Sexual stigma and infant mortality in sub-Saharan Africa

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Introduction

In recent years, policy-makers and international development experts have grown increasing concerned about "sexual risk behavior," including early coital debut, non-marital sex and high numbers of partners. In many parts of sub-Saharan Africa, this set of interests aligns policy-makers with local custom that has treated (especially women's) non-marital sexuality as "sex out of place," subject to severe social sanction and stigma. In the past, non-marital sex was in many societies shameful, dishonorable, and stigmatizing. Today, it is also the frequent object of intervention by international NGOs seeking to reduce sexually transmitted infections, HIV, and early childbearing. An increasing corpus of data showing that infants born to unmarried mothers face higher risks of morbidity and mortality has contributed to the urgency of policy interventions. This paper examines the relationship between non-marital conception and infant mortality in sub-Saharan Africa, contrasting societies in which non-marital sex is stigmatized and those in which it is tolerated. I find that the negative effects of non-marital birth are concentrated in stigmatizing societies. Instead of non-marital sexuality and childbearing being stigmatizing *because* of their harmful effects for children, one important reason that non-marital conception is harmful to children is because it is stigmatized.

Babies born outside of marriage are more likely to die

Most evidence suggests that, on average and in most societies, infants born to unmarried mothers face higher risks than those born within marriage. Studies in Europe and the US have demonstrated that such children are more likely to experience low birth weight and preterm delivery (Carlson et al. 1999; Koupilova et al. 2000; Olden et al. 1995), and that they face higher risks of infant mortality (Arntzen et al. 1996; Bennett et al. 1994; Bird et al. 2000; Gaudino et al. 1999). Indeed, mother's marital status is often controlled in regressions estimating infant mortality risks even when the coefficients are not reported; again, this suggests a broad consensus of different, presumably higher, risk.

At the same time, the apparent harm of mother's singlehood on infant mortality risk appears to vary widely across societies and over time. Whereas some studies have found the log-odds of death to a baby born outside of marriage to be *twice* that of babies born to a married couple, other studies have found only minimal difference between the two groups (see e.g. Simpson et al.). This variability suggests that a variety of pathways connect marital status and infant mortality, and that their relative importance shifts across specific social, political, and economic contexts. Despite the large corpus of research on infant mortality in sub-Saharan Africa, relatively little work has examined the role of maternal marital status on the sub-continent. This paper thus seeks to provide some basic estimates of the relative risk of death, in addition to making an argument about its causes.

Why should maternal marital status matter for infant mortality?

There are a number of reasons why the marital status of the parents should be associated with the mortality risk of the infant, some selective, others causal. Selection into the category of

"unmarried mother" can occur on relatively time-independent characteristics, such as education or family background, as well as according to time-dependent attributes associated with the risk of infant mortality, such as parity or mother's age. At the limit, the unmarried mother is poor and uneducated, and is bearing a first child at a young age. Each of these is associated with higher mortality for her children, regardless of her marital status. Selection on time-invariant characteristics may also go the other way—in Cameroon, for example, it is the more educated who bear children outside of marriage (Johnson-Hanks 2003)—reducing the apparent association between parent's martial status and infant mortality.

In addition to the selectivity of non-marital parenthood, being born to unmarried parents could *directly* cause increases in mortality, whether through resource deprivation as a result of having only one parent, or through social exclusion resulting from the stigma of non-marital sex, conception, and childbearing. Insofar as young adults are expected or required to fend for themselves (rather than remaining embedded within their natal families), unmarried parents are more likely to face economic hardship. Insofar as non-marital sex, conception, and childbearing are stigmatized, unmarried mothers may be expelled from their kin- and social networks, will be less able to make claims on the time, resources, and support of their natal families, and may hesitate to seek prenatal care out of fear of shame. That is, stigma itself may have significant negative effects on the health and health care of infants.

