Maternal mortality and unsafe abortion: a heavy burden for developing countries

Patrick Fernand Thonneau[3]

Summary

More than ten years after the launch of the Safe Motherhood Initiative in 1987, abortion is certainly the 'poor relation' in the debate concerning ways to reduce the number of deaths from maternity-related causes, even though abortion complications account for about 15% of all maternal deaths, and up to 30% in some countries.

Worldwide, 46 million pregnancies (20% to 25% of all pregnancies) each year end in abortion, 36 million of these abortions occur in developing countries and 10 million in developed countries. The WHO estimates that, worldwide, almost 20 million unsafe abortions take place each year, with 95% of these (19 million) performed in developing countries. The risk of death from unsafe abortion is about 1 in 150 procedures in Africa, and 1 in 150,000 in the USA and Europe. The number of maternal deaths is estimated to be about 80,000; this accounts for about 13% of all maternal deaths in the world, one in eight pregnancy-related deaths.

In this review, we then analyze the several major concerns accounting for abortion being such a huge maternal mortality risk factor in developing countries: abortion laws and regulations, abortion techniques, unplanned pregnancy and family planning.

In conclusion, the gap between between developing and developed countries in the risk of death from unsafe abortion have never been so high : 1/150 000 in developing countries versus 1/150 in developed countries. According to that enormous disparity, the international community and organizations from within the United Nations system must play a key role encouraging governments to modify their abortion legislation' and to improve their health system to take more account of women's health rights.

[3] Scientific Director, WHO Collaborating Center in Human Reproduction, Human Fertility Research Group/INSERM - Paul Sabatier University, Service d'Urologie–Andrologie, Hôpital La Grave, Place Lange, 31052 Toulouse cedex, France.Email: thonneau.p@chu-toulouse.fr

Introduction

Since the launch of the Safe Motherhood Initiative in 1987 at an international conference in Nairobi, numerous meetings, workshops and programs have been organized by international, governmental and non-governmental agencies, to reduce the burden of maternal mortality throughout the world, particularly in developing countries.

More than ten years later, evaluations contrast (Maine & Rosenfield 1999, Weil & Fernandez 1999, Ronsmans *et al.* 1997, Le Coeur *et al.* 1998). Substantial progress has been made in the investigation and documentation of maternal deaths, in both developing and developed countries. More exhaustive and valid data have been obtained (and regularly updated) by international agencies, via demographic surveys in particular (United Nations 1997, WHO 1998, AGI 1999). Numerous hospital-based and case-control studies have well identified the principal direct and indirect causes of maternal death. Several interesting studies have also generated relevant, but often conflicting, results concerning the role in maternal mortality of traditional birth attendants (TBA), obstetric transfers, prenatal care programs, professional health training, emergency obstetric care, family planning and resource allocation (WHO & UNICEF 1996).

Unfortunately, the reality of the situation with regard to maternal health is still tragic in the vast majority of developing countries. According to the most recent estimates of the World Health Organization (WHO), 600,000 women now die each year of pregnancy-related causes, versus 500,000 in 1980. Obstetric disorders are still the leading cause of deaths among women of child-bearing age (killing far more of these women than tuberculosis, traffic accidents or AIDS (Murray & Lopez 1997)). This figure also reflects the enormous disparity, known as the« health disadvantage », between rich and poor nations: it is thus estimated that 1 West African woman in 12 dies of maternity-related causes, versus 1 woman in 4000 in northern Europe.

Abortion is certainly the 'poor relation' in the debate concerning ways to reduce the number of deaths from maternity-related causes, even though abortion complications account for about 15% of all maternal deaths, and up to 30% in some countries. The recognition by international agencies and the UN system that abortion complications are a major public health problem in developing countries is relatively recent. This issue was addressed principally in 1994, at Cairo, during the International Conference on Population and Development, « to deal with the health impact of unsafe abortion

as a major public health concern and to reduce the recourse to abortion through expanded and improved family-planning services ».

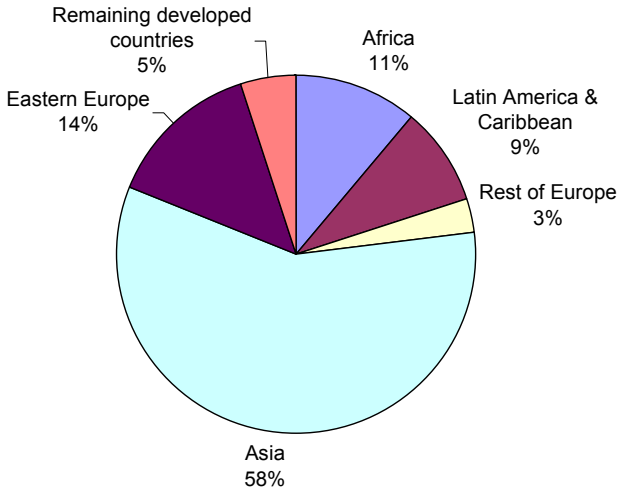
THE MAGNITUDE OF ABORTION

About 210 million pregnancies occur each year throughout the world, 182 million of which occur in developing countries.

It has been estimated from many different sources (official statistics, hospital and population-based studies (United Nations 1997, Henshaw SK et al. 1999)) that, worldwide, 46 million pregnancies (20% to 25% of all pregnancies) each year end in abortion; 36 million of these abortions occur in developing countries and 10 million in developed countries (with a margin of error of a few million, essentially due to possible underreporting in China, India and in the states of the former Soviet Union).

As shown in Figure 1 about 11% of all women undergoing abortions live in Africa, 58% in Asia, 9% in Latin America and the Caribbean, 17% in Europe, and 5% in other developed countries (USA, Canada, Japan, Australia).

