

REVIEW ARTICLE

In the 25 years since the late Sir Dugald Baird expounded his ideas on a fifth freedom—freedom from the tyranny of excessive fertility—what has happened to family planning services world wide? This week and next Dr Potts and Professor Rosenfield review the policies that have been adopted and suggest realistic strategies for the future.

The fifth freedom revisited: I, background and existing programmes

MALCOLM POTTS ALLAN ROSENFELD

In 1965, the late Sir Dugald Baird, then Regius Professor of Obstetrics and Gynaecology in Aberdeen, Scotland, gave a lecture at University College Hospital, London, entitled "A Fifth Freedom?"; the lecture was subsequently published in the *British Medical Journal*.¹ He argued that access to family planning should be placed in the same category as the four other basic human freedoms listed by President Roosevelt in the 1940s. To freedom of speech and worship and freedom from want and fear, Baird added "freedom from the tyranny of excessive fertility"—a bold claim.

Family planning 1965

- ★ Minor specialty outside mainstream medicine.
- ★ In the USA, contraception still illegal in several states.
- ★ Legal abortion limited to parts of Scandinavia and eastern Europe.
- ★ Sterilisation usually required strict application of arbitrary rules of age and parity.
- ★ Lack of contraceptive choices discriminated against the poor since women from middle and upper income brackets often found ways to obtain assistance from private physicians.
- ★ United Nations still refused to respond to requests from member nations for family planning assistance.
- ★ World population less than 3.5 billion and increasing by about 70 million a year (2% per annum).

Today world population exceeds 5.3 billion and is growing by 90 million a year (1.8% per annum). The rate at which the population continues to grow and the final stable population of the world will have a profound impact on global ecology and the progress of national economies. Smaller families in high-fertility countries lead to improved educational opportunities, help to accelerate economic development, and enhance family welfare. Fertility regulation can have a far-reaching effect on maternal and child health.²

(a) Pregnancy is most hazardous if a woman is less than 17 years of age or over 35, and when she already has 4 or more children.

(b) Infants are at greatest risk when born less than 2 years apart.

(c) 14 million children under the age of 5 die each year; effective family planning can improve the chances of child survival, especially in developing countries, by increasing the spacing between births to 2 years or more.

(d) About 500 000 women in developing countries die each year from pregnancy-related causes.³

As societies get richer and better educated, fertility tends to fall.⁴ This decline is a straightforward response to changes in proximate variables—use of contraception and abortion, changes in patterns of breastfeeding, and alterations in age of marriage.⁵ Thus, if there is equal access to family planning services, fertility will fall more rapidly in a prosperous, literate society, where women enjoy an equal status with men. Nevertheless, there are many examples of family planning successes among poor populations and among women who have little access to education.

What has been learned in the past 25 years and what needs to be done in the next 25? We will focus on policy choices, with a special emphasis on developing countries; we will not cover the broader areas of reproductive health, comprehensive health care, social services, and women's rights, although we acknowledge the importance of these issues.

ADDRESSES: Family Health International, North Carolina, USA (M. Potts, MB, PhD); and the Columbia School of Public Health, New York, USA (Prof A. Rosenfield, MD). Correspondence to Dr M Potts, Family Health International, PO Box 13950, Research Triangle Park, North Carolina 27709, USA.

Laying the foundations

Over the past quarter of a century, much has been learnt about the variables that determine family size, about the strengths and weaknesses of family programmes, and about the relations between family size, health, wealth, and status of women. The role of lactational anovulation as an important natural variable in pregnancy spacing has been unravelled only in the past two decades. Shorter duration of breastfeeding and changes in suckling patterns and in supplementary feeding practices are eroding this protection and raising fertility at the very time in history when it most needs to fall.⁶

Access to family planning since 1965

- ★ Family planning incorporated into the British National Health Service and voluntary surgical contraception (VSC, formerly sterilisation) made freely available.
- ★ Last US Comstock Laws prohibiting contraception finally struck down in 1973.
- ★ In 1970, US Congress passed Family Planning Services and Population Research Act (Title X Program) focused on poor women.
- ★ Family planning increasingly accepted as a basic human right world wide, although some countries still have implicit or explicit restrictions on specific methods.
- ★ In May, 1990, Irish Family Planning Association fined £400 for the crime of selling a packet of condoms for 80p.
- ★ Several dictatorships have forbidden or greatly circumscribed family planning choices; in Romania, high priority given to change in this area immediately after 1989 fall of Ceauşescu.

