Religion and the Intergenerational Transmission of Female Genital Cutting: Individual and Collective Religious Identity in Burkina Faso
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Female genital cutting (FGC), also known as female genital mutilation or female circumcision,[1] is a term used to describe operations on female genitalia ranging from a small nick in the clitoris to total removal of the clitoris and labia (WHO 2008). One form or another of FGC is practiced in around 28 countries in Africa as well as in some parts of Asia and the Middle East (WHO 2008). International opposition to the practice, based on health and human rights concerns, dates back to European missionaries in the early twentieth century and coalesced around the 1995 United Nations Fourth World Conference on Women in Beijing (Shell-Duncan and Hernlund 2000). Currently, both local and international organizations are working to eradicate female genital cutting in Africa, and most countries where it is prevalent have some form of legal prohibition of the practice (UNICEF 2005). Efforts to reduce the prevalence of FGC have had mixed success: despite the long history of these efforts, the factors supporting or impeding cessation are not well understood.

Muslim cultural identity has been cited as a support for female genital cutting in some countries, notably Egypt and the Sudan (Gruenbaum 2001; Yount 2004). However, the link between religious affiliation and female circumcision is not clearly defined. FGC did not originate as an Islamic practice. Scholars have concluded that its establishment predates the development of Islam by many thousand years, and female circumcision is rare in much of the Islamic world, including most South Asian and Arab Muslim countries (Gruenbaum 2001;

[1] For a discussion of the controversy inspired by the terminology, see Obermeyer and Reynolds (1999) and the responses to their article in the same issue of *Reproductive Health Matters*; see also Shell-Duncan and Hernlund (2000). We use the terms *female genital cutting*, *female circumcision*, *cutting*, and *circumcision* interchangeably in this article.

Mackie 1996, 2000; PRB 2001). However, some Muslim religious leaders interpret Islamic texts as requiring female circumcision (Gruenbaum 2001; Yount 2004). Female circumcision is prevalent in predominantly Muslim countries like Egypt and Mali and among Muslim populations in African countries including Sudan and Ethiopia (PRB 2001). Even in the absence of formal religious doctrine, female circumcision is understood as a Muslim custom by some women who practice it (Boddy 2007, Johnson 2000). Still, the variation in the strength and direction of the association between religious affiliation and FGC indicates that any association between Islam and the practice of female genital cutting does not result from a universally applicable religious belief, but rather is a culturally specific product of particular Muslim identities.

In this article, we examine the salience of various aspects of religious identity in determining circumcision behavior through a case study of one West African country, Burkina Faso. Burkina Faso is a religiously and ethnically diverse country where approximately three quarters of adult women had been circumcised as of 2003 (INSD and ORC Macro 2004). Despite the comparatively low visibility of political Muslim identity in Burkina Faso, the prevalence of female circumcision is higher among Burkinabé Muslims than among adherents of either Christian or traditional religions. Burkina Faso therefore provides a fruitful setting for examining how various aspects of religious identity – specific beliefs, individual religious identity, and collective religious identity – shape behavior related to female circumcision.

We use data from the 2003 Burkina Faso Demographic and Health Survey to examine religious variation in the intergenerational transmission of female genital cutting. We take advantage of the two-stage sampling procedure used by the DHS to implement multi-level models of circumcision of respondents' daughters. These models explicitly account for both

individual and community characteristics. We use these models to test a series of hypotheses regarding religious affiliation and health behavior. Results show that differences between affiliates of Christian and traditional religions are largely explained by sociodemographic differences and specific religious beliefs. Muslim distinctiveness, in contrast, persists even after accounting for both individual and community differences.

Female genital cutting in Burkina Faso

According to the most recent DHS, the most reliable source of national-level estimates of prevalence, about 77% of Burkinabé women age 15-49 were circumcised as of 2003 (INSD and ORC Macro 2004). The practice is geographically distributed across the entire country, and is present among all major ethnic groups. In most cases, girls are circumcised during infancy or childhood; the average age at circumcision among circumcised women in the DHS was 4.1 years old (INSD and ORC Macro 2004; U.S. Department of State 2001).

The government of Burkina Faso has opposed FGC since the 1983 revolution that established the current republic. In 1990, the National Committee Against the Practice of FGM/C (Comité National de Lutte Contre la Pratique de l'Excision, CNLPE) was established as an NGO to work toward eradication of the practice, and the CNLPE was integrated into the government as a funded secretariat in 1997 (Population Council 2008). In 1996, a law criminalizing female circumcision was passed in Burkina Faso. This law has been accompanied by public education and outreach campaigns through schools, community and religious leaders, and media exposure.

