25. _____ and E. A. Boyse, *Cold Spring Harbor Symp. Quant. Biol.*, in press.
26. F. H. Bach, M. B. Widmer, M. L. Bach, J. Klein, *J. Exp. Med.* **136**, 1430 (1972).
27. V. P. Eijsvoogel, R. Dubois, C. J. M. Melief, L. Kooy, *Transplant. Proc.* **5**, 1301 (1973); F. H. Bach, M. L. Bach, P. M. Sondel, *Nature (London)* **259**, 273 (1976).
28. F. H. Bach, M. D. Widmer, M. Segall, M. L. Bach, J. Klein, *Science* **176**, 1024 (1972); T. Meo, C. S. David, A. M. Rijnbeck, M. Nabholz, V. C. Miggiano, D. C. Shreffler, *Transplant. Proc.* **7** (Suppl. 1), 127 (1975); R. H. Schwartz, C. G. Fathman, D. H. Sachs, *J. Immunol.* **116**, 929 (1976).
29. D. J. Schendel and F. H. Bach, *J. Exp. Med.* **140**, 1534 (1974).
30. M. Simonsen, *Cold Spring Harbor Symp. Quant. Biol.* **32**, 517 (1967).
31. E. Heber-Katz and D. B. Wilson, *J. Exp. Med.* **143**, 701 (1976).
32. R. M. Zinkernagel and P. C. Doherty, *ibid.* **141**, 1427 (1975).
33. G. M. Shearer, T. G. Rehn, A. Schmitt-Verhulst, *Transplant. Rev.* **29**, 222 (1976).
34. K. Pfizenmaier, A. Starzinski-Powitz, H. Rodt, M. Rollinghoff, H. Wagner, *J. Exp. Med.* **143**, 999 (1976); R. M. Zinkernagel, *Nature (London)* **261**, 139 (1976); H. Von Boehmer and W. Hass, *ibid.*, p. 141.
35. A. S. Rosenthal, P. E. Lipsky, E. M. Shevach, *Fed. Proc.* **34**, 1743 (1975).
36. R. H. Schwartz, A. Yano, W. E. Paul, *Proceedings of the Third Ir Workshop*, H. O. McDevitt, Ed. (Academic Press, New York, in press).
37. P. Erb and M. Feldman, *J. Exp. Med.* **142**, 460 (1975).
38. C. W. Pierce, J. A. Kapp, B. Benacerraf, *ibid.* **144**, 371 (1976).
39. J. F. A. P. Miller, M. A. Vadas, A. Whitelaw, J. Gamble, *Proc. Natl. Acad. Sci. U.S.A.* **72**, 5095 (1975).
40. D. H. Katz and B. Benacerraf, in *The Immune System: Genes Receptors, Signals*, E. E. Secarz, A. R. Williamson, C. F. Fox, Eds. (Academic Press, New York, 1974), p. 569.
41. E. M. Shevach and A. S. Rosenthal, *J. Exp. Med.* **138**, 1213 (1973).
42. D. H. Katz and B. Benacerraf, *Transplant. Rev.* **22**, 175 (1975).
43. W. E. Paul, E. M. Shevach, D. W. Thomas, S. F. Pickeral, A. S. Rosenthal, *Cold Spring Harbor Symp. Quant. Biol.*, in press.
44. D. W. Thomas and E. M. Shevach, in preparation.
45. J. F. A. P. Miller, M. A. Vadas, A. Whitelaw, J. Gamble. *Proc. Natl. Acad. Sci. U.S.A.* **73**, 2486 (1976).
46. E. Heber-Katz and D. B. Wilson, *J. Exp. Med.* **142**, 928 (1975).
47. H. van Boehmer, L. Hudson, J. Sprent, *ibid.*, p. 989.
48. H. van Boehmer and J. Sprent, *ibid.* **144**, 617 (1976).
49. H. Cantor, F. W. Shen, E. A. Boyse, *ibid.* **143**, 1391 (1976).
50. D. B. Murphy, L. A. Herzenberg, K. Okumura, L. A. Herzenberg, H. O. McDevitt, *ibid.* **144**, 699, (1976); J. Jandinsky, H. Cantor, T. Tadakuma, D. L. Peavy, C. W. Pierce, *ibid.* **143**, 1382 (1976).
51. J. L. Press, N. R. Klinman, H. O. McDevitt, *ibid.* **144**, 414 (1976).
52. L. A. Herzenberg, K. Okumura, H. Cantor, V. L. Sato, F. W. Shen, E. A. Boyse, L. A. Herzenberg, *ibid.*, p. 330.
53. R. K. Gershon and W. E. Paul, *J. Immunol.* **106**, 872 (1971).
54. C. Civin, H. Levin, A. Williamson, S. Schlossman, *ibid.* **116**, 1400 (1976).
55. J. Oudin, *Ann. Immunol. (Inst. Pasteur)* **125**, 309 (1974).
56. M. Sela and E. Mozes, *Proc. Natl. Acad. Sci. U.S.A.* **55**, 445 (1966).
57. C. W. Pierce, J. A. Kapp, S. M. Solliday, M. E. Dorf, B. Benacerraf, *J. Exp. Med.* **140**, 921 (1974).
58. J. C. Ordal and F. C. Grumet, *ibid.* **136**, 1195 (1972).
59. T. Kishimoto and K. Ishizaka, *J. Immunol.* **111**, 720 (1973).
60. G. J. Hammerling, B. D. Deak, G. Mauve, V. Hämmerling, H. O. McDevitt, *Immunogenetics* **1**, 68 (1974).
61. E. R. Unanue, M. E. Dorf, C. S. David, B. Benacerraf, *Proc. Natl. Acad. Sci. U.S.A.* **71**, 5014 (1974); E. M. Shevach, *Fed. Proc.* **35**, 2048 (1976).
62. C. A. Janeway, Jr., B. E. Cohen, S. Z. Ben-Sasson, W. E. Paul. *J. Exp. Med.* **141**, 42 (1975).
63. M. B. Widmer, B. J. Alter, F. H. Bach, M. L. Bach, D. W. Bailey, *Nature (London) New Biol.* **242**, 239 (1973).
64. H. Binz and H. Wigzell, *J. Exp. Med.* **142**, 197 (1975). S. J. Black, G. J. Hammerling, C. Berek, K. Rajewsky, K. Eichmann, *ibid.* **143**, 846 (1976).
65. A. J. Munro and M. J. Taussig, *Nature (London)* **256**, 103 (1975); T. Tada and M. Taniguchi, in *The Role of Products of the Histocompatibility Gene Complex in Immune Responses*, D. H. Katz and B. Benacerraf, Eds. (Academic Press, New York, 1976), p. 513; E. Mozes, in *ibid.*, p. 485; J. A. Kapp, C. W. Pierce, F. de la Croix, B. Benacerraf. *J. Immunol.* **116**, 305 (1976).
66. J. Thèze, J. A. Kapp, B. Benacerraf, in preparation.
67. G. Berke and D. B. Amos, *Nature (London) New Biol.* **242**, 237 (1972).
68. D. Bennett, *Cell* **6**, 441 (1975).
69. H. O. McDevitt, *Fed. Proc.* **35**, 2169 (1976).
70. E. S. Vitetta *et al.*, *Proc. Natl. Acad. Sci. U.S.A.* **72**, 3215 (1975).
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Compulsory Sterilization: The Change in India's Population Policy

