# Female Genital Cutting Practices in Burkina Faso and Mali and Their Negative Health Outcomes

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*Observations of the types of female genital cutting and possible associated gynecological and delivery complications were undertaken in 21 clinics in rural Burkina Faso and in four rural and four urban clinics in Mali. Women who came to the clinics for services that included a pelvic exam were included in the study, and trained clinic staff observed the presence and type of cut and any associated complications. Ninety-three percent of the women in the Burkina Faso clinics and 94 percent of the women in the Mali clinics had undergone genital cutting. In Burkina Faso, type 1 (clitoridectomy) was the most prevalent (56 percent), whereas in Mali the more severe type 2 cut (excision) was the most prevalent (74 percent); 5 percent of both samples had undergone type 3 cutting (infibulation). Logistic regression analyses show significant positive relationships between the severity of genital cutting and the probability that a woman would have gynecological and obstetric complications.*
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Female genital cutting (FGC), also known as female genital mutilation (FGM) and female circumcision, is defined as the partial or total removal of external female genitalia and injury to the female genital organs for cultural or other nontherapeutic reasons (WHO 1995). FGC is known to be practiced in many areas of the world—Africa, the Middle East, southeast Asia, and among immigrant populations in Australia, Europe, and North America. Reasons for this procedure vary: It has been performed as a means of decreasing women's libido and promiscuity to ensure spousal fidelity, as a rite of passage for girls from adolescence into womanhood, to uphold and maintain cultural or religious traditions, and as a form of medical treatment.[1] The majority of such procedures occur in 28 African countries, including Burkina Faso and Mali.

The extent of cutting involved varies greatly both within and between countries and cultures. To clarify understanding of the prevalence and consequences of these procedures, the World Health Organization (WHO) has classified female genital cutting into four categories: Type 1, also known as clitoridectomy, is the partial or total removal of the prepuce (clitoral hood) and/or clitoris.[2] Type 2, also known as excision, refers to the removal of the clitoris and partial or complete removal of the labia minora (inner vaginal lips). Type 3, also known as infibulation or pharaonic circumcision, involves the partial or complete removal of any of the external genitalia, with stitching or narrowing of the vaginal opening. Type 4 is any other procedure involving pricking, piercing, incising, and stretching of the clitoris and/or labia. Globally, types 1 and 2 are the most frequently practiced forms of female genital cutting, representing an estimated 80 percent of all such procedures practiced (Toubia 1993). Type 3 is thought to represent approximately 15 percent of FGC worldwide, although it is probably the most frequently used procedure in some countries including Djibouti, Somalia, and northern Sudan (Dorkenoo 1996).

The age at which girls undergo genital cutting also varies between and within cultures, most commonly between ages 4 and 8 years (Toubia 1993). Although FGC is often justified as a rite of passage, in some cultures, some girls undergo the procedure before they are one year old. Recent data suggest that, in some regions, girls

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are undergoing this procedure at younger and younger ages, possibly as a result of national and international movements protesting it (Carr 1997).

Genital cutting can have harmful consequences for a girl's health. Complications immediately following the procedure include hemorrhage, severe pain, shock, damage to surrounding organs, and urinary retention and infections. Nonsterile instruments are often used to perform the procedure among large numbers of girls at the same time, and, therefore, Hepatitis B and HIV infection are other possible outcomes that are not yet documented (Post 1995).

Longer-term physical complications that can be attributed directly to genital cutting include: keloids (scar formation following the cut); bleeding from the scar (hemorrhage); dermoid cysts (resulting from embedding a skin fold in the scar or from blockage of a sebaceous gland duct); clitoral neuroma (a painful tumor affecting neural tissue); and stenosis or narrowing of the vagina or urethral openings resulting from scar formation (Toubia 1993).

Other gynecological complications that are more likely to occur following genital cutting include: urinary incontinence due to scarring of the urethral opening; vaginal synechia (obstruction of the vagina through fusions of skin tissue); vesicovaginal and rectovaginal fistulae (abnormal passages between the bladder and vagina or rectum and vagina caused by tearing of the skin); and chronic pelvic infections. In addition, painful intercourse and problems experienced during childbirth, such as prolonged labor and perineal tearing, are thought to be more common following genital cutting. As would be expected, infibulation is associated with more severe complications than are types 1 and 2 (Toubia and Izett 1998).

In addition to these physical complications, genital cutting is thought to have psychological effects, although more systematic research on this aspect of FGC is needed (Toubia 1993). For example, genital cutting could be expected to affect how girls and women understand and perceive themselves within their society, and to affect their sexuality, their trust in caretakers, their self-esteem, and their interactions with sexual partners.

Little scientific evidence is available documenting the occurrence and severity of such complications and their relationship to the type of genital cutting experienced (see Obermeyer and Reynolds 1999 for a review of existing studies). Estimates have been made that the practice doubles the maternal mortality rate, although further research is required to validate these estimates (Oosterbaan 1995). An unpublished report from Mali suggests that women who have undergone FGC are nearly seven times more likely than those who have not to experience complications during childbirth (Diallo 1990).

## Female Genital Cutting in Burkina Faso and Mali

This report presents the results from two clinic-based studies undertaken in Burkina Faso and Mali, countries where FGC is known to be highly prevalent. According to recent national population-based surveys, 94 percent of women in Mali (Coulibaly et al. 1996), and 66 percent of women in Burkina Faso (Dera et al. 1997) are estimated to have undergone this procedure. These surveys, which relied on women's self-reports of their status and of the type of procedure they experienced, suggest that differences may exist in the two countries in terms of the types of cutting practiced. In Mali, the proportions of women undergoing type 1 (52 percent) and type 2 (47 percent) were almost equal, whereas in Burkina Faso, the vast majority of women (92 percent) reported having undergone type 1.

