

INCENTIVES AND DISINCENTIVES USED TO AFFECT DEMOGRAPHIC CHANGES IN FERTILITY TRENDS IN SINGAPORE

K Singh
O Viegas
SS Ratnam

Department of Obstetrics & Gynaecology
National University of Singapore
Kandang Kerbau Hospital
Singapore 0821

K Singh, MBBS (S'pore), MMed (O&G) (S'pore),
MRCOG (London)
Lecturer

O Viegas, MBChB, MRCOG, MD (UK), DA, AM
Senior Lecturer

SS Ratnam, MBBS, MD, AM, FRCS, FRCSEd,
FRCSG, FRACS, FRCOG, FRACOG (Hon)
Consultant and Head

SYNOPSIS

Maternal, perinatal, infant and child mortality rates in the developing world are considerably higher than in developed countries. The potential impact of family planning on the health and welfare of mothers and children is immense. This paper discusses some socio-demographic changes that have occurred as a result of unique family planning policies in Singapore resulting in childbirth becoming a less hazardous experience in this South East Asian Republic.

INTRODUCTION

The Alma Ata declaration of 1979 commits the World Health Organisation to "Health for all by 2000 AD." However, with regard to Maternal and Child Health in developing countries, there was been a failure to achieve this noble goal. Of the 125 million births occurring in the world, the majority take place in the rural and periurban communities of the third world. Given that the maternal and perinatal outcomes are 10-20 times poorer in these countries than in the developed world, it is clear that the health care needs of these mothers and their children represent a significant challenge (1).

Poorer health of women, complications of pregnancy and childbirth, low birth weight as well as general malnutrition and infection are important reasons for globally high levels of maternal, perinatal, infant and childhood mortality and morbidity. All these conditions are strongly affected by fertility patterns resulting in uncontrolled population growth. They do not occur in isolation, but in the context of poor socioeconomic situations with scarcity of education, health and other social services — characteristic of the developing world.

Family planning through appropriate timing, spacing and limitation of number of pregnancies, can promote the health and well being of the family and also reduce the risk of ill health and death for mothers and children. But the implementation of family planning programmes constitutes a major task if left purely to the discretion of individuals or communities as has been seen in some Asian and African countries. The World Fertility Survey for example found that the proportion of women who indicated the birth was unwanted ranged from 6% in Trinidad and Tobago to 44% in Jamaica. The results also suggested that population growth rates could be cut in half in Bangladesh, Columbia, Dominican Republic, Guyana, Jamaica, Peru and Sri Lanka if all unwanted births were prevented (2). Why then, if women want fewer children, don't they have fewer? The obvious answer is they probably do not have access to the necessary information, supplies and services and that their attitudes to fertility regulation may be influenced by the socioeconomic cultural environment in which they make their decision.

There are three ways in which population growth may be contained: (1) raised mortality (2) promote migration (3) reduce fertility. The first two alternatives are obviously unacceptable or impractical so that lowered fertility remains the most feasible means of reducing population growth in those countries whose policy supports it (2). Therefore, the responsibility for policy implementation must rest with the various governments who may choose one or more of the following approaches to achieve the deceleration in population growth:-

- (1) communicate with people in order to influence their demographic behaviour in the desired manner.
- (2) Provide services to affect the desired behaviour.
- (3) manipulate the balance of incentives and disincentives to achieve the desired regulations.
- (4) shift the weight of social institutions and opportunities in the desired direction and
- (5) coerce the desired behaviour through the power of the state.

Although preferable, it is clear that the logistics of successfully implementing such policies on a purely voluntary basis is daunting. Therefore, legislation by governmental authorities in the form of incentives and disincentives is mandatory.

Direct and indirect individual and community incentives and disincentives have been used for many years in the developed world for pronatal purposes; for example, direct monetary stipends, paid maternity leave, and maternity and birth payments as seen in Europe. More recently however, such governmental policies have been used in the developing world for antinatalist purposes. In these countries, an incentive is defined as a tangible or intangible reward to an individual, couple or other group designed to induce specified fertility reducing behaviour. A disincentive is defined as a tangible or intangible negative sanction incurred by an individual, couple or other group as a consequence of exceeding specified fertility behaviour (2, 3).

