Abortion and Maternal Mortality in the Developing World

Friday Okonofua, MB ChB, PhD, FMCOG, FWACS, FICS

Professor, Department of Obstetrics and Gynecology, Provost, College of Medical Sciences, University of Benin, Benin City, Nigeria
Executive Director, International Federation of Gynecology and Obstetrics, London UK

Abstract

Unsafe abortion is an important public health problem, accounting for 13% of maternal mortality in developing countries. Of an estimated annual 70 000 deaths from unsafe abortion worldwide, over 99% occur in the developing countries of sub-Saharan Africa, Central and Southeast Asia, and Latin America and the Caribbean. Factors associated with increased maternal mortality from unsafe abortion in developing countries include inadequate delivery systems for contraception needed to prevent unwanted pregnancies, restrictive abortion laws, pervading negative cultural and religious attitudes towards induced abortion, and poor health infrastructures for the management of abortion complications. The application of a public health approach based on primary, secondary, and tertiary prevention can reduce morbidity and mortality associated with unsafe abortion in developing countries. Primary prevention includes the promotion of increased use of contraception by women (and by men) at risk for unwanted pregnancy; secondary prevention involves the liberalization of abortion laws and the development of programs to increase access to safe abortion care in developing countries. In contrast, tertiary prevention includes the integration and institutionalization of post-abortion care for incomplete abortion and the early and appropriate treatment of more severe complications of abortion. Efforts to address these problems will contribute both to reducing maternal mortality associated with induced abortion and to achieving the Millennium Development Goals in developing countries.

Résumé

L'avortement insalubre représente un important problème sur le plan de la santé publique; en effet, il est à l'origine de 13 % des décès maternels dans les pays en développement. Plus de 99 % des quelque 70 000 décès attribuables à la pratique d'avortements insalubres chaque année dans le monde sont constatés dans les pays en développement de l'Afrique subsaharienne, de l'Asie centrale et du Sud-Est, de l'Amérique latine et des Caraïbes. Parmi les facteurs associés au taux de mortalité maternelle croissant des suites de la pratique d'avortements insalubres dans les pays en développement, mentionnons des systèmes déficients d'offre de modes de contraception nécessaires à la prévention des grossesses non désirées, l'application de lois contraignantes sur l'avortement, des attitudes culturelles et religieuses négatives persistantes à l'égard des avortements provoqués, et une piètre infrastructure sanitaire en ce qui a trait à la prise en charge des complications liées à l'avortement. La mise en œuvre d'une approche en matière de santé publique fondée sur les soins préventifs primaires, secondaires et tertiaires peut aider à réduire la morbidité et la mortalité découlant de la pratique d'avortements insalubres dans les pays en développement. Les soins préventifs primaires comprennent, entre autres, la promotion d'une utilisation accrue de modes de contraception par les femmes (et par les hommes) afin de réduire les risques de grossesse non désirée. Les soins préventifs secondaires, quant à eux, touchent la libéralisation des lois sur l'avortement et l'élaboration de programmes visant à améliorer l'accès à des soins sûrs en cas d'avortement dans les pays en développement. Les soins préventifs tertiaires, enfin, comprennent l'intégration et l'institutionnalisation des soins post-abortum dans le cas d'un avortement incomplet, ainsi que l'offre de soins précoces et appropriés dans le cas de complications plus graves suivant un avortement. Le déploiement d'efforts en vue d'aborder ces problèmes aidera à réduire la mortalité maternelle découlant de la pratique d'avortements provoqués, ainsi qu'à atteindre les objectifs du Millénaire pour le développement dans les pays en développement.

Key Words: Maternal mortality, unsafe abortion, developing countries, abortion complications, contraception, post-abortion care

Competing Interests: None declared.

