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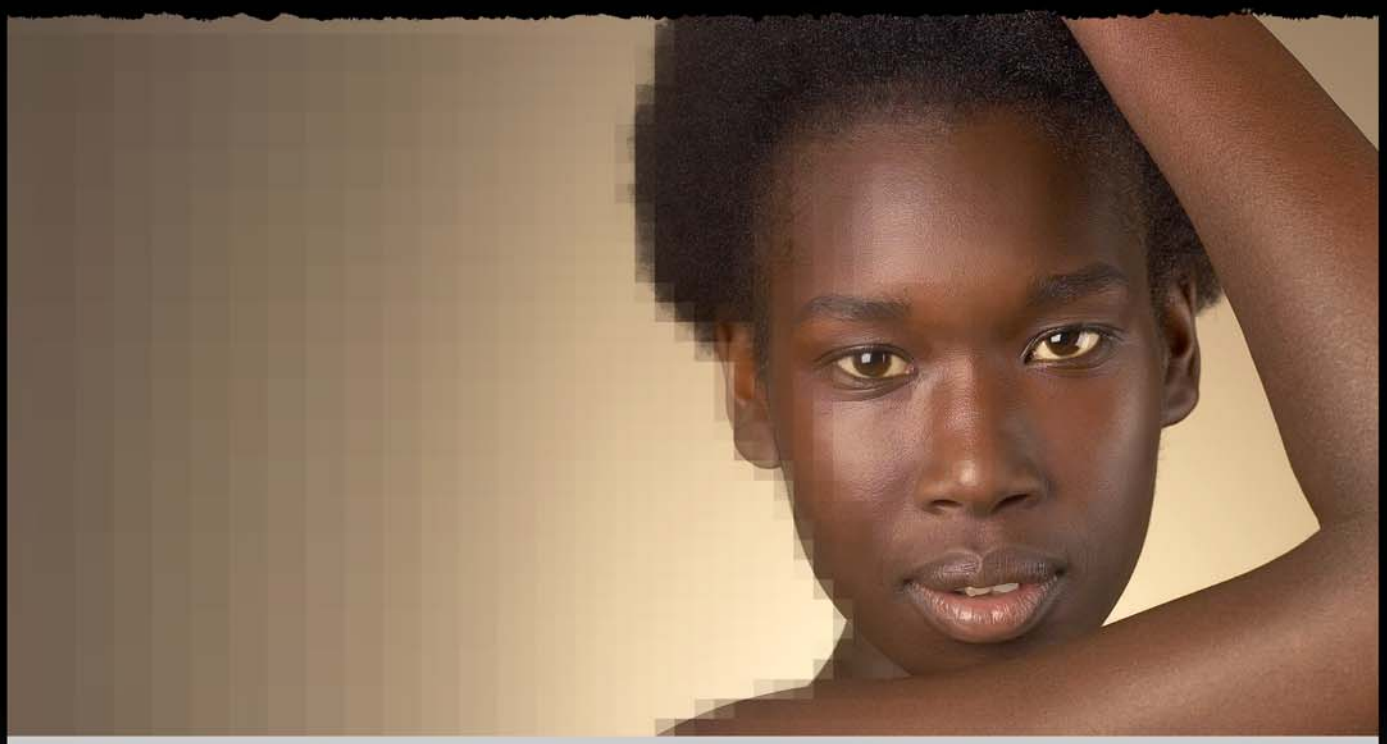

A FOCUS ON GENDER

COLLECTED PAPERS ON GENDER USING DHS DATA

August 2005

This publication was produced for review by the United States Agency for International Development.
It was edited by Sunita Kishor of ORC Macro.

A Focus on Gender

Collected Papers on Gender Using DHS Data

ORC Macro
Calverton, Maryland, USA

August 2005

This report consists of a series of invited papers on the dynamics of gender in developing countries. The papers were prepared by researchers recognized for their work in the areas of demography, reproductive health, and gender. The analyses presented are based on data from the Demographic and Health Surveys program (MEASURE DHS). Funding was provided by the U.S. Agency for International Development (USAID). The opinions expressed in this report are those of the authors and do not necessarily reflect the views of USAID.

The MEASURE DHS project, which is implemented by ORC Macro, is designed to collect, analyze, and disseminate data on fertility, family planning, maternal and child health, nutrition, and HIV/AIDS. Additional information about the MEASURE DHS project may be obtained from ORC Macro, 11785 Beltsville Drive, Suite 300, Calverton, MD 20705 (telephone: 301-572-0200; fax: 301-572-0999; email: reports@orcmacro.com; internet: www.measuredhs.com).

Kishor, Sunita, Ed. 2005. *A Focus on Gender: Collected Papers on Gender Using DHS Data*. Calverton, Maryland, USA: ORC Macro.

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WOMEN'S DECISIONMAKING AND CHILD HEALTH: FAMILIAL AND SOCIAL HIERARCHIES

Sonalde Desai and Kiersten Johnson

1 INTRODUCTION

Ever since the advent of Women in Development literature in the 1970s, many researchers have argued that women's empowerment is closely linked to positive outcomes for families and societies (Presser and Sen, 2000). Nowhere has this argument been more important than in the literature on child health (Mason, 1986). While intuitively plausible, the empirical work on this topic has been limited. Two major factors account for this paucity in the literature: 1) conceptually, as we begin to use an increasingly sophisticated and nuanced conceptualization of empowerment, the way in which different dimensions of empowerment relate to each other has become increasingly problematic; and 2) data for empirical research on this topic have been limited at best.

In an attempt to address some of these deficiencies, this paper draws from two parallel developments. First, the theoretical literature has grown increasingly sophisticated in its understanding of women's empowerment—particularly distinguishing between the roles of families and communities. Second, in the past ten years, comparable cross-national studies in a large number of developing countries have been performed. These studies, known as Demographic and Health Surveys (DHS), contain large samples and make it possible to carry out an empirical examination of some of these arguments. Drawing on these two developments, this paper examines the impact of women's ability to make independent decisions on children's health outcomes—particularly vaccination status, nutritional status, and child mortality in 12 developing countries.

2 EMPOWERMENT: AGENCY AND STRUCTURE

As theoretical work on women's empowerment has evolved, the tension between structure and agency has also grown. While some of the early work on patriarchy was governed by a focus on social institutions and the role of systems of production and property ownership in shaping opportunities available to women (Agarwal, 1994; Leacock, 1978; O'Barr, 1982), more recent work has focused on women's agency and bottom-up empowerment. This latter approach has found favor with both academic researchers as well as social activists.

Activists have been particularly concerned about the overwhelming focus on structures of patriarchy that ignores ongoing changes at the grass roots level where much of the activism takes place. Focus on agency leads researchers to think of processes through which self efficacy emerges along with a better understanding of opportunities for change (Batliwala, 1994; Malhotra, Schuler, and Boender, 2002).

While at a conceptual level, these two approaches—one focusing on agency the other on structure—can be complementary (Kabeer, 1994), in practice it is often difficult to disentangle the two, particularly while operationalizing these for empirical research. One area in which these problems emerge in empirical research is in understanding the meaning of different dimensions of empowerment in a cross-cultural context. Veiling or purdah may hinder women's ability to participate in certain cultural settings, yet in other settings veiled women go about their business having offered a nod to the cultural dictates (MacLeod, 1992).