The governments of Burkina Faso and Mali have taken different approaches in trying to reduce the practice. In Burkina Faso, a law was passed in November 1996 declaring FGC illegal, and a national committee to combat the practice, Comité National de Lutte contre la Pratique d'Excision, was formed. The Malian government, although not outlawing the practice, has declared the elimination of FGC a priority as part of its strategy for increasing women's empowerment. It has also founded a national committee to eliminate this and other practices harmful to women and children (Comité National d'Action pour l'Eradication des Pratiques Néfastes à la Santé de la Femme et de l'Enfant). Additionally, a number of nongovernmental organizations in Mali have been testing strategies to end female genital cutting (see Diallo 1997 for a review). Health providers, specifically, are being targeted in Mali, because of a perceived medicalization of the practice, that is, a movement toward performing the cutting in a clinical setting. According to the 1995–96 Demographic and Health Survey (DHS), although only 2 percent of women of reproductive age were cut in a clinical setting, 5 percent of their daughters were (Coulibaly et al. 1996).

## Methodology

In both Burkina Faso and Mali, data were collected in clinics from consenting women whose consultations included a pelvic exam. The studies were undertaken separately in the two countries, and therefore, the data collection and sampling methods used differed slightly between the two. All women included in both studies, however, were attending clinics primarily for antenatal, family planning, obstetric, or gynecological consultations.

In Burkina Faso, 21 of the 52 Ministry of Health clinics in the rural provinces of Bazèga and Zoundwéogo (both approximately one hour by road south of Ouagadougou, the national capital) were included in the study. These 21 clinics are all located within the Ministry of Health's field research station, which is undertaking research on different aspects of reproductive health, including female genital cutting. These data were collected as part of a study that specifically sought to document the extent and nature of the practice and its associated complications. During the study period (April–July 1998), 1,920 women were observed and interviewed at these 21 clinics. The sample included all consenting women aged 15–55 attending the clinics during this period for any consultation that included a pelvic examination.

The two providers working in each of the 21 clinics attended a two-day training session held by an obstetrician/gynecologist from the university teaching hospital who specializes in the treatment of female genital cutting complications and who is affiliated with the national committee fighting the practice. An anatomical model and training materials developed by the national committee were used. The training included a review of uncut anatomy, followed by descriptions of the ways to recognize and distinguish the different types of cut and how to recognize eight gynecological complications. A pretest of the data-collection instrument (a simple two-page form) was completed one week after the training session under the supervision of the trainer, and the instrument was adjusted according to the experience gained.

In Mali, the data were collected as part of a broader study to test the effect of training providers in FGC education; observing the type of cutting experienced by their clients was, therefore, only one component of the study (for a complete report of the Mali study, see ASDAP et al. 1998). Women were observed in the eight clinics that formed the experimental group of the study; four of these clinics were in the urban area of Bamako, the capital, and four were in the rural district of Bla in the Ségou region. These sites were chosen because they are in areas with a high prevalence of female genital cutting, and because they have a relatively high concentration of personnel specialized in obstetrics and gynecology. These eight clinics represent 19 percent of all public clinics in Bamako and 54 percent of all public clinics in rural Bla. In total, 61 health providers observed and interviewed 5,337 consenting women in these clinics over a period of three months (July–September 1998). Seventy-nine percent of the clients sampled were seen in the urban clinics and 21 percent in the rural clinics. No age restrictions were placed on women for inclusion in the sample; the sole criterion was a consultation that included a pelvic exam. For this reason, a small number of girls younger than 14 were included. Among these were seven girls who had just undergone genital cutting and were admitted for immediate complications and 23 pregnant adolescents.

Training for the clinic staff was begun by two obstetric/gynecological consultants, who trained eight medical doctors from the central and regional health offices. These doctors, in turn, trained the 61 providers in the study clinics during a three-day session in identification of the types of genital cutting; in recognition of ten gynecological complications; in completion of the data-collection instrument; and in using information, education, and communication materials on female genital cutting.

In both studies, providers were asked to observe and note on a simple form whether a woman had been cut, the type of cut she had undergone (according to the WHO classification described above), and any visible gynecological complications. The providers also were requested to ask the women a few questions about their sociodemographic status and birth histories and to record their responses on the same form. Verbal informed consent for recording this information was obtained from all women prior to the consultation; no women refused to participate in either of the two studies.

The data-collection forms for both studies included similar items, but were not identical; for example, the types of gynecological complications observed and recorded differed to some degree. Additionally, the Burkina Faso study required providers to record any clinical signs of genital infection and to ask women about their experience of stillbirth.

One weakness of both studies was that the presence of gynecological complications was systematically recorded only for those women who had undergone genital cutting. Although clinic staff had been trained and requested to note the presence or absence of complications for all women in their care, in practice some recorded this information only for women who had been cut. Consequently, the data regarding complications among uncut women could not be included in the analysis. As a result, ascertaining the relative likelihood of suffering one of these complications among women who have and who have not undergone genital cutting is not possible. Most of the complications that staff were trained to identify could be attributed directly to genital cutting, however. Therefore, most of these complications probably would not appear in uncut women. For example, among the 174 uncut women in Burkina Faso and Mali for whom this item was correctly recorded, only two were observed to have a complication (both in Mali and recorded as hemorrhage).