Received on April 24, 2006

Accepted on May 17, 2006

J Obstet Gynaecol Can 2006;28(11):974–979

INTRODUCTION

Induced and unsafe abortion is a critical public health problem and an important cause of maternal mortality in developing countries. Worldwide, of the 600 000 maternal deaths from pregnancy-related causes each year, an estimated 13% are attributable to complications of induced and unsafe abortion.[1] Many of these deaths occur in developing countries where abortion laws are often restrictive and access to safe abortion is largely denied to women with unwanted pregnancies. Abortion-related deaths are hundreds of times more common in Latin America, sub-Saharan Africa, and Southeast and south Central Asia than in more developed regions of the world, where women have better access to safe abortion practices and procedures. The World Health Organization (WHO) estimates that in developing countries, 67 500 women die from abortion complications each year; in developed countries, 300 die each year.[1] In a country such as Ethiopia, abortion-related deaths

account for up to 50% of maternal mortality[2] and are a significant cause of maternal morbidity.

It is worrisome that despite the huge problem caused by unsafe abortion for women in developing countries, nothing substantial is being done locally or internationally to address the related issues. In 1994, unsafe abortion gained prominence at the International Conference on Population and Development (ICPD) in Cairo[3] as an important public health problem, for which nations were urged to seek appropriate and relevant solutions within the shortest possible period of time. However, since the ICPD, nearly 3/4 million women have died from unsafe abortion in developing countries, with no clear evidence of a definable pathway yet available for resolving the problem in these countries. In 2000, the United Nations (UN) promulgated the Millennium Development Goals (MDGs) and set targets for reducing poverty and achieving gender equality and sustainable development.[4] One of the eight MDGs is to reduce maternal mortality by 75% by the year 2015. Because abortion is a major cause of maternal mortality in developing countries, it is unclear how these countries can achieve all components of the MDGs without addressing the problem of unsafe abortion.

Abortion is a largely preventable source cause of maternal mortality. Technologies and skills to prevent unwanted pregnancies and unsafe abortion are generally available in both developed and some developing countries. A recent World Bank analysis indicates that 90% of abortion-related mortality could be reduced simply by providing safe abortion care.[5] However, lack of political will and lack of resources to apply these technologies are responsible for the high rate of maternal mortality associated with induced abortion in developing countries. Abortion mortality almost exclusively affects women in developing countries, and it is the disadvantaged, poor, and rural women in these countries who are most affected.

It is no longer morally or ethically acceptable that women are denied the benefits of safe abortion care in developing countries. Since safe abortion care benefits women exclusively, the continued poor access to safe abortion care in developing countries is a form of social injustice. Women's equal access to the benefits of scientific progress is a right protected by several international human rights treaties.[6] The denial of information and service delivery options relating to abortion care in developing countries is a form of discrimination against women and violates women's rights to autonomy and security.

DATA ON ABORTION MORTALITY IN DEVELOPING COUNTRIES

The WHO has provided global and regional estimates for the annual incidence of and mortality from unsafe abortion.[7] The data show that developing countries have significantly higher absolute numbers of abortion-related deaths than developed countries (67 500 vs. 300). When used to calculate the ratio of abortion deaths per 100 000 abortions, the data indicate an estimated 330 abortion-related deaths per 100 000 abortions in developing countries as a whole, compared with a ratio of only 0.7 per 100 000 abortions in developed countries.[8] Africa has the highest ratio of 680 per 100 000 abortions, followed by South and Southeast Asia with a ratio of 283 per 100 000 abortions, and Latin America with a ratio of 119 per 100 000 abortions.[8] Data from WHO[7] indicate that the risk of dying from unsafe abortion is highest in Africa, with a rate of 1 in 150, compared with rates of 1 in 250 in Asia and 1 in 900 in Latin America and the Caribbean. The rate in Europe is as low as 1 in 1 900.

Women die as a result of complications including hemorrhage, genital tract sepsis, trauma to the cervix, uterine perforations, and trauma to surrounding organs, such as the urinary bladder or the intestines.[9] When women suffer these complications, the lack of appropriate information, negative attitudes towards abortion, and the fragile health and social infrastructures in many countries often prevent women from receiving quality post-abortion care that could save their lives. These negative factors operate most intensely in the developing countries of Africa, Southeast Asia, and Latin America and the Caribbean.

Overall, the case fatality associated with unsafe abortion is 0.4% in both developed and developing countries; however, Africa has the highest case fatality of 0.7% compared with rates of 0.3% in Asia, 0.1% in Latin America and the Caribbean, and less than 0.1% in Europe.[7] Clearly, Africa has the highest burden of unsafe abortion and its complications, followed by Asia, and Latin America and the Caribbean. Unsafe abortion is also a significant cause of long-term morbidity, including chronic pelvic pain, secondary infertility, ectopic pregnancy, and recurrent pregnancy loss[10,11] in women in developing countries.