As Kabeer (2001) notes, while individual women may act in ways that are inconsistent with social norms, the impact of these actions tends to be limited. However, if a large number of women act to represent their gender interests, this can become an overwhelming force resulting in changes in social norms. Even when focusing on women's individual actions and agency, we need to root these in the context of the society and community they live in. In fact, the few empirical studies that have tried to examine the impact of community contexts on individual outcomes have found that the contextual factors are far more important than the individual factors (Jejeebhoy and Sathar, 2001; Kritz et al., 2000; Mason and Smith, 2003).

3 WOMEN'S EMPOWERMENT AND CHILD HEALTH

Hierarchies based on gender and generation determine the course of household decisionmaking in many societies. Visaria (1993) documents that women in her sample in Gujarat, a state located in western India, indicate a remarkable feeling of constraint regarding cash expenditure. About 50 percent of the women do not feel free to take a sick child to doctor without the approval of their husband or parent-in-law, and about 70 percent do not make decisions regarding the purchase of their own or their children's clothing. Similar findings have been obtained for many other parts of the world (Kishor, 2000; Kritz et al., 2000).

Constraints on women's physical mobility in many parts of the world further restrict their ability to make independent decisions. Women in countries such as India, Egypt, and Bangladesh are governed by social norms that restrict their physical mobility, referred to in the literature as female seclusion. This seclusion involves the veiling of head and face in some instances, as well as restrictions on unaccompanied travel to such places as shops, pharmacies, or hospitals, and limits on direct contact with unrelated males (Bruce, Lloyd, and Leonard, 1995). Thus, even in instances where women wish to make decisions regarding household consumption, expenditures, or health care, they may need help and agreement from other family members, particularly the husband or mother-in-law, in actually conducting these transactions.

It has often been argued that child health and investments in children are determined by intra-household resource allocation decisions, which are related to gender inequalities in the household. In families in which women play an important role in decisionmaking, the proportion of family resources devoted to children is greater than in families in which women play a less decisive role (Thomas, 1990; Duraisamy and Malathy, 1991; Bruce, Lloyd, and Leonard, 1995; Blumberg, 1991). This notion of "maternal altruism" assumes that power in the hands of women will lead to better child outcomes (Mason, 1986).

There are a number of ways by which women's decisionmaking power might come to be associated with improved child health outcomes.

1. **Day-to-day health enhancing behavior.** Many actions that lead to better health outcomes emerge from day-to-day health enhancing behaviors, such as better personal hygiene, regular access to preventive treatments such as timely vaccination, and devotion of time to slowly spoon-feeding toddlers instead of leaving them chewing on a biscuit or bread. Many of these actions occur unconsciously and are often related to fundamental rules that households live by, rather than conscious decisions regarding allocation of time and money. While many factors besides gender empowerment affect these behaviors—most notably household wealth and women's participation in the labor market—in situations where women have control over time and

money they may be able to make more efficient decisions leading to better health outcomes for children than when decisions are controlled by men who then delegate these tasks to women.

2. **Intrahousehold resource allocation.** At any given income level, households must choose where their resources will be spent. Even for poor households, some implicit tradeoffs occur between quality of housing, food expenditure, health and education expenditure, purchase of large consumer durables, and personal consumption items such as tobacco and alcohol. Small scale qualitative studies document that households in which women have more power devote a greater proportion of resources to child-centered expenditures (Dwyer and Bruce, 1988), although there is little quantitative validation of differential spending patterns.

3. **Access to emergency care.** When children are seriously ill, all family members—men or women—may recognize the need to obtain medical care and will do so if they can afford it and if care is available. However, if the primary caregiver—frequently the mother—needs to consult with husbands and family elders, it is possible that the child may not receive immediate care. For example, if a Nepali woman must wait for her husband to return home before she can take a child suffering from seizure to a doctor, the likelihood of child survival will be lower than if she can independently make decisions regarding health care and immediately take the child to a doctor.

While all of these mechanisms may be important for children's health, from a public policy perspective, some sense of the relative importance of these factors is particularly useful. In this study, we focus on three different markers, each of which addresses a different dimension of the relationship between women's decisionmaking power in the household and child health status.

With governments and nongovernmental organizations (NGOs) increasingly focusing on the distribution of low-cost or free vaccinations, whether a child receives a full set of immunizations or not is often a function of the day-to-day health-seeking behavior of the household—at least in communities where immunization facilities are available locally or close by. In contrast, holding income constant, children's nutritional status is a marker of long-term resource allocation decisions made by households. Access to emergency care is probably most accurately reflected by child mortality. In areas where epidemic diseases (such as AIDS) are not the primary cause of death, child mortality is largely a function of appropriate medical care for children suffering from fever, respiratory infections, and gastrointestinal infections. By focusing on the relative importance of women's empowerment in shaping positive outcomes with regard to vaccination, long-term nutritional status (measured by height-for-age), and child mortality, we can examine the impact of women's empowerment on child health.

4 WOMEN'S EMPOWERMENT: FAMILIAL AND SOCIAL CONTEXTS

The preceding discussion has relied on a somewhat loose definition of women's empowerment. While this concept is frequently used in the literature, perhaps the most widely employed operational definition comes of the works of Ruth Dixon-Mueller (1978) and Karen Mason (1986). While these scholars note that women's empowerment is an "elusive concept," they operationally define women's status as the degree of women's access to (and control over) material resources (including food, income, land, and other forms of wealth) and social resources (including knowledge, power, and prestige) within the family, in the community, and in the society at large.

We argue that women's authority over household decisionmaking embodies both of these concepts. Women who have significant input in such household decisions as major household purchases, their own health care, purchase of household daily necessities, and visits to family and friends have access to resources and the power to use them. Among an array of questions designed to measure women's empowerment, the DHS surveys asked women the following:

- Who in your family usually has the final say on the following decisions:

  Your own health care?
  Making large household purchases?
  Making household purchases for daily needs?
  Visits to family or relatives?
  What food should be cooked each day?

Women had the following response options: respondent, husband or partner, respondent and partner jointly, someone else, respondent and someone else jointly, and decision not made/applicable.

Since cooking is generally regarded as one of women's essential responsibilities within the household, we excluded this type of decisionmaking and created a dummy variable that reflects whether women have a final say in any of the other four decisions (their own health care, large household purchases, household purchases for daily needs, and visits to family or relatives).[1]

Apart from selecting good indicators of women's empowerment, the most important challenge has been to distinguish between empowerment as a characteristic of individuals and empowerment as a trait of community participation (Mason and Smith, 2003). Such a perspective allows for interesting distinctions. Women often face a double challenge in their efforts to gain a degree of authority that will permit independent decisionmaking. First, they must overcome internal resistance and family opposition; and then they must deal with social constraints. Independent women in highly patriarchal societies are often subject to strong patriarchal controls outside of the immediate family and are unable to fully implement their preferences in ways that benefit their families and children. In contrast, women who live in societies that are more tolerant of independent behavior are less likely to face these barriers.