Kaval Gulhati

Twenty-five years ago India was the first country to undertake a national family planning program. In the past year it has become the first in which compulsory sterilization has been officially advocated—a dubious distinction, no doubt, but one which may well be a portent of population policies in other developing countries.

Many professionals in the family planning establishment, dismayed at this new direction in India's population policy, argue (i) that India has never provided voluntary birth control services effectively on a mass scale, as—say—Korea and Taiwan have done, and (ii) that compulsory measures will be counterproductive by increasing the resistance to family planning of any kind.

It would be fair to say, however, that the new turn in India's policy has caused relief as well. The dismay stemmed from the shift to compulsion without improvement of the voluntary effort. The relief springs from the reversal of an earlier policy announced in 1974. At the World Population Conference held in Bucharest in August of that year, India's Minister for Health and Family Planning, Karan Singh, made an official statement which was heavily in favor of depending upon economic development to provide the incentive for fertility control. He said, "It will be difficult for many countries to accept family limitation as a goal in itself unless it is clearly linked to a more equitable distribution of world resources" and "Population policy . . . cannot be effective unless certain concomitant economic policies and social programs succeed in changing the basic determinants of high fertility. It has truly been said that the best contraceptive is development" (*1*).

This was an unsettling statement from a leader whose country was expected to provide the greatest support at Bucharest for the advocates of antinatalist policies and programs, and help in drafting a strong world plan. The document which finally emerged from the conference as the "World Plan of Action" (*2*) was disappointing to those committed to vigorous furtherance of fertility reduction. It gave great emphasis to sovereign rights and human rights, to the international economic order, and to the reduction of mortality. It recommended integration of family planning with health programs, but was unfavorable to employing disincentives to reproduction. While giving explicit quantitative goals for mortality reduction, it suggested merely that countries might "consider" quantitative goals for lowering fertility.