As previously noted, genital cutting is thought to increase the likelihood of complications experienced during childbirth. Consequently, data were collected in

both studies to measure this association, although in different ways. In Mali, for all women who attended the clinics for delivery and who consented to participate in the study, any difficulties in childbirth were noted on the data-collection form. Those noted were episiotomies, perineal tearing, obstructed labor, cesarean deliveries, and hemorrhage. In Burkina Faso, women giving birth were included in the study, but any complications associated with the current delivery were not recorded on the form. Instead, all women included in the study who had ever given birth were asked whether they had experienced any difficulties during any of their deliveries, and if so, to describe the type of complication.

In contrast with gynecological complications, obstetric complications were systematically recorded for both cut and uncut women. The accuracy of women's self-reports of obstetric complications is known to be poor (for example, see Ronsmans et al. 1997 and Stewart 1997). Therefore, the analyses relating obstetric complications to genital cutting status and type presented here focus primarily on the data from Mali. Data from Burkina Faso are presented, however, because although the prevalence of reported obstetrical complications might be inaccurate, this inaccuracy is likely to affect similarly those who had been cut and those who had not, and therefore, comparisons of differences between the two groups may be valid.

The results of both studies describe women attending clinics for reasons associated with reproductive health. Whether women attending clinics for such services are representative of women as a whole is not known. One indication of representativeness would be whether most women normally attend clinics for such services. For example, a recent survey in the catchment area of the study clinics in Burkina Faso showed that 79 percent of pregnant women had attended a clinic at least once for an antenatal exam (UERD et al. 1997). In Mali, these proportions were 89 percent of pregnant women in Bamako and 44 percent of pregnant women in the rural district of Ségou (Coulibaly et al. 1996). This indicator suggests that the women sampled in rural Burkina Faso and in Bamako may fairly represent the general population, but that the sample in rural Mali may be atypical because many women there do not regularly attend antenatal clinics.

Because of the methodological differences between the studies, statistical tests were not used to compare the two samples. Within each sample, however, student's t-tests, one-way ANOVAs, and chi-squares were used to compare unadjusted continuous and categorical variables. Exploration of associations between negative health outcomes with genital cutting status uses logistic-regression analyses. Selected socioeconomic variables included in these analyses are shown in the tables. Additional variables, including ethnicity and mother's and father's educational levels, were tested but not found to be significant. In Mali, the seven young clients who attended the clinic for treatment of complications due to recent genital cutting were excluded from the health-outcome regression analysis, but were included in univariate prevalence and typology analyses.

## Sample Characteristics

Table 1 describes the samples from both studies. About half of the women in both studies visited a clinic for an antenatal consultation; childbirth and family planning were the other most common reasons for clinic visits among women in the samples. As expected with this

**Table 1** Percentage distribution of women surveyed, by sociodemographic characteristics and reason for clinical consultation, Burkina Faso and Mali, 1998

| | Burkina Faso | Mali | | |
|---|---|---|---|---|
| Characteristics[a] | Rural (n = 1,920)[b] | Urban (n = 4,226) | Rural (n = 1,111) | Total (n = 5,337)[c] |
| Age | | | | |
| <15 | na | 1*** | 3*** | 1 |
| 15–19 | 18 | 25 | 16 | 23 |
| 20–24 | 26 | 28 | 25 | 27 |
| 25–29 | 22 | 22 | 20 | 21 |
| 30–34 | 15 | 15 | 15 | 15 |
| 35–39 | 11 | 7 | 14 | 9 |
| 40–44 | 5 | 2 | 5 | 3 |
| 45 + | 3 | 0 | 2 | 1 |
| Education | | | | |
| Some/literate | 23 | 44*** | 20*** | 39 |
| None/illiterate | 77 | 56 | 80 | 61 |
| Marital status | | | | |
| Polygamous | 45 | 26 | 46 | 30 |
| Monogamous | 44 | 60*** | 49*** | 58 |
| Cohabiting | 6 | na | na | na |
| Single | 4 | 13 | 5 | 11 |
| Widowed/divorced | 1 | 1 | 0 | 1 |
| Residence | | | | |
| Urban | 100 | 100*** | 0*** | 79 |
| Rural | 0 | 0 | 100 | 21 |
| Type of consultation | | | | |
| Antenatal | 57 | 47*** | 56*** | 49 |
| Delivery | 12 | 28 | 25 | 28 |
| Family planning | 12 | 8 | 5 | 8 |
| Gynecological | 7 | 4 | 4 | 4 |
| Postnatal | 5 | 7 | 2 | 6 |
| Sexually transmitted infection | 3 | 1 | 0 | 0 |
| Other | 4 | 5 | 8 | 5 |

***Significant at p<0.001. na = Not applicable.
[a]Statistical differences were tested only between urban and rural distributions within the Mali sample. [b]In Burkina Faso, the number of women surveyed varies by categorical response and ranges between 1,892 for the age variable and 1,920 for residence. [c]In Mali, the numbers range from 5,166 for the education variable to 5,337 for residence.

type of clientele, the women in both studies were relatively young: 66 percent of women in the Burkina Faso study and 71 percent in the Mali study were between 15 and 29 years old. The mean age and age distribution of clients interviewed in both countries was similar, although the Burkina Faso study was limited to women aged 15–55 years and the Mali study included females of all ages. In Burkina Faso, the mean age of respondents was 26.6–7.2 years, whereas the mean age in Mali was 25.0–7.0 years. In Mali, the women living in the urban area were slightly younger, with a mean age of 24.7–6.6 years, than those living in the rural area (26.5–8.3 years; significance level $p<0.001$).