FACTORS ASSOCIATED WITH ABORTION MORTALITY

The major determinants of the high rate of mortality associated with induced abortion in developing countries include restrictive abortion laws, which deny access to safe abortion practices to women; adverse socio-economic, cultural, and religious factors, which limit access to abortion and post-abortion care to women even when laws are more liberal; and unfavourable service delivery systems, which

restrict access to post-abortion care for women suffering complications of unsafe and induced abortion.

Effects of Abortion Laws

Abortion is highly restricted in many parts of the developing world. Of the 107 countries around the world that either prohibit or strongly restrict access to legal abortion services, the only industrialized countries are Poland and the Republic of Ireland.[12] The rest are developing and low-income countries in Africa, Southeast and Central Asia, and South America and the Caribbean. Abortion laws in developing countries were derived from laws of European colonizers; however, although these European countries (notably Britain, France, Portugal, and Spain) have modernized their laws, many of the colonized countries have continued to maintain the old laws despite years of independence. Contrary to their intended purpose, however, restrictive laws have not prevented abortion in these countries; instead the laws have criminalized women and driven the practice of abortion underground, making it unsafe for women.

The WHO has defined unsafe abortion as "the termination of an unintended pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards or both."[13] In many developing countries, because of restrictive abortion laws, termination of pregnancy is undertaken either by women themselves, using highly dangerous methods, or by "backstreet" abortionists lacking minimal training, skills, and experience.[14,15] The consequence is a high rate of associated complications that result in mortality. Data indicate that more than 30% of women seeking termination of pregnancy in countries with restrictive abortion laws may experience moderate to severe complications.[16]

Effects of Socio-Economic, Cultural, and Religious Factors

In countries with restrictive abortion laws, abortion services by skilled providers are often too expensive to be affordable and accessible to women of low socio-economic status. Even when abortion laws are more liberal, adverse socio-economic, cultural, and religious factors may prevent women from seeking services. As a result of pervading religious and cultural views, women with unwanted pregnancies may fail to seek services in public health institutions even when the law allows the provision of such services. In India, for example, religious and social sentiments prevent women from seeking legal and safe abortion services in public health institutions. Instead, despite the law that permits abortion on broad social grounds, women with unwanted pregnancy in India continue to patronize illegal abortionists.[17,18] This situation results in India's continuing high rate of abortion-related maternal mortality.

Social, cultural, and religious factors in developing countries also prevent women who suffer complications of induced and unsafe abortion from seeking medical treatment in time. Women with complications are likely to be adolescent or poor, since youth and poverty increase the likelihood that women will seek inexperienced backstreet abortionists or use dangerous methods to procure an abortion. When these women suffer complications, they are less likely to seek treatment by skilled providers in public health institutions because they believe such treatment is prohibitively expensive. Data soon to be published indicate that women in sub-Saharan Africa seeking treatment for complications following abortion tend to seek the same inexperienced provider who procured their unsafe abortion, resulting in delayed appropriate treatment and high mortality. These women often fear religious or social stigma should they attend formal health institutions and be discovered to have had induced abortion. Such personal and social fears further reduce women's access to effective and high-quality post-abortion care following unsafe abortion in the developing world.

Service Delivery Factors

Whether abortion laws are restrictive or liberal, strong, compassionate service delivery systems with clear and effective policies related to abortion care are always needed to reduce morbidity and mortality from induced abortion. Unfortunately, developing countries often lack service delivery systems that integrate the prevention and management of abortion complications. Particularly lacking are systems that improve women's access to safe abortion services; that offer quality services and appropriate technologies and procedures; that address issues related to costs, confidentiality, and the training of skilled providers; and that provide accurate information and contraceptive services to prevent future unwanted pregnancies and unsafe abortions.