The new change in India's policy is, in effect, an admission that the population factor is paramount in the development effort and that the voluntary family planning program has failed to meet its objec-

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tives. In fact, on 16 April 1976, Dr. Singh made a major statement on national population policy which courageously conceded both points. He said, "To wait for education and economic development to bring about a drop in fertility is not a practical solution" and "considerable work has been done in our country in the field of family planning, but clearly only the fringe of the problem has so far been touched" (*3*). He outlined several recommendations, such as raising the minimum age of marriage for girls to 18 years and increasing incentives for acceptance of sterilization, which would enhance the efforts of the voluntary family planning program. He then stated that the country was not ready administratively for implementing a national program of compulsory sterilization. However, the door was left open for individual states to pass legislation for compulsory sterilization. At this writing, Maharashtra has already done that and Punjab and Haryana are expected to follow.

An examination of the facts about India's population growth and the meager impact of the family planning program over almost 25 years will explain, at least partially, the desperate dilemma faced by India's leaders. But the significant change which could possibly explain the *timing* of the move for compulsory sterilization is the new political order which was born on 26 June 1975, when Prime Minister Indira Gandhi declared a state of emergency in India. The Indian body politic of today bears scant resemblance to the one that preceded that declaration. Recent changes in the constitution of India have, on the one hand, placed the "directive principles" (aimed at social justice rather than individual) above such rights as freedom of speech and of the press, and on the other have strengthened the office of the prime minister by making it less accountable to the judiciary. Furthermore, opposition parties are in disarray, having lost what little force they had. Mrs. Gandhi is thus virtually free to implement whatever policies she wishes to pursue (*4*).

Prior to the emergency it would have been impossible to endorse compulsory sterilization. At least two major opposition parties and especially the militant faction of the right-wing Jan Sangh were fundamentally opposed even to voluntary birth control (*5*). Although the majority of Indians do not have a religious tenet concerning birth control, they do cherish traditional ways of life and hold fertility in high esteem. Until the emergency, Mrs. Gandhi, who became prime minister in January 1966, had not made any strong statements in favor of birth control. Now she has made such statements but has passed the onus of compulsory sterilization, at least for the time being, to the individual states, in a masterly display of political acumen. There can be little doubt that, without the changes ushered in by Mrs. Gandhi since June 1975, a policy of compulsory sterilization would have meant virtual political suicide for its proponents.

Table 1. Budgetary allocation and expenditure for family planning, 1951 to 1974, in millions of rupees. The 1976 rate of exchange was approximately 9 rupees to the dollar. [Data from (*10*, p. 7)]

Period	Allocation	Expenditure
First plan (1951–56)	6.5	1.4
Second plan (1956–61)	49.7	21.5
Third plan (1961–66)	269.8	248.6
Interplan years		
1966–67	149.3	134.2
1967–68	310.0	265.2
1968–69	370.0	305.1
Fourth plan (1969–74)	2857.6	2844.4

Genesis of India's Family Planning Program

Interestingly, India's national family planning program owes its inception, in no small way, to a prescient advocate of mass sterilization. In 1951 India conducted its first postindependence census. The census commissioner, a learned Indian civil servant, alarmed by the huge number of people counted (a total of 356 million) and by the prospect of continuing rapid growth, presented a strong Malthusian argument for undertaking a national emergency program of fertility reduction. In a remarkable chapter of the census report, entitled "Improvident maternity," he argued that all births after the third were improvident maternity and must be curtailed. He demonstrated that a rate of 25 births per thousand population could only be achieved if no woman was allowed to bear more than three children. He recommended mass sterilization for achieving this goal (*6*). This dire warning was translated into a mild statement in India's First Five-Year Plan; and thus began, innocuously, India's national family planning program.

Family planning was identified as a health problem and given a token allocation as part of the maternal and child care activity of the Ministry of Health. The minister of health was a devout disciple of Mahatma Gandhi, a proponent of celibacy and a protagonist of birth control through sexual abstinence (*7*). From 1952 until 1965 no leader of consequence supported the national family planning program openly and vigorously (*8*). Funds allocated for it during this period were only a small fraction of the health budget, and a large portion of the allocations went unspent.

Serious efforts at fertility control, in India and elsewhere, really began only a decade ago. It was in 1965–66 that a separate department of family planning was formed, in the renamed Ministry of Health, Family Planning, and Urban Development. With advice and financial assistance from the U.S. Agency for International Development and other international agencies, the Lippes loop was chosen as the mass method and enthusiastically promoted (*9*). The allocation for family planning for the single year 1967–68 almost equaled the entire allocation for the 15 years from 1951 to 1966 (Table 1). More significantly, the expenditure on family planning during the fourth plan period, 1969 to 1974, was 2½ times as large as that of all the preceding 18 years taken together.