Social controls find expression in many ways. In societies with strong patriarchal structures, even if a mother makes the decision to take her seriously ill child for treatment, the service provider may hesitate to accept her decision regarding emergency treatment as final. It is not unknown in countries like India for doctors to want a father's signature on a consent form before performing serious procedures on a child or even the woman herself.[2] In contrast, in a less patriarchal society a

[1] We had the option of focusing on final decisionmaking in at least one domain versus participation in decisionmaking even if the woman is not the final decisionmaker. We chose to focus on final decisionmaking because we felt that when decisions are made jointly, it is difficult to distinguish between the woman being a junior partner in the process or being an equal partner. Empowerment means women being able to make final decisions regarding their own health care or visiting their friends and relatives. When similar analyses with any involvement in decisionmaking were carried out, the conclusions were similar.

[2] This is reflected in many domains of life. Often doctors will not perform an abortion or sterilization without a husband's consent. Women might not be able to borrow money without family consent and their signature on legal contracts might not be considered valid. While doctors might be quite willing to treat children in non-life-threatening situations without paternal consent, in situations where serious choices need to be made or large expenditure incurred, they might wait for the father's presence and participation.

woman who would not normally make serious decisions herself may find herself able to emulate other independent women in emergencies. Thus, any study focusing on women's empowerment must distinguish between empowerment and independence at an individual and at a societal level.

We try to distinguish between the two by calculating cluster-specific measures of women's ability to make independent decisions. Within each sampling cluster, we calculate the proportion of women with children who say they have the final decisionmaking authority in at least one of the domains listed above.

5 DATA

The data used in this study come from the DHS surveys. These nationally and regionally representative surveys have been carried out since 1984 in more than 70 less-developed countries, with many countries having had periodic DHS surveys. The surveys are based on scientifically selected samples of households and inquire about household and household members' characteristics, including in some countries questions on women's decisionmaking responsibilities in the household. Basic characteristics of all members and overnight guests are collected in a schedule format, similar to that of a census, with information provided by any adult member of the household. Individual women of reproductive age (15-49) are interviewed individually in face-to-face interviews on their background characteristics, work status, fertility levels and desires, contraceptive use, and use of maternal and child health services. Infant and child mortality data are obtained through a birth history, while nutritional status of children and women is determined through anthropometry.

The DHS surveys interview between 3,500 and 90,000 households, with 5,000 to 8,000 being typical. Approximately one woman per household is found to be of reproductive age, though all such women are interviewed.

We analyzed data from 12 countries, all of which have implemented a special module in which women are asked questions regarding the degree of say in decisionmaking they have in the household, as well as the degree to which women agree or disagree with negative gender norms. A variety of questions regarding women's empowerment have been included in different formats in a large number of DHS countries. However, for cross-country comparability, the sample is restricted to countries where similar questions were administered to all women. The countries selected for this study include the following: Benin, Malawi, Mali, Uganda, and Zimbabwe in sub-Saharan Africa; Egypt, India, and Nepal in Asia; and Haiti, Colombia, Nicaragua, and Peru in the Latin America/Caribbean region.

Our three main dependent variables include the following:

- Number of vaccinations children age 13-60 months have received (includes three doses of polio, three rounds of DPT, and BCG and measles vaccines)
- Children's height-for-age standardized score (multiplied by 100) for children age 13-36 months
- Likelihood of dying between 13 and 60 months of age for children born 60-120 months before the survey.

Whereas the two primary independent variables of interest are the following:

- A dummy variable reflecting whether the mother of the index child has responded that she had the final say in decisions regarding four domains of household life (making large household purchases, making day-to-day household purchases, health care for herself, and visits to family and friends).

- A continuous variable ranging from 0 to 1 reflecting the proportion of women in the sampling cluster who have final say in making any of the above mentioned household decisions. To avoid multicollinearity between the individual and community measures, the community measures are calculated using all women who have had at least one birth, whether they have a child in the selected age range or not.

There is a time disparity between measures of women's empowerment and child health outcomes. Health outcomes cover a span of 10 years, while the empowerment measures are collected at the time of the survey. While there are some couple- and family-specific behavioral traits that remain constant over time, many may change as women age and household structure changes. Including historical period of birth in the analysis is an attempt to control for some of this distance. Comparison between community and individual decisionmaking responsibility presented in Table 1 provides a marker for the role of age and family change in decisionmaking ability. The last two columns of Table 1 compare proportions of all women age 15-49 (with a child) who have primary responsibility for one of the household decisions with the mean for index women with children born in past 10 years. These are younger women, and the community mean in all countries is higher than the individual mean and is moderately large for Egypt, India, Nepal, Nicaragua, and Peru.

Table 1 Sample size and descriptive statistics for the three dependent variables and decisionmaking

Country	Total clusters	Immunization		Height-for-age		Child mortality		Mean decisionmaking power	
		Number	Mean	Number	Mean	Number	Mean	Community	Individual
Benin	246	3,583	6.23	2,781	-164.05	5,069	0.065	0.59	0.58
Colombia	972	3,541	6.74	3,228	-94.70	4,715	0.003	0.82	0.81
Egypt	991	8,398	7.71	8,050	-93.75	11,266	0.011	0.59	0.55
Haiti	317	4,735	5.27	4,255	-123.40	6,050	0.047	0.38	0.38
India	333	19,559	5.45	15,940	-216.83	62,456	0.023	0.33	0.30
Malawi	559	7,868	7.30	6,859	-215.67	9,973	0.069	0.46	0.45
Mali	402	8,200	4.45	6,882	-183.29	12,850	0.089	0.34	0.34
Nepal	251	5,061	6.87	4,876	-223.66	7,075	0.030	0.38	0.34
Nicaragua	609	5,367	7.18	4,678	-117.19	7,938	0.007	0.56	0.52
Peru	1,410	10,487	6.95	9,271	-146.21	15,288	0.016	0.78	0.72
Uganda	296	4,854	5.96	3,919	-179.97	6,048	0.056	0.65	0.63
Zimbabwe	230	2,617	6.75	2,042	-129.33	3,281	0.020	0.80	0.79

Women's decisionmaking authority is often correlated with a number of factors, including their education and household income. Hence, one portion of the analysis is controlled for women's education (divided into three categories, no education, primary education, secondary education) and her partner's education (same three categories), and a measure of household wealth (described below). We also control for the historical period of birth (measured by century month) of the index child because both vaccination coverage and child survival have been improving over time. At the community level, we also control for urban residence.

Controlling for household wealth is particularly necessary in this analysis. Women's decisionmaking authority is often associated with social class and her education. While education is easy to measure, surveys have historically found it difficult to measure income, particularly in agrarian populations. Recent innovations in the use of survey-based household asset data allow researchers to evaluate the distribution of poverty in populations (Filmer and Pritchett, 2001). The wealth index used here is one developed and tested in a large number of countries in relation to inequities in household income, use of health services, and health outcomes (Rutstein, Johnson, and Gwatkin, 2000). It is an indicator of wealth that has shown itself to be consistent with expenditure and income measures (Rutstein, 1999).

The wealth index was constructed using household asset data (including country-specific assets) and principle components analysis. The asset information was collected through the DHS household questionnaire, and concerns household ownership of a number of consumer items and amenities ranging from a television or radio to a bicycle or car, as well as dwelling characteristics, such as type of drinking water available, sanitation facilities used, roofing and flooring, and availability of electricity.