Figure 1. Distribution of abortions throughout the world

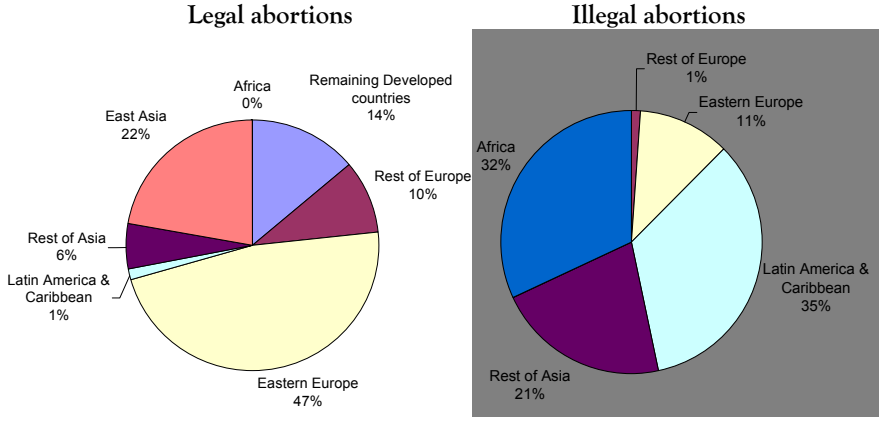


The sex and age distribution of the world population: the 1996 revision, New York; UN, 1997

Of the 46 million abortions performed annually, 26 million are legal and 20 million illegal. Almost half the legal abortions occur in Asia, one fifth in the states of the former Soviet Union and 15% in Europe and other de-

veloped countries. Almost all illegal abortions are performed in developing countries, with 5 million such abortions in Africa, 4 million in Latin America and 10 million in Asia.

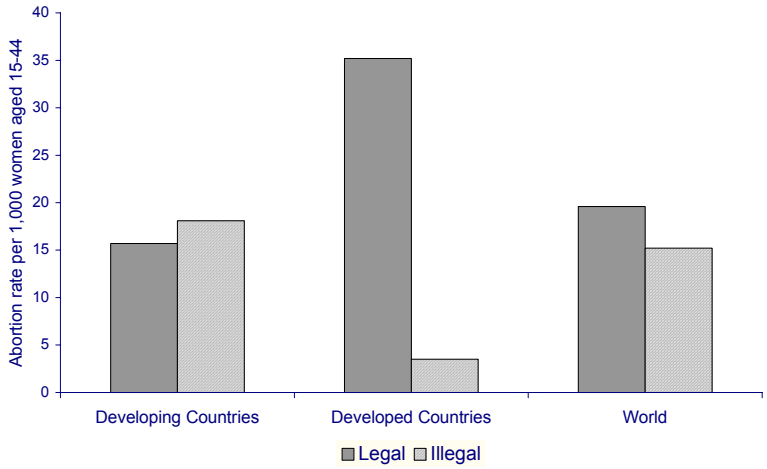
Figure 2. Legal and illegal abortions in the different parts of the world



Using abortion rates (*i.e. number of abortions each year per 1,000 women aged 15-44*) to compare countries or regions regardless of relative population size, we observed an annual worldwide abortion rate of about 35 abortions per 1,000 women aged 15-44, 20 of which were legal and 15 illegal (Figure 3). Global annual abortion rates are very not so different in developed (39 per 1,000 women aged 15-44) than in developing (34 per 1,000 women) countries. The slightly higher level founded in the developed world is definitely linked to the current rates observed in Eastern Europe, the region with the highest level of abortion. Europe include the subregions with the highest and the lowest abortion rates. The states of the former Soviet Union have the highest annual abortion rates, whereas the Netherlands and France have the lowest abortion rates, all countries with liberal abortion laws.

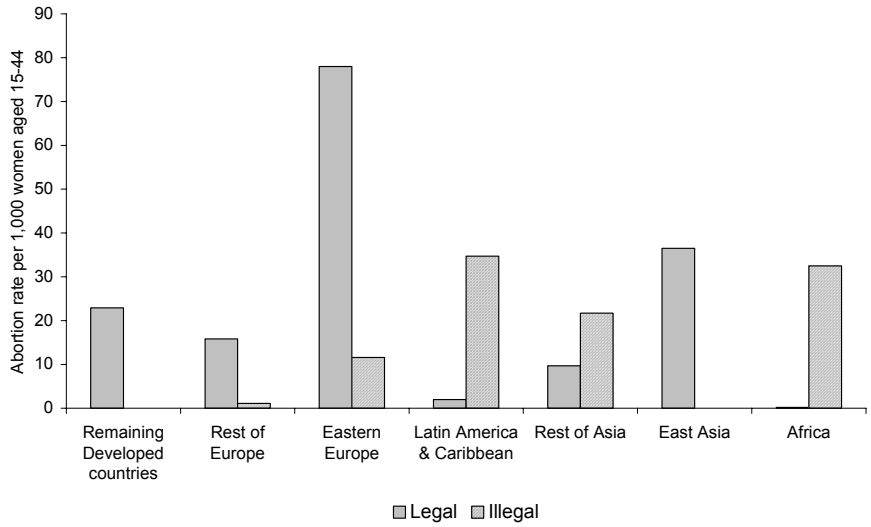
The calculated current worldwide annual abortion rate (35 per 1,000 women) implies a lifetime average of about one abortion per woman. A lower abortion rate (for example of 22 per 1,000 women, as in Australia, the United States and Turkey) implies that the mean number of abortions per woman is less than one (0.7 abortions for the examples given). A higher abortion rate, for example of 50 per 1,000 women (as in Bulgaria or in some West African countries) implies that the mean number of abortions per woman during her reproductive years is greater than one.

Figure 3. Annual abortions per 1,000 women aged 15-44



If the abortion rate is evaluated as a function of the woman's age, we observe that adolescents (less than 20 years old) and women aged 40 or older are the most likely to have an abortion if they become pregnant. Thus, the proportion of pregnancies ended by abortion is greatest at the beginning and end of the woman's reproductive life.

