The Incidence of Induced Abortion in Uganda

CONTEXT: *Although Uganda's law permits induced abortion only to save a woman's life, many women obtain abortions, often under unhygienic conditions. Small-scale studies suggest that unsafe abortion is an important health problem in Uganda, but no national quantitative studies of abortion exist.*

METHODS: *A nationally representative survey of 313 health facilities that treat women who have postabortion complications and a survey of 53 professionals who are knowledgeable about the conditions of abortion provision in Uganda were conducted in 2003. Indirect estimation techniques were applied to the data to calculate the number of induced abortions performed annually. Abortion rates, abortion ratios and unintended pregnancy rates were calculated for the nation and its four major regions. Data on contraceptive use and unmet need were obtained from Demographic and Health Surveys.*

RESULTS: *Each year, an estimated 297,000 induced abortions are performed in Uganda, and nearly 85,000 women are treated for complications. Abortions occur at a rate of 54 per 1,000 women aged 15–49 and account for one in five pregnancies. The abortion rate is higher than average in the Central region (62 per 1,000 women), the country's most urban and economically developed region. It is also very high in the Northern region (70 per 1,000). Nationally, about half of pregnancies are unintended; 51% of married women aged 15–49 and 12% of their unmarried counterparts have an unmet need for effective contraceptives.*

CONCLUSIONS: *Unsafe abortion exacts a heavy toll on women in Uganda. To reduce unplanned pregnancy and unsafe abortion, and to improve women's health, increased access to contraceptive services is needed for all women.*

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Under Ugandan law, induced abortion is permitted only when pregnancy endangers a woman's life. Legal abortions are very rare, given the restricted grounds, the demanding process for obtaining approval (for example, providers typically require certification from three doctors, even though the law does not require this), and the likelihood that many providers and women are unaware of the specifics of the abortion law.[1] Yet, studies carried out in the 1990s show that many women obtain induced abortions in Uganda, often from untrained personnel using unsafe methods. According to studies conducted in some large hospitals, unsafe abortion is a leading cause of maternal morbidity and mortality in the country.[2] A 1992–1993 study in three Kampala hospitals found that 21% of maternal deaths were due to abortion-related complications.[3] At about the same time, complications from abortions constituted more than half of admissions to the gynecologic emergency unit in another Kampala Hospital.[4] The World Health Organization estimates that 880 maternal deaths occurred per 100,000 live births in Uganda in 2000.[5]

Measures of fertility preferences, contraceptive use and unmet need for contraception suggest that the level of abortion in Uganda is high.[6] On average, Ugandan women have two more children than they want; 38% of all births in the five years preceding the 2000–2001 Demographic and Health Survey (DHS) were unplanned, compared with 29% in the five years preceding the 1995 survey. Desired family size has declined substantially in recent years (from 6.5 children in 1988 to 4.8 in 2000–2001); nevertheless, the proportion of married women currently using a contraceptive method, while rising, remains low (23% in 2000–2001, compared with 5% in 1988). Moreover, only 14% use a modern method. Sexually active unmarried young women also are at risk of having an abortion if they become pregnant, given that childbearing outside of marriage is stigmatized. One in five unmarried Ugandan women aged 15–24 are sexually experienced, and one in 10 are currently sexually active. Two in five of those who are sexually active use a modern contraceptive method, but the rest are at risk of an unwanted pregnancy.

Maternal death and illness resulting from unsafe abortion represent an important public health problem in Uganda. Policymakers are aware of the situation. Still, many needs compete for the country's scarce resources (annual per capita income is $270).[7] And the lack of data on the incidence of induced abortion and the magnitude of the public health burden of treating postabortion complications makes it difficult to describe the problem, to focus public attention on it, and to design postabortion care and contraceptive services to address it.

In this article, we present estimates of abortion incidence and morbidity in Uganda. We also present estimates of the

level of unintended pregnancy and provide a broad perspective of the context within which unintended pregnancy and abortion occur, by discussing recent trends in fertility preferences, contraceptive use, risk for unintended pregnancy and levels of unmet need.

DATA AND METHODS

Data Sources

The key data sources for the estimates of abortion incidence were surveys of health facilities and providers designed and fielded for this study, as described below. The study design and protocols were adapted from those of prior research for which an indirect method for estimating abortion incidence was developed.[8] In addition, the 1995 and 2000–2001 Uganda DHS surveys, each of which included more than 7,000 women aged 15–49, were used for information on fertility, contraceptive use, wantedness of births and unmet need for contraceptive services.

•*Health Facilities Survey.* All health facilities (i.e., formal service delivery points managed by trained providers) considered likely to provide medical care for women with abortion complications were included in the sample frame. The government, private and nongovernmental (NGO) sectors all include hospitals and four levels of health centers; the latter are categorized by level of capabilities (I–IV). Clinics operated by private midwives, an important group of providers of postabortion care, are classified as private facilities.[9] Using available information, we determined that the sample frame should include all hospitals, private midwives, and level III and IV health centers, because these facilities provide postabortion care. Lower level health centers provide primary health care only and refer women with abortion complications elsewhere.

Using the most recent Ministry of Health list of health facilities in Uganda, we identified 96 hospitals, 163 level IV health centers and 787 level III health centers for inclusion in the sample frame. The most up-to-date registry of the Private Midwife Association served as the basis for selecting a nationally representative sample of private midwives. A limitation of this list is that it omits the estimated 10–15% of private midwives who are not affiliated with the association.[10] A total of 536 private midwives were included in the registry. Thus, our sample frame consisted of 1,582 facilities, of which 52% are governmental, 36% are private (including midwives) and 12% are operated by NGOs. Six percent of facilities are hospitals, 10% are level IV health centers, 50% are level III health centers and 34% are sites operated by midwives.