Safe abortion

Where access to contraception is backed up by safe abortion, individual couples, for the first time in history, will have virtually full control over their fertility. The results in countries such as Britain and the USA have been impressive. Many families are having 2 children or less—close to biological replacement. The large differential in family size between various social groups is disappearing. Maternal and infant deaths are at uniquely low levels and there are hardly any deaths from illegal abortions.⁷

Key abortion legislation was enacted in England and Wales in 1967 and in the USA (Roe v Wade) in 1973. Abortion legislation has now been liberalised for three-quarters of the world's population. When there is a strong drive to limit family size but inadequate access to contraception, abortion is common. For example, much of the Soviet Union has a contraceptive prevalence similar to that of Kenya but a birth rate like that of other industrialised countries. As a result, the abortion rate (120/1000 women aged 15–44) is twenty times as high as in the Netherlands (4–5/1000), which has good family planning services. If there is a good family planning programme, contraceptive use eventually overtakes the resort to abortion, although abortion never totally disappears.⁸ Contraceptive failures, for example, account for about half of the 1.5 million abortions each year in the USA. Without abortion the increase in global population would be 25–50% more rapid and the average US family perhaps 25–30% larger.

Lack of safe abortion services or restrictive abortion laws still combine to make unsafe abortion a major public health hazard in much of the developing world. The World Health Organisation has estimated that 100 000–200 000 of all maternal deaths annually in developing countries result from the complications of unsafe abortion procedures.³

Changes in organisation and funding of family planning since 1965

- ★ International Planned Parenthood Federation (IPPF, founded in 1952) received its first government support from Sweden in 1967.
- ★ Starting in 1968, the US Agency for International Development (USAID) rapidly built a large and effective international programme of population and family planning assistance.
- ★ In 1990 most industrialised nations give some support to international family planning.
- ★ United Nations Population Fund (UNFPA), established as a special agency of the United Nations in 1969, now has a growing worldwide programme with an annual budget of almost \$200 million.⁹

Family planning programmes

Countries that offer a wide range of methods through a variety of distribution channels (eg, Colombia, Thailand, and Bangladesh) have done better than those that offer one or two methods exclusively through government health services (eg, Kenya in the 1970s and much of India). Some of the most successful programmes have involved private practitioners (eg, in South Korea), who are subsidised to carry out insertions of intrauterine contraceptive devices (IUCDs) and VSC. The ability of people to obtain effective contraceptive methods at a convenient location, preferably close to home, is more important than integration with other types of health services (see table). China, Singapore, and, briefly, India applied social and legislative pressures to reduce fertility. The tragedy of China is that those who today are pressured to have abortions they do not want are the daughters of women who did not have access to family planning options. Contemporary populous countries—eg, Brazil, Egypt, and Pakistan—must be careful not to fall in the same demographic trap.

FAMILY PLANNING SERVICE FACILITIES (FPSF) AND TOTAL FERTILITY RATE (TFR)

Country	Year	FPSF	TFR
Indonesia	1969	510	5.6
	1983	60 796	4.1
Thailand	1968	73	6.1
	1980	7007	3.5
Kenya	1968	174	8.1
	1980	631	8.2
Colombia	1969	363	5.9
	1986	3648	3.6

Data from Ross JA, Rich M, Molzan JP, Pensak M. Family planning and child survival: 100 developing countries. Columbia University, New York: Center for Population and Family Health, 1988