The incentive and disincentive programs used in Asia and the Asean nations have recently been reviewed by David (1982) (4). This paper outlines the development of Eugenic protection laws on fertility in Singapore, the incentives and disincentives in relation to abortion and sterilisation, and the impact of these laws on fertility trends and maternal and child health in this South East Asian nation.

The negative effects of uncontrolled population expansion are inadequacy of food, space, employment and a reduction in the standard of living. In Singapore, a small city state, the relevance of population control is particularly obvious. For this reason, the governmental authorities have modified the existing Eugenic protection laws using legislation as outlined below (5).

Sexual Sterilisation

(1) 1966

Eugenic Board consisting of a District Judge, 2 physicians and 2 representatives from the Ministry of Health and Committee set up under the National Family Planning and Population Board — sterilisation on application by individuals over 40 years old: with 4 or more children. Husband's consent is necessary for female sexual sterilisation.

1969 Voluntary Sterilisation Act

Age barrier withdrawn but 30 days waiting period between application and sexual sterilisation. Number of existing children reduced to 3.

1972 Amendment of Voluntary Sterilisation Act

Number of existing children reduced to 2. Waiting period between application and sexual sterilisation reduced to 7 days.

1974 New Voluntary Sterilisation Act

Decision, maternity responsibility transferred from Eugenic Board to registered medical practitioners holding prescribed qualifications and/or experience with consent of person concerned, spouse, parent or guardian as follows:

- (a) If the person is over 21 years of age whether such a person is married or unmarried with the consent of that person.
- (b) If the person is under 21 years and married with the consent of that person.
- (c) If the person is under 21 and unmarried with that person's consent and the consent of the parent or the guardian if parents are not living.
- (d) If the person is married and has hereditary form of illness, mental deficiency or epilepsy with the consent of the wife or husband of that person.
- (e) If the person is suffering from any of the above diseases mentioned in (d) above and is unmarried with the consent of the parent or guardian if there are no parents.

The operation may be carried out in a government or approved medical practice with the prescribed qualification and/or experience.

ABORTION

Before 1977:

Legal abortion restricted only to those cases in whom maternal life was endangered.

1967:

Medical Committee of the National Family Planning and

Population Board set up. Extended abortion to (1) those eugenic cases e.g. with congenital fetal malformations (2) those cases where the mother was a victim of sex crime or of an intercourse with a mentally insane or feeble minded person.

1968: First Abortion Bill:

Abortion further liberalised to include those cases deemed unsuitable for continuing pregnancy for family, social and economic reasons. This facility was only available to those women resident in Singapore for more than 4 months prior to abortion.

1974: New Abortion Act

This law made it possible for abortions to be performed at the written request and consisted of the woman up to 24 weeks of pregnancy by a registered medical practitioner with prescribed qualifications and/or experience in a government hospital or in approved institution.

To enforce the impact of these laws on population control, the government of Singapore has also introduced a series of incentives and disincentives — indeed Singapore is the first nation to have implemented primarily disincentives in the fertility reduction programmes. *The 5 disincentive policies to date are:*

- (1) Increasing accouchement charges for increasing birth orders, for example, the current rate for the first child is S\$350 whilst for the fifth it is S\$1000.
- (2) School admission priority — lower priority for the choice of primary schools for third and subsequent children.
- (3) No paid maternity leave for delivery of third and subsequent children.
- (4) Taxation policy — no income tax relief given to the fourth and subsequent children born on or after August 1973.
- (5) Housing subsidy allocation — low priority to be given to large families for allocation of housing grants.

Although these are tangible negative sanctions, it must be stressed that the government does not impose legal protective measures on those not restricting family size to the stipulated two.

In an effort to augment the effect of these disincentives, the government of Singapore has also issued a number of incentives for those who comply with their family restriction measures. These incentives offered to date are:

- (1) Waiver of delivery charges in government maternity hospitals —
 - a) no accouchement charge is made for those mothers who accept sterilisation after delivery.
 - b) for subsidized patients, ward charges may also be waived.
 - c) delivery charges are also waived if the husband undergoes sexual sterilisation within one month of delivery.
- (2) Medical leave — up to 28 days of fully paid leave will be granted to those mothers undergoing sterilisation after delivery.
- (3) Monetary stipend — in those cases where the mother is under 30 years of age and the combined family income is less than S\$1500 per month, the government will provide a monetary incentive of up to S\$10,000 towards house purchase if sexual sterilisation is undertaken by the mother after the first or second child.