In Zambia and Ghana, two countries in Africa with liberal abortion laws, the lack of strong service delivery systems that integrate abortion and post-abortion care is the major reason that women in those countries still suffer complications of unsafe abortion.[19–21] Women, and many providers, in these countries are not even familiar with opportunities provided under the law to terminate unwanted pregnancies safely, and policymakers do not regularly provide and disseminate clear guidelines and procedures for abortion and post-abortion care. In Indonesia, the negative attitudes of providers often prevent women from seeking menstrual regulation approved by the Ministry of Health.[22] These negative attitudes by health providers are also carried over to women who suffer complications of induced abortion and

are referred to public hospitals for treatment. Ineffective service delivery systems that do not properly address the needs of women exacerbate the problem and increase exposure to the risk of mortality from unsafe and induced abortion in many developing countries.

OVERVIEW OF PUBLIC HEALTH STRATEGIES TO ADDRESS ABORTION MORTALITY IN DEVELOPING COUNTRIES

The problem of abortion mortality in developing countries would be best addressed at the levels of primary prevention, secondary prevention, and tertiary prevention. Primary prevention includes the prevention of unwanted pregnancies that lead to induced and unsafe abortion, secondary prevention involves the use of safe and effective methods for the termination of unwanted pregnancy, and tertiary prevention encompasses the prompt and effective management of complications that lead to mortality. All three types of prevention must be made to work in concert before any meaningful results can be obtained in reducing maternal mortality associated with induced abortion in developing countries.

Primary Prevention of Abortion Mortality

The continued low contraceptive prevalence rates in developing countries account for the high rate of unwanted pregnancies that lead to unsafe and induced abortion-related mortality. Data from the United Nations Population Fund (UNFPA) indicate that the prevalence of modern contraceptive use is currently around 55% for Asia, 49% for Latin America and the Caribbean, and only 15% for sub-Saharan Africa, with large unmet needs for contraception in many of these countries.[23] Up to 27% of a cohort of sub-Saharan African women report an unmet need for contraception,[24] and there is evidence suggesting that the numbers may be increasing.[25] Barriers to the use of contraception in developing countries include the lack of access to information and services about effective contraceptives[23]; social, cultural, and religious norms and views that prevent women and men from seeking available contraceptives[26,27]; and service delivery systems that have limited capacity to manage and sustain the delivery of effective contraceptive methods.[28]

Existing data indicate that higher contraceptive prevalence rates and greater use of effective contraceptive methods will result in a reduced incidence of abortion and abortion-related mortality.[29] Efforts to reduce abortion-related mortality in developing countries should include the promotion of effective contraception for women at risk for unwanted pregnancy and induced abortion, most especially unmarried adolescents and highly parous married women. Such interventions must seek to provide appropriate information and services for contraceptive delivery and to eliminate barriers that currently limit women's and men's access to contraception in developing countries. Most importantly, public health policies in these countries must seek to provide women who have suffered complications of unsafe and induced abortion with effective contraceptive services to prevent another induced abortion with its unfavourable sequelae.

Secondary Prevention of Abortion Mortality

Secondary prevention of abortion mortality involves the safe termination of unwanted pregnancy and the development of programs that increase women's access to safe abortion methods. Even when abortion laws are restrictive, there are often provisions within the laws that allow health providers to offer safe abortion services to save women's lives or for other broad social or health reasons. However, health workers in developing countries are often ignorant of the legal grounds on which abortion can be provided and often adopt the view that abortion is illegal in all circumstances.[30,31]

Clearly, there is a need to ensure that health workers in each developing country understand the provisions of their country's abortion laws, with particular reference to the specific grounds on which unwanted pregnancies may be terminated.

Pregnancies can now be terminated using eminently safe methods such as manual vacuum aspiration (MVA)[15] and mifepristone and misoprostol regimens.[15,32] Programs that aim to reduce abortion mortality must teach the appropriate use of these methods to physicians and to mid-level providers such as nurses and midwives, as has been done in Ghana[33] and South Africa,[34] to decentralize the use of these methods for the effective secondary prevention of abortion mortality. Programs to integrate the teaching of these methods into medical, midwifery, and nursing curricula are also useful[35] and should be pursued in developing countries.

