HEALTH AND SOCIAL EFFECTS OF FEMALE GENITAL CUTTING¹:
THE EVIDENCE TO DATE

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ABSTRACT

Debates about the health and social consequences of female genital cutting impose a responsibility on scholars to pursue research on the practice with methodological rigor and attention to cultural contexts. We review the uses and limitations of systems to classify female genital practices in studies of overall and type-specific prevalence. We also review evidence of the health, reproductive, and sociodemographic effects of the practice and recommend novel research to examine the relationship of various forms of the practice and the physical, sexual, psychological, and social well-being of women.

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INTRODUCTION

Female genital cutting is practiced in parts of Africa, Indonesia, Malaysia, the Arab Peninsula, and immigrant communities worldwide (Isa, Shuib, & Othman, 1999; Leonard, 2000; Shell-Duncan & Hernlund, 2000). Among African countries with data, estimated prevalences vary from 18 percent in Tanzania to 98 percent in Somalia and Djibouti (Bureau of Statistics and Macro International, 1997; Shell-Duncan & Hernlund, 2000). An estimated 130 million women, most of whom live in Africa, have experienced some form of genital cutting, and two million women are at risk of being genitally cut annually (World Health Organization [WHO], 1996).

In practicing societies, female genital cutting is fundamental to the maintenance of patriarchal family systems and women’s social identity and economic security, and women may insist on circumcising their daughters because not to do so would hinder their prospects for marriage, motherhood, and financial security (e.g., Barclay, 1964; Boddy, 1991; Gruenbaum, 1988; Gulick, 1976; Hicks, 1993; Ibrahim, 1979; Kennedy, 1970; de Villeneuve, 1937; Yount, 2002; Yount & Balk, forthcoming). Increasingly, social-structural and cultural justifications for the practice confront an “eradication” discourse that has the goal of safeguarding women’s rights (e.g., Barstow, 1999; Eke & Nkanginieme, 1999; Hosken, 1982; Koso-Thomas, 1987; Lax, 2000; Slack, 1988; Toubia, 1993, 1994) and a “consequences” discourse that focuses on the physical, psychological, and social effects of the practice (e.g., Aziz, 1980; Cook, 1979; Dirie & Lindmark, 1991a, 1991b; El Dareer, 1982; Mawad & Hassanein, 1994; Morison, Scherf, Ekpo, Paine, West, Coleman & Walraven, 2001; Shandall, 1967; Verzin, 1975). Political views about the practice have at times been so charged that careful reviews of the evidence regarding its effects have been lacking (Gordon, 1991; Obermeyer & Reynolds, 1999; Obermeyer, 1999).

In a context of diverse perspectives and uneven quality of data, we review standard
definitions of the forms of female genital cutting, focusing on the ability of such definitions to capture cross-cultural and temporal variation in overall and type-specific prevalence. We also discuss issues of study design and findings based on a review of studies of the effects of female genital practices on the physical, sexual, psychological, and social welfare of women. This discussion motivates recommendations for new research to understand the effects of the practice. We address these aims by reviewing recent literature from the medical sciences, social demography, and medical anthropology that provide quantitative data on effects and by touching upon but not reviewing systematically the activist literature addressing these practices. Widespread discussion of the deleterious physical, sexual, psychological, and social effects of female genital practices motivates our focus on the empirical strength of these relationships. The importance of reproduction for women’s social identity in settings where female genital cutting occurs motivates our focus on the association of these practices and infertility. We highlight the experiences of women in Northeastern Africa because the highest prevalences and most varied forms of female genital cutting occur in this region. By addressing these aims, we synthesize and add to existing sociodemographic research on female genital practices (Balk, 2000; Caldwell, Orubuloye, & Caldwell, 1997, 2000; El-Gibaly, Ibrahim, Mensch & Clark, 1999, 2002; Jones, Diop, Askew & Kabore, 1999; Larsen, 1989, 1994, 1995, 2002; Larsen & Okonofua, 2002; Larsen & Yan, 2000; Yount, 2002; Yount & Balk, forthcoming) and provide guidance to scholars who wish to undertake rigorous and culturally sensitive research to fill persistent gaps.

CLASSIFICATION AND PREVALENCE

According to standard definitions (Toubia and Izett, 1998; WHO, 1997), there are four major forms of female genital cutting. Type I usually involves excision of the prepuce, with or without excision of all or part of the clitoris. Complete removal of the prepuce and clitoris is
known as clitoridectomy, and an estimated 61.5 percent of Eritrean women and 19 percent of
Egyptian women have experienced this form (El-Zanaty, Hussein, Shawky, Way & Kishor,
1996; National Statistics Office [NSO], 1997). **Type II** – or excision – involves removal of the
clitoris and parts or all of the labia minora and occurs in Eritrea (4 percent), Egypt (64 percent),
and among certain groups in West Africa (El-Zanaty et al., 1996; Hosken, 1978; NSO, 1997).

**Type III** – or infibulation – generally involves a complete excision and the cutting away and
stitching of most of the labia majora, leaving a small opening for the passage of urine and
menstrual fluid (e.g., El Dareer 1982; Hicks 1993; Kennedy 1970; Slack 1988; Verzin 1975).

Infibulation is the most common form of female genital cutting in Somalia and Djibouti (Toubia,
1993), and 73 percent of ever-married women of reproductive age in Sudan (DHS, 1991), 34
percent in Eritrea (NSO, 1997), and 1–9 percent in Egypt (El-Zanaty et al., 1996) have been
infibulated. Matwasat circumcision reportedly emerged in Sudan as an alternative to infibulation
when the latter was outlawed in 1946 and involves similar procedures, except that the opening
left may be larger than that left after infibulation (DHS, 1991; El Dareer, 1982).

Around 1990, two percent of Sudanese women reported having had a matwasat circumcision (Kheir, Kumar &
Cross, 1991). **Type IV** or unclassified forms include a range of other practices, such as pricking,
stretching, or burning the clitoris, scraping around the vaginal orifice, and introducing corrosive
substances or herbs into the vagina. Symbolic circumcision entails nicking the clitoris to cause
temporary bleeding, occurs in Indonesia and Malaysia (Hosken, 1982; Isa et al., 1999), and may
be increasing in prevalence where more extensive procedures have been practiced (Ibrahim,
personal communication, January, 2002); this form is not classifiable using standard definitions,
however, because it does not involve permanent alteration of the female genitalia.