- (4) Continuation of employment for non-Singaporeans — for those couples holding a Singapore marriage certificate where one partner is a non-Singaporean, then both partners must be sexually sterilised after delivery of the second child if they wish to secure continued employment in Singapore.

Since the implementation of the above measures by the government in Singapore, major demographic changes have taken place in fertility trends with corresponding improvements in maternal and child health and obstetric outcome. These are listed below:

I. EFFECTIVE PREVENTION FOR HIGH MORTALITY AND MORBIDITY

Acceptance of Contraception

Family planning in Singapore began in 1949 with the formation of the Singapore Family Planning Association, a voluntary organisation concerned with the health and welfare of mothers and children. Only in 1965 did the Ministry of Health give serious consideration to family planning activities in government clinics and launched its first five year plan. Since then, there have been 3 five year plans up to 1980 (6). A review of the acceptor profile shows that the proportion of women in the childbearing years accepting contraception has increased from below 60% in 1965 to about 90% to date. It is also interesting to note that over the decade 1970 to 1980 the proportion of acceptors below 30 years of age had increased from 62% to 82% (7).

Decline in Birth Rates

The crude birth rate in Singapore was 42.7 per 1000 population in 1957 and since then it has declined sharply. At the end of 1965 the crude birth rate was around 29.5 per 1000 population but, with the introduction of the National family planning programme in 1966, the rate fell to around 20 per 1000 in 1970. It was at this stage that abortion was legalised and there after the crude birth rate fell rapidly so that in 1983 it was 16.2 per 1000 population. This trend has been seen in the 3 major ethnic groups in Singapore (Figure 1) (7).

Improvement in Infant and Maternal Mortality Rates

The change in childbearing resulting from the introduction of family planning has shown a dramatic reduction of both infant and maternal mortality all over the world.

In Singapore the perinatal mortality was 28.3 per 1000 total live births and stillbirths in 1957. It showed a fall to 25.5 per 1000 in 1965. With the introduction of the National Family Planning Programme in 1966 and legislation of abortions in 1970 it has decreased sharply to 10.6 in 1983 (Figure 1). This trend is also shown in the infant mortality rates. The infant mortality rate was 41.4 per 1000 live births in 1957 and 26.3 in 1965. With the introduction of family planning and legalised abortion it has been more significantly reduced so that in 1983, the infant mortality rate for Singapore was 9.4 per 1000 live births (6, 7).

Mental mortality rates have shown a similar decline from 90 per 100,000 live births in 1957 to 10 per 100,000 livebirths in 1983 (Figure 2).

The success of the national family planning programme and the legislation of abortion in Singapore has been largely responsible for the decline in maternal, perinatal and infant deaths but the role of the overall improvement of the maternal educational status and the socio-economic circumstances of the family cannot be overlooked (see Figure 2). The per capita gross national product in Singapore has in-