Experience from countries such as South Africa and Romania indicates that when abortion laws are liberalized, abortion-related maternal mortality can be significantly reduced.[36–38] Thus, in consonance with recommendations at the Fourth Conference on Women, which called on governments "to consider reviewing abortion laws containing punitive measures against women,"[39] advocacy efforts are recommended in developing countries to liberalize laws that restrict women's access to safe abortion.[40] Additionally, countries should be encouraged to develop policies that ensure that needed services are provided and that women have the necessary information and means to use such services.

Tertiary Prevention of Abortion Mortality

When complications of unsafe induced abortion occur, prompt and appropriate treatment in health institutions can reduce the risk of progression to mortality. A major challenge in developing countries is persuading women with complications of unsafe abortion to go to health facilities where they can be treated. As a result of the stigma associated with abortion in several developing countries, many women with complications will either refuse to seek treatment or will seek treatment from the same clandestine and unskilled provider who offered the induced abortion. A second challenge lies in eliminating delays and improving the quality of treatment in health institutions. Eliminating these obstacles will contribute greatly to reducing maternal mortality associated with unsafe abortion in developing countries.

Evidence indicates that involving communities in finding solutions to the problem of unsafe abortion can reduce silence and shame and increase the chance that women will use appropriate health facilities when they suffer complications of unsafe abortion.[40] A community-based study in Western Zambia showed that up to 69% of women reported knowing one or more women who had died as a result of an induced abortion.[21] For such a community, public education, dialogue, and mobilization to sensitize individuals to the problems of unwanted pregnancy and unsafe abortion have been shown to generate local action promoting prompt treatment of complications.[41,42] Such community initiatives should involve the training and re-orientation of private medical practitioners, mid-level providers, and alternative providers to ensure that they make early referrals of women suffering complications from abortion to appropriate health facilities where they can be treated.

The most common complication of unsafe abortion in developing countries is incomplete abortion. There is now incontrovertible evidence that MVA is more cost-effective and safer than traditional dilatation and curettage (D&C) in treating incomplete abortion in developing countries.[15,43] MVA used as part of post-abortion care has found increasing acceptability among health workers, health administrators, and policymakers in developing countries.[44,45] However, many countries are still grappling with several issues relating to its provision, including key aspects of clinical care, information, and counselling, the extent to which MVA use can be decentralized to mid-level providers, the cost of services, and the provision of post-abortion family planning to women with incomplete abortion. The extent to which these related issues are resolved in each country will determine the extent to which post-abortion care can contribute to reducing abortion-related maternal mortality in developing countries in the coming years.

Other more severe complications of unsafe abortion that lead to maternal mortality in developing countries include septic shock, severe bowel injuries, acute renal failure, and tetanus.[46] These complications can be managed only in secondary or tertiary institutions with the right kinds of material and human resources, which may not always be available in many developing countries. However, proper training of staff, a policy of regionalization of care, and early recognition and referral of such cases can lead to better treatment of these complications and ultimately to reduction in associated maternal mortality.

CONCLUSION

Induced and unsafe abortion is an important public health problem and a significant cause of maternal mortality in developing countries. The most important factors associated with mortality from induced abortion in developing countries include inadequate delivery systems for contraception needed to prevent unwanted pregnancies, restrictive abortion laws that limit women's access to safe abortion care, pervading negative cultural and religious attitudes to abortion, poor health and social infrastructures for the management of complications, and women's low social status. The application of a public health approach based on primary, secondary, and tertiary prevention can reduce morbidity and mortality associated with unsafe abortion in developing countries. Primary prevention includes the promotion of increased use of contraception by women at risk of unwanted pregnancy. Secondary prevention involves the liberalization of abortion laws and programs to increase women's access to safe abortion care in developing countries. Tertiary prevention includes the integration and institutionalization of post-abortion care for incomplete abortion and the early and appropriate treatment of more severe complications of abortion. Efforts to address these problems will contribute to reducing maternal mortality associated with induced abortion and to achieving the MDGs in developing countries.

ACKNOWLEDGEMENTS

We appreciate the assistance of Dr Lawrence Omo-Aghoja in conducting the literature search, and Dr Barbara Crane of Ipas for her useful comments on the initial draft of the paper.

REFERENCES

1. World Health Organization (WHO), Division of Reproductive Health. Unsafe abortion: global and regional estimates of incidence and mortality due to abortion, with a listing of available country data. 3rd ed. Geneva: World Health Organization;1998.

