X. POPULATION DYNAMICS AND REDUCING MATERNAL MORTALITY

World Health Organization

A. INTRODUCTION

Increased understanding that population issues are best addressed through people-centred approaches rather than solely demographic rationales led to a paradigm shift in population policies and programmes which traditionally focused on controlling population growth. The International Conference on Population and Development (ICPD) in 1994 in Cairo marked this shift with the adoption of the Programme of Action, which addressed population issues in the broader contexts of reproductive health and development (United Nations 1994). The ICPD Programme of Action acknowledges the intersection of population and health, particularly reproductive health, and their linkage with development. It endorses a reproductive health approach that focuses on meeting individuals' needs while respecting their rights.

At the Millennium Summit later in 2000, world leaders unanimously adopted the Millennium Declaration (United Nations General Assembly, 2000), which led to the articulation of eight specific Millennium Development Goals (MDGs). Being a sensitive development indicator with unacceptably large cross-country differentials, maternal mortality was of concern in both the ICPD Programme of Action and the Millennium Summit, and improving maternal health and reducing deaths due to maternal causes were among the adopted goals and targets in both ICPD Programme of Action and the MDGs.

This paper focuses on the relevance of population aspects of the Program of Action of ICPD for the achievement of the MDG Goal 5 on maternal health and its target of reducing maternal mortality ratio by three-quarters between 1990 and 2015. It starts with an outline of the similar ICPD goal and the key actions recommended for its attainment. Afterwards, the influence of population dynamics on reducing maternal mortality, and the ways with which ICPD Programme of Action addresses these are discussed.

B. MATERNAL HEALTH GOAL OF ICPD PROGRAMME OF ACTION

The ICPD Programme of Action includes a specific goal *"to promote women's health and safe motherhood; to achieve a rapid and substantial reduction in maternal morbidity and mortality and reduce the differences observed between developing and developed countries and within countries. On the basis of a commitment to women's health and well-being, to reduce greatly the number of deaths and morbidity from unsafe abortion; to improve the health and nutritional status of women, especially of pregnant and nursing women"*. It is recommended that *"Countries should strive to effect significant reductions in maternal mortality by the year 2015; a reduction in maternal mortality by one half of the 1990 levels by the year 2000 and a further one half by 2015"*. This is very similar to what target 6 of MDG framework denotes. Other recommended actions in the ICPD Programme of Action include:

- Narrowing disparities within countries between socio-economic, geographical and ethnic groups,
- Expanding the provision of maternal and child health services in the context of primary health care
- Increased emphasis to the management of high risk pregnancies
- Meeting nutritional needs of childbearing women

- Dealing with the health impact of unsafe abortion and reducing the recourse to abortion through expanded and improved family planning services
- Provision of information on reproductive health services including family planning services
- Encouraging men share the responsibility for the sexual and reproductive health

There is empirical evidence that the implementation of most of these recommendations could have a direct effect on improving maternal health and reducing maternal deaths. For example, staffing patterns of peripheral health facilities at the district level was found to be significantly associated with maternal mortality in rural Pakistan (Midhet and others, 1998). In accordance with this, expanding maternal health care to the first level of services was reported to reduce maternal mortality. A number of measures including high availability of skilled birth attendants located within the communities, high availability of birthing facilities together with established referral links between facilities and providers at the community level were successful in reducing maternal mortality in countries such as Malaysia, Sri Lanka, and Honduras (Koblinsky, 2003).

Some pregnancies carry high risk to women and need special management. For example, women with severe anaemia are at high risk of dying at childbirth (Shulman, 1999). Similarly, young women and women giving birth for the first time are at higher risk for obstructed labour and thus, its consequences (Rush, 2000). Special emphasis to such high risk groups should reduce their chances of experiencing severe complications leading to maternal mortality.

Complications of abortion performed under unsafe conditions are among the main causes of maternal deaths (Adefuye and others, 2003; Jain and others, 2004) and appropriate management as recommended in the Programme of Action will reduce deaths related to this cause. The ICPD Programme of Action calls for giving the highest priority to the prevention of unwanted pregnancies and that all attempts should be made to eliminate the need for abortion. The Programme of Action also calls for reducing women's recourse to abortion through expanded and improved family planning services. The impact of comprehensive family planning programmes in assisting individuals to achieve their desired family size was demonstrated (Angeles and others, 2004) and wide implementation of such programmes should reduce both dependence and deaths due to unsafe abortion practices.

