

## Review article

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# Complications of unsafe abortion in sub-Saharan Africa: a review

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The Commonwealth Regional Health Community Secretariat undertook a study in 1994 to document the magnitude of abortion complications in Commonwealth member countries. The results of the literature review component of that study, and research gaps identified as a result of the review, are presented in this article.

The literature review findings indicate a significant public health problem in the region, as measured by a high proportion of incomplete abortion patients among all hospital gynaecology admissions. The most common complications of unsafe abortion seen at health facilities were haemorrhage and sepsis. Studies on the use of manual vacuum aspiration for treating abortion complications found shorter lengths of hospital stay (and thus, lower resource costs) and a reduced need for a repeat evacuation. Very few articles focused exclusively on the cost of treating abortion complications, but authors agreed that it consumes a disproportionate amount of hospital resources. Studies on the role of men in supporting a woman's decision to abort or use contraception were similarly lacking. Articles on contraceptive behaviour and abortion reported that almost all patients suffering from abortion complications had not used an effective, or any, method of contraception prior to becoming pregnant, especially among the adolescent population; studies on post-abortion contraception are virtually nonexistent. Almost all articles on the legal aspect of abortion recommended law reform to reflect a public health, rather than a criminal, orientation.

Research needs that were identified include: community-based epidemiological studies; operations research on decentralization of post-abortion care and integration of treatment with post-abortion family planning services; studies on system-wide resource use for treatment of incomplete abortion; qualitative research on the role of males in the decision to terminate pregnancy and use contraception; clinical studies on pain control medications and procedures; and case studies on the provision of safe abortion services where legally allowed.

## Background

In November 1993, the 21st Conference of Health Ministers for East, Central and Southern Africa (ECSA) was held in Maseru, Lesotho. At this conference, the Health Ministers adopted a resolution in which they identified unsafe abortion<sup>1</sup> as a major cause of maternal morbidity and mortality in the region (Kinoti et al. 1993). In addition, the Ministers recommended specific actions to address the problem of unsafe abortion in member countries.

As a next step, the Commonwealth Regional Health Community Secretariat (CRHCS), in collaboration with JHPIEGO and IPAS, undertook a study in 1994 to document the magnitude of abortion complications in Commonwealth member countries<sup>2</sup> and sub-Saharan Africa (SSA) as a whole. The study involved two components: 1) a literature review on abortion in SSA covering the years 1980-1994, and 2) primary data collection in three Commonwealth countries (Malawi, Uganda, Zambia)<sup>3</sup> to yield more

recent findings. The results of both components of that study form the basis of a reference document entitled *Monograph on Complications of Unsafe Abortion in Africa*<sup>4</sup> (henceforth referred to as the *Monograph*).

This paper presents the results of the literature review component of the CRHCS study, discussing the findings of the research that has been conducted to date and identifying gaps in the research that require further study. Programme and policy implications of the findings obtained through this study will be presented in another article to be published at a later date.

### Literature review methodology

The literature review involved two complementary activities: 1) a computerized search for published literature using numerous bibliographic databases and 2) a manual search for any 'unpublished' documents (referred to as gray literature in the *Monograph* and throughout this paper) available in the Commonwealth member countries on abortion. Ultimately 99 published and 169 gray articles were identified and annotated; many other articles were identified, but they were either irretrievable or were submitted too late to be annotated. The published literature consisted primarily of articles presented in peer review journals and books (or chapters of books) catalogued by the Library of Congress. The gray literature included articles from other journals (i.e. those not peer-reviewed/indexed), meeting proceedings, reports, official country papers, legal briefs, newspaper articles, student theses, etc.

The main criteria for selecting documents were that they be published between 1980 and 1994 (or written during this time for the gray literature), and that they reflect research conducted in, or information gathered on, one or more SSA countries. Under these criteria, the following documents were deemed most relevant: hospital- and community-based epidemiological studies; studies focusing on provider attitudes toward and experiences with abortion and/or post-abortion patients; studies focusing on women's perspectives on the quality of and access to emergency abortion treatment services; studies examining men's perspectives on the problem of unsafe abortion; studies documenting the social and financial costs of abortion; studies demonstrating programme linkages between treatment of abortion complication services and other reproductive health services; clinical studies documenting the safety and effectiveness of different

abortion treatment modalities; and articles covering the general legal situation.

Computerized searches were carried out using select key words (see the *Monograph*, Annex 8, for a list of the keywords used) on the following databases: SCIMATE, a bibliographic cataloguing software used by IPAS; POPCAT, a cataloguing software used by the University of North Carolina Population Center; MEDLINE, a clinical and medical database maintained by the United States (US) National Library of Medicine and accessed through the MEDLARS system; Dissertation Abstracts International, which catalogues masters' theses and doctoral dissertations of US students, accessed through the computerized DIALOG system; SOCIAL SCISEARCH, which catalogues social science research articles and is also accessed through DIALOG; and POPLINE, which features population and family planning articles and is maintained by the Johns Hopkins University/CCP/PCS/PIP. Overview articles and commentaries were generally not annotated; however, the reference pages of these documents were reviewed to identify additional literature for inclusion in the monograph (see the *Monograph*, Annex 7, for a list of the overview articles which were reviewed to identify relevant literature).

The Africa-based search for gray literature engaged the services of Institutional Scientific Officers (ISOs) in 10 (of the now 13) CRHCS member countries. The ISOs searched the following data sources for relevant gray literature: dissertation files of medical schools and university social science departments; Ministry of Health (MOH) documentation files; health/population research institute libraries; national family planning programme document lists; and other national archives where documents on the problem of unsafe abortion might be maintained in each country.