A stratified multistage sample design was used. The master list of all health facilities was organized by type of facility and, within each type of facility, by major region of the country. Within these strata, facilities were ordered according to ownership (public, private or NGO). Next, we chose sample fractions that represent each type of facility's degree of importance, such that facility types that are recognized as more likely to be treating large numbers of women with abortion complications were assigned a higher probability of being selected into the sample. Because hospitals are the most important source of treatment for abortion complications, all hospitals were included. Initial sample fractions were 33% for level IV health centers, 14% for level III health centers and 10% for midwives. These fractions were then increased by 20% to cover potential shortfalls due to incorrect addresses, closures, failures to reach facilities and refusals. Facilities that were not successfully surveyed were not replaced. The final sample fractions were therefore 40% for level IV health centers, 17% for level III health centers, 13% for private midwives and 100% for hospitals (Table 1). The total number of facilities selected was 359.

At each selected facility, the senior staff member who was knowledgeable about the facility's provision of postabortion care was asked to complete the survey—in hospitals, typically the chief or another member of the obstetrics and gynecology department; in smaller facilities, typically the director or a health worker. These informants were asked whether their facility provides treatment of spontaneous and induced abortion complications in an outpatient setting, an inpatient setting or both; if treatment is provided, they were asked the number of abortion patients (spontaneous and induced combined) treated as outpatients and as inpatients, in the average month and in the past month. Specifying these two time frames increases the likelihood of accurate recall and of capturing variation from month to month. These two numbers were averaged and multiplied by 12 to produce an estimate for the calendar year.

Fieldwork was conducted in May–September 2003 by staff of the Obstetrics and Gynecology Department of the Makerere University Faculty of Medicine. The fieldwork staff, who attended a three-day training seminar, were organized into 11 teams, each consisting of three interviewers (nurses and midwives) and one coordinator (a physician), and covering one of the 11 areas that the Uganda

TABLE 1. Characteristics of sample, by type of facility and ownership, Health Facilities Survey, Uganda, 2003

Type of facility	No. of facilities				Sampling fraction (%)				Response rate (%)				No. interviewed			
	Total	Government	NGO	Private	Total	Government	NGO	Private	Total	Government	NGO	Private	Total	Government	NGO	Private
Total	**1,582**	**824**	**193**	**565**	**23**	**26**	**33**	**14**	**87**	**94**	**92**	**64**	**313**	**204**	**59**	**50**
Hospital*	96	53	38	5	100	100	100	100	97	98	95	100	93	52	36	5
Level IV health center	163	148	12	3	40	42	25	33	88	87	100	100	58	54	3	1
Level III health center	787	623	143	21	17	16	16	24	94	96	87	80	122	98	20	4
Midwife	536	na	na	536	13	na	na	13	60	na	na	60	40	na	na	40

*One military hospital was excluded because it does not provide treatment for abortion complications. *Note:* na=not applicable.

Association of Obstetricians and Gynecologists defines for its operations.

Of the 359 facilities sampled, 313 (87%) participated in the survey (Table 1). The response rate varied across regions: 80% in the Northern region, 85% in the Central region, 90% in the Eastern region and 93% in the Western region (not shown). It was 88–97% for hospitals and health centers, and 60% for midwives. Of the 46 nonresponding facilities, 25 were clinics run by midwives who could not be reached, mainly because the available contact information was incorrect; political instability in two northern districts prevented fieldwork from taking place in nine facilities. Seven facilities did not respond for various reasons, such as closure or duplicate listing; five gave no reason.

The survey data were weighted to project the results nationally, taking into account a facility's probability of selection into the sample and nonresponse, by major region, facility type and ownership. The weighting factor for a given facility type or sector was the inverse of that subgroup's sampling ratio multiplied by the proportion of completed interviews among sampled facilities. The decision regarding estimation of sample weights was based on government standards for each category of facilities, which ensures that facilities within a category are similar in size and caseload.

•*Health Professionals Survey.* The research team prepared a list of health professionals who were conversant with abortion provision and postabortion care, including medical doctors, researchers, policymakers, family planning administrators and women's rights activists. Factors considered in selecting respondents included their affiliation, expertise and experience, as well as their reputation among local stakeholders in the field of reproductive health for having extensive knowledge of and experience with postabortion care. A purposive sample of 54 health professionals was selected, and 53 were interviewed in March–August 2003.

Respondents came from eight of Uganda's 56 districts: Kampala, Mukono, Mpigi, Wakiso, Iganga, Jinja, Sembabule and Rakai. A particular effort was made to have sufficient representation of experts who were familiar with the context of abortion in rural areas; 52% had worked in rural areas for six months or longer, and almost three in 10 worked primarily in rural areas.

The Health Professionals Survey was designed to elicit respondents' perceptions of various aspects of induced abortion as it occurs in Uganda—where women obtain abortions, their probability of experiencing complications requiring medical care and the probability that women who need medical care receive it.

Estimating the Incidence of Induced Abortion

The total number of women having abortions in a year includes those who were treated for complications at a health facility, those who obtained care from a private doctor, those who received no care (including those who died before obtaining care) and those who had no complications. Thus, following an approach used in prior studies,[11] we estimated the incidence of induced abortion by first estimating the annual number of women receiving treatment for abortion complications and then applying a multiplier, or inflation factor, that represents the proportion of women having an abortion who do not need treatment or do not obtain it at a health facility.