Provision of information about reproductive health services is another action recommended for reducing maternal mortality. The intention is to promote increased use of health services for antenatal and delivery care. The use of skilled attendant during delivery is an important predictor of maternal mortality (Shen and Williamson, 1999) and was selected as an indicator to monitor progress towards the attainment of MDG Goal 5. Maternal mortality ratios are highest in countries with the lowest proportions of women having skilled attendance at delivery.[1] Another benefit of utilizing maternal health services for antenatal or delivery care is the impact on subsequent use of contraception which would reduce unwanted pregnancies and thus, potential complications of another pregnancy (Hotchkiss and others 1999).

The Programme of Action proposes increased participation of men in sexual and reproductive health to ensure that men share responsibility in issues such as family planning and preventing and controlling sexually transmitted infections including HIV/AIDS. Male dominance is not infrequent in reproductive decisions particularly in the developing world (Isiugo-Abanihe, 1994; Olusanya, 1989) and the Programme of Action recognizes the need for men's increased responsibility to improve maternal health by avoiding consequences of high risk sexual behaviour and unwanted pregnancies.

Attention is given to disparities in maternal mortality among population sub-groups in this section of the Programme of Action. Wide variations in maternal mortality levels exist among different income groups and ethnic groups (Graham and others, 2004; Hoyert and others, 2000). The Programme of Action urges countries to narrow disparities in maternal mortality within countries and between geographical

regions, socio-economic and ethnic groups. Yet there is increasing recognition of the possibility of progress toward the Millennium Development Goals (MDGs) targets for health that does not significantly benefit the disadvantaged sub-groups whom the MDGs are intended to serve (Gwatkin, 2002). It is possible that health related MDGs could be achieved only by improving the status of better-off groups in some societies, and could therefore fail to reach the poor (Gwatkin, 2003). The ICPD Programme of Action addresses the important issues of inequalities, poverty and gender equity in the broader context of population dynamics which will be discussed below.

C. Population Dynamics And Maternal Mortality

Health and population characteristics of a society both influence and are influenced by its development status. Population dynamics such as fertility, mortality, morbidity, mobility (migration), socio-economic levels, education, ethnic composition, age structure and gender equity directly or indirectly affect health particularly reproductive health of individuals.

1. *Fertility*

Fertility is an important predictor of maternal mortality, with high fertility levels associated with high maternal mortality (Shen and Williamson, 1999). According to the demographic transition theory, prior to modernization, societies are characterized by high mortality and fertility levels. With improvements in health and living conditions, mortality rates decline first and as development continues, fertility levels follow. This is explained by reduced need for larger families as sources of labour or social support under better socio-economic conditions. Declining infant and child mortality levels contribute to decreasing fertility as well, reducing the need for backing-up the expected loss of children before they grow-up (Kibirige, 1997).

A number other factors are empirically shown to influence fertility levels. The use of contraception, fertility preferences, educational levels of women, women's status, and age structure of the society are the most important determinants (Angeles and others, 2004; Hakim, 2003; Klepinger and others 1995; Mamdani and others, 1993; Zafar and others, 1995; Bulatao and Ross, 2003; Midhet and others, 1998). In addition to their impact on maternal mortality through reducing fertility, women's status in the society and education were shown to significantly affect maternal mortality (Mousa and Madi 2004; Shen and Williamson, 1999; Bongaarts, 2003).

The ICPD Programme of Action addresses all these fertility determinants. It aims to provide individuals with the means of planning their fertility. The broad concept of reproductive health care in Chapter 7—reproductive health and rights—promotes provision of good quality family planning services with a wide range of contraceptive choices accessible, affordable and acceptable to everyone in need. The Program of Action recommends universal access to reproductive health care for all individuals at appropriate ages by 2015 in the context of primary health care. It is clear from suggested actions that the idea is to create an environment that enables individuals to fulfil their fertility preferences and needs while respecting their basic rights. Giving particular attention to most disadvantaged groups in the countries is recommended, which is an important determinant of fertility (Kibirige, 1997). Empowerment of women and gender equity are also addressed which will be discussed later in this paper.