In both Burkina Faso and Mali, the majority of clinic clients had no formal education and were illiterate. In Mali, as would be expected, women living in the urban areas were significantly more likely to have had some schooling than were those in rural areas ($p<0.001$).

The majority of clients in both studies were married. An even split was found between polygamous and monogamous marriages among women in the Burkina Faso sample and in the rural Mali sample, but a significantly higher proportion of monogamous marriages was noted for the urban Mali sample ($p<0.001$).

Bazèga, the site of the Burkina Faso study, is populated primarily by members of the Mossi ethnic group (95 percent). In Mali, several ethnic groups were represented, the largest being the Bambara (40 percent), followed by the Malinke (14 percent), the Peulh (12 percent), the Sarakole/Soninke (11 percent), the Minianka/Senougo (7 percent), and other groups (16 percent) (data not shown). This ethnic breakdown was significantly different between the urban and rural areas of Mali ($p<0.001$), with the majority in the rural area being Bambara (60 percent), and the two largest groups in the urban area being the Bambara (35 percent) and the Malinke (17 percent) (data not shown).

In the Mali study, the religion of the respondents was not noted. In Burkina Faso, most clients were either Muslim or Catholic (46 percent and 40 percent, respectively).

## Genital Cutting Status and Type

In Burkina Faso, 93 percent of the women observed at the clinics had been cut (data not shown). This proportion is considerably higher than the prevalence of 79 percent found in a population-based survey using self-reports conducted at about the same time in the same area (UERD 1997). This difference may be the result of women's underreporting in the population-based survey, because some women may not know that they have been cut or because the practice was recently declared illegal. Selection bias, whereby the sample of women attending clinics would be more likely to have been cut than would women not attending clinics, is a less likely explanation of this difference.

In Mali, 94 percent of women who visited the clinics had been cut. More rural than urban women were cut (98 percent and 93 percent, respectively; $p<0.001$). These proportions match the national rate for genital cutting found in the most recent DHS using women's self-reports (Coulibaly et al. 1996).

These proportions describe the prevalence of FGC among the entire sample of both studies. These data can be used to consider whether the practice is as prevalent today as it was for the previous generation. A comparison of the prevalence of FGC among women aged 15–24 with women aged 35 years and older shows a decline in Burkina Faso of 7 percentage points, from 97 percent for the older group to 90 percent for the younger women. In Mali, the same comparison showed virtually no difference (94 percent and 93 percent, respectively). One explanation for the age-group difference in the Burkina Faso sample could be that some of the uncut women in the younger age group had not yet been cut but would be in the future. The median age for cutting in the Burkina Faso sample, however, was 9.5 years, and by age 15 virtually all women who were going to be cut would have been.

Moreover, a life-table analysis indicates a slight decline in the median time at which women will have experienced being cut from 9.9 years for women aged 36–55 years ($n = 242$) to 9.4 years for women aged 15–20 years ($n = 452$), suggesting that a slight shift toward performing the procedure at a younger age may have occurred in Burkina Faso. Thirty-eight percent of Burkina Faso respondents were unable to specify the age at which they were cut; that question was not asked of the study respondents in Mali. This finding supports an analysis of the DHS data from Mali, however, that indicates a decline in the age of cutting: 60 percent of women aged 45–49 were cut by age 6, whereas 70 percent of women younger than 30 were cut by age 6 (Tokindang and Diallo 1997).

As Figure 1 shows, the type of cutting practiced varied considerably between the two samples. Whereas the type 1 cut (that is, clitoridectomy) was the most common practice in Burkina Faso, type 2 was the most frequently performed in Mali. Infibulation, or type 3 cutting, was found in 5 percent of both samples. No significant differences in type of cut were found between the urban and rural areas of Mali, or between ethnic groups in either sample (data not shown). Looking again

**Figure 1** Type of genital cutting seen among excised women, Burkina Faso and Mali, 1998

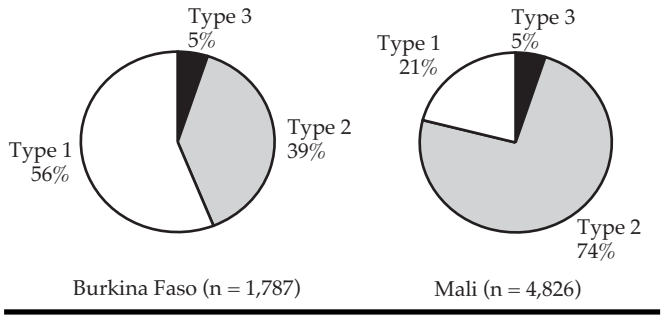


**Table 2** Distribution of all cut women with at least one gynecological complication, by type of complication, Burkina Faso and Mali, 1998

| Type of complication | Burkina Faso Percent (n = 254) | Mali Percent (n = 223) |
|---|---|---|
| Keloid[a] | 62 | 7 |
| Hemorrhage | 3 | 52 |
| Stenosis | 20 | 13 |
| Vaginal synechia | 6 | 2 |
| Vaginal obstruction | 6 | 8 |
| Vesicovaginal fistula | 1 | 1 |
| Rectovaginal fistula | 0 | 1 |
| Urinary incontinence | 1 | 5 |
| Other | 8 | 14 |

[a]In Mali, this category was defined as "keloid/dermoid cyst."

at possible generational differences, none was found in the distribution of types 1 and 2 between the 15–24 and 35+ age groups in Burkina Faso. In Mali, a slight difference was found: Significantly more women in the older age group had undergone a type 2 cut (80 percent versus 75 percent), and fewer had undergone a type 1 cut (17 percent versus 19 percent; $p<0.01$). Infibulation, although relatively rare, was found in all age groups. Possible evidence of an increase in this practice among women of the younger generation was found, however, in Mali, where the proportion having type 3 cutting increased from 3 percent in the older age group to 6 percent in the younger age group ($p<0.05$).