This point was made clear to me by one of my informants in Cameroon, who explained that even among the sexually liberal Beti, pre-marital childbearing could mean shame severe enough to cause reproductive harm:

> You see, when you are a student and you conceive, when your friends leave for school you are ashamed. You are obligated to hide yourself. Even when you give

birth, you even go to the village. You go to give birth in the village so your friends don't see you, because you are so ashamed.

Insofar as babies born in the village face higher infant mortality rates, this shame itself is a risk factor for infant death.

The strength of both selective and causal factors will vary across societies

Selection effects will be strongest when unmarried mothers differ most dramatically from married ones. A corollary of this is that we should expect the largest differences when non-marital childbearing is rare (because its practitioners are therefore clearly unusual on some set of characteristics). As marriage and childbearing become more and more disarticulated, the selection effects wane. Indeed, the studies finding only very small differences in infant mortality risk based on the marital status of the parents were all conducted in Scandinavia, where non-marital sex is presumably subject to little or no stigma. It is also important to note that selectivity is not unrelated to stigma. Where non-marital sex is most stigmatized, non-marital childbearing is likely to be relatively rare and unmarried mothers relatively different from other mothers.

The direct effects of single parenthood on infant mortality risk will also vary across populations and over time. This variation is associated with specific social structures and cultural forms. The resource disadvantage accruing to non-marital households in contexts where neolocal residence is normative and there is little or no welfare state to protect single-parent households. The social and cultural variation in stigma, by contrast, follows no simple formula. Societies treating non-martial sex as highly stigmatizing are found in a variety of contexts, and neither

religion, nor system of descent, nor direction and scale of marriage payments can account for them[1].

Sub-Saharan Africa exhibits extraordinary social and cultural variation. Cameroon alone has 268 named ethnic groups, with a broad range of social practices: patrilineal and patrilineal kin systems; neolocal, duolocal, and patrilocal postmarital residence patterns; horticulture and pastoralism; Christianity, Islam, and local religions. In terms of sexuality, too, we find tremendous variation across Africa, including some of the world's most sexually restrictive cultures and some of the most sexually liberal ones (see Ahlberg 1994 and Caldwell 1987 for a discussion). The variation is on several parameters: discourse and practice may or may concord; premarital sex may be treated very differently from marital or extramarital sex; women's sexuality may be conceived quite differently from men's. However, for our purposes here what is important is only the cultural treatment of women's premarital sex, which we will dichotomize into stigmatizing and non-stigmatizing. The differences between Stigmatizing and Non-stigmatizing societies can be quite marked. The Beti of southern Cameroon have been known for more than a century as belonging to the latter type. Descriptions of their social forms published throughout the 20th century discuss a casual tolerance for pre-marital sexuality:

> [Among the unmarried] free love reigns in the boldest sense of the word. The young woman may give her favor without constraint to whomever and whenever she wishes, and must only hold herself to the religious regulations that forbid sexual intercourse during the day, and to the social ones that forbid it between

[1] Goody (1974, 1990) has proposed a complex theory on the relationship between productive and reproductive systems. Here, descent and inheritance, horticultural practices, marriage payments, and the cultural value placed on bridal virginity are all seen as part of an interpenetrating whole. However, the exceptions to his classificatory scheme are as numerous as the cases that fit, and particularly patterns of sexual stigma frequently fail to conform to the predictions of his model.

blood relatives. Otherwise there are no boundaries" (Tessman, 1913, vol. II:253 [my translation]).

By contrast, in other societies, the sanctions against such premarital sexual freedom can be severe. The Mada and Mouyeng reside in northern Cameroon, along the Chadian border.

> Sexual games are prohibited by the Mada and Mouyeng societies… The rigor of the sanctions applied in the case of infraction underlines the esteem that the two societies have for virginity. The young girl, reclined, arms and legs in the shape of a cross, and firmly attached to stakes, undergoes the burning of hot pepper placed on the eyes and the pelvic region (Richard, 1977:180-181 [my translation]).