Each of the 99 published and 169 gray literature articles was annotated and entered into ProCite version 2.1.1, a computerized bibliographic software program, using a standard bibliographic format (see the *Monograph*, Annex 9, for details on the bibliographic format used). Following the annotation process, all *Monograph* documents were classified into 6 topic areas: 1) magnitude of unsafe abortion (including socio-demographic characteristics of women experiencing the problem); 2) clinical issues; 3) cost issues; 4) contraception and abortion (including post-abortion family planning services); 5) male perspectives; and 6) abortion laws.

In this article, only the major findings and general trends identified for each subject area are presented. Published articles are noted and discussed individually only when their methodology(ies) are so unique or innovative, and/or their findings are so dissimilar to those found in the other studies for that subject area, that the article warrants special attention. Additional or contrasting information provided by the gray literature is incorporated as appropriate. These findings are presented below, along with an assessment of the quality of the published literature and an identification of gaps in the available research results.

## Results

### Magnitude of unsafe abortion

Forty-two published articles documented the magnitude of unsafe abortion in SSA. Almost one-third of these articles were from Nigeria, the rest coming from countries scattered throughout the region. Most of the research was conducted in hospitals (e.g. record reviews, interviews with women admitted for treatment of complications of unsafe abortion), and the gray literature, on the whole, supports the findings reported from the published literature. In several published studies, researchers focused on patients with complications of induced abortion, and therefore, they attempted to distinguish between these cases and those with spontaneous abortion. The criteria and methods used for differentiating between categories, however, were often unclear in these articles. In other studies, incomplete abortion cases or deaths resulting from complications were investigated, without distinguishing between induced or spontaneous abortions.

Since this topical area is so broad, we further sub-categorized these articles as follows: mortality and morbidity statistics, patient characteristics, and provider characteristics.

### *Mortality and morbidity statistics*

Reliable statistics on the incidence of abortion and associated morbidity/mortality were difficult to obtain as variations existed in the way abortion statistics were defined or calculated. Two measures that were calculated most frequently and consistently in the literature reviewed were maternal mortality rate (MMR)<sup>5</sup> and the proportion of maternal deaths attributable to abortion complications (i.e. proportionate mortality rate). The overall MMR cited in the

published articles ranged from 1.18 to 9.6 maternal deaths per 1000 live births (Mhango et al. 1986; Yoseph and Kifle 1988<sup>6</sup>), with the majority falling between 2 and 6 per 1000 live births. The proportion of maternal deaths attributable to abortion ranged from 2% in Nigeria<sup>7</sup> to 54% in Guinea<sup>8</sup> (Chukudebelu and Ozumba 1988; Toure et al. 1992).

Two studies, a household survey conducted in Ethiopia (Kwast et al. 1986) and a combined review of hospital and community deaths in Guinea (Toure et al. 1992) are notable because of their community orientation. The Ethiopian study<sup>9</sup> found that complications of abortion were the leading cause of maternal mortality in the population surveyed, accounting for 54% of the direct obstetric deaths and 29% of all maternal deaths. The Guinean study reported that 15% (see endnote 7) of the hospitals' maternal deaths, and an additional 54% (see endnote 7) of the maternal deaths in the community, were due to abortion complications. These statistics are higher than those obtained from the majority of hospital-based studies, most of which reported a range of 18–28% for abortion-related maternal deaths. These figures highlight the possibility that the MMRs reported in the majority of the literature represent only the 'tip of the iceberg' and that population-based abortion-related mortality is likely to be higher than hospital-based figures indicate.

Contributing causes of abortion-related mortality cited in the literature included: delay in seeking care; lack of drugs and other supplies; provider technical/clinical error in treating complications of unsafe abortion; problems in patient management (e.g. high patient/staff ratio); and administrative requirements to obtaining legal abortion procedures (Kampikaho and Irwig 1991; MacPherson 1981; Mhango et al. 1986; Megafu and Ozumba 1990). Sepsis and haemorrhage were often cited as important major complications of unsafe abortion and were the two main clinical causes of abortion-related deaths indicated in every study reporting this statistic.

### *Patient characteristics*

In the literature reviewed, adolescents were over-represented among those presenting with complications of unsafe abortion. In one Kenyan study, for example, 5% of septic patients were under age 20 (Aggarwal and Mati 1980). Two Nigerian studies, also of septic abortion patients, found that 61% and 75% of the patients were adolescent girls (Adetoro 1986; Adetoro et al. 1991, respectively). A third

Nigerian study found that 61% of the patients treated for complications of induced abortion were adolescents (Omu et al. 1981). Given the predominance of young women among incomplete abortion cases, it is not surprising that numerous studies also found that many abortion patients were unmarried (Chatterjee 1985; Archibong 1991; Okonofua et al. 1992; Aggarwal and Mati 1980; Baker and Khasiani 1992) and were of low parity (Chatterjee 1985; Okonofua et al. 1992; Nichols et al. 1984).

Overall, the educational status of women having experienced an abortion was difficult to compare due to differences in the classification of school levels and the populations studied (e.g. adolescent versus all abortion patients). However, several studies discussed the consequences of unwanted pregnancy and unsafe abortion on a woman's education (Lamprey et al. 1985; Adetoro et al. 1991). For example, research on Nigerian adolescents with septic abortion found that over 50% of the young women had been expelled from school because of their pregnancy (Adetoro et al. 1991).

Only two published studies attempted to quantify the socioeconomic status (SES) of women who had undergone abortion. One study, from Zambia, found that 53% of women seeking an abortion were of low or middle SES (Chatterjee 1985). The other study, also from Zambia, found that over half the women who died from an induced abortion were of high or average SES (Mhango et al. 1986). Many other published studies, however, mentioned that abortion patients were of low SES. A gray literature document suggested that women of low SES are more likely than women of middle and high SES to self-induce abortion or to seek care from unskilled providers because of the high cost of and lack of access to higher quality abortion services (International Planned Parenthood Federation 1994).