6 STATISTICAL METHODS

To measure the impact of women's decisionmaking authority on child health, while distinguishing between individual and community influences, we have analyzed these data using hierarchical linear models (Bryk and Raudenbush, 1992), using HLM software. Hierarchical linear models allow us to distinguish between the individual- and community-level effects of women's decisionmaking authority. We estimate two equations for each country, one at the individual and one at the cluster level.

6.1 Individual-Level Equation

$$Yij = 0j + 1j(Xi1) + kj\,(Xikj) + rij$$

where:

Yij is health outcome for child i in cluster j;

$0j$ is the intercept for individual-level model (average health outcome in cluster j);

$1j$ is the coefficient for the effect of having a mother with decisionmaking authority in cluster j;

$Xi1$ is the dummy variable, coded 1 if mother has decisionmaking authority;

$Xikj$ are individual-level control variables, primary and secondary education for mother and her partner, century month of birth, and household wealth index;

kj are the coefficients for the individual-level control variables; rij are the error terms for the individual-level model.

6.2 Cluster-Level Equations

At the cluster-level, we examine the effects of community-level decisionmaking (while controlling for urban residence) on the intercept of the individual-level model, that is, the average health outcome for children in cluster *j*. The equations for the cluster-level models are

$$0j = 00 + 0m\ Zjm + u0j$$

$$kj = k0$$

where:

00 is the intercept for the cluster-level model;

Zjm is the cluster-level average for women's decisionmaking authority;

0*m* is the coefficient for cluster-level decisionmaking;

*u*0*j* are the error terms at the country level; and

*k*0 are the constant coefficients *kj* across all clusters.

There is a difference between the hierarchical models we estimate and a regression model that contains community-level variables as control variables. A hierarchical model consists of a fixed and a random portion. The differences between communities (clusters) is a function of the type of residence and mean decisionmaking power for the community. However, the effect of individual variables is measured within communities as deviations from the community mean.

7 RESULTS

Descriptive statistics for this analysis are presented in Table 1. Tables 2 through 4 present results from three multi-level models, each for the three dependent variables. The two continuous variables, number of vaccinations (ranging from 0 to 8) and height-for-age (mostly ranging from -500 to +500) are estimated using linear models, whereas child mortality, a categorical variable, is estimated using a logistic regression model. In each of the tables, Model 1 reflects the impact of cluster-level decisionmaking on the average health outcome in that cluster. In this model, differences between clusters are explained with only the average decisionmaking authority of women in each cluster and whether the cluster is urban or rural. Model 2 adds individual-level control variables, woman's and her partner's education, period of birth for the child, and the household wealth index. The third model also adds woman's own decisionmaking authority in the household, thereby partitioning the effect of women's decisionmaking authority into inter- and intracluster variation, while controlling for the variables included in Model 2.

Table 2 Effect of women's decisionmaking power on children's immunization status

Country	Model 1	Model 2	Model 3	
	Community decisionmaking responsibility	Community decisionmaking responsibility	Community decisionmaking responsibility	Individual decisionmaking responsibility
Benin	0.87	0.29	0.42	-0.04
Colombia	0.35*	-0.02	0.01	0.09
Egypt	0.21***	0.08	0.07	0.00
Haiti	-0.18	-0.24	-0.25	-0.01
India	2.49***	0.94**	0.83*	0.13***
Malawi	0.39**	0.21	0.21	0.07
Mali	0.42	0.36	0.24	0.12
Nepal	2.39***	0.74***	0.82***	-0.06
Nicaragua	0.41*	0.07	0.04	0.01
Peru	0.44***	0.24*	0.18	0.10*
Uganda	-0.75*	-0.99**	-1.01***	-1.01
Zimbabwe	2.54***	2.48***	2.19***	0.16
Average	0.80	0.35	0.31	-0.03

Model 1 includes only the effect of average decisionmaking responsibility in the community on intercluster intercept.
Model 2 adds controls for mother's and father's education, age and wealth index at the household level.
Model 3 also adds decision making power of the mother at household level.
* P ≤ 0.1
** P ≤ 0.05
*** P ≤ 0.01

With few exceptions, living in communities where women have great decisionmaking authority improves child health for all three outcomes studied and this effect is frequently statistically significant. In Model 1, for all three measures, child health outcomes are better for clusters where women have more decisionmaking authority than those where women have less decisionmaking authority. These differences are statistically significant in 8 out of 12 countries for vaccination, 9 out of 12 countries for height-for-age, and 5 out of 12 countries for child mortality. The results show that in Benin (as in other countries), the improvement in child health outcomes between communities where no woman has independent decisionmaking authority and those where all women have such authority is substantial. Going from 0 to 1 on this scale results in an improvement of 0.87 for number of vaccinations received (range being 0 to 8); an improvement of 56 in height-for-age (i.e., an improvement of about half a standard deviation on a standardized scale: the mean for a well-fed population is 0 and standard deviation is 100); and a decline in child mortality of about 40 percent (i.e., 1- exp -0.51). In the case of Benin, effects for child mortality and height-for-age are significant at 0.1 level or better and that for immunization is significant at 0.11 level.

Model 2 adds individual-level control variables: mother's and her partner's education (primary and secondary education), household-level wealth index raw score, and month of birth as proxy for age/historical period. The addition of individual factors reduces the size of the community effect: for vaccination in Benin, the community coefficient drops from 0.87 to 0.29; however, it is not statistically significant in either model. In many other countries, community decisionmaking remains important and statistically significant, although the size of the coefficient declines substantially. This suggests that at least some of the intercluster differences associated with women's decisionmaking authority are due to higher education and better economic status. However,

women's decisionmaking authority remains an important predictor of intercluster differences in health outcomes for many countries.

Table 3 Effect of women's decision making power on children's height-for-age

	Model 1	Model 2	Model 3	
Country	Community decisionmaking responsibility	Community decisionmaking responsibility	Community decisionmaking responsibility	Individual decisionmaking responsiblity
Benin	56.48***	42.58***	40.04**	2.37
Colombia	49.46***	22.61*	17.78	4.74
Egypt	48.34***	38.37***	38.53***	-0.21
Haiti	24.64	1.59	4.18	-8.06*
India	122.05***	64.47***	57.47**	9.27***
Malawi	46.58***	31.88***	43.14***	-10.91***
Mali	11.22	7.10	1.88	7.64*
Nepal	92.93***	45.55***	38.40**	6.40
Nicaragua	32.12*	-7.18	-0.76	-6.23
Peru	99.91***	39.20***	40.64***	-1.59
Uganda	-2.16	-2.66	-5.24	1.97
Zimbabwe	12.00	8.77	-0.43	8.96
Average	49.46	24.36	22.97	1.19

Model 1 includes only the effect of average decisionmaking responsibility in the community on intercluster intercept.
Model 2 adds controls for mother's and father's education, age and wealth index at the household level.
Model 3 also adds decisionmaking power of the mother at household level.
* P ≤ 0.1
** P ≤ 0.05
*** P ≤ 0.01

In examining the change in community coefficient across Models 1 and 2, we see a differential pattern for the three outcomes. For vaccination status, after controlling for individual wealth and education, women's decisionmaking authority has a statistically significant positive effect on intercluster vaccination differences in only five countries. For two other countries, Haiti and Uganda, the sign of the coefficient is negative (insignificant for Haiti, barely significant for Uganda). The average size of the coefficient declines by about 66 percent. This suggests that nearly 66 percent of the variation between clusters associated with women's decisionmaking authority is due to its association with wealth and education. The effect for height-for-age remains somewhat larger. The community-level measure for women's decisionmaking authority remains statistically significant in 7 out of 12 countries, although the average size of the coefficients declines by about 50 percent. For child mortality, even after controlling for education and wealth at the individual level, women's decisionmaking authority remains statistically significant in 4 out of 10 countries and the decline in the size of the coefficient is about 33 percent on a logarithmic scale and about 56 percent on an arithmetic scale.