Figure 4. Annual abortion per 1,000 women aged 15-44



THE BURDEN OF UNSAFE ABORTION

The World Health Organization has defined unsafe abortion as an « abortion not provided through approved facilities and/or persons », specifying that this definition « does not take into consideration differences in quality, services available or the other substantial differences between health systems ». Legality and safety usually coincide, although in some countries in which abortion is legal, not all procedures are safe, and in countries in which abortion is illegal, a few women may have abortions carried out by safe procedures.

The WHO, based on information from several sources (hospital admissions, community surveys, abortion provider's surveys, mortality studies) and taking into account the difficulties involved in obtaining exhaustive and valid information on this subject, has published recent data on unsafe abortion and related maternal deaths, according to United Nations regions.

The WHO estimates that, worldwide, almost 20 million unsafe abortions take place each year, with 95% of these (19 million) performed in developing countries. In Africa, 5 million unsafe abortions are performed annually, resulting in an estimated 34,000 deaths, a total number of maternal deaths very similar to that reported for Asia (38,500 deaths), but a much larger number of unsafe abortions are performed each year in Asia (9.9 million). Thus, the mortality ratio (*number of deaths due to unsafe abortion per 100,000 live births during the same period*), which represents the risk of death due to unsafe abortion, exceeds 100 deaths due to unsafe abortion per 100,000 live births in Africa (and may be up to 150 in many West and East African countries), whereas it is less than 50 per 100,000 in Asia or Latin America and the Caribbean.

In other words, the risk of death from unsafe abortion is about 1 in 150 procedures in Africa, and 1 in 150,000 in the USA and Europe !

The relative burden of abortion-related maternal mortality depends on the total maternal mortality rate. It also emphasizes the reduction of other causes of maternal mortality in some regions. The debate is still open concerning the number of maternal deaths resulting annually from unsafe abortion. An estimated 84,000 maternal deaths per year were thought to be due to abortion complications in the late 1970s according to the International Planned Parenthood Federation. This figure was revised upwards to 115,000 in 1988 (WHO), decreasing to 70,000 in 1993 (WHO), and was estimated to be about 80,000 by the Division of Reproductive Health of the WHO in 1997.

This accounts for about 13% of all maternal deaths in the world, one in eight pregnancy-related deaths (Table 1).

Table 1. Global and regional annual estimates of incidence and mortality, unsafe abortions, United Nations regions;1995-2000

	Estimated number of unsafe abortions	Incidence rate (unsafe abortions per 1,000 women aged 15-49)	Estimated number of deaths due to unsafe abortion	Mortality ratio (deaths due to unsafe abortion per 100,000 live births)	Proportion of maternal deaths (% of maternal deaths due to unsafe abortion)
World total	20,000,000	13	78,000	57	13
More developed regions	900,000	3	500	4	13
Less developed regions	20,000,000	16	77,500	63	13
Africa	**5,000,000**	**27**	**34,000**	**110**	**13**
Eastern Africa	1,900,000	36	16,000	153	14
Middle Africa	600,000	28	4,000	98	10
Northern Africa	600,000	15	1,200	24	7
Southern Africa	200,000	16	800	49	19
Western Africa	1,600,000	31	12,000	121	12
Asia	**9,900,000**	**11**	**38,500**	**48**	**12**
Eastern Asia	/	/	/	/	/
South-central Asia	6,500,000	19	29,000	72	13
South-eastern Asia	2,800,000	21	8,100	66	15
Western Asia	500,000	12	1,100	20	6
Europe	**900,000**	**5**	**500**	**6**	**17**
Eastern Europe	800,000	10	500	15	24
Northern Europe	< 30,000	1	< 20	0.2	2
Southern Europe	< 90,000	2	< 20	1	10
Western Europe	/	/	/	/	/
Latin America & Caribbean	**4,000,000**	**30**	**5,000**	**41**	**21**
Caribbean	200,000	17	600	71	18
Central America	900,000	26	700	20	14
South America	3,000,000	34	3,500	47	24
Northern America	/	/	/	/	/
Oceania	**30,000**	**15**	**150**	**51**	**8**

However, this global picture masks large differences between regions and countries. In a recent multicenter study we performed in West Africa from 1998 to 1999, we observed that the risk of dying for a woman having a complication during her pregnancy is 10 higher if this complication have happened during the first trimester of the pregnancy (and multiplicate by 14 in case of abortion complication) (*not yet published data*).

In countries in which overall maternal mortality is high (up to 100 maternal deaths/100,000 live births: Africa, Asia), the proportion of abortion-related deaths is relatively low, at about 12%. In contrast, in Latin American countries, where the level of maternal mortality is much lower (30 to 80/100,000) the relative burden of unsafe abortion is higher, at about 21%.

The situation in Eastern European countries is somewhat surprising, with these countries having the highest proportion of maternal deaths due to unsafe abortion in the world. Although almost all the states of the former Soviet Union have liberal abortion legislation, illegal abortions (i.e. those performed outside the 'official' health care system or within the public health care system but unregistered) account for a substantial proportion of all abortions in these countries (20 to 50%). The official statistics of the USSR Ministry of Public Health reported 536 illegal abortion-related maternal deaths among the total of 2,312 maternal deaths registered in 1988 (27%) (Popov 1991). In a recent study we performed in Kazakhstan (1998), we found that half of all maternal deaths due to abortion complications occurred after illegal abortions, with 20% of maternal deaths due to abortion complications (Kaupova *et al.* 1998).

These maternal deaths are no more than the tip of the iceberg, the underlying rates of morbidity linked to unsafe abortions being very much higher. There is a lack of relevant, regularly collected hospital data in most developing countries, so little has been published on this subject. However, it is clear that in countries in which abortion is illegal, many women (between 20 and 30%) are likely to experience non-lethal complications related to unsafe abortion practices, including major psychological stress, fistulas and chronic pelvic infection resulting in ectopic pregnancy and infertility (Benson *et al.* 1996, Diadhio *et al.* 1999).