These standard definitions have made possible cross-cultural comparisons of type-
specific prevalence and their effects, yet their application faces certain challenges. Women may misreport the form of female genital cutting that they have undergone (e.g., Okonofua, Larsen, Oronsaye, Snow & Slanger, 2002; Snow, Slanger, Okonofua, Oronsaye & Wacker, 2002) due to its legal status (e.g., Yount, 2002) or a respondent’s age at (first) circumcision or interview. Standard definitions also may not detect subtle changes in practice such as the emergence of matwasat circumcision in Sudan and symbolic forms of cutting, which may have physical, social, and psychological implications. Standard classifications also do not permit documentation of the frequency that women experience some form of genital cutting over their life course.

Although repeated procedures reportedly occur only in certain settings (e.g., Agugua & Egwuatu, 1982; Boddy, 1982; Cloudsey, 1983; El Dareer, 1982; Hayes, 1975; Hosken, 1982; Widstrand, 1964), repeated cutting may have independent physical, social, and psychological effects (El Dareer, 1982; Laycock, 1950; Mustafa, 1966). Use in surveys of questions that address the timing of event(s) and that include biomedical and colloquial terms that are culturally salient and representative of either distinct practices or the full range of practices would allow researchers to assess response reliability, to make cross-cultural comparisons, and to assess trends in the practice within cultural contexts.

EFFECTS OF FEMALE GENITAL PRACTICES

Issues of Study Design

Researchers have reviewed the major effects of female genital practices (e.g., Abdalla, 1982; Cook, 1979; El Dareer, 1982; El Saadawi, 1982; Gordon, 1991; Hosken, 1982; Koso-Thomas, 1987), but early reviews gave less attention to the quality and generalizability of identified studies. A subsequent proliferation of research in the early 1990s yielded surprisingly little generalizable evidence regarding the prevalence of specific effects (Obermeyer & Reynolds...
To assess the quality of recent studies of the effects of female genital cutting, we searched for articles published from 1990 to June, 2003 using Medline and SocioAbs databases and the following search terms: circumcision, female circumcision, genital cutting, genital mutilation, infibulation, clitoridectomy, and excision. Medline also permitted selection of articles classified under “adverse effects” of the main heading “female circumcision,” and the reference lists of articles published during or after 1990 provided additional sources. Using these procedures and including four studies published before 1990, we retrieved 57 articles that present empirical evidence of effects of the practice. Table 1 summarizes the designs of these studies, and Appendix 1 describes each study.

Two-thirds of identified studies are facility-based, and about 18 percent of samples are based on censuses or probability-based sampling. Among the 38 studies that rely on censuses, probability samples, or systematic sampling from clinics, response rates are unreported for 18 and below 90 percent for three. About 43 percent of studies are conducted among immigrant populations, and about 39 percent of studies are based on sample sizes of fewer than 100 participants, which limits the range of consequences that can be examined.

Sources of data on female genital cutting and morbidity include self-reports, medical records, and clinical and laboratory exams, and previous studies suggest that estimates of reproductive morbidity vary by the source of data (e.g., Khattab, 1992). Relatively few studies either specify the form of circumcision observed or reported or include a comparison group of uncut women. Among studies in which type of cutting is specified, the level of variation in type is not always sufficient to permit analysis of the association of type and complications, and studies control variously for other determinants of outcomes in question (Table 2). With these
qualifications in mind, we review the available evidence with reference to five hypotheses:

1. The more severe the procedure is, the more severe are the implications for the immediate and distant future (Verzin, 1975).
2. Repeated cutting (including de-infibulation and re-infibulation) may increase the risk of adverse effects (El Dareer, 1982; Laycock, 1950; Mustafa, 1966).
4. Most forms of genital cutting are associated with emotional, psychological, and sexual complications (El Dareer, 1982).
5. Female genital cutting influences a woman’s participation in social life, including social and educational opportunities in adolescence, courtship, marital formation, marital satisfaction, and marital stability (Yount & Balk, forthcoming).

General Findings

Table 2 provides a list of outcomes that have been examined for their associations with female genital cutting, the estimated prevalence of each outcome by type of cutting (if available), and adjusted relative odds of each outcome by type of cutting (if available). Significant and insignificant associations are included. The complete list of outcomes exceeds 100. Outcomes examined in 5 or more sources (regardless of study design) include bleeding, local or general infection, retention of urine, urinary tract infection, cysts, menstrual problems, perineal tears at delivery, sexual problems, and pain. Other outcomes examined in at least 2 sources include reproductive tract infections (RTI) and other gynecological complications, vaginal stenosis, urinary incontinence, rectal injury, scarring and keloid scarring, vulvar abscesses and/or swelling, fistulas (e.g., an abnormal passage between two hollow organs), difficult and/or painful childbirth, stillbirths and birth defects, infertility, haematocolpos, psychological complications, and unspecified complications.

Relevant for the first two hypotheses, certain complications (e.g., bleeding and pain) reportedly occur in settings like Egypt and Sudan, where less and more severe forms of cutting are common (e.g., Mawad & Hassanein, 1994; Sayed, Abd El-Aty, & Fadel, 1996). Other
complications (e.g., retention of urine) reportedly occur in settings like Somalia and Sudan, where more severe and repeated forms of cutting are common (e.g., Dirie & Lindmark, 1992). Therefore, the known geographic distribution of types of female genital cutting and of the prevalence of specific complications provides ecological evidence of an association between the severity and/or frequency of cutting and certain adverse effects.

Also notable is the wide range of estimated prevalences for most complications, which may be a function of differences across studies in the distribution of types of cutting, source(s) of data on complications, sample selectivity, and level of adjustment for other predictors. Therefore, figures in Table 2 underscore the potential range and frequency of outcomes associated with forms of genital cutting but expose limits in our ability to make precise or even accurate inferences about certain observed associations. For this reason, we evaluate the strength of the evidence relating to the above hypotheses by focusing on the following specific outcomes: obstetric complications, pregnancy outcomes, fertility and sterility, emotional and psychological well-being, sexuality, and participation in social life.