Model 3 further distinguishes between women's decisionmaking authority at the cluster level and at the individual level, because we added the decisionmaking variable to the individual-level model while retaining controls for education and wealth. The column for the community decisionmaking variable shows differences between cluster averages (i.e., the intercept across clusters) and the individual decisionmaking variable reflects intracluster differences (i.e., the coefficient from intracluster fixed level analysis). While not strictly mathematically identical, the sum of the cluster-

level coefficient and the individual-level coefficient in Model 3 reflects the coefficient from Model 2. Results show that for each outcome, the size of the intercluster coefficient is substantially higher than the size of the intracluster coefficient. This suggests that living in an area where many women have greater decisionmaking authority is far better for a child than living in an area where only one's own mother has greater decisionmaking authority.

Table 4 Effect of women's decisionmaking power on child mortality

	Model 1	Model 2	Model 3	
Country	Community decisionmaking responsibility	Community decisionmaking responsibility	Community decisionmaking responsibility	Individual decisionmaking responsibility
Benin	-0.51*	-0.35**	-0.31**	-0.04
Colombia	u	u	u	u
Egypt	-0.32	0.03	0.03	0.04**
Haiti	-0.70	-0.36	-0.28	0.01
India	-1.38***	-0.90***	-0.70***	-0.09***
Malawi	-0.71***	-0.51***	-0.74***	-0.19
Mali	-0.25	-0.13	-0.05	-0.12***
Nepal	-0.90**	-0.13	-0.12	0.17***
Nicaragua	u	u	u	u
Peru	0.74**	0.42***	1.07**	0.23
Uganda	-0.44	-0.14	-0.33	0.11
Zimbabwe	-0.56	-0.17	-0.11	-0.02
Average	-0.50	-0.22	-0.15	0.01

Note: There were only 56 cases of child mortality in Colombia and 16 in Nicaragua. Hence these countries are not included in the child mortality analysis. Model 1 includes only the effect of average decisionmaking responsibility in the community on intercluster intercept. Model 2 adds controls for mother's and father's education, age, and wealth index at the household level.
Model 3 adds decisionmaking power of the mother at household level.
* P ≤ 0.1
** P ≤ 0.05
*** P ≤ 0.01
u = Unknown (not available)

8 DISCUSSION

The impact of women's empowerment on health outcomes differs by the type of outcome, and the effect is greater for height-for-age than for either child mortality or vaccination status. Height-for-age is a measure of long-term nutritional status and is affected by children's exposure to gastrointestinal diseases as well as food intake. While malnutrition may lead to increased child mortality, access to health care is an important determinant of mortality. It may be that women's decisionmaking authority most directly translates into day-to-day behavior of the household, and while decisionmaking authority also increases use of emergency care or preventive care, this effect is smaller. While mothers—as primary caretakers—are more aware of children's health needs, in many countries even women who have little authority may be able to work through other family members. Day-to-day resource allocation issues, such as buying special foods for infants, may be more susceptible to women's authority within the household.

Our research shows that while women's decisionmaking authority does not affect health outcomes in all settings, it has a positive impact on health outcomes in a large number of the

countries included in this study. As Model 2 in Tables 3 and 4 indicates, in two Asian countries (Nepal and India), women's decisionmaking authority improves height-for-age and reduces child mortality, even after controlling for education and wealth. Effects are the weakest in sub-Saharan Africa, with Latin America and the Caribbean falling in between. This suggests that more nuanced research on gender inequalities would incorporate historical and cultural factors that influence gender systems in different settings. Women in Asia and the Middle East are restricted by patriarchal controls that limit their physical mobility and ability to make independent decisions to a far greater degree than women in other cultures (Smith et al., 2003). Our results are consistent with these findings.

The magnitude of community effects far outweigh the magnitude of individual effects. More than three-fourths of the effect of women's decisionmaking is concentrated at the community level; the coefficients for individual effects are relatively small. Two potential explanations account for these results. The first explanation suggests that even highly empowered women, when living in a community where women have little say in decisionmaking, may find their power diminished. For example, in highly patriarchal areas, doctors may refuse to carry out emergency treatment at the mother's sole discretion. The second explanation suggests that community attitudes and norms are far more important in determining health outcomes than individual attitudes. For example, when a woman is dealing with a sick child, and her husband is not present, the neighbors might encourage her to make an independent decision to take the child for treatment. Thus, a community that views women as capable of making independent decisions might positively influence a woman who has little power in her day-to-day life.

While our measure of community behavior is an aggregate reflecting what women in a given society generally do, it seems to be far more important in determining child outcomes than what the individual mother does. This finding agrees with Kabeer's (2001) argument that while women may act to challenge the existing normative structures, their individual challenge often has a limited impact. However, while these innovators don't always manage to improve their own life situations, their behavior has a larger social component, and as more and more women begin to assert their control over their own lives, this collective behavior reaches a point at which it begins to influence the opportunities available to all women, not just the innovator herself.

From a public policy perspective, it is this nexus between individual (agency) and community (structure) behavior that needs to be better understood. Many activist groups focus on organizing women in collective action that empowers whole communities of women rather than just the participants. Our empirical results suggest that focusing on communities and community norms has a spillover effect that benefits all women.

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VILLAGE IN THE CITY: AUTONOMY AND MATERNAL HEALTH-SEEKING AMONG SLUM POPULATIONS OF MUMBAI

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1 INTRODUCTION

In Mumbai, where 75 percent of the population live in slums or slum-like conditions (United Nations, 2001), availability of institutional services for childbirth is widespread and most babies are born in facilities (Yesudian, 1988). Despite this, underutilization of municipal services in favor of either childbirth at home or at private providers of variable quality, and late presentation at facilities—many never get there in time—are features of careseeking in this city. In these cramped, unsanitary, and often resource-poor conditions, women's roles can be subject to scrutiny and decisionmaking regarding careseeking behavior may be constrained, especially in pregnancy (Ramasubban and Singh, 2001). Despite social constraints, however, poor urban women may have access to cash and resources that their rural counterparts could never obtain. Here the village is in the city, as observed from the cultural norms governing the daily lives of these women and the pattern of their interaction within their extended families back in their familial village and their immediate neighborhoods.