Abortion patients represented a large percentage of total gynaecological admissions in several of the hospital-based studies: 28.4% in one Nigerian study and 60% in each of two studies from Kenya and Nigeria (Omu et al. 1981; Aggarwal and Mati 1982; Adetoro et al. 1991, respectively). Many women in these studies reported having had a previous abortion. Many of the studies also found that for most abortion patients, knowledge, ever-use, and current-use of contraception were low (Chatterjee 1985; Adetoro 1986; Archibong 1991; Okonofua et al. 1992). Almost all of the studies found little use of

contraception prior to the index pregnancy, with the exception of one article from Zimbabwe (Crowther and Verkuyl 1985). In this study, contraceptive failure had occurred in 18% of the patients treated for abortion complications. Of these, 44% had been using oral contraceptives.

Only one study examined the effect of being human immunodeficiency virus (HIV) positive on the incidence of pregnancy wastage and low birth weight (Urass et al. 1992). This Tanzanian study compared groups of women presenting with spontaneous abortion and those presenting for delivery. The investigation found that infected women had increased rates of both these indicators compared to non-infected women, which contradicts the results of similar studies conducted in the US and Europe where no negative pregnancy outcomes were found.

Women's reasons for seeking abortion were discussed in several studies (Archibong 1991; Bleek 1981; Huntington et al. 1993). These included inappropriate timing of the pregnancy, fear of expulsion from school, financial difficulties, and uncertainties about the partner.

#### *Provider characteristics*

Several studies indicated that women seeking care for complications of unsafe abortion had sought their abortion outside of the hospital from traditional healers and chemists. However, two Nigerian studies found that among those women presenting at hospital for treatment of induced abortion complications, 32% and 18% of them had had their abortion performed by a medical practitioner (Okonofua et al. 1992; Archibong 1991, respectively). In yet another Nigerian study, almost one-third of the illegal terminations were performed by physicians, with two-thirds of the deaths in the last year of the study occurring in women who had obtained an abortion from a physician (Adewole 1992). Interviews with Kenyan nurses showed that they had limited and incorrect knowledge about safe methods for inducing abortion, the safest gestation period, and possible associated complications; however, 11% admitted to having performed an abortion (Kidula et al. 1992).

#### *Assessment of literature*

The published studies provide a wealth of descriptive, primarily hospital-based information about the magnitude of the problem of unsafe abortion in the region (e.g. epidemiological rates and/or ratios) as well as characteristics of abortion patients and

information about providers. In general, the findings indicate that women seeking care for abortion complications represent all women of reproductive age (i.e. married and single, young and old, low and high parity). Although the published literature reported that young, often unmarried women comprise a large percentage of abortion patients treated in hospitals, this finding reflects, in part, that many facility-based studies are conducted in urban teaching hospitals where single women, some still in school, are likely to seek treatment.

In general, the studies, mostly cross-sectional in nature, appeared to be well designed although there were differences in the definition of unsafe abortion, as well as in the methods for measuring outcomes, which made it difficult to compare and contrast findings. Measurements of maternal mortality based on hospital-based data should be interpreted with caution because of built-in selection bias associated with such study groups. In some studies, the total number of abortion patients (N) and/or deaths studied was very small.

Few longitudinal, case-control and intervention studies were described to yield estimates of risk. Similarly, the proportion of maternal deaths attributable to abortion complications varied by the population studied and other factors. However, the findings all point to a similar trend; that is, abortion-related complications are a major contributor to maternal mortality and morbidity in the region.

### Clinical issues

Twenty published articles described clinically-oriented investigations conducted in a number of SSA countries. The majority of these studies were from Nigeria (7) and Zimbabwe (4), and there was one multi-centre study from the region. A variety of study designs were used including retrospective record reviews, case-control studies and clinical trials. Both the gray and the published literature addressed traditional methods for inducing abortion.

Approximately half of the articles specifically addressed complications and treatment. Several reported on serious injuries resulting from poorly performed abortions. For instance, a Nigerian study found that the mortality rate among 11 septic abortion patients with bowel perforation was high, at 64% (Megafu 1980). Another retrospective review of 647 septic abortion patients in South Africa found that 6.5% had undergone laparotomy, 5.4% had had a

hysterectomy, and 1.8% had died (Richards et al. 1985). Haemorrhage, shock, sepsis, cervical and vaginal lacerations, uterine and visceral perforations, tetanus, thromboembolic complications, pelvic inflammatory disease (PID), and infertility were all complications noted in the published and gray literature. Another two articles reported on the use of antibiotics to treat abortion complications (Abudu et al. 1986; Seeras 1989).

The sequelae of unsafe abortion were the focus of a multi-centre study supported by the World Health Organization (WHO). This study (n=approximately 5800) attempted to determine the extent to which sexually transmitted diseases (STDs), PID, and post-partum/postabortion infections are associated with bilateral tubal occlusion (BTO) in infertile couples (WHO 1987). In Africa, the authors found a stronger association between the occurrence of BTO and the number of previous live births than between BTO and the number of previous abortions. For all regions studied, the researchers found that STDs and pregnancy complications affect the magnitude of the occurrence of BTO and other infection-related infertility; however, they found that the most widespread problems occur in Africa.

Nine studies focused on various clinical techniques for inducing abortion. Of these, two studies described the use of PGF<sub>2α</sub> for legal mid-trimester induced abortion (Guidozzi et al. 1992; Rogo and Nyamu 1989), one reported the findings of research on misoprostol (Cytotec) for inducing abortion (Bugalho et al. 1993), and 6 evaluated the use of manual vacuum aspiration (MVA)<sup>10</sup> for the treatment of incomplete abortion. Numerous other studies reported on the use of alternative, including traditional, methods for terminating pregnancy.

