoid a detailed discussion of typological classification¹⁷ these two broad types of family organization have been adhered to primarily in consideration of the current controversy over the question of joint (extended) family's relationship to higher fertility.

The couples belonging to each of the three socioeconomic groups

were further classified by duration of marriage, and the average number of children ever-born per couple in each marriage duration class was analyzed. Family affiliation of each couple was also noted. The proportional concentrations of simple and joint families under each marriage-duration class are shown in Table 2.

Regarding the nature of variation in fertility rates within the three occupationally oriented social classes, it has already been pointed out that "fertility rates of couples belonging to higher professions, higher services, etc. (social class I) are lower than those pertaining to the social classes II and III, particularly in the higher marriage duration classes."¹⁸

Variations in the average number of children ever-born per couple in the different social classes have been further examined on the

TABLE 3. AVERAGE NUMBER OF CHILDREN BORN PER COUPLE BY SOCIAL CLASS, DURATION OF MARRIAGE AND FAMILY TYPE AMONG THE POPULATION OF CALCUTTA, WEST BENGAL, 1956-57.

Social Class	Duration of Marriage (years)	Number of Couples in		Average Number of Children Ever Born per Couple in	
		Simple Family	Joint Family	Simple Family*	Joint Family*
Class I	0-4	10	24	0.9	0.6
	5-9	29	37	2.1	2.1
	10-14	25	28	3.4	2.6
	15+	43	42	3.8	3.4
	all	107	131	2.9	2.3
	All-standardized rate			2.9	2.5
Class II	0-4	12	57	1.2	1.0
	5-9	39	77	2.6	2.1
	10-14	47	87	3.8	3.4
	15+	78	62	4.9	4.6
	all	176	283	3.8	2.8
	All standardized rate			3.4	3.1
Class III	0-4	10	10	1.0	0.7
	5-9	39	43	2.0	2.6
	10-14	71	57	3.5	4.1
	15+	53	38	5.3	5.1
	all	173	148	3.5	3.7
	All standardized rate			3.5	3.8

* Averages are based on the number of couples falling under each family type and each marriage duration—class.

basis of the structural characteristics of the family in which the couples were components. Table 3 shows that for social classes I and II the average number of children ever-born per couple in extended or joint families is definitely less than that in simple (non-extended) families, when women of all marriage duration classes are considered. This is also true for nearly all women of any marriage-duration class, except the initial one (0–4 years). Standardized rates have been computed and the trend in classes I and II indicates that this development cannot be explained simply by chance.

In class III, the average number of children ever-born per couple is more in extended or joint families. Couples in this group differ from the couples in classes I and II in having less of a children load within simple (non-joint) family units. In this group, however, any trend in the averages cannot be proved.

The couples in class I not only had the lowest fertility rate of the three classes, but also maintained the same trend with respect to their family orientation toward simple or joint family types. The lowest standardized rate of fertility for couples belonging to simple or joint families is obtained in the highest socioeconomic group. The highest standardized rates, of course, are obtained from couples in the lowest socioeconomic class, with the couples in class II scoring between the two extremes.

Some interesting conclusions may be based upon these findings:

1. Joint (extended) families are not an essential prerequisite for abundant reproduction.
2. Urban population closely resembled the rural population of West Bengal in the fertility differentials between women of joint and simple families. The urban, class I population averaged the fewest number of children per mother, especially in joint families.
3. Irrespective of their location, whether urban or rural, the women of West Bengal averaged a greater number of children in simple families than in joint families. This trend is evident in Nag's study¹⁴ and in the present one. Under the circumstances, can this trend be explained by chance factors alone?

4. A possible relationship between family type and fertility appears to be a pertinent issue that cannot be ruled out of current social-demographic research. A greater number of field investigations covering wider areas to include more Indian communities are needed to accumulate empirical data. What has been attempted so far has only served to highlight the problem. The underlying basis of the relationship between family type and fertility has yet to be established. To this end, it is hoped that the findings in this paper, together with those of Nag and others, may be the base of future investigations.

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REVIEW ARTICLE

STUDIES IN EPIDEMIOLOGY

Selected Papers of Morris Greenberg, M.D.

FRED B. ROGERS, EDITOR

New York, G. P. Putnam's Sons, 1965. 418 + xxviii pp. \$8.50

This book, a collection of more than a score of previously published papers and documents, was conceived and published by the friends and colleagues of Morris Greenberg as a tribute to the late Director of the Bureau of Preventable Diseases for the New York City Department of Health, who was also the Adjunct Professor of Epidemiology at Columbia University. The affection and esteem in which Greenberg was held is apparent in the tributes by Leona Baumgartner, Harry Mustard and Gurney Clark, which preface the book.

The general purpose of this collection, as stated by Gurney Clark, is to add a new volume to the growing "bookshelf of collected public health papers by leading modern American workers." The editor, Fred B. Rogers, comments that the papers "illustrate technical competence in gathering and evaluating data, arriving at conclusions, and finally taking action." It is by editorial action that papers on diverse subjects have been integrated, and it is therefore this editorial contribution which must be examined to see if the man and his mind emerge from behind the memorial facade. In short, does editor Rogers do justice to his subject?

To begin with, Greenberg and his department have already been introduced to a generation of medical students and public by the

Boswellian accounts of Berton Roueché, which cover the same time period and many of the same epidemiological adventures as in the Rogers collection. But Roueché is better able to communicate the drama, triumphs and hardships of field epidemiology than the crisp, terse case reports included in this book.