A Record of Modest Achievements

These fiscal data show a determination by the government to press on with the program despite the painful failure of the Lippes loop to live up to expectations as a mass method (*8*). (There were many reasons for this setback, one being the unacceptability to Hindu women of intermittent bleeding associated with the loop.) Sterilization and condoms became the leading methods in the program. Table 2 gives clear evidence of the programmatic shift from the loop (IUD, intrauterine device) to sterilization. In the 5 years of the fourth plan period the number of IUD accepters was not much larger than in the 3 years of the interim plans, 1966 to 1969, while the number of sterilizations performed more than doubled. During the fourth plan 14 million couples, 16.4 percent of all eligible couples, received some method of birth control, 9 million of them sterilization. In the fifth plan the target for sterilization was set at 18.5 million and for all methods combined at 34.2 million—more than double the performance in the fourth plan. So ambitious a target almost appears to be self-defeating in the light of the actual achievements of the program to date.

Table 2. Number of sterilizations and acceptances of contraceptive devices since the beginning of the second five-year plan. [Data from (*10*, pp. 8 and 13)]

Period	Sterilizations			Intrauterine devices	Other contraceptives	Eligible couples currently protected by any method (%)*
	Males	Females	Total			
Second plan	70,965	81,712	152,677			0.2
Third plan	1,068,638	304,528	1,373,166	812,713	582,141	3.0
1966 to 1969	3,816,583	575,413	4,391,996	2,057,436	960,896	8.7
Fourth plan	6,571,100	2,432,520	9,003,626	2,149,160	3,009,995	16.4
Fifth plan goals (1974–79)			18,500,000	5,700,000	10,000,000	35.9

*Based on estimated number of couples with wives 15 to 44 years old.

A review of the annual budgetary allocation, expenditure, and performance during the fourth plan period in the context of the fifth plan target may elucidate the problem further. Table 3 gives some important clues about what was happening in the program during the years 1970 to 1974. The year 1971–72 was the first year in the entire history of the program that expenditure exceeded budgetary allocation. Sterilizations increased by 70 percent. The following year, 1972–73, reached a peak both in expenditure and in the number of sterilizations performed—a record 3.1 million. At this critical point, the 1973–74 budget was cut. Sterilization was de-emphasized and the maternal and child health care components reemphasized. The allocation and expenditure were now at a maintenance level, that is, enough to sustain the program but not permitting any expansion. In that year the number of sterilizations fell to below a million, the lowest since 1967. Obviously, in 1973–74, the year of the Bucharest speech, the government had had some second thoughts about the continued expansion of the mass program for birth control by terminal methods like sterilization. Mass vasectomy camps were the main victims of the budget reduction (*10*). Various factors may have influenced that change: adverse publicity due to deaths and infections, poor quality of services, and lack of success in reaching the desired segment of the population (*11*). Moreover, elections were due in February 1976 and a "backlash" from the mass sterilization camps was likely to be a political liability.

The budget cut greatly distressed the population establishment at home and abroad. A *New York Times* editorial protested that India, "the pitiful giant," was losing sight of its priorities (*12*). According to the critics, although the family planning program had not achieved the desired demographic impact, pulling away now instead of pushing harder was foolish, if not disastrous. The government remained unmoved and responded instead with the policy statement at Bucharest. Mrs. Gandhi and her colleagues were fully aware that the country had no constituency advocating family planning. There was no clamor by the people to reinstate the sterilization services. Nobody was queuing up on any kind of waiting list. Why? After 25 years of mass publicity, education, and services, where was the motivation to refrain from having large families?

Motivation: The Socioeconomic Mix

The question of motivation to have a small family is a controversial one. There is no conclusive evidence that motivation springs forth after a certain threshold of socioeconomic development is achieved. Nor is there incontrovertible proof that a silent demand for contraceptive usage exists, waiting only to be fulfilled by free and widespread distribution of the means (*13*). Many persons are wary of contraceptive distribution schemes in India, partly because of the experience during the 1950's in the Punjab, where villagers reportedly accepted pills (vaginal foam tablets) with no intention of using them but only to please their foreign benefactors (*14*), and partly because oral pills and condoms are less likely to be cost-effective than a permanent, one-time method like sterilization. To be sure, the record of family planning programs around the world is not altogether bleak. In some poor countries family planning programs have made remarkable progress. This achievement is attributed to "political commitment" and "implementational capacity" (*13*). In contrast the Indian program has been unevenly implemented and has had ambiguous political support.

At its peak, in 1972–73, the Indian family planning program had a budget cut, and in 1974 a seeming change of focus from sterilization to economic development as the best contraceptive. A review of the development equation would surely show that this shift was premature. If motivation to have smaller families is indeed related to a certain "threshold" or level of socioeconomic development, then the prospects of an early and rapid fertility decline in India are discouraging (*15*).