(Insert Table 2)

**Obstetric Complications**

Evidence from a clinic-based study in rural Burkina Faso and urban and rural districts in Mali shows that the adjusted risk of a complicated delivery increases with the severity of prior genital cutting: 5 percent among uncut women, 18 percent among women with Type I circumcision, 30 percent among women with Type II, and 36 percent among women with Type III (Jones et al., 1999; Moore, 2000). Other studies examine the effects of female genital practices on duration of labor, postpartum hemorrhage, perineal tearing during delivery, and use of Caesarean section, episiotomy, and forceps during delivery.
Regarding duration of labor, an early hospital-based study of Sudanese immigrants in Riyadh, Saudi Arabia shows that the unadjusted prevalence of prolonged stage I labor is no different for circumcised and uncircumcised women (11.4 versus 12.0 percent), but that for stage II labor is higher among circumcised women (13.8 versus 4.3 percent) (De Silva, 1989). Unadjusted duration of stage II labor also is higher among cut than uncut women delivering at three hospitals in Addis Ababa, Ethiopia (Hakim, 2001). By contrast, a clinic-based study of Sudanese and Somali immigrants in Jeddah, Saudi Arabia shows no unadjusted difference in duration of stage I, stage II, or stage III labor among uncircumcised women and women who were de-infibulated before delivery (Rouzi, Aljhadali, Amarin & Abduljabbar, 2001a). A clinic-based study conducted in two hospitals in Benin City and one in Irrua in Nigeria shows that genital cutting (e.g., dichotomized as cut versus uncut) is not associated with obstructed labor at first delivery after adjusting for sociodemographic characteristics (Slanger, Snow, & Okonofua, 2002). Analysis of the same data by number of pregnancy (first, second, all) and type of circumcision (none, Type I, Type II) shows that adjusted odds of prolonged labor do not differ by circumcision type (Larsen & Okonofua, 2002). Birth records from Norway for the period 1986–1998 show that, compared to Norwegian women, Somali women have 1.7 times higher adjusted odds of induced labor, 1.6 times higher adjusted odds of secondary arrest of labor, and 1.6 times higher adjusted odds of prolonged stage-II labor, although information on circumcision status is inferred from ethnic origin (Vangen, Stoltenberg, Johansen, Sundby & Stray-Pedersen, 2002).

Early studies of the effects of female genital cutting on postpartum hemorrhage suggest an effect, whereas later studies do not. De Silva (1989) and Hakim (2001) find higher unadjusted prevalences of postpartum hemorrhage among circumcised than uncircumcised Sudanese
hospital attendees in Riyadh (5.4 versus 1.6) and hospital attendees in Addis Ababa (15.1 versus 11.1), and the unadjusted prevalence of laceration or hemorrhage is as high as 26 percent in a clinic-based study of first deliveries of circumcised women in Ghana (Odoi, Brody, & Elkins, 1997). Average blood loss (ml) is no different among de-infibulated and uncircumcised Sudanese and Somali immigrants delivering at a hospital in Jeddah, Saudi Arabia, however (Rouzi et al., 2001a), and adjusted odds of postpartum hemorrhage are similar for circumcised and uncircumcised women delivering their first birth in three hospitals in Nigeria (Slanger et al., 2002). The Norwegian birth registry indicates that Somali immigrants have 1.3 times higher adjusted odds of postpartum hemorrhage than Norwegian women among deliveries taking place in Norway between 1986 and 1998 (Vangen et al., 2002).

Evidence pertaining to the effects of female genital cutting on the prevalence of perineal tearing is mixed. De Silva (1989) finds no difference in unadjusted rates of perineal tears among uncircumcised and circumcised Sudanese immigrants in Riyadh, whereas Hakim (2001) finds a higher unadjusted prevalence of laceration among circumcised than uncircumcised primiparous hospital attendees in Addis Ababa. Rates of vaginal laceration among de-infibulated and uncircumcised Sudanese and Somali immigrants in Jeddah also are similar (Rouzi et al., 2001a). Vangen et al. (2002) find that adjusted odds of degree 2–4 perineal injury are similar among Somali and Norwegian mothers giving birth in Norway. Although no difference in the adjusted prevalence of perineal tears is observed among first deliveries of circumcised and uncircumcised women in Nigeria (Slanger et al., 2002), classification of these women by number of pregnancy and type of circumcision shows that adjusted odds of perineal tears are 4.2 times higher among second pregnancies of women with Type II versus no circumcision and 2.8 times higher among all pregnancies of women with Type II versus no circumcision (Larsen & Okonofua, 2002).
Regarding procedures performed during delivery, unadjusted rates of Caesarean section do not differ by circumcision status among Sudanese hospital attendees in Riyadh, but unadjusted rates of episiotomy are higher among circumcised than uncircumcised women in this sample (100 versus 90 percent) (De Silva, 1989). By contrast, unadjusted rates of episiotomy do not differ among de-infibulated and uncircumcised Sudanese and Somali women delivering at a hospital in Jeddah (Rouzi et al., 2001a). After adjusting for sociodemographic characteristics, rates of Cesarean section at first delivery do not differ by circumcision status (cut vs. uncut) among clinic attendees in Nigeria (Slanger et al., 2002), but odds of episiotomy are 0.7 times lower among circumcised than uncircumcised women (Slanger et al., 2002). (The difference in rates of episiotomy is observable only in private hospital settings in the study.) Re-analysis of the above data from Nigeria shows no adjusted association between type of circumcision and either episiotomy or Cesarean section (Larsen & Okonofua, 2002). Records of births in Norway for the period 1986–1998 show that, compared to Norwegian women, Somali women have 1.6 times higher adjusted odds of an operative vaginal delivery, and 1.8 and 3.0 times higher adjusted odds of a regular and emergency Caesarean section, respectively (Vangen et al., 2002).

Overall, the evidence suggests that female genital cutting generally and type of cutting specifically are not associated with prolonged labor, postpartum hemorrhage, or use of selected procedures during delivery. General difficulties with delivery and specific complications of delivery such as perineal tearing are associated with more severe – Type II and Type III – forms of cutting. Studies supported by WHO are underway to examine further the obstetric risks of female genital practices, and research is needed on the association of type of cutting and outcomes of delivery among women who deliver at home.