TABLE 2. Measures related to calculating the number of women treated for complications of induced abortion at a health facility in 2003, by region

Region	Women treated for abortion complications*	Women with live births	Women with miscarriages†	Women with miscarriages treated in health facilities‡	Women treated for induced abortion complications§
Total	**109,926**	**1,254,812**	**42,789**	**25,168**	**84,758**
Central	42,929	370,851	12,646	11,154	31,775
Eastern	25,544	361,799	12,337	7,439	18,104
Northern	20,512	213,998	7,297	2,934	17,579
Western	20,941	308,164	10,508	3,641	17,300

*Includes both spontaneous and induced abortions. †Miscarriages at 13–22 weeks' gestation, calculated as 3.41% of all live births. ‡Calculation assumes that the proportion of women with miscarriages who obtain treatment is 1.5 times the proportion who deliver in hospitals. §The total number treated for any abortion complication minus the number treated for care of spontaneous abortions. *Sources:* **Women treated for abortion complications**—Health Facilities Survey. **Women with live births**—based on age-specific fertility rates from the 2000–2001 DHS and estimates of the number of women in each five-year age-group. **Proportion of women who deliver in hospitals**—based on the 2000–2001 DHS.

•*Women treated for abortion complications.* Using data from the Health Facilities Survey, we estimated that 109,926 Ugandan women are treated for complications of spontaneous or induced abortion in a year (Table 2). Because complications of induced and spontaneous abortion often are similar, and because legal restrictions on induced abortion may lead to underreporting, it is difficult to correctly categorize the cause of pregnancy loss; we therefore used indirect estimation to separate this total into complications of spontaneous and induced abortion.

We used available data on the biological pattern of spontaneous abortion, established by clinical studies,[12] and assumed that women having miscarriages at 13–22 weeks' gestation likely require care at a health facility.* Miscarriages at 13–22 weeks account for 2.9% of all recognized pregnancies, and live births for 84.8%; therefore, such miscarriages are equal to 3.4% of all live births. The estimated number of births in Uganda in 2003 was based on age-specific fertility rates from the 2000–2001 DHS and estimates for 2003 of the number of women in each five-year age-group, nationally and for the four major regions.†[13] According to these calculations, an estimated 1,254,812 live births and 42,789 late spontaneous abortions occurred in 2003 in Uganda (Table 2).

A further adjustment is needed because only a certain

*Although some women who miscarry at earlier gestations seek medical care, many likely are treated on an outpatient basis, and relatively few are hospitalized. Pregnancy losses at 23 or more weeks are not included because they are usually classified as fetal deaths rather than miscarriages.

†Detailed age-, sex- and region-specific population data were not available from the 2002 Uganda census. Therefore, we obtained the national number of women aged 15–49 by five-year age-group for 2003 from United Nations estimates (source: reference 13), and applied the age- and region-specific percentage distributions of women from the 2000–2001 DHS to obtain the number of women in each five-year age-group for each major region. To estimate the number of births for 2003, nationally and for each region, we multiplied the number of women in each five-year age-group by the age-specific fertility rate from the 2000–2001 DHS.

TABLE 3. Measures of postabortion care and abortion morbidity, by region

Measure	Total	Central	Eastern	Northern	Western
AVAILABILITY					
Facilities treating abortion complications					
Total no.	1,344	541	338	185	280
No. per 100,000 women 15–49	24	30	23	21	21
Beds in facilities treating abortion complications					
Total no.	34,178	12,056	6,997	7,514	7,611
No. per 100,000 women 15–49	622	674	475	857	561
ANNUAL ABORTION CASELOAD PER FACILITY					
All facilities that offer care	**82**	**79**	**76**	**111**	**75**
Type					
Hospital	358	440	375	259	328
Level IV health center	125	247	76	83	63
Level III health center	53	40	46	89	50
Private midwife	49	45	88	0	30
Ownership					
Government sector	85	99	69	104	81
Private sector	50	45	87	114*	34
NGO	139	159	108	132	128
ANNUAL ABORTION MORBIDITY					
No. of complications treated					
All abortions	109,926	42,929	25,544	20,512	20,941
Induced abortions	84,758	31,775	18,104	17,579	17,300
Rate of complications treated per 1,000 women 15–49					
All abortions	20	24	17	23	15
Induced abortions	15	18	12	20	13

*Based on one case. *Note:* Unless otherwise noted, data are for complications of spontaneous and induced

proportion of women who need treatment for complications of late spontaneous abortion will have access to a health facility. An initial estimate of this parameter is the proportion of women giving birth who deliver in a hospital: Nationally, 39.2% of women deliver at a health facility; the proportion is 58.8% in the Central region, 40.2% in the Eastern region, 26.8% in the Northern region and 23.1% in the Western region.[14] In a high-fertility setting such as that in Uganda, women may be more likely to seek medical care for an illness (such as abortion complications) than for what is expected to be a healthy event (such as delivery). If this hypothesis (although lacking empirical support) is plausible, the difference should be substantial, even though some women who have late miscarriages still would not obtain medical care. We assumed that the proportion of women experiencing late miscarriages who obtain care in health facilities is 50% higher than the proportion who attend such facilities for delivery (e.g., 58.8% vs. 39.2% nationwide). We thus estimated that each year, 25,168 women are treated in health facilities for complications of spontaneous abortion (Table 2).* Therefore, 84,758 women are treated for complications of induced abortion.

•*Number of induced abortions.* We derived the multiplier from information in the Health Professionals Survey, taking several factors into account. In general, the safer abortion services are, the higher the multiplier, because for every woman receiving treatment, many have abortions that do not result in complications requiring medical care. Likewise, the less safe abortion services are, the lower the multiplier, because a higher proportion of women have serious complications that require care. Safety is not the only consideration, however. The multiplier is also a function of the accessibility of health facilities. Where facilities are easily accessible, the proportion of women with complications who receive treatment will be higher. In poor regions or in underdeveloped areas, by contrast, some of the most seriously affected women may not get the treatment they need.