Among the indicators of development which seem to have a direct bearing on fertility motivations are urbanization, infant mortality, education, and nutrition. Most of India's 620 million people live in rural places. The official infant mortality rate for rural India in 1971 was 131 deaths per 1000 live births (*10*); most developed countries have infant mortality rates that are well below 20 (*16*). The level of overall mortality in rural India has remained more or less stationary since 1968 (*10*). The crude death rate, a measure of general mortality levels, now stands at about 18 deaths per 1000 population and seems virtually to have stopped declining. Future advances in mortality control in India would appear to require large-scale improvements in rural health, sanitation, and nutrition (*17*).

During the 20 years from 1966 to 1974, food production barely kept pace with population growth. The per capita availability of cereals improved by only 13 percent despite the 50 percent increase in cereal production. Thanks to the green revolution, the production of wheat almost tripled, but production of pulses, the main source of protein in the diet, actually declined. Thus, although the quantity of food grains available per person increased slightly, the quality of the diet decreased considerably. Even if the Indian nutrition problem is viewed basically as a problem of income generation rather than of food production, the facts are no more reassuring.

As to education, although the proportion of literates in the population has

increased somewhat (from 24.0 to 29.3 percent during the decade 1961-1970), female literacy has remained appallingly low. In two states, Uttar Pradesh and Bihar, which are overwhelmingly rural and contain one-fourth of India's population, female literacy was below 10 percent (*18*). Women remain largely illiterate and undernourished. About 84 percent of the children (a much larger proportion of boys than of girls) enroll in primary school, but an astonishing 60 percent leave school without achieving functional literacy (*19*). In short, the motivation toward smaller families that might be induced by education, especially female education, is exceedingly weak in India.

Table 3. Fourth plan: annual budgetary allocation and expenditure, in millions of rupees, and number of accepters of contraception. [Data from (*10*, p. 7)]

Year	Allocation	Expenditure	Sterilizations	Total accepters, all methods
1969–70	420.0	361.8	1,422,118	3,390,222
1970–71	520.0	489.0	1,329,914	3,768,487
1971–72	606.0	617.5	2,187,336	5,029,895
1972–73	763.0	797.4	3,121,856	5,874,384
1973–74	548.5	578.5	942,402	4,323,991

Motivation: The Cultural Bind

India's problem is further complicated by a tradition and culture that require a man and woman to rear several children. Each couple automatically follows Malthus's "second fixed law of nature" (*20*) and procreates without restraint. The norms of traditional society sanction early and universal marriage and lead to early childbearing and, often, early widowhood. The average age of rural Indian women when they give birth to a third child is 25 (*10*). A review of accepters in a dozen or so vasectomy camps in several states showed that the average age of the wife ranged from 30 years (in Kerala) to 38 years (in Uttar Pradesh). The number of living children per sterilized couple in both Kerala and Uttar Pradesh was about four (*21*). In order to achieve the demographic targets, sterilizations should be performed when the wives are in their mid-20's.

In the Indian cultural context, a stop to childbearing at age 25 would be revolutionary. A young wife in a village receives favored treatment only when she is pregnant. For her, pregnancy, babies, and motherhood are God-given. She only participates in religious rites for the welfare of her husband and children. Without living children her joys and her status would be less. Not surprisingly, the average number of children a married woman gives birth to in her lifetime is about six. Even a young woman is aware of the need for children, especially sons, to care for her in her old age. It has been estimated that one-half of Indian women who survive to age 55 to 59 are widows. Prudence dictates that for old age security a woman should bear enough sons to ensure that several will survive to adulthood. In rural Delhi mothers have lost 36 percent of their children within 1 year of birth (*22*).

For centuries, Indian farmers have known the great economic advantage in having many children. M. Mamdani, a political scientist who interviewed villagers in the Khanna district of the Punjab, found that virtually all these men testified to the economic value of children, especially sons (*14*). He chastised Western researchers in India for failing to appreciate the economic rationality to the rural Indian family of having many children. Furthermore, the need for children, especially sons, is reinforced in the Hindu religion; a son is needed to perform certain rites at the father's funeral ceremonies known as "shradh" (*22*). The economic and cultural forces for having children in Indian rural society are so strong that they render Malthus's preventive check, "a foresight of the difficulties attending the rearing of a family" (*20*), quite worthless.

Past and Future Population Growth

The only preventive checks on Indian fertility which have had some impact are abortion and sterilization and other forms of contraception. Malthus's "positive checks"—pestilence, war, and famine—have taken their intermittent toll, but population historians, Malthus included, have shown that the depopulation these bring about is very quickly obliterated by more population increase. At the time of the great Bengal famine in the 1940's, the population within India's present boundaries was about 310 million; by 1951 it was 360 million, and by 1971 it was 548 million. Barring catastrophes of gigantic proportions, the positive checks, while causing misery and pain, are unlikely to reduce India's population significantly.

It is widely believed that a real decline in the birthrate has occurred since 1968. Some observers relate this decline directly to the family planning program and credit it with a 5 percent reduction of all births—some two points off the birthrate (*19*). This is a plausible assessment in view of the performance of the family planning program, especially in sterilizations, during that period.