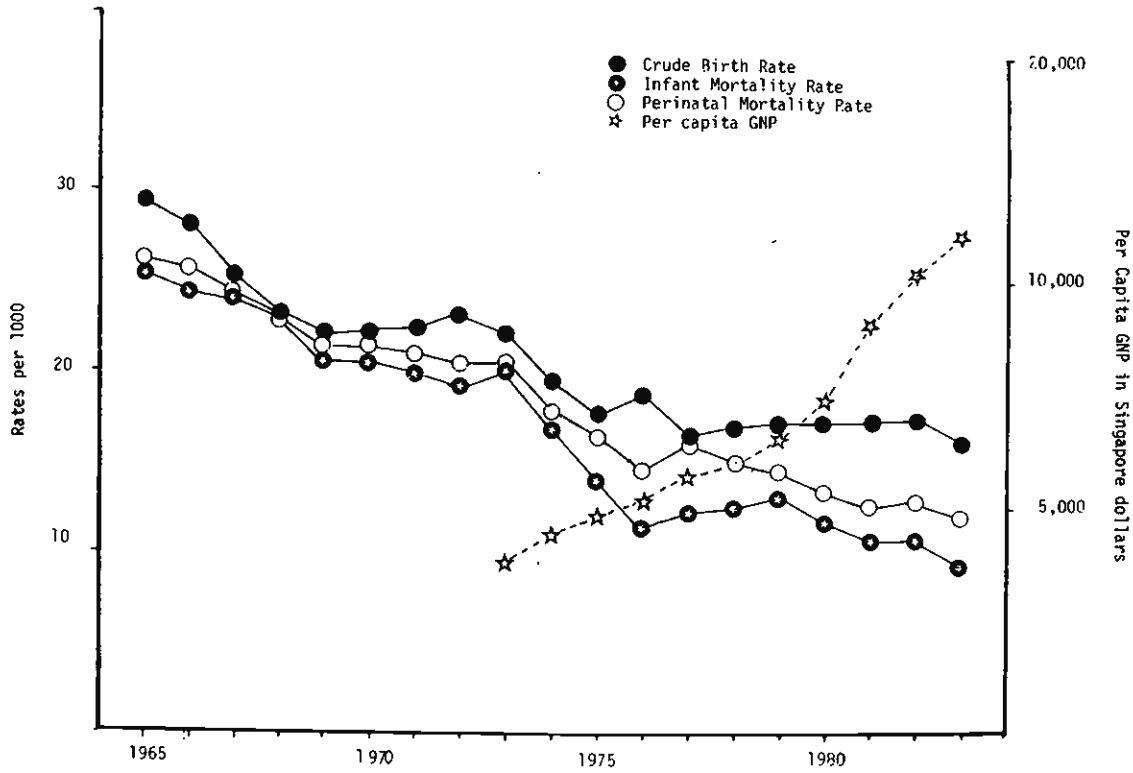


FIGURE 1: Crude birth rates, infant mortality rate and perinatal mortality rates for Singapore 1965-1983 with change in per capita (GNP 1973-1983)*

*Source: Singapore Family Planning and Populations Board Annual Reports, 1984 (7)

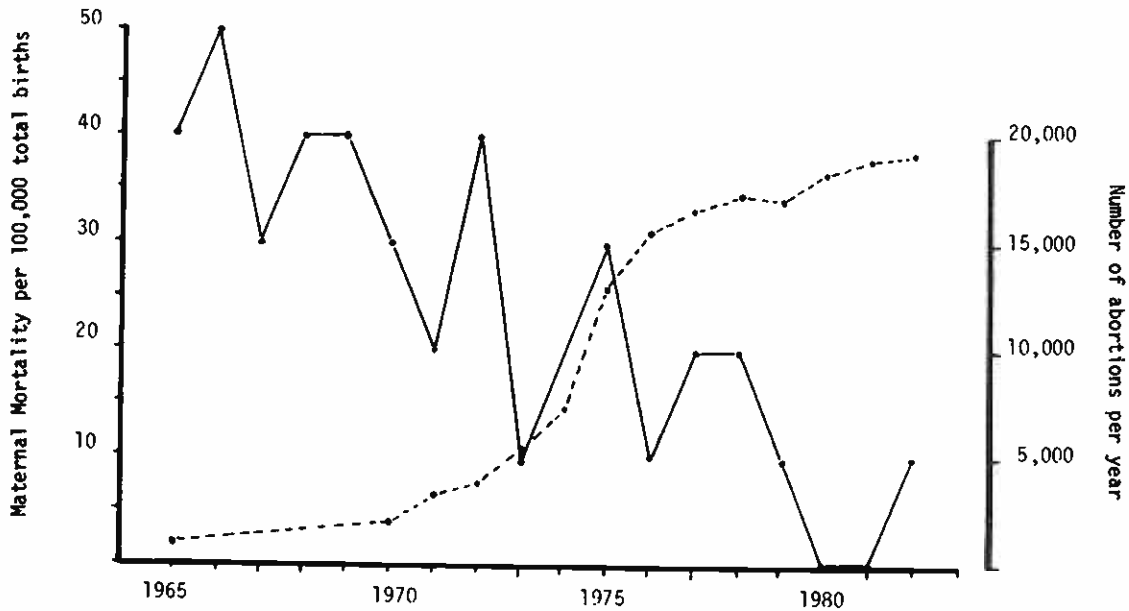


FIGURE 2: Trends in maternal mortality rates in Singapore in relation to legalised abortion rates*

*Source: Singapore Family Planning and Population Board Annual Reports, 1984 (7)

creased from 3,849 Singapore dollars in 1973 to 11,031 Singapore dollars in 1983.