Opposition to FGC is based on both human rights concerns and the health consequences of genital cutting. The immediate negative health effects of the operations can include severe pain, hemorrhage, and infection. In addition to these short-term consequences, possible long-term effects of cutting include scar formation, obstruction of the vaginal opening, fistula, chronic

pelvic infections, and prolonged labor (WHO 2008). Population-based studies of the prevalence of harmful effects are rare (Obermeyer 2003; Obermeyer and Reynolds 1999; Yount and Balk 2004; but see WHO Study Group 2006 for a recent exception). A multi-country study comparing uncut women and women with varying types of FGC found that caesarean section, postpartum hemorrhage, and stillbirth were significantly more likely among women with more severe forms of FGC than among uncut women (WHO Study Group 2006). In a clinic-based study in rural Burkina Faso, 14% of cut women were found to have at least one observable health complication related to female circumcision, with scarring being the most frequent complication (Jones, Diop, Askew, and Kaboré 1999). Less than 1% of women in the sample had more than one complication, and the most severe complications were also the rarest (e.g., less than 1% of women had vesicovaginal or rectovaginal fistulae). Women who had been circumcised were also more likely to have experienced an obstetric complication (perineal tear, hemorrhage) than uncut women.

Explaining religious variation in female genital cutting

Burkina Faso lies between the highly Islamized countries of Mali and Niger and coastal West Africa, where Muslim populations are smaller. Approximately 60% of adult women in Burkina Faso are Muslim, 23% Catholic, 5% Protestant, and 10% belong to traditional or animist religions (INSD and ORC Macro 2004). The correlation between religion and ethnicity is low in Burkina Faso relative to other African countries, such as Kenya or Nigeria, where religious affiliation is closely linked to ethnic identity. Most of the major ethnic groups have at least a substantial minority of Muslims (ranging from 20% to 70%), and only the nomadic Peul and Touareg ethnic groups, which together make up only 7% of the population, are over 80% Muslim. FGC is most common among Muslims – about 82% of adult Muslim women are cut –

but is widespread among Christians (68%) and animists (73%) as well. Any explanation of religious variation in FGC must account for both Muslim distinctiveness and variation among non-Muslims.

Socioeconomic differences between adherents of different religions likely contribute to religious variation in the practice of female genital cutting. Christianity and Islam in West Africa are both imported religions. Trans-Saharan trade brought Islam to West Africa as early as the eighth century. Traders and political elites were the first to convert, and widespread conversion outside of urban centers did not occur until the eighteenth and nineteenth centuries (Davidson 1965). Christianity was introduced largely by colonists and missionaries, who constructed schools and hospitals as well as imposing political structures (Isichei 2000). During the nineteenth centuries, wars of Islamic conversion took place concurrently with the expansion of the French colonial administration. Alignment and opposition between colonial and Islamic forces were complicated and changing (Harrison 1988). These longstanding institutional religious structures produced systematic differences between Christians, Muslims, and adherents of traditional religions in access to education and economic resources.

Previous research on the relationship between socioeconomic characteristics and behaviors and attitudes related to FGC has produced mixed results. Some studies show that girls in wealthy households are less likely to be circumcised, while others show no relationship between economic status and FGC (Boyle, McMorris, and Gomez 2002; Hayford 2005; Yount 2002). Findings regarding urban residence are similarly variable (Caldwell, Orubuloye, and Caldwell 1997; Carr 1997; Yount 2002). The most consistent result from this body of literature is the negative relationship between education and both the likelihood that a woman is circumcised and her attitude toward the continuation of the practice (Boyle, McMorris, and Gomez 2002;

Caldwell, Orubuloye and Caldwell 1997; Carr 1997; El-Gibaly et al. 2002; Hayford 2005; Yount 2002). The negative relationship between education and FGC holds in both East and West African countries as well as in Egypt, applies to both adult women and their daughters, and is present in countries with high FGC prevalence levels as well as in countries where the practice is rare. Thus, some of the religious differences in female genital cutting in Burkina Faso are likely attributable to differences in educational attainment among religious groups.

Formal religious doctrine may also contribute to differences in circumcision practices. Some readings of the hadith suggest that Islam requires FGC. However, this interpretation is debated, and there is disagreement among contemporary religious leaders about whether Islam requires, encourages, permits, or discourages the practice (Gruenbaum 2001; Yount 2004). The Bible contains no prohibitions against female circumcision. Institutionally, however, Christian missionaries (Protestants in particular) have been waging campaigns against female circumcision for more than a century – a focal point of their broader opposition to a host of "unchristian" traditional practices (West and Dube. 2000). Indigenous West African religions are not based on founding texts, so determining "formal" doctrine is difficult. Furthermore, even when religious doctrine is clear, doctrinal differences can produce differences in behavior only if religious institutions are able to enforce these doctrines, either formally through rewards and punishments or informally through social influence (McQuillan 2004).