The chapter on population growth and structure further focuses on population trends for development and suggests *"facilitating the demographic transition as soon as possible in countries where there is an imbalance between demographic rates and social, economic and environmental goals, while fully respecting human rights"* (para. 6.3). A range of steps including economic development and poverty alleviation, especially in rural areas, improvement of women's status, ensuring of universal access to

quality primary education and primary health care, including reproductive health and family-planning services are recommended for countries that have completed the demographic transition to optimize their demographic trends (para. 6.4). The interrelationships between fertility and mortality levels is particularly mentioned so that the focus would be to reduce high levels of infant, child and maternal mortality in order to lessen the need for high fertility (para. 6.5).

By addressing fertility issues in line with the theoretical models and research evidence on determinants of fertility, the Programme of Action provides a solid basis in influencing a major component of population dynamics—fertility, which in turn should have an impact in reducing maternal deaths.

2. *Morbidity*

Morbidity levels for relevant conditions in a population influence maternal deaths. For example, women with severe anaemia are at higher risk of dying at childbirth (Shulman, 1999). Severe anaemia is frequent particularly in regions where malaria is endemic (Okoko and Ota, 2003). Young women and women giving birth for the first time are at higher risk of obstructed labour—a major contributor to maternal deaths—and its consequences such as obstetric fistula (Rush 2000). Ectopic pregnancy is another important cause of maternal deaths and is common in populations where sexually transmitted infections (STI) are widespread. The ICPD Programme of Action addresses these under the specific goal of reducing maternal deaths.

A substantial deteriorating effect on health, including reproductive health, has been that of HIV/AIDS during the last couple of decades, particularly in sub-Saharan Africa. The epidemic has had a significant impact on maternal mortality levels. Nationally representative surveys in Malawi and Zimbabwe indicate that pregnancy-related mortality risks have increased 1.9 and 2.5 times, respectively, during the past decade, concomitant with a nearly 10-fold increase in the prevalence of HIV among pregnant women (Bicego and others, 2002). Similarly, the confidential enquiry into maternal deaths in South Africa attributed 13% of all deaths to AIDS.[2] Tuberculosis, as a co-infection with AIDS has also emerged as a new contributor to maternal deaths (Khan and others, 2001). In addition, the HIV/AIDS epidemic is having deteriorating effects on socio-economic status of people in affected regions, increasing their vulnerability for maternal deaths.

Morbidity levels in a society could further influence maternal mortality levels by diverting limited resources from maternal health services to other emerging health problems. This is likely to be already happening in sub Saharan Africa, where health systems are struggling to overcome devastating effects of HIV/AIDS in all other aspects. A specific goal on HIV/AIDS in the Programme of Action addresses related population aspects and development impact of the epidemic as well as the reproductive health links. The recommendations include measures to prevent and treat the epidemic which should impact the achievement of the MDG Goal 5 together with the Goal 6.

3. *Mobility*

The issue of migration is increasingly attracting attention in the era of globalization during which the rise of inequalities across and within countries negatively is affecting access to health care (Collins, 2003). As regards to maternal mortality, empirical evidence shows higher levels in migrant segments of populations as compared to residents both in developed and developing countries (Bartlett and others, 2002; Razum and others, 1999). Various reasons, including socio-economical factors and the unequal use of appropriate health care, account for these observed variations. The Programme of Action refers to internal and international migration in Chapters 9 and 10 and recommends measures to overcome the

negative consequences both at social and health system levels. The potential limitations in access to reproductive health for migrants and displaced groups and risks to their reproductive health and rights are recognized in the reproductive health section in Chapter 7, and assurance of their obtaining basic reproductive health services is emphasized. Implementation of suggested actions should improve access to reproductive health services as well as addressing social disadvantages of internal and international migrants and thus contribute to reducing maternal deaths in these population groups.

4. *Poverty*

The association of the level of socio-economic development with many health indicators is well known. The differences in maternal mortality ratios between more developed and developing countries are immense (UNICEF/UNFPA/WHO, 2004). The differences between income groups within countries are also notable. Data from both developing and developed country settings show that poor women are more likely to die in childbirth than rich women (Graham and others, 2004; Mayor, 2001). The findings raise concerns about setting of international goals as societal averages since the differences between advantaged and disadvantaged segments of the populations could be overlooked (Gwatkin, 2002).