Both of the studies that reported on the use of PGF<sub>2α</sub> involved extra-amniotic instillation of the prostaglandin; however, their results differed markedly. The South African study (n=319) (Guidozzi et al. 1992) reported complication rates five times higher than those reported in other studies involving suction termination, yet the Kenyan study (n=58) (Rogo and Nyamu 1989) reported no major complications and low rates of minor complications. The Mozambique study on the use of intravaginal misoprostol (n=169) found the drug to be at least as effective as other prostaglandins for pregnancy termination between 12-22 weeks gestation, independent of patient characteristics (Bugalho et al. 1993).

Six studies evaluated the use of MVA<sup>11</sup> versus sharp curettage in the management of abortion complications. A prospective study in Zambia (n=approximately 13 000) concluded that MVA improves services, as measured by better quality of care, more efficient patient flow and lower levels of pain control, resulting in the ability to provide post abortion family planning services immediately following the procedure (Bradley et al. 1991). One descriptive study in Nigeria (n=375) (Ekwempu 1990) and a randomized study conducted at a Kenyan hospital (n=585) (Kizza and Rogo 1990) both found short hospital stays (significantly shorter in the Kenyan study) to be a benefit of the MVA technique. A longitudinal study in Zimbabwe (n=1423) revealed MVA to be more effective than sharp curettage, as measured by statistically significant lower rates of uterine re-evacuation; the same study found MVA to be more acceptable to patients, as measured by less reported pain and lower rates of infection and other post-procedure complications (Mahomed et al. 1994). Another Zimbabwean study (n=357) found lower mean intra-operative blood loss and higher mean haemoglobin levels at follow-up among the MVA versus the sharp curettage group (both findings were statistically significant) (Verkuyl and Crowther 1993). Finally, the use of MVA for performing menstrual regulation (MR)<sup>12</sup> procedures was assessed by a Kenyan study (n=223) (Oyieke 1986). The author found this evacuation technique to be quick and to result in low blood loss and high rates of complete evacuation (96%), with very few immediate complications. All of these studies recommended that MVA be more widely used for treatment of incomplete abortion and legally available MR.

Other studies examined women's and providers' use of alternative abortion methods. A Burkina Faso study (n=61), for example, found that schoolgirls had used a wide variety of alternative methods for inducing abortion, including: modern chemical compounds (such as indigo, potassium permanganate, a 20-tablet dose of chloroquine, and large quantities of instant coffee powder); traditional chemical compounds (such as leaves, roots and large quantities of honey with no other food for several days); in addition to modern methods (such as medical abortion) (Görge et al. 1993). The most dangerous method mentioned was swallowing beer-bottle glass ground into mortar. Among nurses who admitted to having performed an abortion for another person in the past (n=218), 82.1% had used medications,

63.6% had inserted an object into the vagina, and 48.2% had used traditional herbs (Kidula et al. 1992). Traditional Yoruba healers (n=106) were found to have used even more questionably effective methods of inducing an abortion, including medical soap or cream, sacrifice, consultation of the oracle, and scarification (Oyebola 1981).

#### *Assessment of literature*

The clinical research highlights the negative health consequences of unsafe abortion when not performed by skilled providers in hygienic conditions – sepsis, haemorrhage, and sometimes death. The research on MVA as a technique for uterine evacuation was, in general, of high quality. In most of the investigations, both safety and effectiveness of the two techniques were assessed, the number of cases was large enough to make valid generalizations, and two of the studies – intervention in nature – involved random assignment to MVA or sharp curettage groups.

The quality of the other clinical studies varied, however. For instance, the two studies on PGF<sub>2α</sub> (Guidozzi et al. 1992; Rogo and Nyamu 1989) were descriptive and did not compare the use of this drug with dilation and evacuation for mid-trimester procedures. The studies involved different sample sizes and different populations which could explain, in part, why the authors' conclusions differed so much. The study on the use of the prostaglandin Cytotec (Bugalho et al. 1993) had no control group and the results, therefore, should be viewed as exploratory until further research can be conducted.

#### **Cost issues**

Cost-related issues were mentioned in many of the published articles reviewed for this monograph (Johnson et al. 1993; Konje et al. 1992; Figà-Talamanca et al. 1986; Omu et al. 1981; Archibong 1991; Okonofua et al. 1992; Aggarwal and Mati 1982; Binkin et al. 1984; Aggarwal and Mati 1980; Bradley et al. 1991). Brief descriptions of the cost of obtaining an induced abortion, the average length of stay for women treated for abortion complications, and the time needed to perform an evacuation procedure were among the points cited. Only three published articles, however, focused primarily on health care facility costs associated with abortion complications (Johnson et al. 1993; Konje et al. 1992; Figà-Talamanca et al. 1986).

The first study, conducted in Kenya, found that the average length of stay was markedly shorter for those patients treated with MVA versus sharp curettage (76% shorter in one hospital and 49% shorter in a second); the reduced patient stay resulted in lower hospital costs, and most likely, reduced loss of potential patient earnings. This same study found that the cost of treating incomplete abortion patients with MVA was much less than that associated with sharp curettage. The average cost per sharp curettage patient in one district hospital in Kenya was US \$15.25; when MVA was used the cost decreased by 66% (to US \$5.24). These cost reductions reflected decreases in the amount of resources used such as staff time, bed space and pain medication to treat incomplete abortion patients.

The second study, carried out in Nigeria in the 1980s, found that abortion patients presenting with sepsis remained in the hospital an average of 26.4 days, and that average treatment costs for a septic abortion patient (at the time of the study) were US \$223.11 (Konje et al. 1992).

Another Nigerian study, conducted in the 1970s, reported an average stay of 10.5 days for patients treated for complications of induced abortion and 7.5 days for treatment associated with complications of spontaneous abortion (Figà-Talamanca et al. 1986).