As would be expected, urban fertility in India is lower than rural fertility. The urban birthrate has been declining and now stands at about 30 births per 1000 population per year. It will probably continue to decline, with or without a family planning program. But 80 percent of the people live in the villages of India, where the birthrate is still close to the traditional high of about 40. The task of delivering any kind of contraceptive services to the rural population of India is an overwhelming one. It would be a great boon for India if economic development could shorten the demographic transition from high to low fertility to 10 years instead of the 150 years it took in Europe. Since migration, in or out, is expected to be negligible in India, population increase (or decrease) will stem almost entirely from the balance between births and deaths. If starting today each potential Indian mother were to stop at two children, the population would still continue to grow, from 620 million to 890 million, before achieving zero population growth. If, on the other hand, it were to take 70 years to attain the rate of two children per mother, the population would reach 2.9 billion before stabilizing (*23*).

Many demographers have made projections of the course of India's population growth. All these projections show a substantial increase in numbers. The recent calculations made by Cassen and Dyson (*24*) indicate that population in the year 2001 could range from 798 million to 1120 million. The lowest figure would result from a combination of rapid decline in fertility with little or no decline in mortality, the highest from slow fertility decline combined with a fast fall in mortality. What seems most probable are combinations of considerable declines in fertility with moderate mortality declines resulting in population totals of 922 million to 970 million—almost a billion people—in the year 2001. In 1800 a

Table 4. Total population, extent of contraception, per capita income, literacy, and birthrate, in selected states.[Data from (*10*)].

State	Total population (millions), 1975	Couples with contraception (%), 1975		Per capita income (rupees), 1970–71*	Rural literacy (%), 1971	Rural births per 1000 population, 1971†
		All methods	Sterilization			
Uttar Pradesh	94.3	8.3	5.8	523	18	46.3
Bihar	60.5	6.8	5.9	403	17	‡
Maharashtra	54.9	25.9	23.6	775	31	33.7
Tamil Nadu	44.4	21.5	18.5	624	32	32.9
Gujarat	29.4	21.5	18.3	806	28	41.5
Kerala	23.3	21.6	18.4	590	59	31.3
Punjab	14.6	24.6	12.8	995	28	35.0
Haryana	10.9	28.4	14.4	829	22	44.2
All India	594.0	16.3	12.4	640	23.7	38.9

*At 1970–71 prices. †These rates are based on the sample Registration System; underregistration of live births is estimated to vary from 4 to 13 percent. ‡Not available.

billion was the population of the whole world.

This is the dilemma faced by Indian leaders. Should they stand by and wait for economic development and family planning programs to motivate contraception? Or should they take the destiny of the people in their hands and force a fertility decline? What should take precedence, individual desires or the welfare of the community, the state, the nation? Mrs. Gandhi said recently that "some personal rights have to be kept in abeyance for the human rights of the nation; the right to live, the right to progress" (*25*). It would be unfair to fault the government of India for poor performance in family planning or economic development. On both fronts there have been notable achievements. In family planning, perhaps, the performance could have been better. How much better it is hard to say. If development and fertility are closely linked, it can be said that a rapid, large-scale fall in the birthrate by means of the family planning program would have been unlikely, although a superior family planning program might have had a greater impact even in the socioeconomic milieu of rural India.

Modern States and Backward States

Five states in India appear to have had a significant decline in fertility. Predictably, these very states have also done well in overall development. It has often been said that India is not one country but many. There is much truth to this statement. A real understanding of India's population requires disaggregation of the problem by states. Table 4 gives a comparative summary of data for eight major states. These eight states contain almost 60 percent of India's population. A glance at the table shows quickly where the heart of the problem rests—in the two largest states, Uttar Pradesh and Bihar, which have 25 percent of the national population. Uttar Pradesh has 94 million people and the highest birthrate. Bihar and Uttar Pradesh have the most depressed economic situation and the lowest literacy levels. Performance in family planning, as measured by the proportion of couples protected, especially in sterilization, is dismal.

The states that have accomplished the most in extending contraception are Haryana, Maharashtra, Punjab, Kerala, Gujarat, and Tamil Nadu. Together they have about 30 percent of the population—not enough to affect the aggregate performance of the country significantly but enough to give hope for the rest. Most of them have relatively high literacy levels and per capita incomes and declining birthrates. Haryana leads in the proportion of couples protected by all methods. Maharashtra has the lead in sterilizations. Punjab and Haryana have a remarkably high proportion protected with condoms and other conventional methods. This could be a reflection of a host of factors, including the relative prosperity of these states. It is notable that these very states, Haryana, Punjab, and Maharashtra, have been the first to formulate legislation for compulsory sterilization.