The cost to health care systems in developing countries of treating women suffering from abortion-related complications may be substantial, in terms of the number of maternity beds taken up and gynecology budgets (Johnson *et al.* 1993, Sjöstrand *et al.* 1995, Kay *et al.* 1997, Figa-Talamenca *et al.* 1986). In Egypt, in 1996, about one fifth of all admissions to obstetrics and gyne-

cology wards were abortion-related (Huntington *et al.* 1998).

STRATEGIES TO RESOLVE THE DILEMMA OF UNSAFE ABORTION

Worldwide, more than two in ten maternal deaths are due to abortion complications, in most cases in developing countries, where almost all abortions are unsafe.

Around the world, the debate about abortion is heated and passionate, involving both emotional and moral issues. In terms of the mortality and morbidity related to abortion complications, there is a stark division between developed and developing countries. In countries in which abortion is legal, safe and available (mostly developed countries), abortion-related mortality rates are very low, at less than 1 death per 100,000 abortions. In the United States, the risk of dying due to childbirth is 15 times higher than that of dying due to an abortion (9.1 per 100,000 versus 0.6 per 100,000) (Lawson 1994). It could almost be said that abortion is no longer a public health problem in most developed and industrialized countries. In contrast, in most developing countries, it is clear that it will be impossible to achieve low maternal mortality rates without access to safe abortion. In developing countries, several major concerns account for abortion being such a huge maternal mortality risk factor.

ABORTION LAWS AND REGULATIONS

There is no doubt that one of the most significant considerations for a woman contemplating having an abortion is whether the law permits or prohibits abortion where she lives (Kunins & Rosenfield 1991, Singh & Ratnam 1998). About one in four women in the world live in countries with laws that restrict their access to abortion. More than half the women living in developing countries live in countries in which abortion is permitted on general health grounds or for socioeconomic reasons. This relatively optimistic view is counterbalanced by the fact that China, India and Vietnam are in the developing world and all have laws that permit abortion on broad grounds. In countries with liberal laws, restrictions and conditions often limit the woman's access to abortion (gestational limits, facilities and practitioners, consent requirements, counseling and waiting period requirements). The specific limitations of each country may result in an « abortion travel practice », as for example in Europe, where Irish, Polish and French women may be forced to go to England, Germany or the Netherlands to obtain an abortion.

Several recent examples have clearly demonstrated that any sharp modification in abortion law or policy has major consequences for abortion practice, but often also for maternal mortality and morbidity.

One such example is the steep rise registered in Romanian abortion-related mortality just after the Ceausescu decree declaring abortion and modern contraceptive methods illegal: from 30 abortion-related deaths per 100,000 live births in 1965 to 142 per 100,000 in 1989; followed by a drastic fall in abortion-related mortality, to 50 per 100,000, after the restrictions were removed (Stephenson *et al.* 1992, Serbanescu *et al.* 1995).

In Guyana, hospital admissions for septic and incomplete abortions decreased by 41% in the six months following the legalization of abortion complication treatments, in 1995 (Nunes & Delph 1997).

The political changes in South Africa have been followed by a range of legislation placing high priority on sexual equality and reproductive rights. In February 1997, the Choice on Termination of Pregnancy Act was passed. This act permits the 'termination of pregnancy upon the request of the woman up to and including 12 weeks of pregnancy, under certain defined circumstances from the 13th to the 20th week, and after the 20th week in more limited circumstances'. In 1995, 44,686 women were admitted to South Africa's public hospitals with incomplete abortions (one third of which resulted from unsafe abortion) and 425 women died due to abortion-related procedures. To resolve the problems of the lack of health care professionals trained to perform abortions and disparities in geographic accessibility, the National Abortion Care Program was initiated in 1998, providing training in the manual vacuum aspiration (MVA) technique for physicians and midwives. One year after legalization, the frequency of abortion complications had fallen from 51 % to 29% in one reference hospital in Pretoria. Conversely, when this same hospital stopped doing second-trimester abortions, the abortion-related complications rate rose to 36%, demonstrating the importance of accessibility to safe abortion services for all women (Rees *et al.* 1997, De Jonge *et al.* 1999, Dickson-Tetteh & Rees 1999).

In an interesting review of international developments in abortion law from 1988 to 1999, Rebecca Cook observed that since 1987, 26 jurisdictions have extended the grounds for lawful abortion, 4 countries have restricted grounds, and numerous additional limits have restricted access to legal abortion services (service funds, counseling and reflection delay requirements, third-party authorization) (Cook *et al.* 1999).

As stated by Mervyn Susser « the policy changes and the outcome of abor-

tion-related mortality are so sharp and so closely coincident in time that they stand as a persuasive if appalling natural experiment » (Susser 1992).

The question is how can laws and regulation policy be used to lessen the negative effects of unsafe abortion. Faced with the difficulties of a rapid change in the law concerning abortion, several authors have suggested intermediate steps that could lead to the legalization of abortion.

- in countries in which abortion laws are restrictive, the abortion-related health services should agree to treat women presenting abortion complications. Women should not be deterred from seeking proper medical treatment because they fear punishment, and health workers should not be reluctant to proceed with treatment because they think it is illegal or because they are biased against the women needing treatment for abortion complications.
- the indications for legal abortion (even if restrictive) should be interpreted in the broadest sense possible (particularly in the medical environment (Rahman *et al.* 1998)), providing a larger number of women with access to abortion services.
- criminal penalties should not be applied to women who seek abortion because, in the face of such penalties, women tend to postpone seeking medical attention if they suffer complications.

In addition to legal restrictions, two others factors must be considered: accessibility and acceptability. Accessibility to abortion facilities may be limited by several factors, which may be geographic (such as the low availability of services in rural areas, as is currently the case in South Africa (Varkey 2000)) or financial nature. In the United States, one in every four women has no health insurance and some private health insurance plans will not pay for abortions, forcing women, especially those who are poor, to pay out of their own pocket (increasing the length of the pregnancy and therefore the risk of complications) (Gober 1997). This financial aspect is a particular problem in all the states of the former Soviet Union, in which abortion is legal and available but only on payment of a surcharge. This excludes a large and increasing proportion of the population, obliged to use clandestine 'babouskas' for unsafe abortion practices.