Results of a recent retrospective survey of autonomy and maternal careseeking in the eastern slums of Mumbai show that 50 percent or more of women who have recently given birth enjoy high levels of autonomy but that substantial minorities remain in low autonomy categories (Matthews et al., 2003).

Previous qualitative research suggests that widespread reproductive ill health is for the most part silently endured by women. These problems are placed within a context of household dynamics, where the status of women is reliant on family size, female age hierarchies, levels of male employment, and coping strategies against male alcoholism and domestic violence (Ramasubban and Singh, 2001).

There is evidence from the small scale survey that uptake of maternal services is constrained for those women with low levels of empowerment. Planning for childbirth is not associated with any aspect of autonomy, but antenatal care is associated with access to resources, and postpartum care is associated with spousal communication. These variables are as important as education and gravida in the health-seeking process, and although there may be problems interpreting what is meant by autonomy measures derived from survey questions, the role of autonomy in maternal health cannot be ignored (Matthews et al., 2003).

National Family Health Survey (NFHS-2) data on women's autonomy and maternal careseeking from Maharashtra can be used to place the results of this small-scale survey into a larger context. This is particularly true since the NFHS-2, which was conducted concurrently with the small-scale survey in 1999, included a sizeable subset of respondents from Mumbai slum locations. Using these data, it is possible to compare the previous study with a Mumbai-wide representative survey, and to compare the nature of the autonomy/careseeking relationship between slum and nonslum areas of Mumbai, and also to see how this differs from the situation in rural areas. This paper seeks to examine the nature of women's autonomy and careseeking in slums using both the

Maharashtra NFHS-2 and small-scale survey data. Regression models are used to quantify relationships between different aspects of autonomy and maternal careseeking. Understanding the autonomy transition from village to city is key to the situation of increasing numbers of women worldwide. Furthermore, given the emphasis on extending institutional services for childbirth to larger proportions of women, it is important to investigate the effects of women's autonomy, especially in Asian contexts, where gender constraints can severely compromise women's decisionmaking abilities.

2 AUTONOMY AND MATERNAL HEALTH CARE SEEKING

The male-female disparity in health and wellbeing has been well documented in developing countries and particularly in the Asian context (Das Gupta, 1987; Santow, 1995). High levels of morbidity and mortality in women and girl children can often be indicative of female disadvantage relative to males. This is particularly thought to be the case where patriarchal kinship and economic systems limit women's autonomy (Dyson and Moore, 1983). Much research on careseeking and its association with autonomy has focused on child health problems (e.g., Hossain et al., 2000; Durrant and Sathar, 2000), with only a few studies on reproductive health careseeking for women themselves (e.g., Bhatia and Cleland, 1995; Dixon-Mueller and Wasserheit, 1991).

The association between women's position and the uptake of contraception has been studied in many settings. The impetus for this has been the strong and persistent relationship found between levels of women's education and fertility (Caldwell, 1986; Jejeebhoy, 1995). However, the lack of consistency among relationships found between reproductive behavior and female education or employment has led many analysts to measure women's autonomy directly, rather than using education or employment as proxies for their decisionmaking power (Balk, 1994; Jejheebhoy, 1995; Visaria, 1993). This was first suggested by Dyson and Moore (1983) who defined autonomy as the "ability to manipulate personal environments as a basis for decisionmaking about personal concerns." There have been a number of more recent studies that have divided autonomy into dimensions such as women's physical freedom of movement, their participation in decisionmaking, their access to resources, and their ability to visit their natal kin in the Asian context (Balk, 1994; Cleland et al., 1996; Morgan and Niraula, 1995). Most have found relationships between various aspects of autonomy and contraceptive use, but there are many complexities and contradictory findings among these studies, with different aspects of autonomy showing surprising relationships with family planning uptake in different settings and under different research designs. This has led some researchers—particularly those who have carried out in-depth qualitative studies on the realities of women's empowerment in family situations—to question the validity of the concept of women's autonomy, especially in Asia, and to investigate alternative explanations for differences in women's reproductive behaviors (Jeffery and Jeffery, 1997; Mumtaz, 2002).

Apart from a study by Bloom et al. (2001) set in Uttar Pradesh and another by Bhatia and Cleland (1995) set in Karnataka, maternal health-care-seeking behavior, as opposed to contraceptive adoption, has not been studied in relation to direct autonomy measures in India. To our knowledge, there are also no published contributions on this relationship from any other country. Education has been found to be correlated with maternal careseeking in many regions (Bhatia and Cleland, 1995; Kausar et al., 1999; and Matthews et al., 2001), and Bloom et al. (2001) have found that female autonomy is a major determinant of maternal health care utilization in Uttar Pradesh. These findings focus on the effect of freedom of movement and close affinal ties on careseeking in pregnancy, and the authors support the use of direct measures of autonomy to pinpoint

characteristics of women that are equally as important as educational and economic levels. Unlike previous work on autonomy and contraceptive adoption, however, the pathways through which modernizing influences such as autonomy can affect behavior have not been explored in the field of maternal health.

Identifying hypothesized pathways between women's status and maternal health begins with the widely accepted premise that maternal death is avoidable and that every pregnancy carries potential risk of complications (Starrs, 1997). Poor maternal health is associated with unhealthy living conditions, high fertility rates, inadequate hospitals, and low uptake of maternal health services. How does women's gender position or level of autonomy affect these variables? The low status of women's health problems can lead to poor health among women, as well as poor quality services. Restricted access and limited uptake of maternal health services can be linked to a number of autonomy-related factors. If geographical distance is a problem—which is often the case with maternity hospitals—then restricted mobility for women can be a barrier to access. This has been found even over short distances where, in order to travel, women must be accompanied, even in an emergency (Khan, 1999). If financial input is required—which is always the case when there is major surgery such as a C-section or procedures involving blood transfusions, and generally the case with antenatal and postnatal care or normal childbirth in a public institution—then women's lack of control over resources can be a barrier to uptake of services. Linking these last two barriers indicates that transportation costs are a problem in access to maternal care (Okojie, 1994). Social access can be seen as the individual and household decisionmaking process that balances geographical or financial concerns with perceived need. This stage has been identified by Thaddeus and Maine (1994) as a key potential delaying factor that can be life threatening. Poor access to services as a result of compromised decisionmaking at any stage during the obstetric period could be influenced by autonomy or autonomy-related household factors.

Decisionmaking during the obstetric period has two components, deciding to access routine preventative care, and deciding to seek care as the result of a problem. These quite distinct aspects of careseeking exist during pregnancy or after childbirth, when antenatal or postnatal care can be routine or a reaction to a problem. At the time of the birth, when the crucial decisions are made about when, if, and how quickly childbirth services should be accessed, the situation is somewhat different and usually more urgent. The perception of the onset and progression of labor by women and their families is also viewed as either normal or problematic, and care will be sought on the basis of this lay diagnosis. The process of decisionmaking involves women's own assessments as communicated to key household members and these are weighed against scarce resources and other limiting factors. This process is ongoing during all three phases of the obstetric period: antenatal, intrapartum, and postpartum. Many aspects of autonomy may be important to this process; a woman's access to resources, freedom of movement, and her educational level can influence the careseeking outcome. Relationships within the household, age hierarchies, and links with natal kin also play a part in the final decision. The role of natal kin, especially in supporting pregnancies and births, is likely to be an important factor given the social context of India.