Similarly, Boddy describes that:

> [In northern Sudan,] should [a woman] become pregnant out of wedlock, whether before marriage or through adultery, her male kin have the right—even the duty—to kill her for so dishonoring her family (Boddy 1989:76).

As dramatic as these quotes sound, the importance of sexual stigma to demographic rates is by no means unique to Africa, nor is even the relationship between sexual shame and infant mortality. According to Kertzer, shame led 19th century Italian women who became pregnant outside of marriage to surrender their infants to foundling homes, some of which saw 100% of the entrusted children die[2].

In addition to dramatic variation in the degree to which premarital sexuality is tolerated, sub-Saharan Africa exhibits considerable variation in the social organization of marriage itself. In many parts of the continent, marriage is a process that may involve multiple ritual events and

[2] "Much of the terminology used to describe unwed pregnancies [in 19th century Italy] was that of honor and shame. Illegitimate children themselves were referred to as *figli di colpa*, children of guilt. Protecting the honor of such women and their families meant placing tremendous emphasis on secrecy… If marriage was not possible, an affront

gift exchanges over several—even many—years (Bledsoe and Pison 1994; Comaroff 1980; Parkin and Nyamwaya 1987). For women from many ethnic groups, "when did you first marry" is a question that could legitimately be answered in many ways: with the date of the religious ceremony, the date of the first or the last bridewealth payment, the date of the civil marriage, or the date that she began living with her husband. In southern Cameroon, a woman who has undergone *any* of these transitions might choose to call herself married. If she were to become pregnant, the baby would be considered legitimate for at least some purposes. In such societies, it may be difficult to define a birth as marital or premarital. A child may be socially identified as having a father, but not be legally legitimate; a child may be born into a legally binding marriage, but not be recognized by church or mosque. In other African communities, marriage is an event that occurs on a clearly defined date, making the definition of premarital childbearing far easier. Not coincidentally, the societies that stringently define the beginning of a marriage are more likely to stigmatize non-marital sexuality.

Is it possible to quantify the effects of sexual stigma?

In order to estimate the importance of sexual stigma for infant mortality, and particularly for the difference in infant mortality rates between the children of married- and unmarried women, it is necessary first to address the problem of selection bias and second to distinguish between the causal force of resources *per se* and the causal force of stigma. In the absence of experimental data, the selection bias can be only partially controlled, by limiting the sample to the most comparable births and controlling for the likely covariates.

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to a woman's and her family's honor could best be expunged by keeping the pregnancy secret and then disposing of the baby anonymously" (Kertzer 1993:26-27).

To distinguish between the economic effects of singlehood and the stigma of a non-marital conception, I use bridal pregnancy (of so-called "shot-gun weddings"). In particular, I distinguish between first babies conceived within marriage or less than two months before marriage, babies whose parents married between the third month gestation and the birth, and babies whose parents were unmarried at the time of birth[3]. *Women who marry during the pregnancy—especially after the pregnancy becomes visible—will suffer at least some of the stigma associated with a non-marital birth. However, they will not confront the same resource constraints as a single mother. Therefore, the mortality experience of their babies should differ according to the local degree of stigma*. In societies where stigma is high, we should expect that all babies *conceived* outside of marriage will fare poorly: babies born after bridal pregnancy should have infant mortality rates similar to babies born outside of marriage, both measurably higher than the mortality risks faced by babies born after marital conception. By contrast, where stigma is low, we should see that infant mortality rates are more strongly associated with paternal presence—presumably because of the financial and other resources that the father provides—than with the parent's marital status at conception, and babies born after bridal pregnancy should have infant mortality rates not measurably different from babies conceived within marriage.