2. Kebede S, Jira C, Miriam DW. A survey of illegal abortion in Jimma Hospital, Southwestern Ethiopia. Ethiop Med J 2000;38(1):35–42.

3. United Nations. Report of the International Conference on Population and Development, Cairo, 5–13 September 1994. Document A/CONF. 171/13/Rev/1. New York: United Nations;1995.

4. Wagstaff A, Claeson M. The Millennium Development Goals for Health: Rising to the challenges. Washington: The World Bank; 2004.

5. World Bank Reproductive Health at a Glance. Available at: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTHEALTHNUTRITIONANDPOPULATION/EXTPHAAG/0,,contentMDK:20722992~menuPK:64229770~pagePK:64229817~piPK:64229743~theSitePK:672263,00.html. Accessed: July 24, 2006.

6. Cook RJ, Bernard M, Dickens BM, Fathalla MF. Human rights principles. In: Reproductive Health and Human Rights—Integrating Medicine, Ethics and Law. Oxford: Clarendon Press; 2003: 149–216.

7. World Health Organization. Global and Regional Estimates of Unsafe Abortion and Associated Mortality in 2000. 4th ed. Geneva: World Health Organization; 2004.

8. Alan Guttmacher Institute (AGI). Sharing Responsibilities: Women, Society and Abortion Worldwide. New York: AGI;1999.

9. Okonofua FE. Preventing unsafe abortion in Nigeria. Afr J Reprod Health 1997;1:25–36.

10. Lassey AT. Complications of induced abortion and their prevention in Ghana. East African Medical Journal 1995;72(12):774–7.

11. Okonofua FE. Induced abortion—a risk factor for infertility in Nigerian women. J Obstet Gynaecol 1994;14:272–6.

12. Center for Reproductive Law and Policy. The World's Abortion Laws 1998. [Wall Chart]. New York: Center for Reproductive Law and Policy; 1998.

13. World Health Organization. Prevention and management of unsafe abortion. Report of a technical working group. Geneva: World Health Organization;1992.

14. Ankomah A, Aloo-Obunga C, Chu M, Manlagnit A. Unsafe abortion: methods used and characteristics of patients attending hospitals in Nairobi, Lima and Manila. Health Care Women Int 1997;18:43–53.

15. Grimes DA. Reducing the complications of unsafe abortion: the role of medical technology. In: Warriner IK, Shah IH, eds. Preventing Unsafe Abortion and its Consequences: Priorities for Research and Action. New York:AGI; 2006:73–91.

16. Okonofua FE, Odimegwu C, Ajabor H, Daru H, Johnson A. Assessing the prevalence and determinants of unwanted pregnancy and induced abortion in Southwest Nigeria. Stud Fam Plann 1999;30(1):67–77.

17. Chandrasekhar S. India's Abortion Experience. Denton: University of North Texas Press; 1994.

18. Mundigo AI. Determinants of unsafe induced abortion in developing countries. In: Warriner IK, Shah IH, eds. Preventing Unsafe Abortion and its Consequences: Priorities for Research and Action. New York:AGI; 2006:51–72.

19.Lithur NO. Destigmatizing abortion: expanding community awareness of abortion as a reproductive health issue in Ghana. Afr J Reprod Health 2004;8(1):70–4.

20. Ahiadeke C. Incidence of induced abortion in southern Ghana. Int Fam Plan Perspect 2001;21(2):96–101,108.

21. Koster-Oyekan W. Why resort to illegal abortion in Zambia? Findings of a community-based study in Western Province. Soc Sci Med 1998;46(10):1303–12.

22. Djohan E, Indrawash F, Adenan M, Yudomustopo H, Tat MG. The attitudes of health care providers towards abortion in Indonesia. In Mundigo AI, Indriso C. eds. Abortion in the developing world. New Delhi: Vistaar Publications and London Zed Books;1999:217–27.

23.United Nations Population Fund. The state of the world population 1997. New York: UNFPA;1997.

24. United Nations Development Program. Levels and trends of contraceptive use as assessed in 1998. New York: UNDP;1998.

25. Westoff CF, Bankole A. Trends in the demand for family limitation in developing countries. Int Fam Plan Perspect 2000; 26(2):56–62,97.