In the Health Professionals Survey, respondents were asked to estimate the distribution of women obtaining abortions according to type of provider. They also estimated the proportion of abortion patients who experience complications, according to provider type, and the proportion of women with complications who likely obtain care from a health facility. Because conditions vary greatly by socioeconomic status and place of residence, these questions were asked separately for each of four subgroups of women: urban poor and nonpoor, and rural poor and nonpoor. Multiplying these proportions, we obtained the percentage expected to be hospitalized for abortion complications among all women in each of the four subgroups who obtained an abortion. These percentages were weighted by the relative size of the groups nationally to arrive at a multiplier for the country as a whole. On the basis of these calculations, an estimated 28% of women undergoing an induced abortion likely receive treatment for complications. The national multiplier is the inverse of this proportion—3.5 (rounded from 3.54).

Given the assumptions underlying our estimates of the total number of abortions in Uganda, and the likelihood that the multiplier varies by region, area or subgroup, it is appropriate to present a range of estimates and to use the middle one as the recommended estimate. Therefore, we calculated a range of estimates, assuming that the multiplier varies between 2.5 and 4.5. Thus, the estimated number of induced abortions in a year is 2.5–4.5 times the number of women treated for complications.

Estimating Unintended Pregnancy

To calculate numbers and rates of unintended pregnancy, we first calculated the number of unplanned births by applying the proportion of births that are unplanned (mistimed or unwanted at the time of conception), from the 2000–2001 DHS, to the estimated total annual number of live births (procedure described above). Combining this number with the number of induced abortions yielded an estimate of the number of unintended pregnancies for 2003. We then calculated the rate of unintended pregnancies per 1,000 women of reproductive age and the proportion of pregnancies that were unintended.

Measuring Contraceptive Use and Unmet Need

We obtained the proportion of women using modern, or effective, contraceptive methods from the 1995 and the 2000–2001 DHS surveys. Effective methods are male and

*The estimated number of late miscarriages nationwide is 42,789 (1,254,812 × 3.41%). The estimated number of women receiving treatment at a health facility is 25,168 (42,789 × 58.8%).

TABLE 4. Number of women aged 15–49 treated in a health facility for complications of induced abortion; and estimated number of induced abortions, by multiplier to account for women not treated for complications; according to region

Region	No. of women treated	Estimated no. of induced abortions		
		2.5	3.5	4.5
Total	**84,758**	**211,895**	**296,653**	**381,410**
Central	31,775	79,438	111,213	142,988
Eastern	18,104	45,261	63,365	81,469
Northern	17,579	43,947	61,526	79,105
Western	17,300	43,249	60,549	77,848

female sterilization, IUDs, pills, injectables, implants, condoms and spermicides. We present data for women who are married (legally or consensually) and separately for women who are unmarried but are currently sexually active (have had intercourse in the past three months).

Using the same two surveys, we estimated unmet need for effective contraceptives among women aged 15–49, by union status. Women are classified as having an unmet need if they do not want a child in the next two years or they want no more children and are able to become pregnant, are married or are unmarried and sexually active, and are using a traditional method of contraception (periodic abstinence, withdrawal or a country-specific method) or none at all.

RESULTS

Provision of Postabortion Care

Of the 1,582 facilities in our sampling frame, 1,344 (85%) treat postabortion complications (Table 3). The most urban part of the country, the Central region, has the highest ratio of facilities to women aged 15–49 (30 per 100,000, compared with 21–23 per 100,000 elsewhere). However, in terms of a more precise indicator of availability of postabortion services, the number of beds per 100,000 women, the Northern region has the best availability (857 per 100,000); the Central region ranks second (674 per 100,000), and the Eastern and Western regions have much poorer availability (475 and 561 beds per 100,000, respectively).

The average number of abortion patients treated per site is highest in the Northern region (111 per year), largely because of the absence in this region of facilities run by private midwives, which tend to be small. The average patient caseload per site is 75–79 in the other regions. Hospitals, with the largest capacity of all types of facilities, treat an average of 358 postabortion patients per year; by comparison, level IV health centers average 125 a year, and level III facilities and private midwives have much smaller caseloads—53 and 49 patients, respectively. Although government facilities care for the majority of women treated for abortion complications (57%), both NGO and private-sector facilities treat substantial proportions—19% and 24% respectively (not shown). Notably, because facilities operated by midwives constitute the bulk of private-sector health facilities in Uganda, they account for 92% of women receiving postabortion care in the private sector (17% of all cases).

Abortion Morbidity

Almost 110,000 women received care for complications of spontaneous or induced abortions in Ugandan health facilities in 2003 (Table 3). The rate of abortion complications was 20 per 1,000 women aged 15–49 nationwide; it was substantially higher in the Northern and Central regions (23–24 per 1,000) than in the Western and Eastern regions (15–17 per 1,000).

Subtracting the estimated number of women treated for complications of spontaneous abortion from the total number of women treated for abortion complications leaves approximately 85,000 treated for complications of induced abortion each year—15 of every 1,000 women of reproductive age. The rate was above average in the Central and Northern regions (18–20 per 1,000 women), and below average in the Eastern and Western regions (12–13 per 1,000). If all other factors remained the same, and if relatively few women had multiple unsafe abortions for which they required treatment of complications, the overall rate suggests that approximately 525 of every 1,000 women—about one in two—would require treatment for complications of an induced abortion over the 35 years of their reproductive lifetime.