3 TWO MUMBAI SURVEYS WITH COMPARABLE INFORMATION ABOUT AUTONOMY AND MATERNAL CARESEEKING IN SLUMS

The Maharashtra NFHS-2 survey was conducted May through June 1999 with the objective of providing state-level information on fertility, family planning, infant and child mortality, reproductive health, child health, nutrition of women and children, and the quality of health and

family welfare services. The sample of women was designed to provide estimates for the state as a whole, for urban and rural areas, and for Mumbai. The survey was also designed to provide separate estimates for slum and nonslum areas of Mumbai. To achieve these objectives, a larger sample was used in Mumbai than in other urban areas. The final Maharashtra sample consisted of 5,391 ever-married women age 15-49. In Mumbai, interviews were completed with a total of 2,010 eligible women, of which 1,177 were from slum areas (IIPS and Macro International, 2002).

The advantage of this survey is that it provides a Mumbai-wide representation of the urban poor apart from pavement dwellers. Autonomy questions were also included in the women's questionnaire. Of the women in Maharashtra that were interviewed in this survey, 1,511 had given birth during the three years before the survey was undertaken. Of these women, 203 were visitors in the household where they were interviewed; therefore, their place of residence was not clear and they were not included in the analysis presented in this paper. The 1,308 nonvisitors in the survey included 325 living in slum households in Mumbai, 157 in nonslum households in Mumbai, 559 in rural Maharashtra, and 267 in other urban areas of Maharashtra outside of Mumbai.

The Mumbai Safe Motherhood Survey (MSMS) was undertaken concurrently with the NFHS-2 survey. This was a cross-sectional community survey comprised of a sample of 652 women. The target population was women who gave birth in the eight months preceding the survey but not the six weeks preceding the survey. This was to avoid the underrepresentation of women who gave birth in their natal home, but had not yet returned to their normal residence. Six Mumbai slum pockets from the M ward of Mumbai were selected for the survey. The M ward is an area located in the eastern suburbs of Mumbai, outside of the island city. It is one of the largest and most populous slum localities (Ramasubban and Singh, 2001), and has close access to a number of maternity hospitals. The purpose of the MSMS was to examine maternal health careseeking, although the survey instrument also included a module of 32 questions related to autonomy.

The MSMS autonomy module underwent a lengthy design and testing process, using a focus group of key local residents to establish some questions that were relevant to childbearing women. These included questions on access to resources, freedom of movement, spousal communication, and knowledge of the legal age at marriage. From the household roster it was also possible to draw up indicators relating to each women's place in the female age hierarchy in her household, whether she and her husband had become a nuclear unit, and whether she had previously lived in a village, making her natal kin remote and possibly inaccessible.

Results from these two surveys are compared below, focusing on levels of autonomy, determinants of autonomy, and the relation between autonomy and maternal careseeking. Reference is made to previously published results on autonomy and maternal careseeking from the MSMS, but NFHS-2 results from slum locations in Mumbai are presented for the first time here. Analysis of the NFHS-2 survey allows interesting comparisons to be made between Mumbai slum areas and rural Maharashtra, other urban areas in Maharashtra, and nonslum Mumbai in terms of autonomy and careseeking among women. Some comparisons of these four strata are included in the analysis shown below. However, since the main objective of this paper is to describe autonomy and its links with maternal careseeking in the Mumbai slums, only the full correlational analysis as applied to the NFHS-2 Mumbai slum data is reported here. Some reference is made to the corresponding analysis of the rural sample—which is of interest here as elements of the social environment of the village are echoed in slum settings—and this has implications for women's agency.

4 LEVELS OF AUTONOMY AMONG NEW MOTHERS IN MUMBAI

Any investigation of urban poverty in Mumbai must locate itself in slum areas. Although poor households may also be found in nonslum areas in Mumbai, slums represent material poverty based on the dwelling characteristics seen in slums. There is, however, considerable diversity among slum-dwelling households. In the city of Mumbai, three distinct environmental settings exist in slum communities (Ramasubban and Crook, 1995). Those living in multistoried, one-room tenements in the island city represent a stable group in terms of their social history and skill levels. They are the least stressed by the pressures of urban living, and they are relatively more responsive to institutional and technological innovations. The pavement dwellers emerge as a transient group, lacking the backup of strong family and kinship ties. They have the lowest levels of income; there is a preponderance of males in the population; and they are the least responsive to interventions. The third and largest group is represented by the slum settlements in the localities outside the island city. Among these people the family unit is very strong, the resolve to succeed financially is strong, kinship ties are resilient, and social histories are divergent owing to in-migration from many different parts of the country. Of the three groups, they are the most stressed because of their lower income and asset base and the squalor surrounding their dwellings. The provision of public goods and services is crucial to the amelioration of their condition. This situation of people from diverse backgrounds being crowded into limited space with few civic amenities is typical of many large cities in south Asia.

One aspect of Mumbai that is fairly unique among the towns and cities of developing countries is the general availability of modern health services. The city of Mumbai has the highest number of hospital beds and doctors of any city in India (Yesudian, 1988). Use of these health services is also high. Findings reported by Crook, Ramasubban, and Singh (1991) from a cross-sectional household survey indicated that for children in 90 percent of households, treatment for ailments was sought within a week. For adults, this proportion was slightly lower, but consistent in all types of neighborhoods. It was calculated that the average cost of curative treatment for a sick person was between one-fifth and one-third of the monthly household income, which, taking the incidence of illness into consideration, was an estimated 2.3 and 3.6 percent of the household per capita income. They concluded that these findings indicate that even fairly marginalized urban populations are now connected to the curative medical system (public and private), and that even the poorest groups are willing to pay for care when the need arises. This is contrary to common perceptions of the urban poor. Physical access to medical facilities "can hardly be regarded as a limiting factor in Mumbai today" (Crook, Ramasubban, and Singh, 1991).

In terms of maternity care for childbirth, private provision has been found to be an option that is too expensive for most of the slum households in Mumbai (Yesudian, 1988; Matthews et al., 2003). The Municipal Corporation is the major provider of childbirth services inside the city, and only a small percentage of women give birth at a private hospital or nursing home. About 15 percent have their babies at home (Matthews et al., 2003). In greater Mumbai, there are 26 municipal maternity homes, with the number of beds ranging from 10 to 84, and 14 maternity hospitals, with the number of beds ranging from 20 to 172. Among these are three teaching and referral hospitals. There are also two large charitable hospitals—performing as many as 11,000 deliveries each year—and a large number of private facilities ranging from nursing homes with 2 to 4 beds to private hospitals with 40 to 50 beds.