Governments and new policies

When it comes to adopting new policies, governments fall into two groups: those that test new ideas for possible local

applicability and those that contrive to list hypothetical reasons why their problems are unique and why experience elsewhere is irrelevant. Thus, Thailand's national family planning programme investigated various innovative options—eg, whether nurses could insert IUCDs or even carry out female VSC—and responded positively to the strong desire of some women to use injectable contraceptives. The government also encouraged the participation of private organisations (eg, Mechai Viravaidya's Population and Development Association). Consequently, the prevalence of contraceptive use is now close to 70% and the Thai programme is widely regarded as one of the most successful in the developing world.¹⁰ By contrast, whilst India has set bold central policies, especially the 1969 abortion law, the practical details of the programme have been cautious and conservative and consumers have had little say. The central leadership tended to promote a single-method philosophy (first the IUCD, then vasectomy, and more recently female VSC) rather than a variety of methods and distribution channels. Oral contraceptives were deemed to be unsafe for Indian women, despite their almost universal acceptance elsewhere and the fact that pregnancy-related morbidity and mortality were higher in India than in most other countries. Moreover, without much evidence, these same authorities decided that Indian women would not use oral contraceptives even if they were offered them. Not surprisingly, the Indian programme is often regarded as a failure, although some states and regions have had dramatic successes (as long ago as 1978, the total fertility rate [TFR] in rural Kerala had fallen to 2.8).

Religion

Religious attitudes have influenced aspects of policy making but have had little effect on the adoption of birth control itself. Religious controversy slowed the response of some developing nations (eg, Mexico) to population pressures and continues to make some donors (eg, Belgium) cautious. Moreover, certain international organisations have been reluctant to give emphatic support to policies that they know are technically essential. Roman Catholics remain divided over their support of the Papal encyclical, *Humanae vitae* (1968), that condemns artificial contraception.¹¹ However, the percentage of Catholic couples in the USA who use artificial contraception or who have abortions is about the same as for non-Catholics.¹² Some interpretations of Islam perceive VSC as a forbidden mutilation of the body—eg, it is excluded from the Egyptian government's family planning programme.

Existing programmes

Demographic impacts

In several countries, with diverse economic and cultural backgrounds, voluntary family planning has been adopted with extraordinary rapidity, and fertility is falling two to four times as quickly as it did in the West at a similar stage of the demographic transition (see figure). In Sri Lanka, the TFR fell from 4.8 in 1965 to 2.4 in 1987. In Thailand, the change was even more rapid, from 7.5 in 1960 to 2.2 in 1987.¹³ In Bangladesh, a much poorer country, and several other countries (eg, Nepal and Kenya) contraceptive prevalence rates are now as high or higher than they were in rural Thailand as recently as 1968 (estimated at that time to be less than 5%).

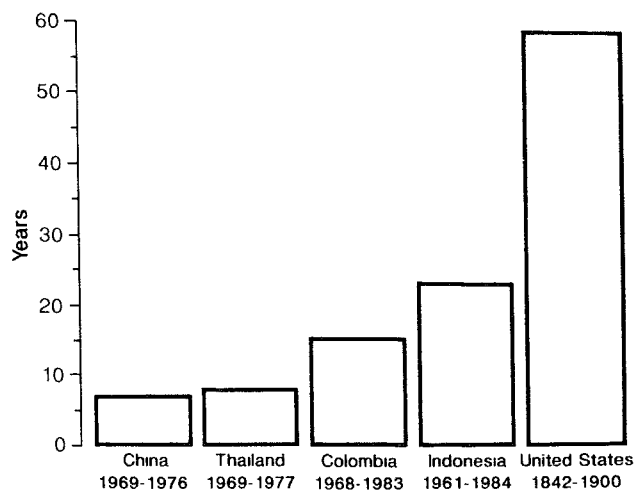
Experience in Bangladesh

- ★ TFR fell from 7.0 in 1975 to under 5 in 1988, while *desired* family size fell from 4.9 to 2.9.
- ★ 1989 fertility survey¹⁴ showed 30% contraceptive prevalence in fertile couples.
- ★ Government-supported family planning programme complemented by successful social marketing and by an active VSC programme offered via both government and non-governmental organisation (NGO) channels.
- ★ Some government clinics and several NGOs offer menstrual regulation services early in the first trimester.
- ★ Women are malnourished and three-quarters have no access to education, yet 45% want no more children.
- ★ Almost a quarter of all children die before their fifth birthday, yet women clearly see family planning as a shortcut to better health for themselves and their offspring.
- ★ Women appreciate that contraceptives give them autonomy and personal freedom, and that smaller families are likely to be better educated.
- ★ In 1975, 29% of women said family size was the will of Allah, but in 1990 only 8% believe they cannot control their own destiny.