Another point concerns the acceptability to the scientific community and health professionals of providing abortion procedures. In many countries, even those in which abortion is legal, many doctors refuse to perform abor-

tion for religious, personal or ethical reasons. In developing countries in which abortion is illegal, attitudes are often negative (rejection) and the treatment of abortion complications is delayed, providing evidence of a non-acceptability to health professionals of treating women admitted for abortion complications (Makinwa-Adebusoye *et al.* 1997, Singh *et al.* 1997).

ABORTION TECHNIQUES

Epidemiological studies and mortality data have shown that the risk of maternal mortality and morbidity is very low for the endouterine vacuum aspiration (suction curettage) method (WHO 1995). For abortions in the first three months of pregnancy, the incidence of minor complications is estimated to be 2 to 3%, with one major complication per 1,000 abortion procedures. In the United States, the fatality rate is 0.4 deaths per 100,000 abortion procedures, mainly linked to complications of general anesthesia (Council on Scientific Affairs 1992, Hakim-Elahi *et al.* 1990, Henshaw & Van Vort 1994). We reported a low incidence of immediate complications (< 1.7%) in a prospective study conducted in France on abortions performed under local anesthesia (Thonneau *et al.* 1998).

Techniques for second-trimester abortions are much more difficult and harmful than those used in the first three months. They require highly skilled staff and well-equipped facilities. For example, the US case fatality rate for abortions performed between 16 to 20 weeks is 6.9 deaths per 100,000 live births, versus 0.4 per 100,000 at 8 weeks.

In developing countries in which abortion is legal and performed by health professionals, dilatation and curettage with metal instruments are often used in preference to vacuum aspiration or MVA, increasing iatrogenic morbidity.

In developing countries in which abortion is illegal or very restricted, various methods are used to induce abortion (Rogo 1993, Paxman *et al.* 1993, Faundes & Hardy 1997). In a recent study we performed in women admitted to an obstetrics department in Abidjan (Ivory Coast) for abortion complications, we found that 'introduction of plant stems into the uterus', 'use of vaginal preparations' and 'ingestion of plants' were the most common abortion methods. Seventeen abortion-related deaths were registered, giving a hospital case fatality rate as high as 3.6%. The ingestion of plants was the major death risk factor (probably due to neurological disorders linked to plant effects) (Goyaux *et al.* 1999).

In many cases, the 'abortionist' is an unskilled health worker or, less fre-

quently, the woman herself (Madebo & Tsadic 1993). Bergström compared women who had undergone induced legal and illegal abortion and who were patients at Maputo Central Hospital, Mozambique. He found that more than one third of illegal abortions were carried out by health workers (similar results have been reported in Nigeria, Bolivia, and Mexico). One third of the women admitted for illegal abortion complications had initially undergone curettage, strongly suggesting a professional approach to the intervention, providing a way for these health workers to top up the low wages they receive (Machungo *et al.* 1997).

At the dawn of the twenty-first Century, the technique of abortion by vacuum aspiration during the first three months of pregnancy is perfectly well known and mastered. This technique is easy to perform and the vacuum required may be generated by an electric pump or a hand-held syringe (manual vacuum aspiration, MVA; an outpatient procedure with potential for use in developing countries). Menstrual regulation, MVA, done within a few weeks of amenorrhea without confirmation that the woman is pregnant, is used in Bangladesh, Indonesia, and in some other developing countries in which abortion is not allowed.

We should also mention the recent development of the antiprogestagen Mifepristone* (in association with prostaglandin) which has been shown to be effective and safe for the induction of abortions until 12 weeks of amenorrhea (Silvestre *et al.* 1990, Misago *et al.* 1998).

In an interesting and recent review done by Blanchard *et al.* in the use of Misoprostol alone, the authors concluded that this regimen could be a safe and effective method for early pregnancy termination. Misoprostol is widely marketed in the world, really inexpensive (especially comparing with Mifepristone) simple to administer, and stable in tropical climates. Thus, Misoprostol-alone regimen could be a real alternative for medical abortion for women living in developing countries (Blanchard *et al.* 1999).

Emergency contraception could also be used to prevent pregnancy after unprotected sexual intercourse (when no contraceptive method was used or after a fail of the method). The Yuzpe regimen (two pills comprising 100 microg. ethinylestradiol + 500 microg. Levonorgestrel, or 1 mg dl-norgestrel, initial dose followed by a similar dose 12 hours later) developed 25 years ago, have been now frequently replace by the levonorgestrel regimen, (two 0.75 mg dosed 12 hours apart). A recent publication (1998) have reported significant lower pregnancy rate among women assigned to levonorgestrel regimen (1.1%) comparing to those with Yuzpe regimen (3.2 %) (Programme's task

force on postovulatory methods of fertility regulation 1998). Recently, Mifepristone have been also tested for emergency contraception. Comparison in effectiveness have been also performed between Yuzpe regimen, levonorgestrel, and Mifepristone, without any clear advantage between the three methods (delayed menstruation in mifepristone group; levonorgestrel must be taken two doses 12 hours apart)(Webb AMC *et al.* 1992, Glasier *et al.* 1992). Nevertheless, it is important to mention that these emergency contraception methods have been able to prevent 85 % of expected pregnancies.

The complex relationship between abortion, unplanned pregnancy, and family planning

Attitudes concerning ideal family size and the best time to have children are the complex product of social expectations, cultural values and politico-economical circumstances. The desire to have a small family (between 2 and 3 children) has clearly become more common, even in developing countries.

A study based on Demographic and Health Surveys and Contraceptive Prevalence Surveys in 41 developing countries showed that the demand for family limitation is increasing throughout the developing world. The women of Asia, North Africa, Latin America, and the Caribbean tend to want to limit the number of births and family size, whereas those from Sub-Saharan Africa wish simply to space births (Westoff & Bankole 2000).