Pregnancy Outcomes
Researchers have suggested that infibulation increases the probability that a pregnancy ends in a stillbirth, largely because labor is obstructed by an extreme narrowing of the vagina and by accumulated fibrous and scarred vulvar tissue that fails to dilate during contractions (e.g., Gordon, 1991; Laycock, 1950). Laycock’s (1950) evidence is based only on case studies from Sudan, however, and recent study of neonatal deaths to children of Somali, Ethiopian and Eritrean women in Sweden finds no evidence for this hypothesis (Essén, Bödker, Sjöberg, Gudmundsson, Ostergren, & Langhoff-Roos, 2002).

A handful of other studies, in which information on type of cutting is not always available, suggest that the evidence is more mixed. In a study of 12 Somali refugee women in the United States, of whom 11 were circumcised, 4 out of 48 pregnancies end in stillbirths, a higher rate than that found in non-infibulating populations (Arbesman, Kahler, & Buck, 1993). Although unadjusted rates of stillbirth or early neonatal death are similar among circumcised and uncircumcised Sudanese expatriate women in Riyadh, Saudi Arabia (De Silva (1989); see also Daw, 1970), women with Type I circumcision have marginally higher adjusted odds than uncircumcised women of reporting a stillbirth among attendees of three hospitals in Nigeria, particularly among first pregnancies (OR=1.7) (Larsen & Okonofua, 2002). Compared to the fetuses of Norwegian mothers giving birth in Norway during 1986–1998, those of Somali mothers) have 2.6 times higher adjusted odds of distress during delivery, 2.5 times higher adjusted odds of prelabor death, but similar adjusted odds of intrapartum death (Vangen et al., 2002). Unadjusted rates of asphyxia are higher among infants born to circumcised than uncircumcised Sudanese immigrant women in Riyadh (DeSilva, 1989), whereas APGAR scores are higher among uncircumcised than circumcised hospital attendees in Addis Ababa (Hakim, 2001) and are no different among children born to Sudanese and Somali hospital patients who
are uncut and de-infibulated before delivery (Odoi et al., 1997). Births to Somali women in Norway between 1986 and 1998 have 3.1 times higher adjusted odds than those of Norwegian women of having APGAR scores of less than 7 at 5 minutes after delivery, but mean birthweight and adjusted odds of early neonatal death are similar for the two groups (Vangen et al., 2002). Unadjusted rates of fetal loss also are similar among circumcised and uncircumcised hospital attendees in Addis Ababa (Hakim, 2001).

**Infertility**

Research on African fertility prior to 1990 suggests that levels of childlessness and subfecundity are high in regions where certain forms of female genital cutting exist (e.g., Bongaarts, Frank & Lesthaeghe, 1984; Frank, 1983; Mammo & Morgan, 1986). Although some have attributed high proportions of childlessness to the widespread incidence of sexually transmitted infections (e.g., Frank, 1983; Mammo & Morgan, 1986; McFall & McFall, 1984), others have hypothesized that women with more severe forms of genital cutting should have more difficulty becoming and staying pregnant (e.g., Dewhurst & Michelson, 1964). Assessing the presence and magnitude of these effects has been complicated by a lack of appropriately designed studies, use of selective samples (e.g., clinic attendees or infertile couples), and resistance or inability among women to associate problems of fertility with their circumcision status and history (e.g., Dirie & Lindmark, 1992; El Dareer, 1982; Inhorn & Buss, 1993; Meuwissen, 1966). We review studies that consider whether the following occur at higher rates in circumcised, and especially in infibulated, groups: infertility-causing infections, secondary infertility (e.g., infertility after a known pregnancy), and primary infertility (e.g., failure to conceive after prolonged exposure).  

Belsey (1979) proposed that female genital cutting may produce infection or injury that
interferes with conception or increases the risk of pregnancy wastage, and several studies in the 1970s and 1980s investigated the effect of female genital practices on infertility through its effects on chronic pelvic infection (Lenzi, 1970; Rushwan, 1980; Shandall, 1967) and vaginal changes (e.g. hardening and narrowing of the vaginal passage) (Meuwissen, 1966).¹³ Since much is unknown about the relationship of circumcision to AIDS, its potential importance also should not be dismissed (e.g., Brady, 1999; Hardy, 1987; Kun, 1997; van Roosmalen, Reynerse, & Wiebenga, 1992; see Gausset, 2001 for an alternative point of view).

Recent evidence suggests an association between female genital practices and urinary and genital infections. In an uncontrolled study of immigrant women attending a hospital in the United Kingdom, 8 percent of women with type II cutting had a clitoral abscess and 30 percent of women with type III cutting had pelvic inflammatory disease (Fox, deRuiter & Bingham, 1997). A higher incidence of urinary and genital tract infections is observed among circumcised than uncircumcised Sudanese clinic attendees in Riyadh (e.g., more than one organism isolated in 11.1 versus 6.3 percent, respectively) (De Silva, 1989), and a survey and clinical exam of over 1,100 women in Gambia shows 1.7 times higher adjusted odds of bacterial vaginosis and 4.7 times higher adjusted odds of herpes simplex virus II among circumcised than uncircumcised women (Morison et al., 2001). (Adjusted odds of syphilis are lower among circumcised women, however.) Clinic-based data from rural Burkina Faso show higher adjusted odds of any genital infection among circumcised than uncircumcised women (OR=1.7) (Jones et al., 1999), and self-reports of genital infection from 1,836 women attending three hospitals in Edo State, Nigeria suggest that, compared to uncircumcised women, circumcised women have 1.5 times higher adjusted odds of lower abdominal pain, 2.8 times higher adjusted odds of yellow, foul-smelling discharge, 1.7 times higher adjusted odds of white vaginal discharge, and 4.4 time higher
adjusted odds of having a genital ulcer; adjusted odds of genital itching do not vary by circumcision status, however (Okonofua et al., 2002).

A case-control study conducted among 190 Egyptian women in Cairo and Alexandria shows a direct association of female genital cutting and infertility (Inhorn & Buss, 1993). Women with tubal-factor infertility (TFI) resulting from post-inflammatory damage to the fallopian tubes had higher odds than fertile controls of having had an excision (rather than a cliterodectomy) and of having had a traditional provider perform the procedure, and the odds of having had an excision performed by a traditional provider were synergistic among infertile women. (Inhorn & Buss, 1993:232) (Figures in Table 3 are adjusted for marital duration and wife’s age. See Larsen (2002) for a discussion of this study).