Clinical experience

After pioneer studies in Thailand¹⁵ and elsewhere, oral contraceptives are now distributed widely and safely through non-medical channels.¹⁶ At least 10 million couples use condoms in the developing world. IUCDs are an effective method of contraception in many settings, but their use remains risky in some rural areas of developing countries where safe insertion and adequate follow-up are hard to provide. Easy access to VSC services is often difficult but it is now possible to carry out these procedures (vasectomy and tubal ligation) in most parts of the world. Minilaparotomy, under local anaesthesia, is an especially adaptable way to provide female surgical contraception.¹⁷

All reversible methods of contraception are associated with failures, and even a low rate may accumulate to a high risk when exposure continues for many years.¹⁸ Some of these unintended pregnancies end in abortion (legal or



Time taken for fertility to decline.

Fertility decline from a TRF of 6 to 3.5.

illegal). With modern techniques and proper training, first-trimester abortion has a lower mortality and morbidity than term delivery, and vacuum aspiration under paracervical block can be carried out responsibly as an outpatient technique. Menstrual regulation can be achieved by a single trained person in various settings.

Distribution channels

It is as important to have a wide variety of distribution channels as it is to make available a range of contraceptive methods. Family planning should be part of the work of health clinics and hospitals, but it continues to be an uphill struggle to persuade health professionals to include provision for such services as a routine part of obstetrics in the same way that vitamins and iron tablets are considered important choices in prenatal and postpartum care.

Social marketing programmes

- ★ Existing retail outlets are used to distribute contraceptives at a subsidised price.
- ★ Among the most cost-effective and culturally appropriate ways of establishing a nationwide system of contraceptive distribution quickly.
- ★ External funds are used to lower the price of the product to fit the needs of the people and to provide comprehensive and sustained advertising of carefully selected brand images.
- ★ Bangladesh programme costs only \$6.23 per couple-years of protection (CYP), including the cost of commodities.
- ★ As countries get richer, level of subsidy can be lowered.
- ★ In Colombia, social marketing and community-based distribution programmes cost \$5.45 per CYP and 20% of this cost is recovered from consumers.

Obstetric hospitals have a special opportunity to provide postpartum and postabortal family planning care. IUCDs are reasonably successful when they are inserted immediately after placental expulsion, and the issue of their use in this way is more one of management and training than of technology.¹⁹ In 1982, the social security system of Mexico began a well-organised programme of postpartum family planning; by 1988, 50% of the 720 000 women admitted to the social security hospitals for delivery or abortion left with some form of contraception. The proportion of postpartum IUCD insertions has now risen to 54%.

Evaluation and management

The least ambiguous way to measure the overall performance of family planning programmes is a programme-related decline in the birth rate. However, it is important to recognise that many exogenous variables—eg, commercial distribution of contraception, or changes in the illegal abortion rate, job opportunities, and education and status of women—may also alter the TFR. Contraceptive prevalence, which is strongly correlated with fertility decline,²⁰ is measured regularly in many countries, especially through the USAID-sponsored Health and Demographic Surveys. Cost per CYP is perhaps the most useful way of comparing the performance of individual programmes and is derived from sales (about 100 condoms or 13 packets of pills per couple), from data on the age of users and continuation rates of IUCDs, or from the age of

individuals accepting VSC.²¹ The cost of different programmes varies from well under \$10 per CYP to over \$150; these differences suggest uneven programme management and a lack of selectivity among some project sponsors.

Management has always been a key issue in determining the success of family planning programmes,²² but with many governments the staff are paid very little. To make matters worse, staff promotion often tends to go by length of service rather than by talent. In an attempt to compensate for the low performance of staff, incentives have sometimes been given for family planning work, but the effect of such additional rewards wears off quickly. When large numbers of low-paid professionals are given extra bonuses, bogus clients may be invented to secure payments and clinical judgments may be biased by the incentives offered. NGOs can replace bad field workers with new ones more readily than can government programmes.