According to the health professionals surveyed, the majority of abortions among relatively well-off women likely are performed by trained health professionals, such as physicians, clinical officers, nurses or midwives (three-fourths in urban areas and almost two-thirds in rural areas); access for poor women in urban areas is similar to that for better-off women in rural areas, given the availability of trained providers in urban areas.[15] However, complications may result from procedures carried out by trained providers who have little experience or who work in unhygienic settings. In addition, a substantial proportion of abortions in all subgroups of women entail a high risk of complications because they are carried out by informal and untrained providers (traditional healers, lay practitioners, pharmacists or the women themselves). Physicians in Uganda are believed to favor surgical methods, such as dilation and curettage, over vacuum aspiration and medical abortion. Most informal providers in urban areas are thought to use hormonal drugs or rubber catheters, and many providers in rural areas, as well as women who induce their own abortions, are believed to use herbs and sharp objects (such as sticks and hangers).

TABLE 5. Estimated abortion rate and abortion ratio in 2003, by multiplier to account for women not treated in a health facility for abortion complications

Region	Abortion rate			Abortion ratio		
	2.5	3.5	4.5	2.5	3.5	4.5
Total	**39**	**54**	**69**	**14**	**19**	**23**
Central	44	62	80	18	23	28
Eastern	31	43	55	11	15	18
Northern	50	70	90	17	22	27
Western	32	45	57	12	16	20

Notes: The abortion rate is the number of induced abortions per 1,000 women aged 15–49 per year. The abortion ratio is the number of induced abortions per 100 pregnancies (the sum of live births and abortions).

TABLE 6. Percentage of live births that were unwanted, mistimed and unplanned at the time the woman became pregnant, by year, according to region

Region	Unwanted		Mistimed		Unplanned	
	1995	2000–2001	1995	2000–2001	1995	2000–2001
Total	**8**	**14**	**21**	**24**	**29**	**38**
Central	13	18	29	21	42	39
Eastern	5	14	20	34	25	47
Northern	6	13	16	20	22	33
Western	7	10	17	18	24	29

Note: Percentages are based on live births in the five years before interview.

Abortion Incidence

Applying the medium multiplier (3.5) to the estimated number of women receiving treatment for complications of induced abortion (85,000), we estimated that 297,000 induced abortions occurred in Uganda in 2003 (Table 4, page 187). The estimates using the various multipliers range from 212,000 to 381,000.

The medium estimate is that 54 induced abortions were performed per 1,000 women aged 15–49 in 2003; estimates range from 39 to 69 per 1,000 (Table 5, page 187). The medium estimate ranges from 43–45 per 1,000 women in the East and West to 62 per 1,000 in the Central region and 70 per 1,000 in the Northern region.

At the national level, an estimated 14–23 abortions occurred per 100 pregnancies in 2003, depending on the multiplier used (Table 5, page 187); the medium estimate of the abortion ratio (19 per 100) means that nationally, about one in five pregnancies ended in induced abortion. The abortion ratio was about one in six in the East and West; in the Northern and Central regions, close to one in four pregnancies ended in induced abortion.

Abortion in the Context of Unintended Pregnancies

In the DHS, the proportion of births that were reported to be unplanned (unwanted or mistimed) increased from 29% in 1995 to 38% in 2000–2001 (Table 6). Increases occurred in all regions except the Central region, where the level was already very high in 1995. The increase was particularly large in the Eastern region (from 25% to 47%).

Combining our estimates of induced abortion for 2003 with an estimate of the number of unplanned births from the 2000–2001 DHS, we estimated the total number of unintended pregnancies in 2003. The proportion of births that were unplanned during the five-year period before the 2000–2001 survey was applied to the total number of live births in 2003, assuming that this proportion changed little over this short period.

TABLE 7. Number of pregnancies, unintended pregnancy rate, percentage of pregnancies that were unintended and estimated pregnancy rate, by region, 2003

Region	No. of pregnancies	Unintended pregnancy rate*	% of pregnancies that were unintended	Pregnancy rate†
Total	**1,551,465**	**141**	**50**	**282**
Central	482,064	144	53	269
Eastern	425,164	159	55	288
Northern	275,524	151	48	314
Western	368,713	110	41	272

*Number of unintended pregnancies (unplanned births + abortions) per 1,000 women aged 15–49 per year. †Number of pregnancies (live births + induced abortions) per 1,000 women aged 15–49 per year. *Note:* Age-specific fertility rates and the intention status of births obtained from the 2000–2001 DHS were assumed to apply to 2003; population estimates for 2003 are from the United Nations and the DHS (see footnote on page 185); these estimates do not include spontaneous abortions.

The results show that nationally, 141 unintended pregnancies occurred per 1,000 women in 2003, and half of all pregnancies were unintended (Table 7). The Eastern region had the highest unintended pregnancy rate (159 per 1,000) and the highest proportion of all pregnancies that were unintended (55%) among the four regions; it had the lowest abortion rate and abortion ratio (Table 5), but the highest proportion of births that were unplanned (Table 6). The Western region had the lowest unintended pregnancy rate (110 per 1,000), as a result of having the second lowest abortion rate of the four regions and the lowest proportion of births that were unplanned. The very high abortion rate of the Northern region, balanced by its relatively low proportion of unplanned births and its very high overall pregnancy rate, resulted in this region's having a medium level of unintended pregnancy.

Overall, 282 pregnancies occurred per 1,000 Ugandan women in 2003. The total pregnancy rate varied little across the Central, Western and Eastern regions (269–288) and was above average in the Northern region (314).

Factors Underlying Unintended Pregnancy and Abortion

The observed differences among the four major regions in level of unintended pregnancy and abortion may be explained by differences in use of any contraceptive method, in use of effective methods and in fertility intentions.