In the case of female circumcision, religious differences in behavior are driven not only by textually-based doctrine but by local applications of religious beliefs. In East Africa, missionaries' longstanding efforts to abolish FGC were framed as a conflict between Christianity and traditional religious beliefs. The clash between missionary teachings against FGC and traditional practices among the Kikuyu in East Africa developed into a symbol of cultural and

political conflict, and female circumcision was politicized during the fight for independence in Kenya (Thomas 2003). In West Africa, in contrast, female genital cutting has been a less religiously and politically charged issue. Although missionaries led active campaigns against polygyny, FGC has not been the subject of Christian activism in West Africa (Caldwell, Orubuloye, and Caldwell 2000). Traditional religion is often credited with underpinning the practice in this part of the world; the relationship between West African Islam, indigenous religions, and FGC has gone largely unexamined. Here, we analyze differences between traditional religions, Christianity, and Islam in addition to Christian-Muslim dichotomies, and consider both individual religious beliefs and variation in the local applications of those beliefs.

We focus on the local prevalence of circumcision as an important component of community context. Change in the practice of FGC is theorized to be a collective process, with individual decisions strongly influenced by community characteristics and behavior. Mackie (1996, 2000) argues that changes in the practice of FGC can only take place collectively. Because cutting is seen as a prerequisite for marriage, individual decisions to go against local circumcision norms will lock daughters out of the marriage market. Thus, families can only change circumcision practices when there is sufficient local support to ensure that daughters will be able find willing husbands. Paradoxically, the presence of a non-circumcising group may also strengthen circumcision norms. Research in multiple contexts has found that the presence of non-circumcising groups, and the definition of female circumcision as a key element of difference, plays a large role in justifying and supporting the process. In Kenya, for example, FGC was politicized as a symbol of cultural difference between indigenous Kenyans and colonizers, but is also held up as a barrier against intermarriage between the non-circumcising Luo and circumcising ethnic groups such as the Kikuyu and Kalenjin (Thomas 2003; Weinreb 2001;

White 1990). In Sudan as well, ethnic differences in female circumcision practices are singled out as markers of social and cultural differences (Gruenbaum 2001). Here, we study the degree to which religious differences in female genital cutting vary according to the local prevalence of FGC.

Analytic approach

In this analysis, we assess the contribution of (1) sociodemographic characteristics, (2) specific religious beliefs, and (3) community circumcision context to religious differences in female genital cutting in Burkina Faso. We estimate a series of nested models predicting the likelihood that a respondent will circumcise her daughters. (Details on the construction of the dependent variable are in the data and methods section below.) All models are multi-level to appropriately estimate the effects of community characteristics and to account for the correlation within communities of women's decisions about their daughters' circumcision. The first model in our analysis includes only measures of respondent's religious affiliation and shows the unconditional association between denomination and circumcision behavior. Subsequent models add measures related to different explanations for religious difference; we examine change in the coefficients for religious variation as the primary outcome of interest.

To test the possibility that differences in social and economic resources account for religious differences in circumcision behavior, we control for individual and community-level education, household wealth, and urban-rural residence. We hypothesize that religious differences will persist net of individual and community sociodemographic characteristics.

To test the hypothesis that specific doctrine related to female genital cutting explains religious differences in behavior, we add a measure of whether a respondent believes her religion requires female circumcision. This individual interpretation of religious doctrine is more salient

than official religious teachings in determining respondents' behavior. We hypothesize that individual doctrinal beliefs will explain some but not all of the denominational differences in circumcision behavior.

To test the role of local context in shaping religious differences, we incorporate the prevalence of female genital cutting in the community, allowing for interactions between community context and individual religious identity. We hypothesize that daughters will be more likely to be circumcised in communities where circumcision among adult women is more common. We also hypothesize that religious differences in daughters' cutting will be larger in places where FGC is less common, and thus where differences are likely to be more salient.

Data and methods

Data

We use data from the 2003 Demographic and Health Survey for Burkina Faso. The DHS are a set of nationally-representative surveys of women of reproductive age conducted in more than 75 countries worldwide. The surveys are largely standardized across countries and include information on household structure and sociodemographic characteristics, reproductive history, child health, and health knowledge and behaviors. In countries where female circumcision is prevalent, the DHS questionnaires include a module on knowledge, attitudes, and behavior related to FGC. The DHS use a two-stage sampling procedure, first choosing sample areas and then selecting households from within those clusters. In each selected household, all women age 15-49 are selected for interview. The 2003 Burkina Faso DHS was conducted by the Institut National de la Statistique et de la Démographie in cooperation with Macro International and included 12477 women in 400 sample clusters.

Because the DHS sample clusters may include more than one village, cluster-level measurements may not accurately represent community effects. This distortion would bias the community effects found in these analyses toward zero. Thus, findings on the magnitude of correlation within communities are conservative. However, previous research suggests that the DHS sample clusters do allow for meaningful analysis of community effects. For instance, Kravdal (2002), using DHS data to analyze the influence of community-level education on fertility, tests and confirms the hypothesis that cluster averages can be used as proxies for community levels of various characteristics. Kohler and colleagues (2000), in a study on network effects on family planning in Kenya, found qualitatively similar results for community effects using data from the Kenya DHS and from a village-based survey.