Funding

Family planning in developing countries is funded in three ways.

(a) A surprisingly large part is paid by the consumers of services—eg, three-quarters of the oral contraceptives used in Latin America are purchased at full price by users.

(b) Governments in developing countries such as Thailand, Indonesia, India, Zimbabwe, Kenya, and Mexico are placing increased resources into family planning.

(c) Both international private and governmental donors continue to provide essential financial support and technical assistance.

The annual investment in 1988 to help those who wanted to plan their families but who were too poor to pay the full cost of services (excluding the People's Republic of China) is estimated to have been \$1.8 billion.²³ Of this amount, it is thought that the developing countries themselves paid for about \$970 million and foreign donors \$660 million. Of the \$660 million, about \$450 million is indirect support through technical assistance and financial support in training, evaluation, research, and programme implementation, leaving about \$210 million spent on contraception and direct family planning service support. These costs do not include building infrastructure, improving maternal and child health services, or conducting censuses.²⁴

Support of industrialised nations

- ★ By end of 1988, industrialised nations had provided an aggregate of \$7.2 billion to international family planning.²⁵
- ★ Support has stagnated since mid-1980s, partly as a result of wasteful ideological disputes in the USA.
- ★ Reagan administration stopped funding UNFPA and IPPF because of an erroneous belief that these organisations promoted abortions.
- ★ Only 0.9% of the total development assistance budget provided by industrialised nations is spent on population/family programmes (according to meeting of Organisation for Economic Cooperation and Development, Paris, 1990).
- ★ Some countries (eg, the Netherlands and Norway) give more than 0.9%; others (eg, Australia) give less; France gives virtually nothing.
- ★ World Bank emphasises the need for lower birth rates yet gave only 0.1% of its loans to population activities in 1987 and 0.4% in 1988.²⁶

Family planning and development

To participate in their own development, developing communities need to find and train local leaders. In Thailand and Mexico, a cost-effective way of identifying committed and honest community leaders for social (eg, anti-drug-abuse) or economic (eg, community banks) projects has been to build on the skills of contraceptive distributors (promotores in Mexico). Not all distributors succeed, in which case a small sum will have been wasted on their training. However, good performance often predicts skill and commitment in other areas, and potentially costly mistakes in development projects can consequently be avoided.