Unfortunately there is a wide gap between these fertility aspirations and reality, and there are therefore many unwanted or unplanned pregnancies (Bankole *et al.* 1998).

Worldwide, an estimated 38% of the 210 million pregnancies each year are unplanned, and 22% end in abortion. In Africa, 30% of the 40 million pregnancies each year are unplanned, and 12% end in abortion. in Eastern Europe, 63% of the 11 million pregnancies are unplanned, and 57% end in abortion. By analyzing data from the National Survey of Family Growth, Henshaw found that 49% of the pregnancies that ended in 1994 in the United States were unintended, and that 54% of these ended in abortion (Henshaw 1998).

It therefore appears obvious that reducing the number of 'unplanned pregnancies' by family planing methods would reduce the total number of pregnancies and the number of abortions. Unfortunately, things are not that simple.

Firstly, exposure to the risk of an unwanted pregnancy is as high as the

number of children desired is small. As shown in Figure 5, a women who aims to limit her family to two children without requiring an abortion, must successfully practice birth control for 25 of her 30 child-bearing years.

Figure 5. Number of months a women should use a birth control method if she wishes to have only two children

Regarding exposure to the risk of becoming pregnant, sexual relations are beginning increasingly early in adolescents (Görgen *et al.* 1993, Berglund *et al.* 1997)(with frequent ambivalence towards the question of pregnancy at this age)(Manning *et al.* 2000), and extra-marital sexual relation frequently occur phenomenom in married couples (information brought to light by studies on AIDS).

Family planning methods are certainly the most efficient way, to avoid 'unplanned' pregnancy during this long period of exposure to the risk of pregnancy.

Nevertheless, the failure rates of the various family planning methods are non-negligible, associated with methods themselves or with their discontinuation (Skeldjestad 1997). These failures in family planning methods result in a large number of unplanned and unwanted pregnancies, and consequently in numerous abortions (Fu *et al.* 1999). In France, where more than 1 million women use the IUD, the frequency of unplanned pregnancies linked to IUD failure is estimated at 15 to 20,000 (giving an IUD failure rate of about 1.5%). Around two thirds of these IUD failure end in abortion, accounting for more than 5% of the 200,000 abortions registered annually in France. In Denmark, where the abortion rate has been constant since the early 1980s, half the women undergoing abortions became pregnant despite

contraceptive use (Knudsen 1997). In USA, 58% of women having abortions had experienced contraceptive failure, 31% had used a method in the past but were not using contraception during the month in which they conceived, and 11% had never used any method. The proportion of abortion patients whose pregnancy resulted from condom failure increased from 15% in 1987 to 32% in 1994! (Henshaw & Krost 1996)

Although improvements have been made in delivery systems, widespread availability and the broad acceptability of methods remain elusive goals in many developing countries (especially in countries with disorganized and inefficient health systems), contributing to discontinuous use, and resulting in substantial numbers of unplanned pregnancies (Ali & Cleland 1995). In the countries of Central and Eastern Europe, the high cost and poor availability of modern methods of contraception almost certainly account for the high frequency of abortion.

Finally, of course, a large number of men, women and couples not wishing to have children have sexual relations with no contraception, thereby exposing themselves to the risk of unwanted pregnancy and abortion. It is clear that these populations "at risk of unwanted pregnancies" account for a large proportion of the total number of abortions. In the US, women using contraception are only 15% as likely as women using no method to have an abortion.

Considering the consequences of unplanned pregnancy (particularly in developing countries) it is surprising that couples take so high risk by neglecting or refusing to use a family planning method. However, the decision as to whether or not to use a fertility regulation method is associated with numerous complex factors such as the perceived risk of pregnancy, the openness of communications between partners, the support of parents and peers, desensitization society towards of sex as a taboo topic, the community's attitude towards sex education and the influence of specific guidance by health staff (Shapiro & Tambashe 1994, Renne 1996).

In industrialized countries in which family planning has long been available and accessible, abortions still take place, the rate depending on the country (low in the Netherlands and Scandinavian countries, higher in France, Great Britain and the USA) with no clear tendency to decrease observed. In developing countries, several different patterns are observed simultaneously. In some developing countries (South America and South-East Asia (Singh & Sedgh 1997)), the desire to have small families is leading to the extensive use of contraceptive methods and abortion. In countries in

which access to modern methods of contraception is limited (as in Central and Eastern Europe (Johnson *et al.* 1993, Kulczycki 1995)) and in countries in which the acceptability of modern methods of contraception is low (Sub-Saharan African countries (Shapiro & Tambashe 1994)) many families use abortion as a means of regulating their fertility.

As stated by Henri David, 'the evidence is persuasive that people can be motivated to prevent unwanted pregnancies when they perceive themselves as playing an active role in determining their own future and in improving their own and their family's quality of life' (David 1992).

So, could family planning decrease the number of unwanted pregnancies? The answer is of course "yes" but is almost certainly also "not completely". No matter how effective family planning services and practices become, unwanted pregnancies will still occur and there will therefore always be a need for access to safe abortion services.

Conclusion

Abortion, due to its frequency worldwide, its often illegal nature, its major contribution to maternal mortality and its social implications, is a major public health issues in most developing countries. The gap between between developing and developed countries in the risk of death from unsafe abortion have never been so high: 1/150 000 in developing countries versus 1/150 in developed countries.

Ways of reducing the burden of unsafe abortion are well known, although their implantation is rather difficult, as has recently been illustrated by the situation in South Africa.

The international community and organizations from within the United Nations system must play a key role encouraging governments to modify their abortion legislation' and to improve their health system to take more account of women's health rights.

References

Ali M, Cleland J (1995). Contraceptive discontinuation in six developing countries: a cause-specific analysis. *Int Fam Plann Perspec* **21**(3),92-97.