We focus primarily on the module of the DHS devoted to female genital cutting. In this section, women were first asked whether they had ever heard of genital cutting. They were then asked whether they themselves had been circumcised, and if so at what age. Women with at least one living daughter were asked how many of their daughters were circumcised. Women with circumcised daughters were then asked about the circumstances of the circumcision of their most recently circumcised daughter; women without any circumcised daughters were asked if they planned to have their daughters circumcised. After these specific questions a more general set of questions was asked regarding attitudes toward circumcision and positive and negative aspects of the practice.

In general, DHS data are regarded as highly reliable. To our knowledge, however, there has been no systematic review of the quality of data collected by DHS on female genital cutting,

either in general or specifically for Burkina Faso.[2] Few women refused to answer the question, suggesting that the subject matter was not seen as an especially sensitive issue. Only 3% of the sample reported never having heard of FGC; of women who had heard of it, only two women (0.02%) had missing responses for the question about their own circumcision. Qualitative research conducted in Burkina Faso suggests that secrecy surrounding genital cutting has increased as a result of the law against the practice passed in 1996 (Population Council 2008). Women may underreport daughters' circumcision for fear of legal repercussions. Thus, these results should be interpreted as conservative estimates of levels of intergenerational transmission. In the absence of any evidence that underreporting varies by religion, however, estimates of religious differences in transmission should be unbiased.

Sample construction and dependent variable

The primary outcome variable in this analysis is whether a respondent has circumcised or plans to circumcise her daughters. We concentrate on daughter's circumcision rather than respondent's circumcision for two main reasons. First, since little is known about the respondents' natal families, studying daughters' rather than respondents' circumcision allows for better understanding of the context surrounding circumcision. Second, we are interested in the effects of community characteristics on circumcision decisions. However, the DHS only has information on a respondent's current place of residence. Because the daughter's circumcision is more recent than the respondent's, and because many women move at marriage, the current community of

[2] In Egypt, a follow-up study to the Egypt DHS compared women's responses to survey questions with the results of pelvic exams given by gynecologists. This study of 1,339 women found over 90 percent agreement between women's reports of their circumcision status and doctors' assessments (El-Zanaty et al. 1996; cited in Carr 1997). This study, however, was not nationally representative; the women were clients of one of a set of hospitals and clinics.

residence is more likely to be the relevant community for the respondent's decision about circumcising her daughter.

Unlike previous DHS, where women were asked about the circumcision status of a reference daughter (usually the youngest daughter), respondents in the 2003 Burkina Faso survey were asked about all daughters. Women with living daughters were asked if any of their daughters were circumcised; if they responded affirmatively, they were asked how many were circumcised as well as details about the most recent circumcision. If no daughters were circumcised, they were asked if they planned to have their daughters cut in the future.
We used this series of questions to create a single dichotomous outcome variable. Women with any circumcised daughters and women who planned to circumcise were combined into one group and assigned a value of one for the outcome variable. Women with no circumcised daughters and who did not plan to circumcise their daughters were assigned a value of zero. Women who had some circumcised daughters were not asked if they planned to have their remaining daughters cut. Counting these women among women who had all of their daughters cut may overstate the transmission of FGC if these women had in fact changed their minds about the practice after having their older daughters cut. However, examining the distribution of the age and number of daughters for these women showed that the majority had only one daughter who was not circumcised, and that in most cases the remaining uncircumcised daughter was very young. These patterns are more consistent with the scenario that the daughters would be circumcised in the future than with the possibility that women had changed their minds. More generally, planning to have one's daughter circumcised is not an ideal measure of the intergenerational transfer of female genital cutting, since some mothers may not carry out their plans to cut and others may have their daughters cut despite their plans not to. However, it is a

more precise measure than the more general attitude questions asked by the DHS, because it asks respondents specifically about their own daughters.

Because respondents' daughters vary in age, these data do not represent a true cross-sectional prevalence of female genital cutting in Burkina Faso. It is also difficult to assess change in the practice over time, since age at circumcision can vary. Using event history techniques, it would be possible to analyze trends over time. In this article, however, we are primarily interested in religious variation, rather than change over time. We therefore use cross-sectional analyses to examine all living daughters.

Finally, we limit analyses to the daughters of circumcised respondents. Women who were not circumcised almost never circumcised their own daughters (only 88 women in the whole sample); essentially, only daughters of circumcised mothers are at risk of being circumcised themselves. Our final analytic sample, circumcised women with daughters who had non-missing values for dependent and independent variable, was 5889 women.

Religion measures

The DHS asks only limited questions about religious affiliation. Respondents are divided into five groups: Catholics, Protestants, Muslims, traditional/animist religions, and no religion. It is not possible to separate mainline Protestants from evangelical or indigenous Christian churches, and it is not possible to distinguish between different Muslim brotherhoods. Data on attendance and strength of religious belief are also not available. There are relatively few Protestants in Burkina Faso, and exploratory analyses showed no substantive differences between Catholics and Protestants. We therefore combine Catholics and Protestants in all analyses, and use as our primary measure of religious affiliation a set of four dummy variables for religious affiliation: Christian, Muslim, traditional/animist, and no religion.