† Total Fertility Rates

The trend of fertility among women is shown by the total fertility rate. This rate provides an indicator of the 'number of children a woman will have during the whole of her reproductive life span on the basis of the existing fertility rate at the time of the study.'

In Singapore the decrease in fertility trends was noted from 1957. During the period 1957-1965 the total fertility rate declined from 6.4 to 4.6 per woman. With the introduction of the National family planning programme in 1966, the decline in fertility accelerated especially during the period 1966-1970 so that in 1970, the total fertility rate was 3.1 per woman. This general declining trend in fertility has continued and in 1983, was 1.6 (Figure 3) (6, 7, 8, 9).

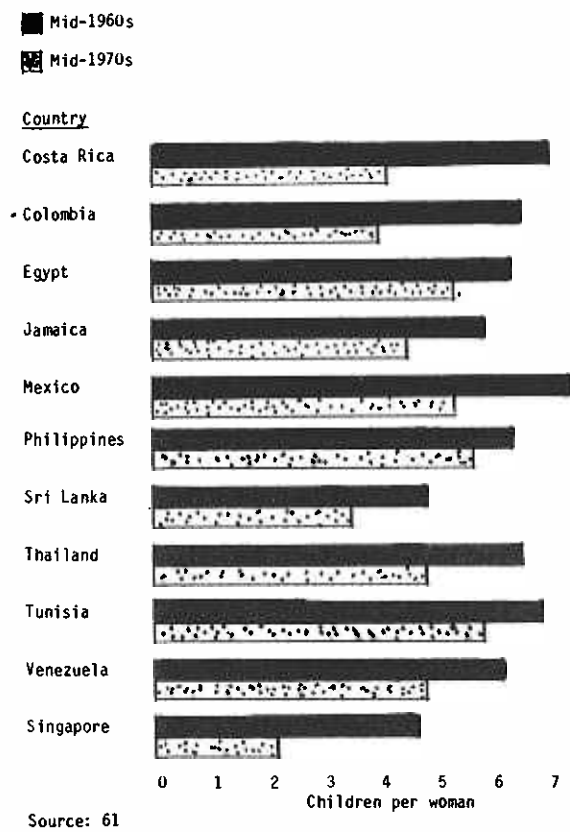


FIGURE 3: Total fertility rates
*Source: Population Reference Bureau, 1983 (9)

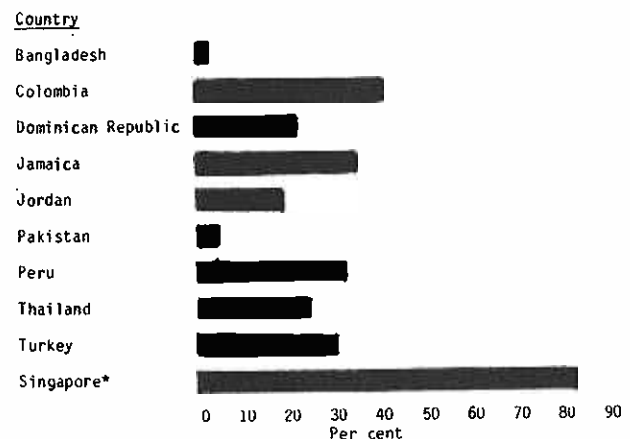
In multi-racial Singapore, the decline in fertility rate from 1966-1983 was 66.1% for Malays and 71.9% for Indians whilst for the Chinese it was 64.4%. However, the fertility rate of the Chinese has been falling significantly and consistently since 1957. As a result the Chinese have had the lowest total fertility rate among the three ethnic groups since 1957 (6, 7).

An even more important demographic change occurred amongst the more affluent and educated Singaporean. Whereas the original intention was to reduce the Net Reproductive Rate to one, the rate fell to 0.8 in 1980 and this drop was contributed to mainly by the higher socioeconomic class. As a result of this change, the government brought about a selective priority scheme to encourage graduate females to have at least 3 children. From January 1984, these mothers were promised first priority in the registration of the school of choice and more favourable income tax relief

benefits. This policy, however, created social dissatisfaction in being so selective and is to be discontinued in March 1986. This reversal of trend serves to emphasize the need for such policies to be applied "across the board" with fairness if equitable compliance is to be achieved.