Few studies have considered the effects of female genital practices on primary or secondary infertility, either directly or indirectly through their effects on infection, using representative, population-based samples of women. Among those that do, findings are mixed. Analyzing data from several countries in Sub-saharan Africa, Larsen (1994) finds that primary sterility (e.g., the proportion childless among women who married before age 20) is relatively high (5 percent) in 1978–79 and relatively low (2 percent) in 1989–90 and that sterility is high in the upper age groups (in both periods) relative to other African countries. In Sudan, infibulated women have a higher adjusted incidence of sterility (in the five years preceding the 1978–79 World Fertility Survey) than less severely circumcised or uncircumcised women but do not have a higher overall prevalence of sterility (Larsen, 1989). Although Larsen suggests that real downward pressure on fertility by circumcision may be difficult to identify in a population with little variation in the practice, the lack of a significant finding here may also be due to her decision to classify the few cases of non-infibulated women into one category, thus combining
women with matwasat circumcisions and those with milder forms.

In a study using nationally representative samples of women aged 15–49 in the Central African Republic (C.A.R.), Côte d’Ivoire, and Tanzania, Larsen and Yan (2000) find that circumcised women have lower unadjusted odds of childlessness and infertility by age in all sites, and higher total fertility rates than uncircumcised women in Tanzania and Côte d’Ivoire (the reverse pattern prevails in the C.A.R.). In all countries, circumcised and uncircumcised women grouped by age at circumcision have similar adjusted odds of infertility and of having a child. Although the authors conclude that “the practice of circumcision does not have a statistically discernable effect on women’s ability to reproduce” (Larsen & Yan, 2000: 313), they acknowledge that more severe forms of cutting may interfere. Using demographic and health survey data from northern Sudan, Larsen (2002) shows that women with intermediate circumcision or infibulation (types II and III broadly) have 2.8 times higher adjusted odds of primary infertility than uncircumcised women and that odds of primary infertility are similar for “sunna” circumcised (type I broadly) and uncircumcised women. Adjusted odds of secondary infertility and fertility also do not differ by circumcision status (Larsen, 2002).

In sum, although most nationally representative samples provide insufficient evidence of an association of (more severe forms of) female genital cutting and primary and secondary infertility, estimation of the effects of female genital cutting on fertility in such studies is limited by misclassification of, lack of data on, or insufficient variation in types of genital cutting. One population-based study from northern Sudan suggests that more severe forms of cutting are associated with primary infertility. A case-control study provides evidence of an association of more severe cutting and tubal factor infertility, and clinic-based studies suggest that female genital practices are associated with infertility-causing infections. It is reasonable to conclude
that more severe forms of genital cutting are associated with primary infertility, and that all forms of cutting may dampen fertility through their effects on infertility-causing infections. Given the importance of fertility for many African women and the belief in some settings that female genital cutting enhances a woman’s fertility, further evaluation of the direction and magnitude of this relationship would provide meaningful information to women in practicing societies.

Psychological Effects

Less well represented in Table 3 but believed to be associated with circumcision are psychological and emotional hardships resulting from the practice or its short- and long-term physical sequelae. Other researchers have reviewed the psychological consequences of the practice, including its association with chronic anxiety and depression (e.g., Baasher, 1979; Toubia, 1994; de Villeneuve, 1937). These associations are difficult to document in practicing societies because norms favoring the practice may influence women’s reporting of psychological effects. Studies suggest that some women provide conflicting responses to questions about the psychological effects of the practice. Interviews with Somali immigrants in Canada show that although 29 and 28 percent of women, respectively, report experiencing fear and unhappiness during the days following their procedure, 79, 72, and 60 percent report feeling special, happy, and proud during the same period (Chalmers & Omer Hashi, 2000). Thirty percent of these women report feeling more beautiful, whereas 16, 5, and 3 percent report feeling sorry that it was done, angry, and betrayed, respectively (Chalmers & Omer Hashi, 2000).

A study comparing circumcised and uncircumcised women’s attitudes about and experiences with domestic violence reveals that circumcised women may internalize the view that “harmful” practices against women are justified. Population-based data from ever-married
women of reproductive age in Egypt indicate that circumcised women have 7.4 times higher unadjusted odds than uncircumcised women of believing that a husband is justified in beating his wife, and 4.2 times higher odds of having experienced domestic violence (Refaat, Dandash, el Defrawi, & Eyada, 2001). Adjusted odds of exposure to domestic violence are 2.1 times higher for circumcised than uncircumcised women. In addition, 90 percent of women in a village in Assiut, Egypt (Sayed et al., 1996), 14 percent of women in a study conducted in London, England (Momoh, Ladhani, Lochrie & Rymer, 2001), and 56 and 46 percent of circumcised versus uncircumcised women attending hospitals in Nigeria (Slanger et al., 2002) report that female genital cutting has no effect. Among 12 circumcised and 12 uncircumcised Bedouin-Arabs of the Negev, circumcised women perceive the practice more positively but attitudes toward sexual abuse do not differ by circumcision status (Al-Krenawi & Wiesel-Lev, 1999).

In sum, few studies examine the adjusted affects of female genital practices on women’s attitudes about domestic violence, and no studies compare women’s reports of the psychological effects of the practice by type of circumcision among circumcised women. The evidence does suggest that negative shortterm and longterm reactions to the experience of being genitally cut may coexist with views that reflect norms favoring the practice (Yount, 2002). This review identified no studies that examine the effects of female genital practices on women’s psychological and emotional well-being through circumcision-induced acute and chronic physical sequelae, despite the fact that many circumcised women report chronic complications (e.g., Agugua & Egwuatu, 1982; Calder, Brown & Rae, 1993; Chalmers & Omer Hashi, 2000; El Dareer, 1982; Gadallah, Zarzour, El-Gibaly, Abd El-Aty, & Monazea, 1996; Knight, Hotchin, Bayly & Grover, 1999; Ozumba, 1992; Passmore Sanderson, 1981). Also absent are qualitative studies that assess how these physical effects affect the quality of life of circumcised women.
Sexuality

Researchers have long presumed that female genital practices adversely affect women’s sexual pleasure, yet quantitative evidence of such effects has until recently been lacking. A study of 200 cut and 50 uncut family planning clients in Ismailia, Egypt, shows that a lower percentage of circumcised than uncircumcised women reportedly have sexual desires (58 versus 84), always initiate sex (11 versus 22), enjoy sexual life (32 versus 46), achieve orgasm (29 versus 44 percent), and achieve orgasm before or with the husband (39 versus 62) ([El-Defrawi, Lotfy, Dandash, Refaat, Eyada, 2001]). Circumcised women also have a lower mean frequency of sexual intercourse per week than uncircumcised women (1.9 versus 2.8), and a higher percentage complain of dysmenorrhea (81 versus 56), dryness during sex (49 versus 30), and dyspareunia or pain during sex (46 versus 32). Loss of interest in foreplay does not differ by circumcision status.