Bankole A, Singh S, Haas T (1998). Reasons why women have induced abortions: evidence from 27 countries. *International Family Planning Perspectives* **24**(3),117-127 & 152.

Benson J, Nicholson LA, Gaffikin L, Kinott SN (1996). Complication of unsafe abortion in sub-Sahara:a review. *Health Policy Plann* **11**,117-31.

Berglund S, Liljestrand J, Marin FdM, Salgado N, Zelaya E (1997). The background of adolescent pregnancies in Nicaragua: a qualitative approach. *Soc Sci Med* **44**(1),1-12.

Blanchard K, Winikoff B, Ellertson C (1999). Misoprostol used alone for the termination of early pregnancy. *Contraception* **59**,209-217.

Cook RJ, Dickens BM, Bliss LE (1999) International developments in abortion law from 1988 to 1998. *Am J Public Health* **89**,579-586.

Council on Scientific Affairs, American Medical Association. Induced termination of pregnancy before and after Roe *v* Wade: trends in the mortality and morbidity of women. *JAMA* 1992, **268**,231-39.

David HP (1992). Abortion in Europe, 1920-91: a public health perspective. *Stud Fam Planning* **23**(1),-22.

De Jonge ETM, Pattison RC, Mantel GC (1999). Termination of pregancy (TOP) in South Africa in its first year: is TOP getting on top of the problem of unsafe abortion, *Sexual and Reproductive Health Bulletin* **7**,14-15.

Diadhiou F, Goyaux N, Faye O, Thonneau P (1999). A neglected but prevalent tragedy. *BMJ* **318,**1526.

Dickson-Tetteh K, Rees H (1999). efforts to reduce abortion-related mortality in South Africa. *In Safe Motherhood Initiatives: critical issues* by M Berer and TKS Ravindran, Reproductive Health Matters, Blackwell Sciences Limited, London, 190-197.

Faundes A, Hardy E (1997). Illegal abortion: consequences for women's health and the health care system. *Int J Gynecol Obstet* **58**,77-83.

Figa-Talamenca I, Sinnathuray TA, Yusof K *et al.* (1986). Illegal abortion:an attempt to assess its cost to the health services and its incidence in the community. *International Journal of Health Services* **16**(3),375-389.

Fu H, Darroch JE, Haas T, Ranjit N (1999). Contraceptive failure rates: new estimates from the 1995 national survey of family growth. *Family Planning Perspectives* **31**(2),56-63.

Glasier *et al.* (1992). Mifepristone compared with high-dose estrogen and progestogen for emergency postcoital contraception. *N Engl J Med*;327 :1041-1044.

Gober P (1997). The role of access in explaining state abortion rates. Soc Sci Med **44**(7),1003-1016.

Gôrgen R, Maier B, Diesfeld HJ (1993). Problems related to schoolgirl pregnancies in Burkina Faso. *Studies in Family Planning* **24**(5),283-294.

Goyaux N, Yace-Soumah F, Welffens-Ekra C, Thonneau P (1999). Abortion complications in Abidjan (Ivory Coast). *Contraception* **60**,107-109.

Hakim-Elahi E, Tovell HMN, Burnhill MS (1990). Complications of first-trimester abortion: a report of 170,000 cases. *Obstet Gynecol* **76**,129-35.

Henshaw S, Van Vort J (1994). Abortion services in the United States, 1991 and 1992. *Family Planning Perspectives* **26**,100-106 & 112.

Henshaw SK (1998). Unintended pregancy in the United States. Family Planning Perspectives **30**,24-29 & 46.

Henshaw SK, Krost K (1996). Abortion patients in 1994-1995: characteristics and contraceptive use. *Family Planning Perspectives* **28**,40-147 & 158.

Henshaw SK, Singh S, Haas T (1999). The incidence of abortion worldwide. *International Family Planning Perspectives* **25**(S),S30-S38.

Huntington *et al.* (1998). The postabortion caseload in Egyptian hospitals: a descriptive study. *Int Fam Plann Persp* **24**(1),25-31.

Johnson BR *et al.* (1993). Costs and resource utilization for the treatment of incomplete abortion in Kenya and Mexico. *Soc Sci Med* **36**(11),1443-1453.

Johnson BR, Horga M, Andronache L (1993). Contraception and abortion in Romania. *Lancet* ;341 :875-78.

Kaupova N, Nukusheva S, Biktasheva H, Goyaux N, Thonneau P (1998). Trends and causes of maternal mortality in Kazakhstan. *International Journal of Gynecology & Obstetrics* **63**,175-181.

Kay BJ *et al.* (1997). An analysis of the cost of incomplete abortion to the public health sector in South Africa. *South African Medical Journal* **87**(4),442-447.

Knudsen LB (1997). Induced abortions in Denmark. *Acta Obstetrica & Gynecologia Scandinavia Suppl.***76**(164),54-59.

Kulczycki A (1995). Abortion policy in postcommunist Poland. *Population and Development Review* **21**(3),471-505.

Kunins H, Rosenfield A (1991). Abortion: a legal and public health perspective. *Annu Rev Publ Health* **12**,361-82.

Lawson PHW (1994). Abortion mortality, United States 1972 – 1987. *Am J Obstet Gynecol* **171**(5),1365-1372.

Le Cœur S, Pictet G, M'Pelé P, Lallemant M (1998). Direct estimation of maternal mortality in Africa. *The Lancet* **352**,1525-1526.

Machungo F, Zanconato G, Bergstöm S (1997). Reproductive characteristics and post-abortion health consequences in women undergoing illegal and legal abortion in Maputo. *Soc Sci Med* **45**(11),1607-1613.

Madebo T, Tsadic TG (1993). A six month prospective study on different aspects of abortion. *Ethiop Med J* **31**,165-172.

Maine D and Rosenfield A (1999). The safe motherhood initiative:why has it stalled? *Am J Public Health* **89**,480-482.