Birth interval or spacing of children

Women who use contraceptives are more successful than other women in spacing their births and preventing unwanted babies. Figure 4 shows the proportion of women who say they want more children that are using contraception (8, 9). In Singapore, the number of women who want more children that are using contraceptives has increased from 67% in 1970 to 88% in 1983. This trend is greatest in women who are of parity 0 or 1. In this group the use of contraception has increased from 43% in 1970 to 81% in 1983 (7).



Source (63-67)
*Singapore data refers to patients using contraception between 1975-1983.

FIGURE 4: Percent of women who want more children that are using contraceptions*
*Source: Population Reference Bureau, 1983 (9)

Maternal age of childbearing

In Singapore there is a decline in childbearing among the women age 15-19 years. There was a 62.5% decline in the births occurring in this group between 1966 to 1983. For the women aged 35 years the decline in the births was 67.7% between 1966 to 1983 (Figure 5).

In 1983, the prime childbearing age group was 25-29 years and 42.3% of total births were born to mothers in this prime childbearing age group. 90% of live births were born to mothers in the age group 20-34 years. The Malay and Indian mothers were younger than the Chinese mothers. About 43% of Malay and 36% Indian mothers were in the younger age groups 15-19 and 20-24 years compared with only 23% of Chinese mothers in these age groups (6, 7).

Birth Order

In developed and developing countries as contraceptive use increases, women have smaller families and fewer births at unfavourable ages. This trend is similarly shown in Singapore (Figure 5). The number of fourth and later babies fell by about almost 90%. The first and second born during the period have increased with the success of the national family planning programme (6, 7).

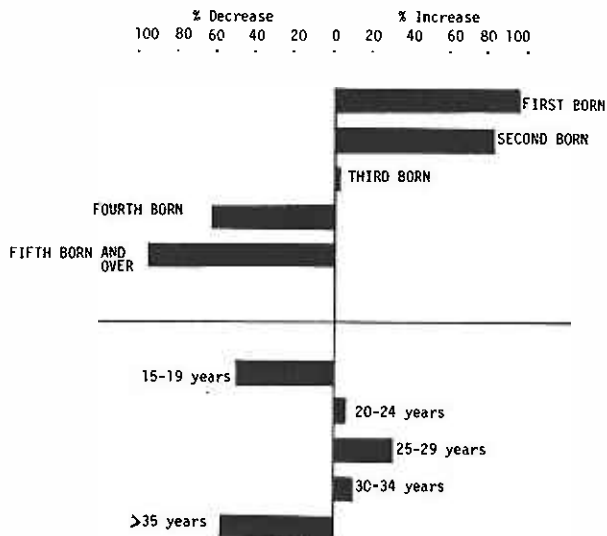


FIGURE 5: Change in fertility patterns in Singapore (1967-1983) by birth order and maternal age*

*Source: Statistics from Registrar of Birth and Deaths, Singapore 1983 (6)

Thus it can be seen that family planning provides highly effective technology that can, by preventing high risk pregnancies, reduce maternal and child mortality.

2. MEETS INDIVIDUAL AND COMMUNITY NEEDS

Family planning meets an individual and community needs. Many men and women want to control their fertility. Evidence of the desire to prevent births is seen in survey results and in levels of illegal abortions.

The potential for preventing deaths from illegal abortion through family planning is clearly very great since these pregnancies are unwanted.

In Singapore with the liberalization of abortion legislation in 1970 and the availability of abortion on demand for pregnancies up to 24 weeks in 1974, there has been a progressive fall in the abortion deaths from 15 in 1968-1970 to 9 in 1974-1976, a decline of 40%. This is substantiated by the increase in the number of legalised abortions over the period 1971-1979 (Figure 6) (10).