The New Legislation

Punjab and Haryana have passed ordinances with strong punitive measures against government employees who do not undergo sterilization after having two children: basic amenities like subsidized housing, maternity leave, and medical care are to be denied to couples not having one sterilized spouse or not pledging to undergo sterilization after the second child. The coercive element in these disincentives applied to government employees is probably designed to have an impact on other sectors of the society, for the immediate demographic result of these measures is not likely to be very great (*21*). The strongest and most sweeping legislative measure, on the verge of becoming a law, is in Maharashtra. The Maharashtra bill calls for compulsory sterilization of all men with three living children. Failure to comply would result in forcible sterilization under arrest (*25*). The compulsory sterilization bill has been approved by the Maharashtra legislative assembly with just one dissenting vote. It is expected to become law this year (*26*). Under the bill a woman would have to undergo sterilization if medical contraindications proscribe vasectomy for her husband. Furthermore, the bill proposes compulsory abortion of any pregnancy that would result in a fourth child. Justifying such a punitive bill, the Maharashtra state minister of health commented, "We have tried every trick in the book, and now we have come to the last chapter." He predicted that "the rest of India will follow our lead. They are watching and waiting. All developing countries with limited resources will have to think of this matter" (*27*).

Obviously, the Chinese approach and the contraceptive inundation scheme under way in Pakistan (*28*) have been rejected, at least for the time being, by Maharashtra. The Chinese have, of course, revolutionized the entire structure of society, and they have decentralized the health and birth control policy to the level of each commune (*29*). States like Maharashtra (and countries like India) can hardly follow China's example with respect to fertility control without first undergoing fundamental changes in the structure of the whole political and

economic system (*30*). The Pakistan approach is still experimental. Interestingly, Maharashtra, which has a population of 55 million as against Pakistan's 70 million, is much ahead in literacy, lower fertility, and proportion of couples with contraception. Yet Maharashtra has chosen to take a much more drastic step at this stage.

It has been estimated that 2.2 million sterilizations would have to be performed in Maharashtra in the year or two following the legislation, and thereafter about 350,000 a year (*27*). Reputedly, Maharashtra has the best medical system in India, and during 1972–73, the peak year, 609,391 sterilizations were performed there (*10*). It can be argued, therefore, that Maharashtra could conceivably take care of the backlog in 1 to 3 years and then stay ahead of the recurrent need.

For the rest of India the task would be almost impossible, especially in the biggest and poorest states. Medical feasibility aside, the more difficult question is, Who will locate the eligible couples and how will eligibility be determined? In the villages there is no on-the-spot birth registration, nor is marriage registration mandatory (*31*), and the couples live in extended families. School enrollment is most inadequate for the purpose because of low enrollment of girls and lack of a system of surnames. The Maharashtra bill allows for payments to informers. It also stipulates incentive payments of approximately $16 for an accepter with two children and $11 for one with three. Although Maharashtra claims to have thoroughly examined the compulsory sterilization issue for 3 years, the scope for misuse, harassment, and backlash is enormous. Minority groups and the poor and backward are naturally afraid of such measures (*8*). It would be a grave mistake to underestimate the difficulties of implementing such a law safely and fairly in a country as poor, diverse, and large as India. The possibility cannot be ruled out that the new law will either be ignored or be administratively unenforceable. A related earlier change in Maharashtra, raising the marriage age, has been largely bypassed (*32*). If indeed the new law is intended primarily as "normative" legislation, then the expectations of a rapid fertility decline from this policy are misdirected. Furthermore, such a move might have the effect of diverting the effort of the program from other fertility control strategies and so actually be counterproductive.

Any assessment of the administrative and financial prospects of implementing the new policy nationwide is essentially an exercise in speculation. For instance, in 1974 the family planning program in India had 5665 doctors and 20,476 auxiliary nurse-midwives to cover an eligible population of over 100 million couples. The average expenditure per sterilization was 415 rupees (*10*), approximately $45. Thus the commitment of resources to the compulsory sterilization policy will have to be massive. At the peak of the program in 1972–73 Maharashtra spent about 9 million rupees. It would now have to commit some 900 million rupees in order to perform the 2.2 million sterilizations estimated for the start of the compulsory program.

The move toward compulsory sterilization for family planning is thus a momentous decision. It is an attempt to revolutionize fertility while other developmental factors remain at evolutionary pace. Rapid population growth in countries like India is an obstacle to economic development. The ingredients for the success of voluntary family planning programs are motivation and provision of effective contraceptive services. Over the years India has tried a combination of schemes: cash incentives for accepters of sterilization and the IUD, subsidized condom sales, legal abortion, massive vasectomy camps, railway station vasectomy clinics, and some pill distribution. But the motivation for family limitation among India's villagers appears to have remained weak. A great defender of liberty, Edmund Burke, once said in another context, "Kings will be tyrants from policy when subjects are rebels from principle."