## Gynecological Complications

For both studies, those women who had undergone genital cutting of any type were also examined for indications of an observable gynecological complication that could be associated, directly or indirectly, with the cutting. Of all cut women observed in Burkina Faso, 14 percent had at least one complication, and for the sample from Mali, the proportion was 5 percent (data not shown). In both samples, fewer than 1 percent of women were observed to have two or more of these complications.

Table 2 describes the types of complications observed and the proportions of women noted as having each type. (The proportions sum to more than 100 percent because some women had multiple complications.) The most frequently noted complication differs for each sample (keloids in Burkina Faso and hemorrhage in Mali). One possible explanation is that type 1 cutting is more prevalent in Burkina Faso, and that the formation of a keloid from scar tissue is likely to be the most common observable complication among women who have undergone a clitoridectomy. In Mali, where the more severe type 2 cutting is most prevalent, women will have had more genital tissue removed, and therefore, hemorrhaging from the scar tissue may occur more often. The difference may also be due to varying perceptions of how each category should be defined, as a result of the research teams' having been trained separately.

Internal and external damage to the vagina (through stenosis and synechia and other obstructions) was found among one-fourth to one-third of women having any complication. Although frequently mentioned in the literature as a consequence of genital cutting, the number of cut women observed to have fistulae of either type was small (three women in Burkina Faso and five in Mali).

As Table 3 indicates, the type of cutting a woman had undergone clearly affected the likelihood that she would suffer a gynecological complication. Those women who were infibulated were almost two and half times more likely to have a gynecological complication than those with a type 2 cut, and women with a clitoridectomy were much less likely to have a complication; these differences were more pronounced in Burkina Faso.

The table also suggests that cut women in Burkina Faso attending a clinic for childbirth were significantly more likely to have an observable complication than were cut women visiting a clinic for other reasons. In Burkina Faso, 23 percent of cut women attending for delivery had an observable complication, half of whom had keloids and one-fourth of whom had stenosis. The reason for this association is not obvious; one reason may be that cut women having complications, especially a keloid scar or vaginal narrowing (stenosis), are more likely to attend a clinic for delivery rather than bear a child at home, because they anticipate problems with the delivery resulting from their gynecological complication.

The only other factors found to be significantly associated with these complications were religion in Burkina Faso, where Muslims were less likely than others to have visible complications, and residence in Mali, where those living in urban areas were almost two times

**Table 3** Logistic-regression analysis of the odds of having an observable gynecological complication associated with female genital cutting among all cut women, Burkina Faso and Mali, 1998

| Variable | Odds ratio (95 percent CI) | | | |
|---|---|---|---|---|
| | Burkina Faso | | Mali | |
| FGC status | | | | |
| Type 1 | 0.61** | (0.46, 0.82) | 0.71 | (0.41, 1.24) |
| Type 2 (r) | 1.00 | — | 1.00 | — |
| Type 3 | 2.45*** | (1.47, 4.09) | 2.43** | (1.40, 4.24) |
| Age | 0.98 | (0.94, 1.02) | 0.97 | (0.93, 1.01) |
| Number of deliveries | 1.00 | (0.90, 1.11) | 1.05 | (0.93, 1.18) |
| Education | | | | |
| Some/literate | 0.82 | (0.57, 1.19) | 1.08 | (0.75, 1.57) |
| None/illiterate (r) | 1.00 | — | 1.00 | — |
| Religion | | | | |
| Muslim | 0.71* | (0.52, 0.97) | — | — |
| Christian (r) | 1.00 | — | — | — |
| Other | 1.27 | (0.76, 2.13) | — | — |
| Marital status | | | | |
| Polygamous | 0.96 | (0.70, 1.32) | 1.01 | (0.66, 1.55) |
| Monogamous (r) | 1.00 | — | 1.00 | — |
| Other | 0.85 | (0.52, 1.39) | 0.90 | (0.50, 1.63) |
| Residence | | | | |
| Urban | — | — | 1.88* | (1.06, 3.34) |
| Rural (r) | — | — | 1.00 | — |
| Type of consultation | | | | |
| Antenatal | 1.39 | (0.96, 2.00) | 1.53 | (0.80, 2.90) |
| Delivery | 2.22*** | (1.39, 3.57) | 1.84 | (0.95, 3.55) |
| Postnatal | 0.97 | (0.46, 2.04) | 0.26 | (0.03, 2.03) |
| Other (r) | 1.00 | — | 1.00 | — |

*Significant at p<0.05; **p <0.01; ***p<0.001.
— = Not applicable. (r) = Reference category. CI = Confidence interval.
**Note:** Burkina Faso: n = 1,744; Mali: n = 3,681.

more likely than their rural counterparts to have complications. Again, the reasons for these associations are not apparent. Because information concerning complications was not systematically collected from uncut women, other factors that may help explain these results cannot be explored.