The module on female genital cutting also asks specifically about religious beliefs about the practice: respondents are asked whether their religion requires female circumcision. Possible responses are yes, no, and don't know. We treat "don't know" responses as a distinct category, rather than combining them with either yes or no responses or excluding them as missing values. This approach posits that uncertainty about religious beliefs is a meaningful category; that is, uncertainty about doctrine leads to different behavior than either positive or negative certainty. In exploratory analysis, we tested this classification and found that modeling "don't know" responses separately added to the explanatory power of the models.

Control variables

Our models also include measures of individual and community sociodemographic characteristics shown in previous research to be associated with the prevalence of female genital cutting. Specifically, we control for respondent's age, education level, and household wealth; the proportion of women in the community who have gone to school; and whether the community is urban or rural. Household wealth in poor countries is notoriously difficult to measure in large-scale surveys. The DHS collects data on a series of household characteristics (e.g., water supply, housing material, electricity) and possessions (e.g., bicycle, car, television) and uses these data to construct a weighted index representing household wealth (Rutstein and Johnson 2004). The resulting index score can be used to compare households' overall economic well-being. It has been criticized for overrepresenting factors that indicate connections to a market economy while devaluing traditional sources of wealth such as land and livestock, and for neglecting intrahousehold dynamics related to the control of household resources (Bingenheimer 2007). In the absence of more appropriate alternatives, we use the DHS constructed wealth index score as a rough estimate of household economic status. The distributions of key independent and

dependent variables, for the sample as a whole and for each religious group, are shown in Table 1.

Some models also incorporate measures of community prevalence of circumcision. The prevalence of genital cutting among adult women is an indicator of the strength of local circumcision norms and has been shown to be a strong predictor of the intergenerational transmission of FGC in Kenya (Hayford 2005). We calculated the proportion of respondents in a sample cluster who had been cut and dichotomized this measure to divide the sample into relatively high prevalence and low prevalence communities. Low prevalence communities are those where at least 20% of respondents are uncut; this cutoff is approximately the median prevalence level among clusters.

Model

Hierarchical models, also known as multilevel models, provide a framework for simultaneous estimation both of effects that are specific to individuals and effects that are common to a community. Multilevel models also estimate unbiased coefficients and standard errors; standard linear and logistic regression techniques produce biased results when observations are not independent, as is likely the case when community effects are strong. The dependent variable here, whether a mother has her daughters circumcised, is dichotomous. We therefore use multilevel logistic regression methods to model categorical outcomes. For a general discussion of multilevel models, see Bryk and Raudenbush (1992) or Goldstein (1995); Guo and Zhao (2000) describe the particular case of multilevel models for dichotomous outcomes.

The statistical model used in multilevel analysis of dichotomous variables closely resembles the standard logistic regression model. As in the logistic regression model, the observed outcome variable y_{ij}, whether respondent i in cluster j has circumcised her daughters, is

assumed to have a Bernoulli distribution, with underlying probability of circumcision p_{ij}. (That is, p_{ij} is defined as the probability that $y_{ij} = 1$.) The logit function is used to relate p_{ij} to the explanatory variables:

$$\log[p_{ij} / (1 - p_{ij})] = \beta_j + \beta_1 x_{1ij} + ... + \beta_k x_{kij} , \quad (1)$$

where β_j is the intercept, x_{kij} are the explanatory variables, and β_k are the coefficients for these variables.

Multilevel analysis differs from standard logistic regression in that community effects are explicitly represented separately from individual effects. Instead of a fixed intercept, each level two unit (here, the sample cluster) has its own intercept, β_j. This cluster-specific intercept is determined by community characteristics, but it also includes a random component:

$$\beta_j = \beta_0 + \beta_1 x_{1j} + ... + \beta_q x_{qj} + \alpha_j . \quad (2)$$

Here, β_0 is a fixed intercept, the overall population intercept. As indicated by the *j* subscripts, the explanatory variables x_{qj} are characteristics of communities, not individuals. In this case, for example, the community-level intercept may be influenced by the average education level in the community, or by the proportion of women circumcised in the community. The coefficients for these variables are represented by β_{qj}.

The random component of the cluster intercept is α_j, a cluster-specific random variable with mean 0. There is also a random component at the individual level, ε_{ij}, associated with the binomial distribution of the dependent variable. The two random components α and ε are assumed to be uncorrelated.

The DHS sample included 12477 women in 400 clusters. The largest cluster had 69 respondents and the smallest cluster had ten. The analytic sample consists of 5889 women in 398 clusters. The largest cluster has 41 women, and the median cluster size of respondents in the

sample is 16. Theoretically, the size of clusters does not matter for multilevel analysis. Individual respondents are a sample of their community; even respondents in single-respondent clusters are influenced by other (unmeasured) community members. In practice, some estimation methods can produce biased results when level two units have only one or two individuals. To avoid this problem we use PROC NLMIXED in SAS to estimate all models. The estimation techniques used by most other programs approximate the likelihood function. Unlike these programs, NLMIXED maximizes the actual likelihood function. It therefore provides accurate estimations of random effects, as well as accurate likelihood statistics that can be used to judge goodness of fit (Guo and Zhao 2000; Rodríguez and Goldman 1995; Wolfinger 1999).