Other studies document high prevalences of sexual complications among circumcised women, but estimates are not available for uncircumcised women and are not adjusted for other factors that may affect women’s sexuality (Chalmers & Omer Hashi, 2000; Odoi et al., 1997; Almroth, Almroth-Berggren, Hassanein, Al-Said, Hasan, Lithell, & Berstrom, 2001; Knight et al., 1999; Akotionga, Traore, Lakoande, &. Kone, 2001). Nevertheless, high percentages of circumcised Somali immigrants in Canada report that sex for them is associated with pain (69 percent), shyness (62 percent), and fear (30 percent) (Chalmers & Omer Hashi, 2000). Twenty-seven, 26, and 14 percent of these women, respectively, report that sex is to be endured, avoided, and hated (Chalmers & Omer Hashi, 2000). A study of Sudanese men shows that although 92 percent of respondents attribute “difficulties to penetrate” and 27 percent attribute “male wounds, bleeding, and inflammation of the penis” to female genital practices, only 8 percent report that the practice reduces women’s sexual desire (Almroth et al., 2001). A qualitative study
of 60 men in Egypt suggests that men tend to prefer extramarital relations with uncircumcised women but prefer to marry a circumcised woman to avoid excessive sexual demands (Wassef & Mansour, 1999). These figures notwithstanding, some ethnographers argue that researchers cannot assess the objective impact of practices like excision on women’s sexuality “because it is subjective and individually variable” (Ahmadu, 2000:305). A priori assumptions of an adverse impact also contradict reports from Kono women who had sexual experiences before excision that they perceived no difference or increased sexual satisfaction after the procedure (Ahmadu, 2000).

A recent clinic-based study in Edo State, Nigeria and a population-based study in the Central African Republic show no difference between cut and uncut women in adjusted odds of coital frequency (Okonofua et al., 2002; Stewart, Morison & White, 2002). The clinic-based study in Nigeria also shows no difference by circumcision status in adjusted odds of sexual arousal, partner-initiated sex, and the experience of pain or orgasm during intercourse, but compared to uncut women, cut women have 1.3 times higher adjusted odds of initiating sex, 1.9 times higher adjusted odds of reporting that their breasts are their most sensitive body part, and 0.4 times lower adjusted odds of reporting that their clitoris is their most sensitive body part (Okonofua et al., 2002). A comparison of responses to questions about sexual experiences by type of circumcision among women attending family planning and gynecological clinics in Cairo shows no difference in knowledge about sex or overall sexual satisfaction but lower unadjusted scores for sexual desire/arousal and experience of orgasm among infibulated compared to uncircumcised women (Thabet & Thabet, 2003).

In sum, our review uncovered little quantitative evidence of the effects of female genital practices on women’s sexuality, few studies comparing the sexual experiences of circumcised
and uncircumcised women, and no study comparing experiences and attitudes pertaining to sex by type of circumcision after adjusting for other determinants of these attitudes and behaviors. Unadjusted estimates suggest that infibulation has deleterious effects on women’s sexual arousal and fulfillment. Given the sensitivity of discussing sex in some populations, a comparison (to the extent possible and ethically appropriate) of quantitative responses to questions about sex with similar data gathered in less structured interviews may be useful.

**Participation in Social Life**

Even more sparse and variable in quality is evidence of the social effects of female genital practices either before or after marriage. Physical complications associated with female genital cutting, however, may have numerous social consequences for unmarried adolescent girls. Although some researchers suggest that adolescents in parts of Egypt and elsewhere welcome the event as an important marker of maturation (Lane & Meleis, 1991; Leonard, 2000), others speculate that the health-related complications of the practice may interfere with a girl’s ability to participate fully in social life (Rushwan, 2000). Urinary complications among circumcised schoolgirls, for example, may adversely affect their performance in school. Beyond speculation, however, little is known about the effects of various forms of female genital cutting on the ability of girls to participate fully in school-related and other activities that would enhance their prospects for social and economic security.

Researchers also have hypothesized that the effects of female genital cutting are most apparent at marriage. Although a main justification for female genital cutting in practicing societies is enhancement of the marital capital of unmarried daughters, female genital cutting may reduce marital stability in two ways that relate to its effects on women’s physical and psychological well-being. First, psychological and physical difficulties arising from circumcision
may affect the quality of marital sexual relations. Second, infertility associated with more severe forms of cutting may prevent women from fulfilling prescribed marital roles.

Regarding the first pathway, women who have had any form of genital cutting may experience pain or anxiety during sexual intercourse that leads to frigidity and unsatisfying sexual relations, and women who have had more severe forms may experience coital difficulty, foul odors resulting from chronic retention of urine and menstrual fluids, and/or the development of fistulae that preclude or seriously hinder their ability to have sex. In either case, persistent difficulties may reduce the overall quality of marital relations and may lead the husband to seek divorce or a second marriage (e.g., El Dareer, 1982; Fourcroy, 1998; Hezekiah & Wafula, 1989; Jordan, 1994; Morris, 1999; Rushwan, 2000; Toubia, 1985; Warsame, 1989 in Toubia, 1994).

Among 300 Sudanese men married to infibulated and sunna circumcised or uncircumcised women, 20 percent stated that they married their second, non-infibulated wife because they disliked having to break the scars of their infibulated wives to have sex (Shandall, 1967). A more recent study of Sudanese men showed that most men would have preferred to marry an uncut woman (55 percent of young men and 13 percent of grandfathers), citing more sexual satisfaction as the main reason for this preference (Almroth et al., 2001).