Data and methods

The data come from the Demographic and Health Surveys for Benin, Cameroon, Ethiopia, Gabon, Ghana, Kenya, Niger, Senegal, Togo and Zambia, ten recent surveys which include self-reported data on ethnicity. The data used here come from the women's individual recode files, particularly including the birth registers. As is well known, these are nationally representative

[3] The main results are not very sensitive to the details of this formalization. If we reclassify births to women married

surveys of women 15-49, conducted as collaborations between Macro International and local (national) statistical agencies; sample sizes vary from 5501 for Cameroon to over 15,000 in Ethiopia. I use self-reported ethnicity as an indicator of the social environment of stigma in which the mother and infant live. Using a wide range of ethnographic sources, we coded 55 of 117 African ethnic groups named in the DHS as either stigmatizing or non-stigmatizing (a list of the sources, ethnic groups, and their classification are available upon request). For the remaining ethnic groups, either we were unable to find any reliable information about their sexual practices and ideologies, or the information we found was explicitly contradictory. In either case, these groups are classified here as "stigma unknown." Groups were considered stigmatizing if they were reported to ostracize or physically punish women found to have had premarital sex or if they practiced strict virginity testing at marriage. Societies were classified as non-stigmatizing if they were described as unconcerned about premarital sex and had no reported sanctions against it. More societies were identified as sexually stigmatizing than as non-stigmatizing. Although we found information about fewer than half the named ethnic groups, they tended to be the larger ones. As a result, we have stigma information for nearly 60% of the individuals in the sample.

To reduce variability and selection bias, I examine the mortality risk for the first child only. Since the data in the birth histories are coded backwards (from most recent to first birth), it is necessary to construct a new set of variables for the characteristics of the first child, regardless of where he appears in the birth history. Infant mortality is defined as the death of a child born alive within the first year. The mother's educational attainment is recoded into two dummy variables for "attended at least primary" and "attended at least secondary." I define the marital status of the mother at the time of the birth by subtracting the century month code for the birth

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in the first two months of gestation or babies whose parents married within the first two months post-partum as "bridal pregnancy" the results do not substantively change.

date of the first child form the century month code of the first marriage. Births within seven months of the marriage are classified as following bridal pregnancy. Births prior to the marriage, as well as births to women who had not married by the time of the interview, are called non-marital births. All other births are considered marital.

This method of defining non-marital births requires good data regarding the dates of births and marriages. Given the processual nature of marriage in some African societies, some have argued that DHS data are insufficient for this task, because the DHS asks only for a date of marriage, rather than distinguishing between traditional bridewealth marriage, socially sanctioned cohabitation, civil marriage, and religious marriage (for example, Lardoux and van de Walle 2005). This is a legitimate and important concern, and I certainly agree that we should seek to gather more detailed and appropriate data. Nonetheless, I think that the DHS data are worth analyzing and that the data are meaningful, because what interests us in this analysis is whether the birth occurred before the *socially meaningful marital event*, whatever that event may be. Thus, if in one society women consider themselves "truly married" when they marry religiously, and in another society mark of a socially legitimate marriage is the bridewealth ceremony, then we would expect women in the first society to give the date of religious marriage and women in the second to report the date of the bridewealth. Since the importance of marriage for infant mortality lies in large part in the social legitimacy of the birth, it is appropriate that women should report the marriage as having started with the locally legitimating ritual event[4].

I use probit models to estimate the association between mother's marital status and infant mortality in each group of societies: stigmatizing, non-stigmatizing, and stigma unknown, controlling for the country and a range of individual-level covariates (mother's education, age at

first birth, sex of the child, etc.). I estimate three separate models, rather than a single model with dummy variables for the stigma type because the latter approach would force the structure of the relationship to be parallel in all three types of societies. I want to be able to evaluate whether mother's education and age at birth, for example, have similar effects on infant mortality across stigmatizing and non-stigmatizing societies, in addition to whether mother's marital status does. In a single model, this would require a complete set of interaction terms. Although we have a large joint dataset (55,865 individuals), infant death is a rare outcome, and a complete set of interaction terms strains the data.

The coefficients for "bridal pregnancy" and "single birth" indicate the change in probability of death for a baby born under these circumstances compared to those born to married mothers (reference category). I use Huber/White robust standard errors because of the clustering of the data.