The ICPD Programme of Action recognizes the interactions of development with health aspects of population and recommends improvements in overall conditions as well as reproductive health of disadvantaged groups. Special attention is given to improving socio-economic conditions of poor women in developed and developing countries (para. 3.16). Suggested actions include prioritizing to meet the needs, and increasing the opportunities for information, education, jobs, skill development and relevant reproductive health services, of all underserved members of society. The Programme of Action addresses inequalities in health service access further in the chapters related to reproductive and maternal health. It is recommended to the governments *"to ensure equitable access to basic services including integrated maternal and reproductive health services particularly for the most underserved and vulnerable groups"*.

5. *Age structure*

Age structure of a population shows specific fertility and morbidity features, which influence maternal mortality. For example, in countries characterized by a younger age structure and early childbearing, early pregnancies could pose high risk since adolescents have higher rates of birth complications, maternal mortality and morbidity than their older counterparts (Granja and others, 2001). In addition, adolescent mothers are more likely to experience unemployment and poverty as an adult, tend to have closer spacing of births, more non-marital births and a higher proportion of unintended births than women who delay childbearing (Ehlers, 2004; Hayes, 1987)

An integrated approach to the special nutritional, general and reproductive health, education and social needs of girls and young women is suggested in the related sections of the Programme of Action. It recommends reinforcement of laws concerning the minimum age at marriage and to raise it where necessary. The Programme of Action calls for making available youth specific services including information and counselling to help prevent early marriages and high-risk child-bearing and to reduce associated mortality and morbidity. Other actions target young peoples' equipment for a better life with appropriate education and support. The implementation of these would contribute to reducing maternal mortality by targeting one of the most vulnerable population groups.

6. *Gender equity*

Gender equity is a major component of the ICPD Programme of Action which is also closely related to maternal mortality. As discussed above, women's status in the society determines their risk of dying from maternal causes. This effect was found to remain significant even after controlling for the

economic indicators such as gross domestic product and economic growth (Shen and Williamson, 1999). Implementation of programmes aiming to increase women's status in the society is expected to reduce maternal mortality. The Programme of Action gives a lot of emphasis to issues related to empowerment of women and promoting gender equity in related sections. From a reproductive health perspective, it recognizes the reproductive rights of individuals and promotes a user-centred approach to comprehensive reproductive health services, which should facilitate women's empowerment. It aims to promote gender equity in all spheres of life, including family and community life, and to encourage and enable men to take responsibility for their sexual and reproductive behaviour and their social and family roles including responsible parenthood, prevention of unwanted and high-risk pregnancies and shared control and contribution to family income.

7. *Other population characteristics*

Geographical structure and ethnic composition of a population are among other population features that are associated with maternal mortality levels. Women living in rural segments of the populations are in general more disadvantaged in terms of physical access to adequate services as well as other factors such as education, women's status in the society and income levels which all are predictors of maternal mortality. Fertility levels are higher in rural areas because more human labour is required (Kibirige, 1997).

Ethnic composition of a population is another factor observed to be related to maternal mortality. Higher maternal mortality levels were reported in black women as compared to white women (Anachebe and Sutton, 2003; Hoyert and others, 2000). It is suggested that alongside health-care access and use, quality of prenatal, delivery, and postpartum care, and interaction between health-seeking behaviours and satisfaction with care, might explain part of this difference (Hoyert and others, 2000; Centers for Disease Control and Prevention, 1999).

The needs of disadvantaged groups including rural and indigenous groups for comprehensive reproductive health services as well as the need to improve their overall conditions are emphasized in various chapters of the ICPD Programme of Action.

D. CONCLUSION

Maternal mortality is determined by a mixture of biological, socio-economic, cultural and contextual (including health systems) factors and their complex interactions. Policy and programmes targeted to improve maternal health and reduce maternal deaths at country level need to consider population dynamics that these factors create. The ICPD Programme of Action suggests ways to improve reproductive health of individuals in the context of various population aspects, most of which also are predictors of maternal mortality. Implementation of the Programme of Action will significantly contribute to attainment of the MDG Goal 5 and target 6 of improving maternal health and reducing maternal deaths.

NOTES

[1] World Health Organization, Department of Reproductive Health and Research, Proportion of births attended by skilled health personnel, Estimates by country, http://www.who.int/reproductive-health/global_monitoring/data.html. Accessed on 10 November 2004.

[2] Interim Report on the Confidential Enquiry into Maternal Deaths in South Africa, March 1998, The National Committee for the Confidential Enquiry into Maternal Deaths, http://www.doh.gov.za/docs/reports/1998/mat_deaths.html. Accessed on 10 November 2004.

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