Results

Descriptive statistics

Table 2 shows the proportion of women circumcised according to key independent variables as well as the proportion of circumcised women with daughters who have been circumcised or who plan to circumcise their daughters. The overall prevalence of circumcision is high but far from universal, with about three quarters of respondents reporting having been circumcised. There is clear evidence for an ongoing decline in the prevalence of FGC. Younger women in the sample are less likely to have been cut than older women: only 65.0% of women age 15-19, compared to 83.6% of women age 45-49, the oldest age group in the sample. In addition, less than half (48.6%) of women who are themselves circumcised will or have cut their daughters.

There is substantial variation across population subgroups in both the proportion of women circumcised and the likelihood that a circumcised woman will continue the practice with her daughters. Fewer educated women than women with no education are circumcised. This relationship is not likely to be causal, since genital cutting occurs before school age for most

women. However, it suggests that families who did not have their daughters cut have some characteristic that is also associated with sending daughters to school. Among women who were cut, educated women are less likely than women with no education to have their daughters cut (39.4% of women with primary education and 17.1% of women with secondary education or more, compared to 50.9% of women who never attended school).

The proportion of women circumcised also varies by religious affiliation, the central variable of interest in this analysis. Muslim women have the highest prevalence of FGC, with about 81.5% of Muslim women cut. The lowest proportions of women circumcised occur among Christians (68.0%) and women who report no religion (63.0%); women with traditional or animist beliefs are in the middle. A similar gradient is visible for the proportion of circumcised women who will pass the practice on to their daughters, with about 54.5% of Muslims planning to circumcise their daughters and about 34.3% of Christians. Note that although these differences are substantial, religious affiliation is far from an absolute predictor of behavior. Among adult women, the majority in all religious groups are cut, and a substantial minority in all religious groups are uncut. Looking at daughters of circumcised women, fewer than half will be circumcised in most religious groups, and only slightly more than half of daughters of circumcised Muslim women will be cut. The multivariate analysis below attempts to understand some of the sources of variation in the association between religious affiliation and circumcision practices.

Multivariate results

Multivariate results are shown in Table 3. This table presents a series of four nested models: Model 1, a baseline model including only religious affiliation; Model 2, which controls for individual and community-level sociodemographic characteristics; Model 3, which adds

individual religious beliefs; and Model 4, which incorporates community circumcision prevalence.

Model 1 shows the unconditional association between religious affiliation and the likelihood that a circumcised woman will pass the practice on to her daughters. Consistent with the descriptive results, this regression shows a negative association between Christian affiliation and circumcision of daughters; the odds of daughter's circumcision are 40% lower for Christian women than for women with traditional or animist beliefs, the omitted category ($OR = e^{-0.48} = 0.6$). Women with no religious affiliation are less likely than animist women to circumcise daughters, but this difference is not statistically different from zero. The difference between Muslim women and women with traditional or animist beliefs is also not statistically significant. This baseline model, then, suggests that the most salient differences in the transmission of female circumcision are between Christian women and non-Christian women.

Model 2 adds basic sociodemographic characteristics (age, education, household wealth, community education, urban residence) to see if religious differences in the intergenerational transmission of female genital cutting are the result of sociodemographic differences between adherents of different religions. The relationship between sociodemographic controls and daughters' circumcision is largely consistent with the bivariate relationships shown in Table 2. Older mothers are more likely to have their daughters cut, and women with some education are less likely to have their daughters cut, although the difference between women with a primary school education and women with no formal education is not statistically significant. Once these characteristics are accounted for, the coefficient for Christian women is reduced in magnitude, from -0.48 (Model 1) to -0.31 (Model 2). That is, some but not all of the differences in circumcision practices between Christian women and women with traditional beliefs can be

attributed to the greater wealth and higher education levels of Christian women. In contrast, differences between Muslim women and animist women are *increased* by controlling for sociodemographic characteristics. Muslim women, on average, are better educated, wealthier, and more likely to live in urban areas than women with traditional or animist beliefs (Table 1). Controlling for these differences, Muslim women are more likely to circumcise their daughters than comparable women with traditional beliefs (B=0.38, OR=1.5).