Makinwa-Adebusoye P, Singh S, Audam S (1997). Nigerian health professionals' perceptions about abortion practice. *Int Fam Plann Pers* **23**,155-161.

Manning WD, Longmore MA, Giordano P (2000). The relationship context of contraceptive use at the first intercourse. *Family Planning Perspective* **32**(3),104-110.

Misago C, Fonseca W, Correia L, Fernandes LM, Campbell O (1998). Determinants of abortion among women admitted to hospitals in Fortaleza, North Eastern *Brazil. Int J Epidemiol* **27**,833-839.

Murray CJL, Lopez AD (1997). Mortality by cause for eight regions of the world: global burden of disease study. *Lancet* **349**,1269-76.

Nunes FE, Delph YM (1997). Making abortion law reform work: steps and slips in Guyana. *Reproductive Health Matters* **9**,66-76.

Paxman JM, Rizo A, Brown L, Benson J (1993). The clandestine epidemic: the practice of unsafe abortion in Latin America. *Studies Family Planning* **24**(4),205-226.

Popov AA (1991). Family planning and induced abortion in the USSR: basic health and demographic characteristics. *Studies in Family Planning* **22**,368-377.

Programme's Task Force on Postovulatory Methods of Fertility Regulation/ WHO Special programme of Research, Development and Research training in Human Reproduction (1998). *Lancet* **352**,428-433.

Rahman A, Katzive L, Henshaw SK (1998). A global review of laws on induced abortion, 1985-1997. *International Family Planning Perspectives* **24**(2),56-64.

Rees H *et al*. (1997). The epidemiology of incomplete abortion in South Africa. *South African Medical Journal* **87**(4),432-437.

Renne E (1996). The pregnancy that doesn't stay: the practice and perception of abortion by Ekiti Yoruba women. *Soc Sci Med* **42**(4),483-494.

Rogo KO (1993). Induced abortion in Sub-Saharan Africa. *East Afr Med* **J 70**,386-95.

Ronsmans C, Vanneste A-M, Chakraborty J, van Ginneken J (1997). Decline in maternal mortality in Matlab, Bangladesh:a cautionary tale. *Lancet* **350**,1810-14.

Serbanescu F, Morris L, Stupp P, Stanescu A (1995). The impact of recent policy changes on fertility, abortion, and contraceptive use in Romania. *Stu Fam Plann* **26**,76-87.

Shapiro D, Tambashe BO (1994). The impact of women's employment and education on contraceptive use and abortion in Kinshasa, Zaire. *Stud Fam Plann* **25**(2),96-110.

Shapiro D, Tambashe O (1994). The impact of women's employment and education on contraceptive use and abortion in Kinshasa, Zaire. *Stud Fam Planning* **25**(2),96-110.

Silvestre L, Dubois C, Renault M, Rezvani Y, Beaulieu E-E, Ulmann A (1990). Voluntary interruption of pregnancy with mifepristone (RU486) and a prostaglandin analogue: a large-scale French experience. *N Engl J Med* **332**,645-48.

Singh K, Ratnam SS (1998). The influence of abortion legislation on maternal mortality. *Int J Gynecol Obstet* **63** (Suppl.1),S123-S129.

Singh S, Sedgh G (1997). The relationship of abortion to trends in contraception and fertility in Brazil, Colombia and Mexico. *Int Fam Plann Perspec* **23**(3),4-14.

Singh S, Wulf D, Jones H (1997). Health professionals' perceptions about induced abortion in South Central and Southeast Asia. *Int Fam Plann Persp* **23**,59-67 & 72.

Sjöstrand M, Quist V, Jacobson A, Bergström S, Rogo KO (1995). Socio-economic client characteristics and consequences of abortion in Nairobi. *East African Medical Journal* **72**(5),325-332.

Skjeldestad FE (1997). Increased number of induced abortions in Norway after media coverage of adverse vascular events from the use of third-generation oral contraceptives. *Contraception* **55**,11-14.

Stephenson P, Wagner M, Badea M, Serbanescu F (1992). The public health consequences of restricted induced abortion – lessons from Romania. *Am J Public Health* **82**,1328-31.

Susser M (1992). Induced abortion and health as a value. *Am J Public Health* **82**,1323-1324. Editorial.

The Alan Guttmacher Institute (AGI) (1999). Sharing responsibility: women, society and abortion worldwide. New York;AGI.

Thonneau P, Fougeyrollas B, Ducor B, Boubilley D, Dif J, Lalande M, Soulat C (1998). Complications of abortion performed under local anesthesia. *Eur J Obstet Gynecol Reprod Biol* **81**,59-63.

United Nations/Department of Economic and Social Information and Policy Analysis (1997). *World population prospects: the 1996 revision*. New York, N.Y., USA, United Nations.

United Nations/Department of Economic and Social Information and Policy Analysis (1997). *World population prospects: the 1996 revision*. New York, N.Y., USA, United Nations.

Varkey SJ (2000). Abortion services in South Africa :available yet not accessible to all. *Int Fam Plann Pers* **26**,55-161.

Webb AMC *et al.* (1992). Comparison of Yuzpe regimen, danazol, and mifepristone RU 486 in oral post-coital contraception. *BMJ* **305**,927-931.

Weil O and Fernandez H (1999). Is safe motherhood an orphan initiative? *Lancet* **354**,940-43.

Westoff CF, Bankole A. (2000). Trends in the demand for family limitation in developing countries. *International Family Planning Perspectives* **26**,56-62 & 97.

WHO (1995). Complications of abortion: technical and managerial guidelines. Geneva; WHO.

WHO/Division of Reproductive Health. Unsafe abortion. Global and regional estimates of incidence of and mortality due to unsafe abortion, with a listing of available country data (WHO/RHT/MSM/97.16) (1998). Geneva, Switzerland. World Health Organization (WHO).

World Health Organization and UNICEF (1996). Revised 1990 estimates of maternal mortality. Geneva, Switzerland:WHO & UNICEF ; WHO/FRH/MSM 96.11.