Only one gray literature article addressed the cost issue. A Tanzanian study estimated the mean cost of obtaining an induced abortion at US \$22.00; this compared to an average patient monthly wage of US \$12.50. In addition, the study found that it cost the hospital an average of US \$7.50 per patient to treat abortion complications compared to an annual MOH per capita budget of US \$1.00 (Mpangile et al. 1992).

#### *Assessment of literature*

Very little information exists on the cost of treating complications of unsafe abortion, although many authors speculated that this service consumes a disproportionate amount of scarce hospital resources. Most of the published literature that did discuss cost issues focused on the average length of stay.

The Kenyan study was the only one to describe methods used for calculating costs (Johnson et al. 1993). This gap should be addressed in future research so that the soundness of methodologies used can be assessed.

#### **Contraception and abortion**

Of the 15 published articles reviewed which focused on the relationship between contraception and abortion (including post-abortion family planning services), more than 60% were from Nigeria. The remainder had either a regional or country focus, including Kenya, Tanzania, Uganda and Zaire.

In more than half of the articles, adolescents were the primary study population. In most of these studies, data were collected through school-based interviews using either self- or interviewer-administered questionnaires. The remaining articles focused on all women of reproductive age. Three of these involved the use of hospital-based patient interviews, two involved community-based interviews, and another involved interviews with traditional healers. The remaining two articles were a review of findings from the World Fertility Survey (WFS) and Contraceptive Prevalence Survey (CPS) for various SSA countries, and a commentary on unwanted pregnancy.

Although a variety of methodologies were used, the majority of the adolescent studies aimed to examine adolescents' knowledge, attitudes and practices associated with contraceptive use and abortion. Several studies found a high number of adolescents to be sexually active (Agyei et al. 1992; Nichols et al. 1986; Lema 1990) – up to 76% of non-student male adolescents in one Nigerian study (Nichols et al. 1986). Correspondingly, a fair number of adolescents also reported having been pregnant; 25.6% in one Ugandan study and almost 50% of the female student population in the Nigerian study (Agyei 1992; Nichols et al. 1986, respectively). And, a significant number of those who had become pregnant had sought an induced abortion; 17% in the Ugandan study, and almost all in the Nigerian study. Contraceptive use varied widely in the literature reviewed; a notable finding in the Nigerian study was that sexually active females who had had an induced abortion were *less* likely to be currently using contraception than those who had never been pregnant (Nichols et al. 1986).

Reasons given for non-use of contraception by adolescents were similar across studies: fears about the safety of contraceptives, lack of knowledge about family planning and lack of access to services. Interestingly, focus group results from Nigeria and Kenya suggested that the adolescent respondents had

more accurate knowledge about and more positive attitudes towards abortion than towards family planning (Barker and Rich 1992). Another study found a gender-related difference in attitudes toward family planning or abortion. A Nigerian study of secondary school students found that more female than male students were favourable towards abortion while more male than female students advocated use of contraceptives to prevent abortion (Oshodin 1985).

Only one article focused on postabortion family planning, examining the use of contraceptive methods by unmarried adolescents in Nigeria following contraceptive counselling (Ezimokhai et al. 1981). This study found oral contraceptive discontinuation rates at the end of the 2½ year study period to be higher (72%) among those women treated for abortion complications than among a similar socio-demographic group of general family planning clients (50% discontinuation rate).

Many published studies examined attitudes toward and use of contraceptive methods among all women of reproductive age. One notable facility-based study in Nigeria reported on pregnancies due to method failure among family planning clients, and found that less than 1% of those interviewed had experienced contraceptive failure (Ogedengbe et al. 1991).

Two community-based studies also provided insight into contraceptive use (Olukoya 1987; Shapiro and Tambashe 1994). In both studies, contraceptive use was low and in the Nigerian study (Olukoya 1987), 70% of the women were using either abstinence, no method, or relatively ineffective contraceptive methods following their abortion. Interestingly, in this study those women who had a history of abortion had a *higher* rate of previous family planning use than the group as a whole.

The author of a retrospective review of WFSs and CPSs concluded that abortion was being used to control entry into childbearing or to change the starting pattern of fertility, and therefore, did not indicate a desire to limit fertility (Frank 1987).

The gray literature identified repeat abortion as a problem. According to some researchers, most abortion patients had never used a modern method of contraception, reportedly due to a lack of knowledge or access (Alihonou 1993; Family Planning Association of Madagascar 1994). The authors recommended intensifying family planning services for men and

women; expanding family planning services to include a strong educational component, especially for adolescents; liberalizing abortion laws; and making safe abortion services more widely available.

#### *Assessment of literature*

Although the quality of the research varied, the studies indicated that contraceptive use is limited, that induced abortion is not uncommon, and that serious obstacles remain to increasing the use of family planning methods (e.g. misconceptions about the risks of contraceptive use). One of the most striking findings is the virtual absence of research on post-abortion family planning. Based upon the existing literature, serious gaps remain in our understanding of the relationship between contraception and abortion.

#### **Male perspectives**

Only one published article, an opinion survey of male Nigerian undergraduates studying in the US, focused specifically on males' perspectives toward abortion (Adebayo and Nassif 1985). Almost two-thirds (64%) of the males surveyed for this article stated that they were opposed to abortion, and an additional 17% were uncertain. Those with fewer children and those with no male children were significantly more likely to be against abortion, while those who were unmarried were more likely to favour abortion. The authors concluded that values and opinions acquired in one's own culture are often preserved, despite exposure to Western culture.

The gray literature, although limited, was able to provide some additional insights into the role of men in the decision to terminate a pregnancy. According to one study from Tanzania, 30% of the women seeking treatment in public hospitals for complications of unsafe abortion became pregnant by casual partners, 12% of the married women became pregnant by men who were not their husband, and 31% of the teenagers (17 years and below) became pregnant by men age 45 or older (Mpangile et al. 1992). Findings such as these support the contention that spousal authorization for post-abortion services could be a significant barrier to access and timely care (Armstrong 1987). Post-abortal psychological support from the male partner often was found to be lacking, although a number of studies indicated that male partners usually pay for the woman's care.