## Obstetric Complications

In Burkina Faso, 82 percent of the clients surveyed had given birth at least once, with the mean number of deliveries for all clients being 3.0–2.6, and the mean age at first birth of 18.9–1.9 years (data not shown). Fourteen percent of all clients had experienced at least one stillbirth. In Mali, 86 percent of clients had delivered at least once, with the mean number of deliveries being 3.0–2.5, although this was significantly higher in the rural than the urban area (3.9–3.0 and 2.8–2.4, respectively; p<0.001). The mean age at first birth and the number of stillbirths were not recorded in Mali. Although 86 percent of the women studied in Mali had had at least one delivery, only 82 percent stated that they had had at least one live birth, suggesting that stillbirths were also common for those in the Mali sample.

In Mali, 1,468 women visited a clinic to deliver a child (28 percent of all clients in the sample). Seventy-six percent of these women gave birth without any difficulties, while 24 percent experienced some complications: 12 percent had episiotomies; 6 percent had perineal tears; 3 percent hemorrhaged, and 3 percent had a cesarean birth.

As Table 4 shows, clear associations exist between delivery complications and being cut: Uncut women were significantly less likely to have an observed complication during delivery than were cut women. Moreover, the likelihood of experiencing a difficulty during delivery increased with the severity of cutting: Five percent of women without a cut experienced a difficulty, compared with 18 percent of women who had undergone type 1 cutting, 30 percent of women with type 2, and 36 percent of women with type 3 (data not shown).

**Table 4** Logistic-regression analysis of the odds of reporting having had difficulties with deliveries among women who have had at least one delivery in Burkina Faso and of observing difficulties among clients attending a clinic for delivery in Mali

| Variable | Odds ratio of self-reported complications (Burkina Faso) | (95% CI) | Odds ratio of observed complications (Mali) | (95% CI) |
|---|---|---|---|---|
| FGC status | | | | |
| Not cut | 0.32*** | (0.19, 0.54) | 0.17** | (0.06, 0.52) |
| Type 1 (r) | 1.00 | — | 1.00 | — |
| Type 2 | 1.30* | (1.04, 1.62) | 1.79* | (1.10, 2.89) |
| Type 3 | 2.28** | (1.33, 3.94) | 1.77 | (0.87, 3.61) |
| Age | 0.97** | (0.94, 0.99) | 0.99 | (0.96, 1.03) |
| Number of deliveries | 1.05 | (0.98, 1.14) | 0.74*** | (0.66, 0.83) |
| Education | | | | |
| Some/literate | 1.17 | (0.89, 1.52) | 0.76 | (0.57, 1.02) |
| None/illiterate (r) | 1.00 | — | 1.00 | — |
| Religion | | | | |
| Muslim | 0.72** | (0.57, 0.90) | — | — |
| Christian (r) | 1.00 | — | — | — |
| Other | 0.88 | (0.60, 1.30) | — | — |
| Marital status | | | | |
| Polygamous | 1.11 | (0.88, 1.40) | 0.78 | (0.55, 1.12) |
| Monogamous (r) | 1.00 | — | 1.00 | — |
| Other | 1.21 | (0.80, 1.82) | 1.65* | (1.12, 2.42) |
| Residence | | | | |
| Urban | — | — | 2.71*** | (1.67, 4.40) |
| Rural (r) | — | — | 1.00 | — |
| Type of consultation[a] | | | | |
| Antenatal | 0.70** | (0.54, 0.90) | — | — |
| Delivery | 1.42 | (0.97, 2.07) | — | — |
| Postnatal | 0.83 | (0.52, 1.34) | — | — |
| Other (r) | 1.00 | — | — | — |

*Significant at p<0.05; **p<0.01; ***p<0.001.
— = Not applicable. (r) = Reference category. CI = Confidence interval.
[a]In Mali, only women who came to the clinic for delivery are included.
**Note:** Burkina Faso: n = 1,527; Mali: n = 1,270.

Women in Bamako were significantly more likely to have complications during delivery than were women in the rural area of Mali, whereas women who had more previous deliveries were significantly less likely to have observed complications during the current delivery. Furthermore, the most commonly observed complication—episiotomy—was not significantly related to whether or not a woman had been cut, and was found to occur almost exclusively among women attending clinics in Bamako, with only one case observed in the rural area of Mali (data not shown). Episiotomies occurred among 25 percent of women who were delivering for the first time, 32 percent of women delivering for the second time, and only 3 percent of women who had previously delivered two or more times ($p<0.001$) (data not shown).

The number of women suffering a perineal tear who could be included in a regression analysis was small (n = 74). The results indicated, however, that compared with women having a type 1 cut, women having a type 2 or type 3 cut were significantly more likely to have a perineal tear ($p<0.05$), whereas no significant difference was observed among uncut women (data not shown). Similarly, testing for the likelihood of either perineal tearing or hemorrhaging shows that women having a type 2 cut were significantly more likely ($p<0.05$) than those having a type 1 cut to experience these complications, with no significant differences found among uncut women.

In Burkina Faso, women visiting a clinic for delivery were not observed for complications during the delivery. Instead, all women were asked about their experiences with all previous deliveries, including stillbirths. Because these responses are self-reports and may be aggregated across more than one delivery, the results are considered less valid than those for the Mali sample. Because all women were asked the same questions in the same way, however, the results remain indicative of the differential experiences of cut versus uncut women.