Results

We first consider simply the proportion of infants born to mothers in each marital status who die in each of the three groups of societies, shown in table 1. The first interesting observation is that infant mortality is lower overall in non-stigmatizing societies than in stigmatizing ones, suggesting perhaps that non-stigmatizing societies are more economically and socially advantaged. Second, without controls for mother's age or education, we observe no association between mother's being single and infant death; the proportion dying is even slightly lower among children of single mothers in non-stigmatizing societies and those where the stigma is unknown. This would be expected if highly educated women are more likely than the uneducated

[4] Of course, my argument rests on the assumption that women tend to date their marriages from the time of the social meaningful marital event. I have direct evidence that this is the case among educated Beti women in southern

to have non-marital births, Third, in all three types of societies (albeit only very weakly in the non-stigmatizing ones), babies born after bridal pregnancy appear to face the highest risks.

Table 1: Proportion of infants who died by society type and maternal marital status

	Stigmatizing		Stigma unknown		Non stigmatizing	
	Proportion of infant deaths	N	Proportion of infant deaths	N	Proportion of infant deaths	N
Mother Single	0.1107	3,750	0.1009	4,648	0.0812	2,437
Bridal Pregnancy	0.1355	3,934	0.1336	4,259	0.0912	1,974
Mother Married	0.1164	15,343	0.1176	15,310	0.0887	5,403
Total	*0.1190*	*22,544*	*0.1156*	*23,753*	*0.0882*	*9,568*

We turn now to the probit regression results. The model I am fitting is very simple, in part because of data constraints (we can legitimately use only variables that would have applied at the time of the first birth, whereas most of the DHS data refers to the time of the survey), but also on principle: the only variables here are ones for which I have strong a priori reasons to think they should influence the relationship between marital status and infant death[5]. We see that nearly all of the variables have similar coefficients in the three groups of societies, indicating that the effects of mother's education, of calendar time, and of mother's age are parallel across the different societies. This is an important result, because it means that measurable differences in the coefficients of the marital status variables across the different classes of societies are not due only to jumpy estimates or non-comparability of the equations in general, but rather are meaningful, real differences. All the control variables are in the expected direction: male infants

Cameroon, but no data one way or the other for other groups.

[5] Note that this is a more exigent standard than requiring that the variables matter for the outcome. Many things (such as twinning) almost certainly alter the likelihood of infant death, but are also almost certainly randomly distributed with regards to mother's marital status, and have no known interaction with it. Therefore I exclude them. The sex of the child, by contrast, has been shown to vary by social status, and is therefore included.

are more likely to die; babies born to educated women are less likely to die; babies born to women who gave birth for the first time at older ages are less likely to die[6].

Table 2: Probit models of infant death

	Stigmatizing	Stigma unknown	Non-stigmatizing
Child is male	0.1271***	0.1140***	0.1431***
Century-month code of birth	0.0000	-0.0005**	-0.0005**
Mother attended primary school	-0.1984***	-0.2081***	-0.2460***
Mother attended secondary school	-0.2354***	-0.1309**	-0.1305*
Mother's age at birth	-0.0176***	-0.0178***	-0.0102*
Bridal Pregnancy	0.1081***	0.0609*	0.0115
Mother Single	0.1352**	0.0867**	0.0748*
Log Likelihood	-8270.2888	-8008.016	-2751.9019
N	*22,544*	*23,753*	*9,568*

All models contain a complete set of country dummies and are estimated with (Huber/White) robust standard errors. (< 0.001, ** < 0.01, * < 0.05).***

The only variables that different significantly across the three groups of societies are those associated with the mother's marital status. In stigmatizing societies, babies born to women who conceived outside of marriage—whether or not they subsequently marry—are significantly more likely to die. The effect is about the same magnitude as the difference between boys and girls. In non-stigmatizing societies, by contrast, babies born after bridal pregnancy look like babies conceived within marriage. Babies born outside of marriage, by contrast, are measurably more likely to die than are babies born within marriage, although the effect is only about half the size of the comparable effect in stigmatizing societies. Societies for which the stigma status is unknown are intermediate, reflecting the fact that this group contains both stigmatizing and non-stigmatizing societies in unknown proportion.