REFERENCES

- Baird D. A fifth freedom? *Br Med J* 1965; ii: 1141-48.
- Maine D. Family planning: its impact on the health of women and children. New York: Center for Population and Family Health, Columbia University, 1981.
- Rosenfield A. Maternal mortality in developing countries: an ongoing but neglected 'epidemic'. *JAMA* 1989; **262**: 376-79.
- Cutright P. Ingredients of recent fertility decline in developing countries. *Int Fam Plann Perspect* 1983; **9**: 101-09.
- Bongaarts J, Potter RG. Fertility, biology, and behavior: an analysis of the proximate determinants. New York: Academic Press, 1983.
- Thapa S, Short RV, Potts M. Breast feeding, birth spacing and their effects on child survival. *Nature* 1988; **335**: 679-82.
- Tietze C, Henshaw SK. Induced abortion: a world review. New York: Alan Guttmacher Institute, 1986.
- Potts M, Diggory P, Peel J. Abortion. Cambridge: Cambridge University Press, 1977.
- UNFPA annual report 1989. New York: UNFPA, 1990.
- Rosenfield A, Bennett A, Varakamin S, Lauro D. Thailand's family planning program: an Asian success story. *Int Fam Plann Perspect* 1982; **8**: 43-50.
- Murphy FX. Catholic perspectives on population issues II. *Popul Bull* 1981; **35**: 1-34.
- Mosher WD. Fertility and family planning in the United States: insights from the National Survey of Family Growth. *Int Fam Plann Perspect* 1988; **20**: 207-17.
- Chayovan N, Knodel J, Kamnuansilpa P. Approaching replacement fertility in Thailand: results of the 1987 Demographic and Health Survey. *Int Fam Plann Perspect* 1988; **14**: 86-93, 102.
- Hug MN, Cleland J. Preliminary report on the Bangladesh Fertility Survey. Dhaka: National Institute of Population Research and Training (NIPORT), 1989.
- Rosenfield A, Limcharoen C. Auxiliary midwife prescription of oral contraceptives: an experimental project in Thailand. *Am J Obstet Gynecol* 1972; **114**: 942-49.
- Zavala AS, Perez-Gonzales M, Miller PC, Welsh M, Wilkens LR, Potts M. Reproductive risks in a community-based distribution program of oral contraceptives, Matamoros, Mexico. *Stud Fam Plann* 1987; **18**: 284-90.
- Mumford SD, Bhiwandiwalla PP, Chi I-C. Laparoscopic and minilaparotomy female sterilisation compared in 15 167 cases. *Lancet* 1980; ii: 1066-70.
- Ross JA. Contraception: Short term vs long-term failure rates. *Fam Plann Perspect* 1989; **21**: 275-77.
- Rosenfield A, Castadot RG. Early postpartum and immediate postabortion intrauterine contraceptive device insertion. *Am J Obstet Gynecol* 1974; **118**: 1104-14.
- Bongaarts J. Implications of future fertility trends for contraceptive practice. *Popul Dev Rev* 1984; **10**: 341-52.
- Huber SE, Harvey PD. Family planning programmes in ten developing countries: cost effectiveness by mode of service delivery. *J Biosoc Sci* 1989; **21**: 267-77.
- Black T. Ten institutional checks to family planning. In: Potts M, Wood C, eds. New concepts in contraception. Lancaster: Medical Technical Press, 1972: 43-55.
- Janowitz BS, Bratt JH, Friel DB. Investing in the future. Research Triangle Park, North Carolina: Family Health International, 1990.
- United Nations Population Fund. Report of the International Forum on Population in the Twenty-First Century. New York: UNFPA, 1990.
- Ness GD, Thomas S. Global population assistance: the 1989 assessment. *Populi* 1989; **16**: 4-17.
- Camp SL, Conly SR. The World Bank's role in global population efforts: an agenda for effective action. Washington: Population Crisis Committee, 1989.

FOODBORNE ILLNESS

Foodborne salmonellosis

A. C. BAIRD-PARKER

Salmonellas continue to be one of the main causes of foodborne illness world wide; in many countries salmonellosis is the most frequently reported foodborne disease. In various western countries, including the UK, reported cases of salmonellosis have increased steadily during the 1970s and 1980s, with an especially sharp rise in some countries during the past five years due to certain phage types of *Salmonella enteritidis*. Thus, the socioeconomic cost of human and animal salmonellosis adds substantially to the cost of food production and health care, and causes much suffering and financial loss. There is international recognition of the need to find cost-effective solutions.¹

Bacteriology

Salmonellas are gram-negative, motile, rod-shaped bacteria that can grow both aerobically and anaerobically, between about 7 and 48°C (optimum 37°C), at pH 4-8, and at water activities above 0.93. They are readily killed by heat (eg, 71.7°C for 15 s) and acid (eg, 1.4% acetic acid at pH 4.0 within 72 h), and are resistant to both freezing and drying,

particularly in the presence of proteins and other protectants.²

The organism is ubiquitous among domestic and wild warm-blooded animals and almost all serovars cause illness in man. Some types are adapted to certain animal species; these types are much more virulent for the species to which they are adapted than for other species. For example, the avian-adapted *S pullorum* and *S gallinarum* cause severe disease in poultry but very rarely infect man. *S enteritidis* phage type (PT) 4 causes an invasive infection of poultry that leads to septicaemia and subsequent chronic infection of various organs; when the ovary is infected, transmission of organisms to the contents of the egg can occur. Although highly virulent to poultry, *S enteritidis* PT4 does not have enhanced virulence for man.³

Although there are more than 2200 serovars of salmonella, fewer than 200 cause human illness in the UK in any one year. *S typhimurium* and *S enteritidis* currently account for three-quarters of reported cases; *S enteritidis*

ADDRESS. Unilever Research, Colworth Laboratory, Sharnbrook, Bedford MK44 1LQ, UK (Dr A. C. Baird-Parker, PhD).