#### *Assessment of literature*

The paucity of literature on male perspectives on abortion underscores the need for additional research



on this topic. The one published article that was available was methodologically weak due to the lack of baseline or other comparative data and problems in how questions were worded. The gray literature (and references to male involvement in articles covered in other topic areas) does seem to indicate that male partners are not actively involved in decisions related to *how* and *where* the abortion procedure is performed, except perhaps to provide financial support.

### Abortion laws

The relationship between abortion and the law was examined as the primary focus in 18 published studies, although numerous studies reviewed in the other topic areas recommended legal reform to help address the negative health consequences of restrictive laws. Seven articles were on abortion laws in South Africa, three were on Nigerian laws, four had a regional perspective (e.g. Commonwealth or Francophone Africa), and the remaining focused on laws in individual countries (including Botswana, Mauritius, Swaziland, Tanzania, Zambia, and Zimbabwe).

Abortion laws in many SSA countries trace their origins to English or French legal codes (Cook and Dickens 1981; Knoppers et al. 1990). They are therefore generally restrictive, allowing legal abortion only for a narrow range of indications such as saving the life of the woman. In addition, some laws include procedural requirements, for example, consultation with more than one medical professional, committee approval, etc. Of note, the author of overviews of the Nigerian abortion law pointed out that, despite the existence of such laws, authorities in that country were reluctant to prosecute medical practitioners for performing abortions or women for obtaining them (Okagbue 1988; Okagbue 1990).

Law reform was recommended in many of these articles so that the legal code for abortion reflects a public health rather than a criminal orientation. Suggestions for reform included: clarification of current law; broadening the indications for legal abortion; removing the liability for women who seek, and providers who perform, abortions; and clarification of the requirements for health facilities offering pregnancy termination. One author noted, however, that methods used for fertility regulation before pregnancy can be confirmed (i.e. before 'quickening' – usually 12 to 14 weeks after the LMP) can

already be *legally* introduced into Commonwealth countries based upon a strict interpretation of the law (Cook 1983).

Three published articles, two from South Africa and one from Zambia, commented on the administrative requirements and other conditions which create barriers for women seeking abortion. One study argued that the restrictive bureaucratic regulations of the 1975 South African Abortion and Sterilization Act have resulted in lower access to legal abortion services for black South Africans who live in the poor, more rural, areas where the appropriate medical professionals are not available (Sarkin-Hughes and Sarkin-Hughes 1990). In support of this statement the authors note that 78% of legal abortions performed in 1984–5 were for white women. This argument is further borne out by the second South African article which reported on the experience of a hospital psychiatry department in providing referrals for abortion on psychiatric grounds (Nash and Navias 1983); over a six-year time period, only 10 black women were referred for psychiatric reasons compared to 919 white women and 328 coloured women.

The Zambian article explained that even though abortion is legal in that country, burdensome administrative requirements and the provision of legal abortion services in only one teaching hospital in the whole country, limit women's access to safe services (Castle et al. 1990). The result is that many women resort to unsafe abortions to terminate their pregnancies.

In addition to articles on the legal situation in SSA countries, two published articles reported on the opinions of South Africa's gynaecologic and psychiatric professional societies on the country's abortion law (Dommissie 1980; Nash et al. 1992). Although the studies were conducted about 10 years apart, the majority of both groups (over 80% of the gynaecologists and 89% of the psychiatrists) supported changes in the law. Large percentages of both groups supported pregnancy terminations in populations such as the very young (e.g. under 14 or 16) or older women (e.g. over 40), those experiencing failed contraception, or those of high parity (e.g. 6 or more). Just over half of the psychiatrists and 32% of the gynaecologists supported abortion on request.

In addition, three published opinion pieces presented various arguments for maintaining or liberalizing

restrictive abortion laws. Several authors indicated that, although few abortion cases are actually prosecuted, those that are tried in court have a major inhibiting effect on other women in terms of seeking safe abortion services.

Legal advocacy efforts within SSA countries were also well documented, with four published articles offering accounts of efforts to reform abortion laws in individual countries. A South African activist described the (unsuccessful) efforts of an advocacy group to pressure the government to approve first-trimester legal abortion on request (Cope 1993). Legal reform efforts in Mauritius (unsuccessful) and Botswana (ultimately successful in the early 1990s) were also presented in separate articles (Muvman Liberasyon Fam 1988; Mogwe 1992, respectively). The success of the effort in Botswana is notable, given that the impetus for change came from medical professionals rather than from women's or human rights' organizations. In another document, a Nigerian gynaecologist argued that restrictive laws encourage clandestine abortions which are performed by poorly trained practitioners working in unsanitary conditions (Ladipo 1986).

#### *Assessment of literature*

Numerous articles addressed the fact that legal abortion is restricted to a very limited set of circumstances in the region. In most instances, the published literature on legal issues was well-referenced and helped to place abortion laws in the region in historical and legal context. Although using different methodologies (e.g. reviews of legal and administrative codes, opinion surveys, descriptions of advocacy efforts) and writing from a variety of perspectives, virtually all of the authors concluded that restrictive laws negatively affect women's health, primarily because clandestine, unsafe abortions occur in greater numbers in such environments.

#### **Conclusion**

Much is already known about the negative consequences of unsafe abortion, and providers and programme managers should be continually striving to apply that knowledge in order to improve the quality of their services (see Table 1). At the same time, there is still much to learn about the complications of unsafe abortion, and many of these issues are now presented below as recommended for future research in this field.