Nationally, the proportion of married women aged 15–49 who were currently using an effective contraceptive method increased from a very low level of 8% in 1995 to a still quite low level of 14% in 2000–2001 (Table 8). (The proportion using traditional methods increased only from 7% to 9% over this period.) The use of effective methods and the increase in use were above average in the Central region. Prevalence remained extremely low—at or around 10% among women in union—in the other three regions in 2000–2001. The gap between the number of children women want and the number they have increased from 1.3 children in 1995 to 1.6 children in 2000–2001 (not shown); it was particularly large in the Eastern region (2.1 children).[16]

As a result, the proportion of women in union who had an unmet need for effective contraception in 2000–2001 was extremely high: Fifty-one percent of women did not want a child soon or wanted no more children, but were not using an effective contraceptive method. The overall proportion of married women with an unmet need for contraception did not change between 1995 and 2000–2001; however, the proportion declined slightly in the Central region and increased slightly in the other three regions.

Although unmarried sexually active women aged 15–49 had a higher level of use of modern methods than married

women (38% vs. 14%), the majority were not using an effective method. Twelve percent had an unmet need for modern contraception and were at risk of unintended pregnancy.

DISCUSSION

Morbidity due to unsafe abortion is very high in Uganda: Each year, an estimated 85,000 women, or 15 of every 1,000 women aged 15–49, are treated for complications from induced abortion. If this rate remains unchanged over a woman's lifetime, the average woman will have a 50% chance of needing care for complications following an induced abortion in her lifetime. Treatment of abortion complications consumes scarce medical and health resources: Women who have abortion complications may require several days of hospitalization, treatment with expensive antibiotics, or oxytocin injections or blood transfusions, in a country where shortages of drugs and blood supply are a major problem.[17] In addition to the immediate impact on their health, some women will suffer from long-term consequences, such as infertility.

An estimated 297,000 Ugandan women have induced abortions each year. The resulting abortion rate of 54 per 1,000 women of reproductive age is very high in comparison with the estimated rate for Eastern Africa, where Uganda is located (31 per 1,000 women).[18] However, the estimate for the subregion may understate the true level: The evidence base for developing estimates has been quite limited, given the lack of national studies of abortion incidence and the need to rely on small-scale studies. The high estimated level of induced abortion in Uganda is plausible, considering the very large and increasing gaps between actual and wanted family size resulting from growing proportions of women desiring smaller families without corresponding increases in use of modern contraceptives. Despite the gradual increase in contraceptive use between 1988 and 2001, the overall level of contraceptive use remains low, and use of modern methods is very low.

Variation in the abortion rate across regions within Uganda is to some extent as expected. The rate is relatively high in the most urban region, the Central region, and lower in the more rural and less developed Eastern and Western regions. However, it is substantially above the national average in the Northern region. Several factors may explain the extremely high rate in the North. The region has experienced a great deal of civil unrest for more than two decades. Since 1980, the Lord's Resistance Army, a rebel group, has imposed its presence in many districts of this region through violence, terror and intimidation, and thousands of families have been displaced or broken up by deaths or kidnappings. In this situation, women may seek abortion because of several interrelated factors: It is difficult to have a child after a husband has died or disappeared; the identity of the man responsible for the pregnancy may be unknown; women's social supports are greatly weakened; women deprived of their usual means of livelihood may engage in commercial sex work and experience an unwanted pregnancy; and rape is common in conditions of insurgency.

TABLE 8. Percentage of women aged 15–49 currently using effective contraceptive methods, and percentage who have an unmet need for improved contraception, by year and union status, according to region

Region	In union				Not in union			
	Currently using an effective method		Have unmet need		Currently using an effective method*		Have unmet need	
	1995	2000–2001	1995	2000–2001	1995	2000–2001	1995	2000–2001
Total	**8**	**14**	**49**	**51**	**26**	**38**	**10**	**12**
Central	16	26	50	46	38	52	11	11
Eastern	6	9	46	52	17	34	13	12
Northern	3	6	45	52	7	16	5	12
Western	7	11	53	56	18	19	8	13

*Based on those who are sexually active. *Notes:* Effective methods are pills, IUDs, injectables, implants, spermicides, condoms, and female or male sterilization. Women have an unmet need if they want no more children or do not want a child in the next two years and are fecund; are married, or unmarried and currently sexually active; and are using a traditional method of contraception or no method at all.

Additionally, a number of health facilities have closed or are not fully functioning, and some providers have moved to other parts of the country. For example, for security reasons, most private midwives have left the region.[19] These factors are believed to directly contribute to a high level of unwanted pregnancy and, most likely, abortion. In fact, the proportion of births that were unplanned has increased rapidly in the region (from 22% in 1995 to 33% in 2000–2001), and the proportion of married women using modern contraceptives is the lowest among the four major regions (6%).