Model 3 adds a measure of specific religious belief, whether the respondent believes that her religion requires female circumcision. We measure both a positive belief and uncertainty about religious tenets regarding female circumcision. As expected, believing that circumcision is required by religion positively predicts the likelihood that daughters will be circumcised (B=1.20, OR=3.3). Relative to women who say their religion does not require circumcision, women who are uncertain about religious requirements are also more likely to have their daughters circumcised (B=0.33, OR=1.4). Additional tests show that the difference between "yes" and "don't know" responses to the question about religious requirements for circumcision is statistically significant (results available from authors upon request). Controlling for specific religious beliefs attenuates some of the religion coefficients relative to Model 2. Differences between Christian women and women with traditional or animist beliefs are reduced to near zero (B=-0.08) and are not statistically significant once religious beliefs about female circumcision are accounted for. Differences in the circumcision of daughters between non-Muslim religious groups in Burkina Faso can therefore be attributed to a combination of sociodemographic differences and interpretations of religious doctrine relating to female circumcision.

However, differences between Muslims and traditional or animist women remain large and statistically significant even when religious beliefs are accounted for (B=0.38, OR=1.5). In

fact, controlling for specific religious beliefs does not change the Muslim-animist difference at all – coefficients in Model 2 and Model 3 are the same. Although Muslim women are more likely than women with traditional or animist beliefs to say that their religion requires circumcision (Table 1), these beliefs do not explain their greater propensity to pass the practice on to their daughters.

In all models, the level two variance is statistically different from zero, and adding additional control variables in Models 2 and 3, including measures of community characteristics, does not substantially reduce the variance relative to the baseline model (0.64 in Model 3 compared to 0.69 in Model 1). Using the formula $\rho = s^2/(s^2 + \pi^2/3)$ to calculate the intraclass correlation coefficient rho (Guo and Zhao 2000), this level two variance implies that about 16% of the remaining unexplained variation in Model 3 is between clusters rather than within clusters. Model 4 introduces another community-level characteristic, the prevalence of female genital cutting among adult women in the community. Adding this measure of local circumcision norms reduces the level two (between cluster) variance by about 20% (from 0.64 to 0.50). Model 4 also incorporates interactions between individual religious affiliation and local circumcision prevalence.[3] Neither the main effect of Christian affiliation nor its interaction with circumcision prevalence are statistically different from zero, indicating that differences between Christian women and animists are small in both low prevalence and high prevalence clusters. The main coefficient for Muslim women is close to zero in Model 4 (B=0.02): in high prevalence communities, the reference group, there are no differences in daughters' circumcision between

[3] In exploratory analysis, we tested interactions between other measures and circumcision prevalence. There was some evidence for statistically significant interactions between education and circumcision prevalence, but because these interactions are tangential to our substantive interest we do not present those results here. The relationships between other measures and daughter's circumcision did not vary according to local circumcision prevalence.

Muslim and animist women, net of other characteristics. In low prevalence communities, in contrast, Muslim women are significantly and substantially more likely to circumcise their daughters (total "effect" = 0.02 + 0.57 = 0.59; OR=1.8). The significant interaction between Muslim affiliation and circumcision prevalence also implies that the "protective" effect of living in a low-prevalence community is smaller for the daughters of Muslim women than for the daughters of women with traditional or animist beliefs. For women with traditional religious beliefs (the reference category), women in clusters where at least 20% of adult women are uncircumcised are less likely to circumcise their daughters (B=-1.23, OR=0.3). For Muslim women, this difference is smaller in magnitude (B=-1.23 + 0.57=-0.66, OR=0.5).

Discussion and conclusions

This article examines the relationship between religious affiliation and the intergenerational transmission of female genital cutting in Burkina Faso, a religiously diverse West African country. Because of its importance in the delineation of adult identity and of social group membership, and because of its history of appropriation in colonial conflicts in some places where it is practiced, female genital cutting has strong symbolic meaning both for those who practice it and those who do not. This symbolic meaning has been tied to religious identity – most commonly Muslim identity – in some countries, but the connection is context-specific, and variation in the connection is not well understood.

The substantial differences between Burkinabé Christians, Muslims, and adherents of traditional religions in education, wealth, and other sociodemographic characteristics do little to explain differences across religious groups in the practice of female circumcision. In fact, some religious differences in the transmission of FGC are larger once sociodemographic differences are taken into account. Respondents' interpretations of religious doctrine regarding female

circumcision are more important than sociodemographic factors in explaining circumcision behavior. Controlling for these beliefs reduced differences between Christians and animists to a statistically insignificant level. It is striking that controlling for specific religious beliefs does not attenuate differences between Muslim women and women with traditional or animist beliefs. Among the religious affiliations included in this analysis, Islam has the strongest formal doctrinal support for female circumcision, and Muslim women in this sample are the most likely to report that their religion requires circumcision. Yet differences between Muslims and other groups are the least sensitive to controlling for specific religious beliefs.

These results demonstrate the importance of individual interpretations of religious doctrine. Individual respondents' belief in the religious requirement for FGC explains circumcision of daughters even when there is not a consensus among religious authorities about religious doctrine. At the same time, this analysis highlights the collective aspects of religious identity. Religious differences in circumcision behavior are context-dependent. In communities where a high proportion of adult women are cut, Muslim women are not more likely to circumcise their daughters. Religious affiliation plays a role in circumcision decisions primarily in communities with lower circumcision prevalence. Religious differences are conditional on local norms, suggesting that the religious underpinnings for this practice are inseparable from more general "cultural" motivations. It is possible that female genital practices are important as a way of defining a distinct identity for Muslims in Burkina Faso, and that this role becomes more central as the prevalence of the practice declines among other groups. Institutional religious structures, such as schools and congregations, may also play a larger role in sustaining FGC among Muslims than among other religious groups.