Regarding the second pathway, female genital cutting may adversely affect marital relations by preventing some women from fulfills prescribed marital roles. In particular, if marital unions are established mainly to produce children for the lineage, as they often are in Northeastern Africa, then a failure to produce children may logically dissolve the marriage (e.g., Brady, 1999; Inhorn & Buss, 1993; Morris, 1999; Rushwan, 2000). Indeed, husbands of women who do not produce children are more likely to seek divorce or a second wife (e.g., Ammar, 1954; El Din 1977; van der Kwaak, 1992; Larsen, 1995; Meuwissen, 1966; Sami, 1986) “unless
other attributes compensate for her sterility” (Lewis, 1994:63). In Sudan, infibulated women have over twice the adjusted odds of being currently divorced compared to uninfibulated women, and such effects may occur through the effect of cutting on fertility as well as by reducing marital quality in other ways (Balk, 2000). In East Africa, “women in polygynous unions as well as women with a high frequency of remarriage have a higher incidence of childlessness than those in monogamous unions who are married only once” (Henin, 1981:696). Whereas being in a polygynous union may or may not reduce the relative welfare of women, divorce due to infertility carries harsh consequences for women and their natal families (e.g., Inhorn & Buss, 1993).

Lastly, no study has considered whether changing norms about female genital cutting have unintended negative consequences on women in marriages, in part because the status of their cutting (or lack thereof) is unexpectedly and disapprovingly received by the groom and his family. Researchers studying marital formation should be attuned to the possibility of negative or positive consequences arising from shifting norms and practices as well.

DISCUSSION

Our review of the health and social effects of female genital practices has uncovered a reasonable body of evidence suggesting that more severe forms of genital cutting increase the risk of selected obstetric complications (hypothesis 1). Less is known about the association of severity of genital cutting and other physical and psychological outcomes, however. Except for one study, our review uncovered little evidence related to the association of repeated cutting and adverse health effects (hypothesis 2), although ecological evidence suggests that more severe health effects are more prevalent in settings where more severe and repeated forms of cutting occur. One case-control study and one population-based study support the hypothesis that more
severe forms of genital cutting are positively associated with infertility, but methodological limitations of other population-based studies preclude wider generalizations about this effect (hypothesis 3). Recent research suggests that women in societies where less and more severe forms of genital cutting are common express a range of negative short- and long-term psychological effects of the practice (hypothesis 4), and an important finding from this review is that women may express conflicting views about the practice in contexts where social norms favor it. Little evidence addresses the hypothesized association between female genital practices and women’s social well being during adolescence and marriage (hypothesis 5).

Before proposing an agenda for research, it is notable that several scholars are skeptical of the attention that female genital cutting receives in political and scientific circles (Scherf, 2000; Walley, 1997). Without question, researchers and practitioners need to view female genital cutting with sensitivity to the range of social and economic circumstances that challenge the well being of women in practicing societies. At the same time, female genital cutting still occupies a central place in the lives of women and political activists, and these interests impose a responsibility on scholars who seek to understand the practice to pursue their research with methodological rigor and attention to cultural contexts. Consequently, researchers first need to be prepared for positive and negative health and social effects of female genital practices, especially because the political environment in which such research is undertaken retains certain expectations about unrealized or disproven effects. Second, researchers should address a broader and more nuanced array of possible effects of these practices, including the following:

1) Adjusted risk of obstetric complications by type of genital cutting among women who delivery at home
2) Adjusted risk of primary and secondary infertility by type of genital cutting among representative, population-based samples of women
3) Adjusted effect of female genital practices on women’s attitudes about domestic violence
4) Adjusted effect of female genital practices (directly or indirectly through chronic physical
sequelae) on the psychological well-being of circumcised women
5) Qualitative studies of the association of type of genital cutting and type-induced physical sequelae on the quality of life of circumcised women
6) Quantitative studies of sexual attitudes and experiences of circumcised and uncircumcised women, adjusted for other predictors of these attitudes and experiences
7) Qualitative studies of the sexual experiences of circumcised and uncircumcised women
8) Qualitative and quantitative studies of adolescents’ reactions to the practice and its perceived effects on their participation in social and educational activities
9) Qualitative and quantitative studies of the effects of the practice (or non-practice) of female genital cutting on courtship and marriage in societies where norms have been favorable but are changing

A better understanding of the health effects of female genital practices also will require more rigorous study designs that combine improved measurement of female genital cutting, representative population-based samples of married and unmarried women (where appropriate), and large enough samples to estimate a wider range of possible effects. Improved measurement of female genital cutting can be achieved with use of a “circumcision history” that includes an overall question about whether a woman has ever been circumcised and more detailed questions about the timing and nature of each procedure performed among ever-circumcised women. This format would allow researchers to assess the separate effects of the timing, frequency, and extent of cutting on various health and social outcomes.

In settings where the validity of self-reports of circumcision is unknown, the conduct of a clinical exam on a random sub-sample of participants in at least one representative sample survey would be useful. Note, however, that the use of clinical exams to ascertain the quality of self-reported circumcision status may be unwarranted for ethical reasons but might be appropriate in studies designed also to identify the association of female genital practices and outcomes that women are unlikely to report accurately (e.g., asymptomatic genital infections). To be useful across cultural contexts, an extensive and mutually exclusive checklist that distinguishes between biomedical components of the procedure as well as effects ascertained by
laboratory and clinical exam might be used to record findings.

Administration of improved methods to measure type of circumcision and asymptomatic sequelae in combination with pregnancy histories among representative samples of (married and unmarried) women would allow researchers to build on Larsen’s work of the effects of female genital cutting on the risks of primary and “subsequent” infertility and stillbirths. Use of formative qualitative research would assist in the development of structured questionnaires, and the parallel conduct of in-depth interviews with women who have experienced some form of genital cutting would help to explore beliefs about the effects of female genital practices as well as their less visible and less easily measured psychological and sexual effects (e.g., al-Krenawi & Wiesel-Lev, 1999; El-Defrawi et al., 2001; Johansen, 2002; Keita & Blankhart, 2001).