**Table 1.** Lessons learned from a review of studies on the complications of unsafe abortion in sub-Saharan Africa

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- Abortion procedures performed in an unsafe environment or by an unskilled provider are a major public health problem; are responsible for a large proportion of maternal morbidity and mortality; and affect women of all ages, ethnic backgrounds, educational levels, and marital arrangements.
  - Complications of unsafe abortion affect women in the prime of their lives; result from unsafely-performed induced abortion procedures, including self-induced abortion; can be severe enough to cause infertility, chronic illness, or death; and can be managed through the use of a technology which is safer than and as effective as sharp curettage for uterine evacuation – manual vacuum aspiration.
  - Treatment of complications of unsafe abortion consumes vast amounts of scarce monetary and human resources. These resources can be more efficiently utilized through improvements in treatment services and provision of preventive health care.
  - Unsafely induced abortions are the inevitable consequence of: high numbers of sexually active adolescents; extremely low levels of knowledge about family planning among all women, especially concerning safe, modern contraceptive methods; lack of access to modern contraceptives; and low continuation rates, either caused or exacerbated by fears about family planning method safety as well as the absence of routine post-abortion family planning services.
  - Opinions of males, as partners, practitioners, and policymakers, are critical in determining women's access to contraceptives and safe treatment services, in addition to women's continued effective family planning use; yet men's perspectives have remained virtually unstudied.
  - National laws that are overly restrictive or that require stringent, complicated administrative approvals prior to receiving care needlessly restrict women's access to safe abortion procedures, thus fostering the proliferation of unsafe, clandestine abortions.
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#### **Context of abortion research**

Over the last 15 years, abortion research in sub-Saharan Africa, as well as in other regions, has been influenced by a complex set of factors. United States government policies which restricted funding for abortion-related activities, the sensitivity of the topic in many regions of the world, and the methodological difficulties inherent in conducting high-quality research about clandestine abortion have all contributed to notable gaps in our understanding of the issue. The fact that a sizeable body of published and unpublished literature exists from sub-Saharan Africa is testament to the magnitude of the problem and the significance of the issue to health and other professionals involved in the region.

Recent changes in the policies of the United States government, along with those of many other governments, coupled with a new focus on integrated women's reproductive health by the international community, have resulted in a resurgence of research about unsafe abortion. Methodological challenges and suggestions for addressing them have been described by various researchers (Barreto et al. 1992; Coeytaux et al. 1989). New and modified approaches for studying specific issues about abortion have been implemented in a variety of settings (Huntington et al. 1993; Anderson et al. 1994; Abernathy et al. 1993). While these and other methodologies will refine our understanding of the factors associated with unsafe abortion, the suggestion that complications from unsafe abortion are a major health problem in the region is well supported from available evidence.

### Research for the future

The most glaring gap in the epidemiological research is the lack of knowledge about the magnitude of abortion complications at the population level; specifically, the number of women who do not seek care in public facilities because: 1) they only have minor complications; 2) they cannot or choose not to seek care in such facilities; 3) their complications have been attended to through other channels (e.g. private practitioners); or 4) they die before receiving medical treatment. Community-based studies should be conducted to complement the wealth of hospital-based data in order to gain a clearer picture of the true magnitude of unsafe abortion complications in the region.

Other facets of the problem of unsafe abortion must also be studied. For instance, research on long-term sequelae of unsafe abortion (e.g. chronic disabilities) and on special populations (e.g. adolescents, HIV-positive women) is needed. In addition, no studies report on pain control and perceptions of pain from the woman's point of view. Clinical studies which evaluate the effectiveness of different combinations of pain control medications and abortion treatment modalities are needed. Specifically, additional clinical studies on antibiotic therapies for incomplete abortion patients is one area of recommended focus, given the use, in many instances, of unsafe techniques to induce abortion, and the high prevalence of sexually-transmitted diseases among some populations of women. This research should be complemented by strengthening and disseminating international

guidelines on antibiotic use to assist clinicians in the treatment of incomplete abortion and other complications.

Another information gap relates to clinical practice at the lower levels of the health care system. Carefully controlled studies which examine uterine evacuation, stabilization of patients, and referral by non-physician providers at first-referral and primary-level facilities would determine the feasibility of and methods for bringing safe post-abortion care close to the majority of women who need it. Finally, the infrastructural, personnel and follow-up requirements for providing induced abortion services (whether using MVA, sharp curettage, or mifepristone), where legally indicated, should be evaluated so that safe, high-quality abortion services can be expanded.

The paucity of literature on the cost of treating abortion complications makes this one of the most wide-open, potentially fruitful, areas for future research. Investigations should examine system-wide resources expended, including an analysis of opportunity costs (e.g. long-term productivity losses due to morbidity and mortality from unsafe abortion). The definition of cost should be expanded to include measurements of the psycho-social and economic costs to families and communities as a result of abortion-related maternal deaths and disabilities. In addition, cost-benefit analyses of interventions are needed; for example, cost savings from the introduction of post-abortion family planning or liberalization of the laws (which would hypothetically decrease the number of late and complicated abortions) could be examined.

Although the linkage of treatment of abortion complications and post-abortion family planning seems a natural one – in order to prevent future unwanted pregnancy – it is one that most researchers and providers currently do not make. Studies on the effect of post-abortion family planning programmes on contraceptive acceptance, future contraceptive use, unintended pregnancy rates and repeat abortion are essential. Future hospital-based operations research is crucial in order to identify the most effective ways to link emergency treatment of abortion complications and family planning programmes. In addition, the relationship between abortion and contraception over time has not been well examined (e.g. what are the contraceptive antecedents to an unintended or unwanted pregnancy and subsequent abortion?). Qualitative data collection methods would be appropriate to examine women's fears about contraceptives

and the effect of an abortion experience on future contraceptive use.