[6] The relationship over all ages is probably curvilinear, but because the mean here is so young, almost all of the variation is on upward-sloping part of the curve. A squared term for mother's age was significant in only a small number of models.

Discussion and conclusion

The basic finding of this paper is that the mortality disadvantage suffered by illegitimate children is stronger in societies that are less tolerant of non-marital sex. That is, culture matters *directly* for demographic rates, not only as loose set of values within which individuals make choices, but concretely by providing a characteristic repertoire of potential courses of action (Swidler 1986:284). So what are the everyday practices, the characteristic courses of action, that lead from non-marital conception to infant death in stigmatizing societies but not in non-stigmatizing ones? The most important factors, I argue, will be those that influence a new mother's ability to advocate on behalf of her infant, whether for clean water or medical care. Her ability to insure that her baby gets the care it requires depends both on financial resources and on her social standing in the household, that is, the strength of her claims to household resources. Contrary to the "benevolent dictator" model of the family in Becker's new home economics (1991), households in many African societies do not share resources either equally or strictly according to need. The inequalities within African households mean that the social context in which a woman gives birth will matter very much for her child's survival: an ailing infant's treatment will depend in part on its social location as the child of a more or less worthy member of the household (see Guyer 1985, 1993; Guyer and Eno-Belinga 1995 for discussions of the economic structure of some African households).

In stigmatizing and non-stigmatizing societies alike, the hazards that an unmarried woman might face giving birth are probably clear. Although she *may* be well-supported by her natal family, she faces a higher chance of being socially isolated and financially constrained than does a married woman. This should be even more clearly true in stigmatizing societies, where natal families are less likely to be willing to care for the infant of a "wayward" daughter. The

statistical pattern described above, where the infants of single women face higher risks in both stigmatizing and non-stigmatizing societies, but the differences are greater in stigmatizing ones, thus concurs with expectations.

The situation for women who marry during their pregnancies is quite different. In non-stigmatizing societies, this action may be considered a choice. In certain communities, an inauspicious marriage to an undesirable partner is considered far worse than single motherhood (see Johnson-Hanks 2005), and so women who marry while pregnant are likely to be selecting partners similar to those they would have married without the duress of pregnancy. That is, they should look like married women. But in highly stigmatizing societies, pregnant women may be obliged to marry at all costs. Pregnant women may be constrained to marry less desirable men, to accept less desirable structural positions in polygynous households, to marry without bridewealth or with a decreased bridewealth. Within their new households, they may be marginalized, and the needs of their infants given less regard than the needs of other women's children, and they be more likely to experience stress or bouts of ill-health during the pregnancy. For all of these reasons, children born after a bridal pregnancy should have increased mortality risks, similar to children of unmarried mothers.

Across sub-Saharan Africa, practices and cultural norms regarding premarital sexuality vary widely. Whereas some groups place high value on bridal virginity, others tolerate—or even expect—premarital sexual relationships. These local attitudes often translate into practices regarding children borne outside of marriage: the social consequences of being born to unmarried parents are stronger in populations less tolerant of the sex that leads to such births (see Laslett et al. 1980). This paper has examined the degree to which the health and mortality consequences of premarital conception follow the pattern identified ethnographically for social

opprobrium. As expected, I find that children conceived outside of marriage suffer a greater mortality disadvantage in African societies where premarital sexuality is more stigmatized. Infants depend on their mothers' advocacy; when their mothers occupy socially disadvantageous positions in the household, infants suffer. That is, cultural norms influence social structure, and social structure influences mortality rates. In the case of sexual stigma and infant mortality, we can clearly observe the demographic consequences of culture.

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