26. Otoide VO, Oronsanye F, Okonofua FE. Why Nigerian adolescents seek abortion rather than contraception: evidence from focus group discussions. Int Fam Plann Persp 2001;27(2):77–81.

27. Keele JJ, Forste R, Flake DF. Hearing native voices: contraceptive use in Matewe village, East Africa. Afr J Reprod Health 2005;9(1):32–41.

28. Black T. Impediments to effective fertility reduction. Br Med J 1999;319:932–3.

29. Marston C, Cleland J. Relationships between contraception and abortion: a review of the evidence. Int Fam Plan Perspect 2003;29(1):6–13.

30. Okonofua FE, Shittu SO, Oronsaye F, Ogunsakin D, Ogbomwan S, Zayyan A. Attitudes and practices of private medical providers towards family planning and abortion services in Nigeria. Acta Obstet Gynecol Scand 2005;84(3): 270–80.

31. Singh S, Wulf D, Jones H. Health professionals' perceptions about induced abortion in south central and southeast Asia. Int Fam Plan Perspect 1997;23(2):59–67.

32. Okonofua FE, Menakaya U, Otoide V, Omo-Aghoja L, Odunsi K. Experience with misoprostol in the management of missed abortion in the second trimester. J Obstet Gynaecol 2005; 25,(6):583–5.

33. Billings DL, Ankrah V, Baird TL, Taylor JE, Ababio KPP, Ntow S. Midwives and comprehensive postabortion care in Ghana. In: Huntington D, Piet-Pelon N, eds. Postabortion care: lessons learnt from operations research. New York: The Population Council; 1999:141–58.

34. Sibuyi MC. Provision of abortion services by midwives in Limpopo province of South Africa. Afr J Reprod Health 2004;8(1):75–8.

35. Oye-Adeniran BA, Adewole IF, Iwere N, Mahmoud P. Promoting sexual and reproductive health and rights in Nigeria through change in medical school curriculum. Afr J Reprod Health 2004;8(1):85–91.

36. Stevens M. Abortion reform in South Africa. Initiat Reprod Health Policy 2000;3(2)(special issue):4–6.

37. Hord C, David HP, Donnay F, Wolf M. Reproductive health in Romania: reversing the Ceausescu legacy. Stud Fam Plann 1991; 22:231–40.

38. Stephenson P, Wagner M, Badea M, Serbabescu F. Commentary: the public health consequences of restricted induced abortion—lessons from Romania. Am J Public Health 1992;82:1328–31.

39. United Nations. Beijing Declaration and Platform for Action. Fourth World Conference on Women, Beijing, 4–15 Sep 1995. A/CONF.1777/20. New York: United Nations;1995.

40. Ashenafi M. Advocacy for legal reform for safe abortion. Afr J Reprod Health 2004;8(1):79–84.

41. Hord CE, Benson J, Potts JL, Billings DL. Unsafe abortion in Africa. An overview and recommendations for action. In: Warriner IK and Shah IH, eds. Preventing unsafe abortion and its consequences: priorities for research and action. New York: Guttmacher Institute; 2006:115–50.

42. Settergren S, Mhlanga C, Mpofu J, Ncube D, Woodsong C. Community Perspectives on Unsafe Abortion and Postabortion Care, Bulawayo and Hwange Districts, Zimbabwe. Research Triangle Park, NC:Research Triangle Institute;1999.

43. Mahomed K, Healy J, Tandon S. A comparison of manual vacuum aspiration (MVA) and sharp curettage in the management of incomplete abortion. Int J Gynaecol Obstet 1994;46(1):27–32.

44. Greenslade F, Leonard AH, Benson J, Winkler J, Henderson VL. Manual vacuum aspiration: a summary of clinical and programmatic experience worldwide. Carrboro, NC: Ipas;1993.

45. Baird T, Plewman C, Booth R, Tubi AM. Christian hospitals in Nigeria provide postabortion care and STD management. Dialogue 1997;1(2):1–2.

46. Okonofua FE. Abortion. In: Okonofua FE, Odunsi OA, eds. Contemporary Obstetrics and Gynecology in Developing Countries. Benin City, Nigeria: Women's Health and Action Research Centre; 2003: 179–201.