Fifty-one percent of the clients who had ever experienced a delivery reported having had difficulties with at least one of them: 34 percent reported having had an episiotomy; 9 percent, obstructed labor; 5 percent, perineal tears; 1 percent, a cesarean birth; and 2 percent, other difficulties. Women who were cut were significantly more likely to report these complications than those who were not, as Table 4 indicates. Furthermore, as the type of genital cutting increased in severity, the likelihood of women's reporting difficulties increased. Those who had undergone type 2 cuts were 1.3 times more likely to report such difficulties than were those having type 1 cuts, and those who experienced infibulation were more than two times more likely to do so. Muslim women were significantly less likely to report delivery complications, as were women attending a clinic for antenatal visits.

No significant associations were found between a woman's FGC status and her reporting of a previous stillbirth; as a client aged and/or had more deliveries, however, the probability of her having experienced a stillbirth increased (data not shown).

## Genital Infection

In the Burkina Faso study, providers were trained to observe and note any possible signs of genital infection, and specifically the presence of abnormal vaginal discharge, ulceration, vegetation, and irritation. Twenty-four percent of all clients were recorded as having one of these signs, the majority (79 percent) having an abnormal discharge. Clients who had undergone genital cutting were more than one and a half times more likely than those who had not to show one of these signs (see Table 5), with 19 percent of uncut women having any of these signs. Among clients who had undergone FGC, no differences were found between the type of cutting and the presence of these signs. Those women who had

**Table 5** Logistic-regression analysis of the odds of having a genital infection at time of observation among all clinic clients, Burkina Faso, 1998

| Variable | Odds ratio | (95 percent CI) |
|---|---|---|
| FGC status | | |
| Cut | 1.72* | (1.02, 2.92) |
| Not cut (r) | 1.00 | — |
| Age | 1.00 | (0.97, 1.03) |
| Number of deliveries | 0.91* | (0.84, 0.99) |
| Education | | |
| Some/literate | 0.84 | (0.63, 1.13) |
| None/illiterate (r) | 1.00 | — |
| Religion | | |
| Muslim | 1.00 | (0.78, 1.29) |
| Christian (r) | 1.00 | — |
| Other | 0.61 | (0.36, 1.02) |
| Marital status | | |
| Polygamous | 1.04 | (0.80, 1.34) |
| Monogamous (r) | 1.00 | — |
| Other | 1.08 | (0.73, 1.60) |
| Type of consultation[a] | | |
| Antenatal | 0.85 | (0.65, 1.11) |
| Delivery | 0.32*** | (0.20, 0.53) |
| Postnatal | 0.34** | (0.17, 0.68) |
| Other (r) | 1.00 | — |

Significant at *p<0.05; **p <0.01; ***p<0.001. — = Not applicable.
(r) = Reference group. CI = Confidence interval.
[a]Clients who came to the clinic to consult about sexually transmitted infections were excluded from this analysis.
**Note:** n = 1,818.

been cut and who had an observed gynecological complication were, however, three times more likely to have such signs (data not shown).

Women who attended a clinic for a delivery or antenatal visit were less likely to have these signs, possibly because healthier women become pregnant (women of higher parity were less likely to show these signs) or because pregnancy masks these signs.

## Discussion

Although the literature on genital cutting frequently describes the range of gynecological and obstetrical complications that may be associated with the procedure, little empirical evidence exists of the nature and extent of the relationship between cutting and such complications. The data presented here were primarily collected through direct observation by trained medical staff, and although the data are not without limitation (as described below), they appear to be of greater validity than women's self-reports. Five important findings emerge from these data: First, genital cutting of any type is associated with gynecological, obstetric, and other complications; 5–14 percent of the women who had been cut also had an observable complication that could be associated directly or indirectly with having undergone genital cutting. The most common type of complication observed (for more than three-fourths of women with a complication) was directly associated with scarring caused by cutting the sensitive tissue of the genitals. Keloid formation, hemorrhaging, probably from the scar tissue, and thickening of the vagina (stenosis) due to scarring accounted for three-fourths of the complications observed, although their frequency differed between the two samples. In addition, 10–12 percent of those women with a complication had vaginal synechia or obstructions. Although this problem may not be directly attributable to having undergone genital cutting (no comparison was possible with women who had not been cut), such obstructions are highly likely to have been exacerbated by this condition. As noted above, fistulae were found in only a few cut women presenting at the study clinics.

Second, a clear, positive relationship is found between the type of cut a woman has undergone and the likelihood that she will have a visible long-term complication—the more severe the cut, the more likely she is to have a complication. No major differences appear to exist in the type of complication associated with the type of cut, in that all types of complication are more prevalent among women with type 2 and type 3 cuts than among those with a type 1 cut.

Third, one-fourth of women observed in the Mali sample who were attending the clinic for a delivery had a problem. Although this proportion may overrepresent the rate of delivery complications in the general population, because those with potential delivery problems may be more likely to present at a clinic, a positive relationship was found between experiencing a difficulty during delivery and having been cut. The odds ratio of experiencing a difficulty during delivery for a woman in Mali who had not been cut was nearly 20 percent less than that of a woman who had a type 1 cut; the odds for a woman who had had a type 2 or type 3 cut were further increased.

The most frequently observed delivery complication was attributable to having undergone an episiotomy, and it was not significantly associated with having been cut. Episiotomies are frequently conducted among younger women giving birth for the first or second time, and with women giving birth in urban clinics. (Episiotomy is often recommended for first deliveries in many African countries.) Among those women observed to be giving birth in the Mali sample, 8 percent were first deliveries, of which 25 percent had an episiotomy. A recent study conducted among Somali women attending a clinic in the United States found that episiotomy was no more likely among cut women than among uncut women, a finding that supports the suggestion that the high prevalence of the procedure among primiparous women is a function of conventional obstetrical practice (Lupo and Marcotte 1999).