Indian policy-makers view the use of coercive laws to reduce fertility as a necessary intervention. Maharashtra's leaders seem to regard compulsory sterilization as an easy way to success (*33*). But legislative measures in other socioeconomic matters such as the Prohibition of Dowry Act (*34*) or the Tenancy Act (*35*) have, in practice, been completely ineffective. Even for a coercion program to work will require a hugely expanded commitment of administrative and financial resources. The world will be watching closely to see whether and how the Indian state governments follow up their new policy with bigger budgets and more effective action.

References and Notes

1. K. Singh, *Fam. Welfare* **21**, 3 (1974).
2. United Nations, *World Plan of Action*, U.N. Publ. E/Conf. 60/L. 55/dd 3 1974, part 1.
3. K. Singh, *National Population Policy Statement* (Ministry of Health and Family Planning, New Delhi, 16 April 1976).
4. "The Gandhi Coup," *New York Times*, 27 June 1976, p. 2; A. J. Lukas, *New York Times Magazine*, 4 April 1976, p. 19. See also "Trends—a documentation of the recent emergency powers," *Seminar* **199**, (New Delhi, March 1976).
5. M. F. Franda, *Field Reports, American Universities Field Staff, South Asia Series*, vol. 16, No. 11 (1972).
6. R. A. Gopalaswami, in *Census of India, 1951, Report* (Government of India Press, New Delhi, 1953), vol. 1-A.
7. M. K. Gandhi, *Birth Control*, A. T. Hingorani, Ed. (Bharatiya Vidya Bhavan, Bombay, 1962).
8. J. P. Lewis, *Popul. Bull.* **26**, 12 (Nov. 1970).
9. U.S. Agency for International Development, *India Program Memorandum FY 1970* (New Delhi, 1968).
10. *Yearbook 1974–1975, Family Welfare Planning in India* (Ministry of Health and Family Planning, New Delhi, 1976).
11. A. Jain, *Stud. Fam. Plann.* **6**, No. 8 (1975).
12. Editorial, *New York Times*, 7 August 1973, p. 32.
13. R. Freedman and B. Berelson, *Stud. Fam. Plann.* 7, No. 1 (1976); P. Demeny, *Popul. Devel. Rev.* **1**, 307 (1975).
14. M. Mamdani, *The Myth of Population Control: Family, Caste and Class in an Indian Village* (Monthly Review Press, New York, 1972).
15. W. Rich, "Smaller Families through Social and Economic Progress," *Monograph No. 7*, Overseas Development Council, Washington, D.C., 1973.
16. *World Population Data Sheet, 1975*, Population Reference Bureau, Washington, D.C., 1975.
17. A. Berg, *The Nutrition Factor: Its Role in National Development* (Brookings Institution, Washington, D.C., 1973).
18. *Census of India 1971, Series 1, Paper 1* (Government of India Press, New Delhi, 1972), suppl. pp. 41, 76.
19. R. Cassen, *Popul. Devel. Rev.* **1**, 33 (1975).
20. T. R. Malthus, *First Essay on Population* (Royal Economic Society. Macmillan, London, 1926).
21. P. Visaria and A. K. Jain, "India," in *Country Profiles* (Population Council, New York, 1976).
22. D. G. Mandelbaum, *Human Fertility in India* (Univ. of California Press, Berkeley, 1974).
23. T. Frejka, *The Future of Population Growth: Alternative Paths to Equilibrium* (Wiley, New York, 1973).
24. R. Cassen and T. Dyson, *Popul. Devel. Rev.* **2**, 101 (1976).
25. Editorial, *Econ. Polit. Wkly.* (Bombay), 10 April 1976.
26. In order to become law the bill must be signed by the president of India. At this writing (1 February 1977) there has been no announcement of its being signed.
27. W. D. Hartley, *Wall Street Journal*, 7 July 1976, p. 34.
28. George Washington University Medical Center, "Contraceptive distribution—taking supplies to villages and households," *Population Reports, Series J., No. 5* (July 1975).
29. G. McNicoll, *Popul. Devel. Rev.* **1**, 1 (1975).
30. D. Banerji, in *Population in India's Development 1947–2000*, A. Bose, A. Mitra, P. B. Desai, J. N. Sharma, Eds. (Vikas, New Delhi, 1974).
31. S. Chandrasekhar, *Infant Mortality, Population Growth, and Family Planning in India* (Allen & Unwin, London, 1972), pp. 42 and 47 and appendix 2.
32. *The Economist*, 14 August 1976, p. 56.
33. Interview with D. N. Pai, Bombay, reported in the *New York Times*, 13 August 1976, p. A8.
34. *People*, **3** (No. 3), 39 (1976).
35. W. Ladejinsky, *Econ. Polit. Wkly.* (Bombay, vol. 4, 27 September 1969.