Finally, past research on the effects of female genital practices has focused heavily on their medical sequelae and little on their direct or indirect social effects. Researchers should give more attention to the effects of physical and psychological outcomes associated with female genital practices on (1) adolescents’ ability to participate in educational and social opportunities and (2) the stability of marriage, as measured by standard indicators (e.g., divorce) and locally salient indicators (e.g., periodic separation). Evidence from certain settings also suggests that the prevalence of female genital cutting is declining and that symbolic or less severe forms of the practice are emerging (e.g., Msuya, Mbizvo, Hussain, Sundby, Sam & Stray-Pedersen, 2002; Nkwo & Onah, 2001; Snow et al. 2002), perhaps in part due to targeted interventions (e.g., Caldwell et al., 2000; CEDPA-Egypt, 1999; Robertson, 1996; Tostan, 1999). Where local norms about the practice have been favorable but are changing, greater attention should be given to the effects of such changes on women’s experiences during courtship and marriage (Balk, 2000; Yount & Balk, forthcoming). An understanding of these changes may best be achieved through a
longitudinal follow-up of initially uncircumcised girls to examine age-specific probabilities of circumcision by type and then to compare the experiences of circumcised and uncircumcised women during courtship and marriage. Ever-married women also may be interviewed to estimate the probabilities of periodic separation, divorce, and/or polygynous union by type of circumcision, and qualitative interviews might be conducted with never-married, engaged, first married, and divorced women and men to understand how these groups view the role of female genital cutting in marriage (El-Gibaly et al., 1999, 2002).

To address this agenda, future studies should use multi-method research designs, a wider range of study participants (e.g., cut and uncut women), representative samples when population inferences are to be made, and methodological rigor in qualitative and quantitative data collection and analysis. Interdisciplinary collaborations among anthropologists, social demographers, clinicians, and others who are knowledgeable about female genital practices and/or practicing populations also will be helpful. Although this agenda gives attention to remaining questions of the effects of female genital practices on women’s reproductive health, it also calls for attention to a wide range of social outcomes that may be directly or indirectly attributable to various forms of the practice. Such research would provide sound evidence for policies and programs to address the range of experiences of circumcised women in practicing societies, if new policies and programs are to be made.
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NOTES

1 The World Health Organization (1997) uses “female genital mutilation” to refer to all types of female genital practices. We use “female genital cutting” or “female genital practices” to refer to the complete set and the WHO system of classification to describe specific types.

2 Agugua and Egwuatu (1982) find in their Nigerian study that excision resulted in labial fusion in 30 percent of 55 cases that presented themselves, thus making it similar to infibulation.

3 An even more radical form called introcision involves cutting into the vagina or splitting the perineum, either digitally or with a sharp instrument. This type has only been reported among Aboriginal populations of Australia (Lyons 1981; Verzin 1975; Worsley 1938). According to Hosken (1978), the Australian medical authorities state that these practices no longer exist.

4 According to Toubia (1993), the law against these practices in Sudan was omitted from a 1991 legal revision, rendering the legal status unclear.

5 The mean age at circumcision is 6–8 years in Sudan (e.g., El Dareer, 1982; Hicks, 1993; Ministry of Planning, 1979), whereas the median age at circumcision is 4 years among Eritrean women aged 15–49 years (National Statistics Office, 1997) and 10 years among ever-married Egyptian mothers and their daughters (El-Zanaty et al., 1996). Regarding potential biases associated with respondent’s age at interview, younger women may be unwilling to recall recent events, and older women may be unable to remember events that occurred many years ago.


7 Studies 38–56 in Appendix 1 are not included in Table 2 because they are case studies or do not provide quantitative estimates of the effects of female genital cutting.


9 The sample in De Silva’s study is likely to be selective, and indeed rates of noncircumcision and sunna and intermediate forms are higher in the sample than in Sudan. Divisions between type of circumcision also are not maintained throughout the analysis (probably because cell sizes are too small), which may explain why obstetric complications are less frequent than one might expect to find in a largely infibulating population.

10 Although the authors report that the mean number of pregnancies to 8 women is 6, it is unclear whether the total number of pregnancies is 48. Reported stillbirths occurred to 2 women, and one child is reported to have died one day after birth. The authors do not associate these outcomes with circumcision characteristics, although one woman was not circumcised, 4 had sunna circumcisions, and 7 were infibulated.

11 This outcome may be attributable to both groups of women having had ante- and neonatal care.

12 Infibulation also creates a barrier to coitus. Because an inability to have coitus due to infibulation would generally occur in the first weeks or months of marriage, this barrier could increase the interval between marriage and first birth without affecting the overall fertility of infibulated women. The effects of coital difficulty may be greater if they lead to unsterile procedures cause infection (e.g., use of unhygienic instruments to open an infibulation or to widen the vaginal opening) (El Dareer, 1982; Shandall, 1967). We identified no studies that
examine differences in coital frequency between infibulated and un-infibulated women and the subsequent use of interventions to facilitate sex.

13 Mustafa (1966:304) claims that “20 to 25 percent of the cases of infertility in the Sudan are due to infibulation, which may cause chronic pelvic infection or may prevent sexual intercourse” but offers neither data nor citations to support his claim. Belsey and Ware (1986) report that studies from the U.S. and Sweden indicate that gonorrhea is the cause of inflammation of the fallopian tubes in less than half of the patients with PID and that a previous delivery, abortion, or curettage has been associated with about 20 percent of such cases. Meuwissen (1966) does not report data on the circumcision status or history of his patients. Toubia (1993) suggests that the prevalence of circumcision in Ghana is only about 30 percent, and Hosken (1981) suggests that it is practiced only in the north. The categorizations “infibulated” and “sunna circumcised” in Shandall (1967) are those used by the author. Shandall (1967) also finds that uncircumcised women are about 1.5 times more likely to have chronic pelvic infection than sunna circumcised women and attributes this finding to the larger share of low-income, southern and western Sudanese among uncircumcised women in the sample.

14 Larsen does not consider the decline in the prevalence of infibulation in the interval but sees this decline as part of a trend in Africa in the declining prevalence of sterility.

15 Women who experience vesicovaginal fistula as a result of the practice also are likely to be ostracized by their husbands and communities (Warsame 1989 in Toubia, 1994).

16 Such a study would suffer from potential problems of endogeneity if a girl’s circumcision status evokes a negative reaction among families of prospective husbands, which motivates the girl’s family to circumcise her.
Female genital mutilation (FGM), also known as female genital cutting and female circumcision, is the ritual cutting or removal of some or all of the external female genitalia. The practice is found in Africa, Asia and the Middle East, and within communities from countries in which FGM is common. UNICEF estimated in 2016 that 200 million women living today in 30 countries—27 African countries, Indonesia, Iraqi Kurdistan and Yemen—have undergone the procedures.