Of more relevance is the finding that women who had been cut, particularly those with type 2 and type 3 cuts, were significantly more likely ($p<0.05$) to suffer a perineal tear during delivery. Such tears are more frequent among cut women because of increased inelasticity of the skin caused by scar tissue, and they increase the likelihood of infection and the possibility of the woman's developing fistulae. Consequently, episiotomy may be justifiable among women who have undergone genital cutting, especially of types 2 and 3, in order to control the degree of perineal laceration that may occur. Indeed, for women who have been infibulated, episiotomy is frequently required, especially for first deliveries, as described by Lupo and Marcotte (1999).

Fourth, in the Burkina Faso sample, a relationship was found between a woman's having been cut and an increased possibility of her having signs that may indicate genital infection, although this possibility is not related to the severity of cut. This finding supports the intuitive expectation that a woman whose genital tissues have been damaged through genital cutting is more susceptible to a reproductive tract infection. However, nu-

merous studies (for example, Dallabetta et al. 1998; Maggwa et al. 1999; Solo et al. 1999; Zurayk et al. 1995) have demonstrated that signs and symptoms associated with infection, including those used in this study, are not particularly valid indicators of an infection, even when they are identified by a clinician rather than by the woman herself. The number of outcomes that prove to be false positives and false negatives when compared with laboratory testing is generally too high to be useful in predicting a genital infection. Although this finding does not prove conclusively that women who have undergone genital cutting are more likely to have an infection (laboratory testing is required to determine this association), it does suggest that a relationship exists between cutting and signs of vaginal discharge that may warrant further investigation. The US study of 38 Somalian women who had undergone genital cutting (Lupo and Marcotte 1999) found, however, that urinary tract infections were no more likely to appear among cut women than among uncut women (although the report did not indicate how such infections were identified).

Fifth, the data from the present studies confirm the findings from self-reports in population-based surveys that the prevalence of female genital cutting is very high in both countries. The results also suggest that a slight decline in the practice may have occurred over time in Burkina Faso but not in Mali, as shown in a comparison of the prevalence of genital cutting among women in the older and younger age groups. This encouraging possibility should be balanced against the finding that the age at which the procedure is being undertaken may be declining, although women's difficulty in recalling the age at which they were cut means that this finding may not be significant.

Clear differences were found in the type of cutting practiced between the two samples, with type 1 being more prevalent in Burkina Faso and type 2 more prevalent in Mali. The data suggest that there may be a trend away from performing type 2 in Mali, although whether this trend is changing toward greater use of type 1 or type 3 is not clear, because both types were found to be more prevalent than type 2 among girls in the younger age group. That 5 percent of women in both countries were found to have type 3 cuts may be surprising, especially because the incidence of type 3 cutting had not been documented previously in Burkina Faso.

With regard to methodological limitations, urban–rural differences in the prevalence of complications may, to some extent, be attributable to differences in the training of professional clinic personnel. Diagnostic bias may, therefore, account for some of these differences.

Neither the Burkina Faso nor the Mali study sought to collect data on other potential negative outcomes of genital cutting, notably its effects on a woman's sexuality and on her social role in the family and community. Empirical data concerning these issues are sorely needed to give a more complete picture of the role that genital cutting plays in the lives of women, their families, and their communities. Although a focus on the negative health outcomes of genital cutting has produced valuable information that can assist in supporting arguments for reducing the practice on the grounds that it is indeed harmful, these data may not be sufficient to outweigh the social and cultural supports for this traditional practice in many societies. Some researchers argue that using health-risk arguments is ineffective and potentially dangerous (Toubia and Izett 1998), because clitoridectomies can be touted as "safer" than infibulation, and those in favor of genital cutting can use these findings to promote type 1 cutting and oppose ending the practice altogether. Furthermore, centering this debate on women's ability to bear children safely maintains and upholds women's position in society as linked to this role. Other equally important yet more culturally challenging issues, such as women's ability to lead a healthy sex life may, therefore, be ignored. For this reason, many feel that efforts to stop genital cutting must focus on improving women's status and changing their political awareness (Toubia 1993; Adongo et al. 1998).

Data collected in other studies on genital cutting, however, support the need to provide empirical evidence of negative health outcomes and to work with clinic staff to increase their understanding of these medical complications (Mwangaza et al. 1998; Tostan 1999). For the study in Mali, for example, clinic staff were trained to educate their clients about these complications as one way of raising providers' own awareness about the procedure (ASDAP et al. 1998). As a consequence of this study, the Ministry of Health is using the results to promote a standardized and mandatory training concerning female genital cutting for all health providers. The Ministry had not been aware that the procedure was being conducted by staff in its clinics and has subsequently issued a policy directive banning the practice.

## Notes

1 Some forms of FGC were performed as late as the 1950s by American and British medical professionals to cure "psychological disorders" such as nymphomania and lesbianism (Burstyn 1995).

2 Although the WHO classification scheme is widely used, defining type 1 to include both the partial or total removal of the clitoris, and/or removal of the clitoral hood may be limiting. Some

argue that type 1 should be further delineated into smaller categories, so that women with their clitorises left intact are separated from those who have undergone clitoridectomy (Taylor 1999).

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