The estimated number of pregnancies ending in abortion (one in five) and the high proportion of pregnancies that are unintended (50%) are consistent with the high level of unmet need for contraceptive services in Uganda.[20] Despite government efforts to improve coverage, availability of family planning services remains deficient: The range of methods provided at lower level health facilities is limited, the mechanisms of contraceptive supply from the district level to lower level administrative areas are poor and trained health workers are scarce.[21] Furthermore, while the proportion of supplies provided by the public sector declined significantly between 1995 and 2000–2001 (from 47% to 36%), the proportion provided by the private sector increased only slightly (from 42% to 46%).[22]

Evidence from focus group discussions carried out among couples in two districts of Uganda shows that important barriers prevent women from using contraceptives. Among these are fear of side effects, cost, inconvenience, and the fear that use or even discussion of family planning may imply unfaithfulness or lack of commitment to marriage.[23] In the 2000–2001 DHS, one in five married women and one in three married women younger than 30 mentioned side effects as their main reason for not using a contraceptive method.[24] The emphasis on the condom as the only method that protects against HIV may have the undesirable effect of discouraging women and couples from using other effective contraceptives, including hormonal methods.[25]

These barriers clearly require programmatic actions to help women prevent unintended pregnancy and to reduce the level of unsafe abortion. Among the actions to be con-

sidered are the development of a comprehensive information, education and communication campaign that will help reduce rumors, fears and misconceptions about family planning by disseminating accurate, reliable and consistent messages nationwide. The campaign should target men, to increase their knowledge and understanding of contraception and their support for their female partners' contraceptive decisions. Couples should be counseled on the correct and consistent use, as well as side effects, of effective methods. Sex education is also an important avenue for increasing accurate knowledge of contraception, both in school (one-third of 15–19-year-olds have had seven or more years of schooling) and out of school, for those who do not attend school at all or who drop out at an early age.[26] For women requiring treatment for abortion complications, it is particularly important that the postabortion care package include contraceptive counseling and services (or, if services are not available on-site, referral to an appropriate provider). Respondents in the Health Facilities and Health Professionals Surveys unanimously agreed that this is critical.[27]

Increasing access to contraceptive services through all the major sectors of service provision is also essential if levels of unintended pregnancy and induced abortion are to be reduced in Uganda. Actions should focus on improving the mechanisms of contraceptive supply (especially at lower level health care facilities) and ensuring regular supplies, broadening the range of methods offered, strengthening and expanding strategies to reach people in remote areas (as community-based distribution programs do on a small scale), training more health care providers in contraceptive counseling, updating their knowledge of all methods, and increasing their skills in providing methods that require a procedure, such as IUDs, implants and sterilization. Given the very high levels of induced abortion and abortion morbidity in the North, the need for policy and programmatic attention to women's health care needs is especially great there. At a minimum, our results suggest that reproductive health care ranks high among the priority needs of this region and should constitute a standard part of health services offered in rehabilitation programs in areas of insurgency.

Reduction in the level of unintended pregnancy will lower the incidence of unsafe abortion; by so doing, it will reduce women's morbidity and mortality burden, and the health care system's cost burden of treating abortion complications. At the individual and household levels, the result will be important gains for women's health and lives. And at the societal level, benefits will include better use of scarce health resources, as well as reductions in the costs of postabortion care. The benefits accrued from these efforts in terms of deaths prevented and improvements in women's health can make a significant contribution to national productivity and development.

REFERENCES

1. Kinoti S et al., *Monograph on Complications of Unsafe Abortion in Africa,* Arusha, Tanzania: Reproductive Health Research Programme, Commonwealth Regional Health Community Secretariat for East, Central and Southern Africa, 1995.

2. Mirembe F and Okong P, Risk factors associated with maternal mortality in three Kampala hospitals, Kampala, Uganda: Makerere University, Department of Obstetrics and Gynecology, 1995.

3. Ibid.; and Mirembe F, A situational analysis of induced abortions in Uganda, *African Journal of Fertility, Sexuality and Reproductive Health,* 1996, 1(1):79–80.

4. Department of Obstetrics and Gynecology, Departmental annual report, Kampala, Uganda: Makerere University, 1999.

5. AbouZhar C and Wardlaw T, *Maternal Mortality in 2000: Estimates Developed by WHO, UNICEF and UNFPA*, Geneva: World Health Organization (WHO), 2003.

6. Ahmed FH et al., Reducing unintended pregnancy and unsafe abortion in Uganda, *Research in Brief*, New York: The Alan Guttmacher Institute (AGI), 2005, No. 1.

7. World Bank, *World Development Report 2006: Equity and Development, 2005,* Washington, DC: World Bank and Oxford University Press, 2005.

8. Singh S and Wulf D, Estimated levels of induced abortion in six Latin American countries, *International Family Planning Perspectives*, 1994, 20(1):4–13; Singh S et al., Estimating the level of abortion in the Philippines and Bangladesh, *International Family Planning Perspectives,* 1997, 23(3):100–107; and Henshaw SK et al., The incidence of induced abortion in Nigeria, *International Family Planning Perspectives*, 1998, 24(4):156–164.

9. Birungi H et al., The policy on public-private mix in the Ugandan health sector: catching up with reality, *Health Policy and Planning*, 2001, 16(Suppl. 2):80–87.

10. Museke G, Private Midwife Association, Kampala, Uganda, personal communication, May 2, 2002.

11. Singh S et al., 1997, op. cit. (see reference 8); and Henshaw SK et al., 1998, op. cit. (see reference 8).

12. Bongaarts J and Potter RG, *Fertility, Biology and Behavior: An Analysis of the Proximate Determinants*, New York: Academic Press, 1983; Harlap S, Shiono PH and Ramcharan S, A life table of spontaneous abortions and the effects of age, parity and other variables, in: Hook EB and Porter I, eds., *Human Embryonic and Fetal Death*, New York: Academic Press, 1980.

13. United Nations (UN) Population Division, *World Population Prospects: The 2002 Revision*, Vol. II, New York: UN, 2003.

14. Special tabulations of data from the 2000–2001 Uganda Demographic and Health Survey.

15. Prada E et al., Abortion and postabortion care in Uganda: a report from health care professionals and health facilities, *Occasional Report*, New York: AGI, 2005, No. 17.