Studies on males as partners, providers, and decision-makers are also grossly lacking. Understanding males as partners – specifically in terms of the decision to seek an abortion, the level of emotional and economic support offered to women seeking an abortion, the decision to initiate and continue the use of contraception, and how each of these may vary between married and unmarried couples – is crucial to improving the reproductive health of women. In addition, males in SSA are in the majority among practitioners who provide (legal) induced abortions or treatment services, and among policymakers who make decisions about the national priority given to women's reproductive health issues. Thus, a thorough understanding of male perspectives on these issues, and factors which affect male decision-making in these areas, is critical.

While articles on the current legal environment abound, studies on the impact of legal restrictions and/or reform are needed. Analyses of the feasibility of legal reform in a variety of political, cultural, and

religious settings, and studies on the impact of other reproductive health laws and policies on women who seek abortions should be conducted. For example, regulations that prohibit contraceptives for adolescents or require spousal consent are particularly onerous for those treated for abortion complications, since they will continue to be at risk for a subsequent unwanted pregnancy.

The need to conduct this research should not be used as an excuse to delay decisions or actions, but rather, the findings from the research should be constantly used by managers and providers as a tool for assessing their programme options and management of their services. Unsafe abortion has been clearly identified and documented as a major public health problem in the region. What is needed now are concrete programmatic plans to address the problem, and directed *action* on the research agenda (see Table 2) to provide programme managers and providers with relevant information to aid them in improving their services in the future.

**Table 2.** Action needed on the research agenda

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- Document the magnitude of abortion complications at the population level and determine the long-term sequelae of unsafe abortion.
  - Set up clinical studies to evaluate different combinations of pain control medications and procedures; options for antibiotic therapy and other treatment regimens; and provision of post-abortion care by non-physician providers.
  - Document work-years and income lost to abortion-related morbidity and mortality; health system-wide resources expended on post-abortion care; and projections of the amount of resources saved with increased accessibility to and use of organized post-abortion services.
  - Conduct operations research on the integration of emergency treatment with family planning services; decentralization of post-abortion care; organization of treatment services; and other similar topics to address quality and accessibility of care.
  - Examine the social, cultural, and economic context within which induced abortion occurs, the role of males as partners, as service providers, and as policymakers; and the relationship between contraceptive use and abortion.
  - Prepare case studies that describe experiences with the provision of safe, legal abortion services in countries where the abortion law has been liberalized (in order to identify constraints and lessons learned).
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## Endnotes

<sup>1</sup> Unsafe abortion is defined as a procedure for terminating unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards or both (World Health Organization. 1993. *The Prevention and Management of Unsafe Abortion: Report of a Technical Working Group*. Geneva. 12-15 April 1992 (WHO/MSM/92.5). Geneva: Maternal Health and Safe Motherhood Programme, Division of Family Health, World Health Organization, p. 3).

<sup>2</sup> Botswana, Kenya, Lesotho, Malawi, Mauritius, Namibia, Seychelles, South Africa (added November 1994), Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. In May 1995, the CRHCS changed its name to the East, Central and Southern Africa Health Community (ECSAHC).

<sup>3</sup> These three countries were selected for the primary data collection activities because they met a set of criteria outlined during the planning phases of the study. These included membership as one of the Eastern, Central and Southern Africa (ECSA) Commonwealth countries, little abortion research conducted to date, limited major research currently underway, and a situation of potential interest to the field. Specifically, Uganda and Malawi represented countries where a limited amount of previous or current research was conducted; Malawi was also the site of the upcoming 1994 meeting of the Commonwealth Health Ministers where a draft of the monograph was to be presented; and Zambia has a liberal abortion law which is unique in the region.

<sup>4</sup> Kinoti SN et al. *Monograph on Complications of Unsafe Abortion in Africa*. Arusha, Tanzania: CRHCS, 1995.

<sup>5</sup> The MRR is technically a ratio but historically has been referred to as a rate (Mausner J, Bahn A. 1974. *Epidemiology: An Introductory Text*. Philadelphia: WB Saunders Co., p. 195).

<sup>6</sup> Over a two-year period, 60 maternal deaths were identified (Mhango et al. 1986); over a six-year period, 216 maternal deaths were identified (Yoseph and Kifle 1988).

<sup>7</sup> Of 239 maternal deaths over a five-year period, five were attributed to abortion. The authors suggest that the low number of abortion-related deaths is a result of under-reporting.

<sup>8</sup> During the 12-month study period, 123 deaths registered in health institutions and 11 community deaths occurred. Of these, 19 maternity unit deaths (15%) and 6 community deaths (54%) were due to abortion complications.

<sup>9</sup> Of pregnancies reported for 9315 women, 45 maternal deaths occurred during the two-year study period. Twenty-four of these were direct obstetric deaths, 13 attributable to abortion complications.

<sup>10</sup> MVA is a technique for uterine evacuation. The MVA instrument consists of a portable, hand-held, single- or double-valve syringe and an assortment of flexible plastic cannulae. The instrument can be used for treatment of incomplete abortion and induced abortion at 12 weeks gestation or less. In addition, MVA can be utilized for obtaining samples for endometrial biopsy (Greenslade FC et al. 1993. *Manual Vacuum Aspiration: A summary of clinical and programmatic experience worldwide*. Carrboro, North Carolina: IPAS, p. ix).

<sup>11</sup> It is important to note that in some of the studies, MVA was used on women presenting at more than 12 weeks since their last menstrual period (LMP). The package insert of the MVA kit clearly states, however, that the Karman cannula and syringe should be used *only* for uterine evacuations at 12 weeks LMP or less. IPAS produces and distributes the MVA kits.

<sup>12</sup> Menstrual regulation (MR). 'This term refers to use of the manual vacuum aspiration technique with a hand-held syringe for termination in very early pregnancy and sometimes refers to uterine evacuation when pregnancy has not been confirmed.' (World Health Organization. *Complications of Abortion: Technical and Managerial Guidelines for Prevention and Treatment*. Geneva: WHO, 1995)

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