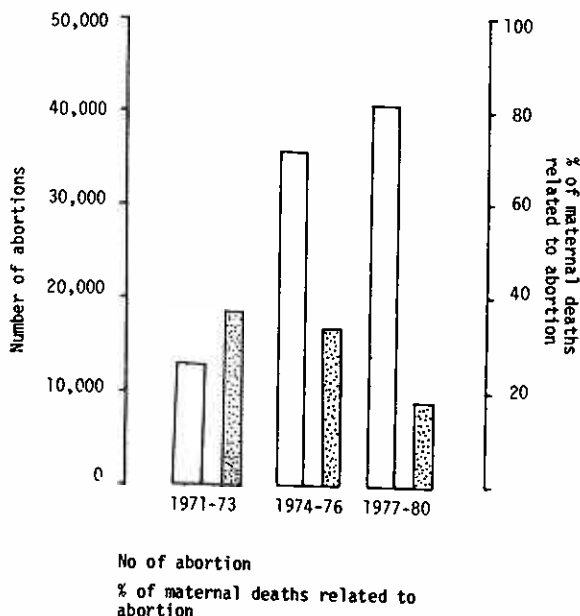


FIGURE 6: Trends in legalised abortion in Singapore and abortion related maternal deaths*

*Lim et al, 1979 (10)

Ethical Consideration

It is clear that in the implementation of any governmental policy using incentives or disincentives, ethical issues are inevitable. These main objections relating to incentive programmes are (1) these may infringe on the freedom of choice by influencing the options of parental decision makers and (2) they may be unjust.

However, positive incentives can be seen to enlarge options rather than reduce this and hence serve both freedom and justice. The individual is presented with a choice he did not have in the absence of the incentive; since he can decline the incentive, he has lost nothing from his previous state but has gained an option — the incentive rather than his normal fertility behaviour.

When considering negative incentive programs, the main problem is the possible effect on third party innocents (children) born in disregard of disincentives for example the disadvantage of second choice schooling etc. In addition, there is the possibility of psychological or internal effects in the form of intrafamily reactions to innocents on the ground that they cost the family something. Although such effects may not be large, they nevertheless should be safeguarded against. In general, positive incentives are usually permissible provided that means of resolving a population problem are not sufficiently effective in their absence and that those who are affected by the incentives possess sufficient knowledge and understand the consequences of accepting them.

Positive incentives are generally to be preferred to negative ones on the ground that the potential harm to innocents entailed by the use of negative incentives may be a present danger (4).

In Singapore, the equitable and just distribution of these incentives and disincentives has resulted in healthy compliance from the population with the attendant benefits of controlled population growth on maternal and child health care and improved social standards.

CONCLUSION

It should thus be emphasised that for eugenic protection laws to be effective and a population to benefit from such laws, it is mandatory that careful planning takes place in the initial stages and that adequate facilities are created to meet the demand. It is also vital that the services are readily available with little publicity and without any waiting period. Counselling must form an essential component of any programme that includes termination of pregnancy and sexual sterilisation.

The inclusion of these components in the programme in Singapore may explain the absence of serious psychological sequelae to termination of pregnancy or sterilisation in the Republic.

REFERENCES

1. World Health Organisation. Maternal and Child Health Report by the Director-General. Presented at 32nd World Health Assembly, Geneva: April 1979.
2. Warrall P. Incentives and disincentives in family and population planning programs. Population Reference Bureau, Inc Washington D.C.
3. Jan SB, Lee J, Ratnam SS: Effects of social disincentives policies on fertility behaviour in Singapore. Am Publ Health 1978; 68 (2): 119-25.
4. David P. 'Incentives, Reproductive Behaviours and In-

- tegrated community Development in Asia'. Studies in Family Planning, Vol 13, No 5, The Population Council May 1982.
5. Anandakumar C, Ratnam SS: The impact of eugenic protection laws on fertility and the logistics of successfully implementing policies — Singapore experience. Singapore J Obstet Gynaecol 1984; 15: 132-46.
 6. Statistics from Registrar of Birth and Deaths. Singapore 1982 to 1984.
 7. The Singapore Family Planning and Population Board Annual Reports from 1968 to 1984.
 8. Ministry of Health and Population Control. Population Control and Family Planning Division. Government of the People's Republic of Bangladesh Fertility Survey, 1975-1976. First Report, Dacca, 1978.
 9. Population Reference Bureau, World Fertility, A chart of Age-Specific Fertility Rates for 120 countries, Washington D.C. January 1981.
 10. Lim LL, Cheng MCE, Rauff M, Ratnam SS: Abortion in Singapore 1968-1976. Singapore Med J 1979; 20: 391-4.