16. Ahmed FH et al., 2005, op. cit. (see reference 6).

17. Godfrey A, Legalizing abortion, Kampala, Uganda: Makerere University, Department of Obstetrics and Gynecology, 2001.

18. World Health Organization (WHO), *Unsafe Abortion, Global and Regional Estimates of the Incidence of Unsafe Abortion and Associated Mortality in 2000,* fourth ed., Geneva: WHO, 2004.

19. AGI and Uganda Project Team, Minutes of advisory committee meeting, June 24, 2003, Kampala, Uganda: AGI, 2003; and International Medical Corps, *Uganda: A Tale of Two Regions,* 2004, <www.imcworldwide.org/loc_uganda.shtml>, accessed Nov. 27, 2005.

20. Ahmed FH et al., 2005, op. cit. (see reference 6).

21. Population Secretariat, *The State of Uganda. Population Report 2004. Promises, Performances and Opportunities*, Kampala, Uganda: Ministry of Finance, Planning and Economic Development, 2004.

22. Special tabulations of data from the 1995 and 2000–2001 Uganda Demographic and Health Surveys.

23. Blanc AK et al., *Negotiating Reproductive Outcomes in Uganda*, Calverton, MD, USA: Macro International/Institute of Statistics and Applied Economics, 1996.

24. Special tabulations of data from the 2000–2001 Uganda Demographic and Health Survey.

25. Population Secretariat, 2004, op. cit. (see reference 21).

26. Bankole A et al., *Risk and Protection: Youth and HIV/AIDS in Sub-Saharan Africa*, New York: AGI, 2004; and Neema S, Musisi N and Kibombo R, Adolescent sexual and reproductive health in Uganda: a synthesis of research evidence, *Occasional Report*, New York: AGI, 2004, No. 14.

27. Prada E et al., 2005, op. cit. (see reference 15).

RESUMEN

Contexto: *Si bien la ley de Uganda permite el aborto inducido únicamente para salvar la vida de la mujer, muchas mujeres obtienen este procedimiento, con frecuencia en condiciones no higiénicas. Estudios realizados en pequeña escala sugieren que el aborto realizado en condiciones de riesgo es un importante problema de salud en Uganda, aunque no se dispone de estudios nacionales cuantitativos sobre el aborto.*

Métodos: *En 2003 se llevaron a cabo una encuesta representativa a nivel nacional de 313 instalaciones de atención de la salud donde se tratan mujeres con complicaciones a raíz de un aborto y una encuesta de 53 profesionales que tienen conocimiento acerca de las condiciones en que se realizan los abortos en Uganda. Se aplicaron técnicas indirectas de estimación para calcular el número de abortos inducidos realizados cada año. Las tasas de abortos, las razones de abortos y las tasas de embarazos no planeados fueron calculadas a nivel nacional y para cada una de las cuatro regiones principales del país.*

Resultados: *En Uganda, cada año se realizan unos 297.000 abortos inducidos y se trata a aproximadamente 85.000 mujeres por complicaciones relacionadas a este procedimiento. Los abortos presentan una tasa de 54 por cada 1.000 mujeres de 15–49 años y uno de cada cinco embarazos termina en un aborto. La tasa de abortos es más elevada que el promedio en la región central, la región más desarrollada económicamente y donde se encuentra la mayor concentración urbana (62 por cada 1.000 mujeres). También es muy elevada en la región del norte (70 por 1.000). A nivel nacional, aproximadamente la mitad de los embarazos no son planeados; el 51% de las mujeres casadas de 15–49 años y el 12% de las mujeres no casadas del mismo grupo de edad tienen una necesidad insatisfecha de un método anticonceptivo eficaz.*

Conclusiones: *El aborto realizado en condiciones de riesgo constituye una pesada carga sobre las mujeres de Uganda. Es necesario ofrecer un mayor acceso a los servicios de anticonceptivos para todas las mujeres con el fin de reducir los embarazos no planeados y los abortos realizados en condiciones de riesgo.*

RÉSUMÉ

Contexte: *Malgré la restriction de la législation ougandaise sur l'IVG aux seuls cas où la vie de la femme est en danger, beaucoup de femmes se font avorter, dans des conditions souvent peu hygiéniques. Les études de petite envergure laissent entendre que l'avortement à risques représente un sérieux problème de santé en Ouganda. Il n'existe cependant aucune étude nationale quantitative de l'avortement.*

Méthodes: *Une étude nationalement représentative de 313 établissements de santé traitant les complications de l'avortement et une enquête auprès de 53 professionnels au courant des conditions de l'IVG en Ouganda ont été menées en 2003. Les techniques d'estimation indirecte ont été appliquées aux données pour calculer le nombre d'avortements pratiqués chaque année. Les taux et quotients d'IVG et les taux de grossesse non planifiée ont été calculés pour le pays et ses quatre régions principales.*

Résultats: *On estime à 297.000 le nombre d'avortements provoqués chaque année en Ouganda; près de 85.000 femmes sont traitées pour cause de complications. L'IVG se pratique à un taux de 54 pour mille femmes âgées de 15 à 49 ans; une grossesse sur cinq se termine ainsi. Le taux d'avortement est supérieur à la moyenne dans la région du Centre (62 pour mille), la plus urbaine et la plus économiquement développée du pays. Il est également particulièrement élevé dans la région du Nord (70 pour mille). À l'échelle nationale, environ la moitié des grossesses ne sont pas planifiées; 51% des femmes mariées âgées de 15 à 49 ans et 12% de leurs homologues célibataires présentent un besoin non satisfait de contraception efficace.*

Conclusions: *L'avortement non médicalisé impose un lourd fardeau aux Ougandaises. Pour réduire les grossesses non planifiées et l'avortement à risques, et pour améliorer la santé des femmes, un meilleur accès aux services de contraception doit être assuré à toutes les femmes.*

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