Greenberg himself defined epidemiology from the vantage point of one accustomed to dealing with the community: "a science concerned with the relationships of disease in the aggregate—what has been called 'crowd diseases.' " Perhaps because he was a practicing pediatrician during the early period of his professional life, the subject matter of his papers tends to retain a clinical orientation and to specialize in the area of maternal and child health. Statistical and research sophistications appear in his publications, but are not emphasized in this collection; the viewpoint is eminently practical and even the most theoretical considerations are translated into public health action. Two examples illustrate both his style and the concern arising out of his investigations:

Blanket advocacy of therapeutic abortion in pregnant women who develop rubella during the early months of pregnancy is medically unjustified. Exposure of susceptible young girls to cases of rubella is medically justified and is a sound public-health procedure.

What difference does it make if you give the patient a shot of penicillin? Well, it does make a difference! It is time to call a halt to the march back to Lister's era and to remember that cleanliness is still nearest to Godliness.

It is, however, becoming the practice to define epidemiology as that which epidemiologists do. Therefore, any collection of the life's work of a great epidemiologist could be a formative document which helps to delineate the methods of epidemiological enquiry. If this is the aim of this memorial, the editorial work is not always successful. Rogers has organized the reports into five groups—scope, content and method of epidemiology; studies in community and institutional settings; bacterial and viral diseases; immunoprophylaxis and therapy; and congenital anomalies and defects. Rogers precedes each paper with an introduction intended to put Greenberg's con-

tribution into the global scope of medical progress. The introductions, however, tend to focus upon the disease state in question, rather than upon Greenberg's contribution to the growing list of epidemiological skills and practices.

Sometimes the reason for the selection of a specific paper is uncertain. In fact, the editor is not always kind to his author: he includes three early reports on the clinical use of gamma globulin for "historical record" but omits the historical first four reports of Rickettsialpox, substituting a summary prepared for a textbook. A lengthy series of clinical and pathological case reports of congenital cardiac anomalies in infants is included, though their focus is not epidemiological. Two papers originally published in *Nursing World* display Greenberg's skills in communication about such topics as Salk vaccine and viral diseases, though these treat epidemiological considerations too superficially. Another technical paper on poliomyelitis prepared for *Hospitals* is more successful, only because it includes matters of organization and mobilization of medical services which were based upon sound epidemiological principles. In the case of poliomyelitis and the embryopathic effects of rubella in pregnancy, however, the order of scientific reports and the editorial comment blend and successfully communicate the steps of epidemiological investigation; in the case of others, even when the original research protocol is included, the brevity of details will make them less suitable as models for teaching methods of enquiry.

The reader may also find a number of minor editorial decisions troublesome: publication citations are not given immediately in association with each paper; individual articles are not listed in the table of contents or on the page headings, so that one has difficulty in finding a paper quickly; photographs included with several of the papers are not of sufficient quality to warrant reproduction.

Whether Rogers' collection and editorial comments do justice to the mind of his subject can best be answered by Morris Greenberg's friends. This reviewer cannot help but feel that the unique contribution which Greenberg made to epidemiological progress has not, however, been given sufficient prominence by the editorial work. In his prefatory tribute Harry Mustard points out that Morris Green-

berg, the epidemiologist, was a product of both his native ability and New York City: "The city's own vast and mixed population, its packed millions, its steady flood of visitors, its incoming maritime commerce . . . made inevitable the endemic existence of a wide gamut of communicable diseases and the threat of epidemics a continuing menace." Greenberg rose to the challenge which this megapolis afforded. The epidemiological method is usually confined to the study of diseases of relatively high prevalence. But in a population base the size of New York City, it is possible to study, by both prospective and retrospective means, diseases of low incidence rate. Possible, yes—but only with a superb epidemiological intelligence system that permeates the entire health care system. This organization Morris Greenberg had, and developed so that he could conceive and perform research studies impossible elsewhere. New York City gave scope for Greenberg's scientific curiosity.

In some cases, his studies were conducted specifically because of the existence of this reporting system, as, for example, an evaluation of different methods of prophylaxis for ophthalmia neonatorum and the study of congenital defects of children born to mothers who had rubella in their first trimester of pregnancy. In another situation, this large population produced enough persons for anti-rabies treatment, so that it was possible for Greenberg to compare duck embryo and Semple vaccines. The massive vaccination programs during the 1947 epidemic of smallpox in New York City permitted him to undertake a definitive analysis of the complications, and report on the effects of vaccination during pregnancy. It required this large population to produce 13 infants whose acute diarrhea was identified as being caused by *Salmonella montevideo* in canned egg yolk powder, and 194 cases of pica from which 28 cases of proven and 20 of probable lead poisoning were found. An outbreak of 84 cases of trichinosis led Greenberg to make a comparison of the intradermal and precipitin tests for this disease. The periodic epidemics of poliomyelitis provided him with sufficient numbers of cases to complete a most thorough examination of the relationship between tonsillectomy and poliomyelitis. Yet, this combination of natural and planned experiments was always carefully handled, and Green-

berg assiduously avoided generalizing beyond his data or drawing false conclusions. The limitations of natural experiments were clearly always before this investigator.

The real value of this book, then, lies in the fact that the majority of its papers comprise the first collection in the growing practice of mass epidemiology, or to coin a term, *epimegademiology*—the study of disease distribution and determinants in massive population groups. That this work was done by a man who had significant administrative responsibilities is a tribute not only to his scientific curiosity, but also to his organizational expertise. If this is not wholly apparent in this book, the fault must be regarded as an editorial one. Rogers has focused upon disease; the book would have been a more useful and a greater tribute to its subject had it focused on the epidemiological intelligence service Greenberg used so effectively.

In one sense, the collection portrays Greenberg in the same sense as the novelist Ian Fleming portrayed James Bond—in a series of spectacular confrontations with the criminal world. What was needed was the viewpoint of Bond's superior, M, and a description of how he selected priorities and used his agents effectively. That, I think, was the way Morris Greenberg advanced the discipline of epidemiology.

DONALD O. ANDERSON