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Table 1: Distribution of dependent and independent variables in sample

	Total sample	Christian	Muslim	Traditonal/ Animist	No religion
N	12475	3723	6982	1516	254
Percent of women circumcised	76.6	68.0	81.5	73.3	63.0
Percent of circumcised women with daughters circumcised or planned	48.6	34.3	54.5	46.5	40.6
Percent believing a religious imperative for circumcision	21.4	5.9	29.5	19.2	7.2
Percent who don't know whether religion requires circumcision	11.7	7.8	12.8	13.0	33.9
Percent urban residents	21.6	30.7	21.3	1.1	3.5
Percent with some education	19.7	33.1	16.6	3.1	5.6
Mean wealth index	0.07	0.35	0.06	-0.56	-0.48

Data: Burkina Faso DHS, 2003. All percents and proportions weighted.

Table 2: Proportion of respondents and daughters circumcised, by specified characteristics

	N (survey)	Percent circumcised	N (analytic sample)	Percent of women with daughters circumcised/planned
Total	12473	76.6	5889	48.6
Age of respondent				
15-19	2777	65.0	167	41.1
20-24	2241	76.2	786	37.6
25-29	1988	79.2	1132	36.1
30-34	1599	79.4	1028	44.0
35-39	1535	81.6	1087	55.6
40-44	1256	83.2	909	59.1
45-49	1077	83.6	780	65.9
Area of residence				
Rural	9459	77.0	4744	50.5
Urban	3014	75.1	1145	39.1
Education				
None	9900	78.3	5151	50.9
Primary	1476	74.0	512	39.4
Secondary or higher	1097	64.3	226	17.1
Wealth index				
Poorest	2120	73.2	1001	53.3
Poorer	2276	76.8	1137	50.8
Middle	2939	77.5	1503	48.1
Richer	2061	79.6	1055	53.0
Richest	3077	75.9	1193	38.5
Religion				
Christian	3723	68.0	1458	34.3
Muslim	6980	81.5	3551	54.5
Traditional/animist	1516	73.3	769	46.5
No religion	254	63.0	111	40.6
Religious imperative for circumcision?				
No	8380	74.9	4016	40.3
Don't know	1334	81.0	582	51.1
Yes	2318	92.0	1291	70.0
Hasn't heard of circumcision	442	--	--	--

Data: Burkina Faso DHS, 2003. Women with invalid values for religion are excluded from the table. Analytic sample is circumcised women with at least one daughter and with non-missing values for independent variables. All percents weighted.

Table 3. Multi-level models predicting daughter's circumcision

	Model 1			Model 2			Model 3			Model 4	
	B	SE		B	SE		B	SE		B	SE
Intercept	-0.20	0.11		-0.93	0.13	***	-1.31	0.13	***	-0.73	0.17
Religion (omitted = traditional/animist)											
Christian	-0.48	0.12	***	-0.30	0.12	*	-0.08	0.13		-0.23	0.17
Muslim	0.11	0.11		0.38	0.12	**	0.38	0.12	**	0.02	0.16
No religion	-0.14	0.23		-0.12	0.24		-0.03	0.24		-0.58	0.36
Age (centered at 25)				0.07	0.00	***	0.07	0.00	***	0.07	0.00
Education (omitted = no formal schooling)											
Primary school				-0.21	0.12		-0.26	0.12	*	-0.26	0.12
Secondary school or higher				-0.90	0.21	***	-0.83	0.21	***	-0.78	0.21
Wealth index factor score				-0.02	0.01	**	-0.02	0.01	***	-0.02	0.01
Proportion of women in community who ever attended school				-0.45	0.44		-0.37	0.43		0.14	0.41
Urban				0.29	0.24		0.24	0.23		0.03	0.22
Circumcision required by religion? (omitted = no)											
Don't know							0.33	0.10	**	0.29	0.10
Yes							1.20	0.08	***	1.19	0.08
Low prevalence of circumcision in community										-1.23	0.22
Religion-prevalence interactions (omitted = traditional/animist)											
Low prevalence x Christian										0.13	0.25
Low prevalence x Muslim										0.57	0.24
Low prevalence x no religion										1.05	0.48
Level 2 variance	0.69	0.08	***	0.72	0.09	***	0.64	0.08	***	0.50	0.07
BIC	7686			7315			7104			7047	

Data: Burkina Faso DHS, 2003. Circumcised women with at least one daughter and with non-missing values for independent variables. N=5889. *: $p < .05$; **: $p < .01$; ***: $p < .001$ (two-tailed tests).