Using data from the Maharashtra NFHS-2, it is possible to examine levels of autonomy among slum dwellers in Mumbai who have recently given birth (Table 1). Data was collected in this survey both on the household type and the area type in Mumbai, as slum households can be found in nonslum areas. However, as the number of slum households in nonslum areas is low, and the household characteristic is of overriding importance, the results in Table 1 are based on household types rather than household areas. The table shows that the autonomy of mothers in slum areas of Mumbai who have recently given birth exceeds that of their rural counterparts as well as women in urban areas outside of Mumbai. For example, the extent to which women are involved in decisionmaking for purchasing jewelry and other major household items in slums is 52 percent, compared with 58 percent in nonslum Mumbai, and 40 percent in rural Maharashtra. This pattern is repeated for going to the market without permission, which is widespread at 71 percent in the Mumbai slums, and only 10 percentage points more among new mothers outside the slums. In rural areas the equivalent figure is as low as 28 percent. These estimates show the lack of autonomy among women generally, but also the comparative advantage of the slum dwellers, although even among the urban poor there are distinct minorities who remain with low autonomy according to all of the measures shown here. The autonomy advantage of Mumbai slum dwellers over urban dwellers outside of Mumbai exists despite the lower wealth and higher fertility characteristics of the urban poor compared with those in urban areas outside of Mumbai. The comparison between urban Maharashtra and the slum districts of Mumbai shows both of these groups falling between the extremes of rural women and urban nonslum women in Mumbai in terms of autonomy, education, and other socioeconomic indicators.

Table 1 Autonomy of women in Maharashtra who have recently given birth, by household type, Maharashtra NFHS-2

Autonomy indicator	Percentage Mumbai nonslum households	Percentage Mumbai slum households	Percentage urban areas outside Mumbai	Percentage rural Maharashtra
Woman involved in:				
Decision on obtaining health care	54.8	42.5	31.5	24.0
Decision on purchasing jewelry[1]	58.0	52.3	41.9	40.1
Decision on going to stay with family members	47.8	37.2	41.9	33.0
No permission needed to:				
Go to the market	80.9	71.1	43.4	28.4
Visit friends and relatives	43.3	29.8	27.7	17.9
Allowed to have money set aside	83.4	59.7	62.9	47.6
Number of women	157	325	267	559

Note: Estimates are unweighted.
[1] And other major household items

Questions asked on autonomy as part of the MSMS are not equivalent to those from the Maharashtra NFHS-2; for example, there is no similar question in the MSMS regarding being allowed to have money set aside. Table 2 details the results of those parts of the MSMS autonomy module that cover the same areas as the NFHS-2 questionnaire. The picture that emerges is similar to that for the NFHS-2 direct indicators of autonomy: a highly autonomous population but with substantial minorities of women who suffer low autonomy. For example, 71 percent of mothers who

have recently given birth do not need permission to go to the market, according to the NFHS-2 Mumbai-wide slum estimate, and in the slum districts covered by the MSMS, exactly the same proportion of women can go to the market either alone or with others. Some indicators show more variation; for example, 30 percent of the NFHS-2 slums sample needs no permission to visit friends and relatives, whereas in the eastern suburbs, 39 percent can visit relatives at will, with no permission required. (This is a problematic question in the slum context, where relatives can live hundreds of miles away or in the same slum district.) Other indicators do not quite match up; for example, in the NFHS-2, women were asked if they were involved in decisionmaking for obtaining health care, purchasing jewelry, and going to stay with family members, while in the MSMS, there was more emphasis on freedom of movement rather than the decisionmaking process, for example whether women were able to travel alone to the doctor.

Table 2 Autonomy of women interviewed in the Mumbai Safe Motherhood Survey

Autonomy question and response	Percentage of women	Number of cases
Can you visit relatives when you want?		
Cannot visit as and when you wish to	14.2	92
Visit when want, with permission needed	44.5	289
Visit when want, with no permission needed	39.0	253
If your child was ill, would you be allowed to take him or her to the doctor without the company of another adult?		
No	24.3	491
Yes	75.7	158
If you were ill, would you be allowed to go to the doctor without the company of another adult?		
No	28.8	462
Yes	71.2	187
Are you able to spend money by yourself for a sari?		
Decision made by others	24.8	161
Decide jointly	33.4	217
Decide alone	41.8	271
Are you able to spend money by yourself for presents?		
Decision made by others	28.2	183
Decide jointly	31.6	205
Decide alone	40.2	261
If you have ever earned money from paid employment, have you been able to spend your money on buying jewelry or cosmetics for yourself?		
No	81.4	19
Yes	18.6	83
Who accompanies you to the market?		
Never go	29.4	191
Go with others	14.5	94
Go alone	56.1	364
Who accompanies you to the market to do major shopping?		
Never do such shopping	21.0	136
Go with others	62.2	404
Go alone	16.8	109

A previous analysis of the MSMS data used latent class analysis to reduce the dimensionality of the autonomy questionnaire items to 14, producing high and low autonomy categories for each dimension. The following independent dimensions were found; the six in italics are each based on one survey question.

- Freedom of movement
- Spousal communication about family building
- Involvement with an organization
- Spousal communication on health, education, money
- *Participation in a micro-credit scheme*
- *Ability to go out socially with friends in the locality*
- *Voting in general or local elections*
- Deference to in-laws
- Access to resources
- Spousal transfer of money
- Level of domestic violence suffered
- *Participation in adult education classes*
- *Knowledge of age at marriage law*
- *Ability to visit natal kin members*

The results showed that more than half of the MSMS sample could be characterized as high autonomy for most of the autonomy dimensions, although good access to resources was less prevalent. Substantial minorities of women remained in a low autonomy category for all dimensions (Matthews et al., 2003).

Indicators of socioeconomic status and often-used autonomy proxies also show similarities when comparing the two surveys. As shown in Table 3, a similar proportion of mothers who had recently given birth were involved in employment in both surveys (11 to 12 percent) and similar proportions were in households headed by either their husband or their father-in-law (more than 90 percent). However, other indicators show that the MSMS sample is not representative of the Mumbai slums as a whole. The NFHS-2 shows a Mumbai slum population that is richer, better educated, more literate, less fertile, and marries later than the MSMS sample in the eastern suburbs. Also, the NFHS-2 women are more exposed to television than the sample from the MSMS. It is also interesting to compare women in the slums with women in other parts of Mumbai and Maharashtra. The indicators show that women in the slums have much higher levels of socioeconomic status than their rural counterparts. The proportion who have worked in the past 12 months is, however, smaller than for any other group, which may have implications for autonomy. Women in the slums have children earlier than their nonslum counterparts, although the indicator, age at first birth less than 16 years, is higher among women in other urban areas than among slum women.

Table 3 Autonomy proxies and socioeconomic characteristics of mothers who have recently given birth, Maharashtra NFHS-2 and MSMS

Characteristic	Maharashtra NFHS-2[a] Percentage Mumbai nonslum households	Percentage Mumbai slum households	Percentage urban areas outside Mumbai	Percentage rural Maharashtra	Percentage Mumbai Safe Motherhood Survey
Complete primary or more	96.2	72.0	77.9	55.8	50.3
Currently working	12.1	11.4	19.9	66.0	12.1
Age at marriage under 15	1.9	8.0	18.0	32.7	12.4
Age at first birth under 16	1.9	13.5	20.6	36.3	-
Reads a newspaper/magazine at least once a week	78.3	39.4	47.2	18.6	22.9
Watches TV at least once a week	92.6	76.0	78.7	44.0	67.1
Listens to radio at least once a week	66.9	38.8	34.5	26.8	28.6
Always lived in the city	72.0	49.2	53.2	-	41.6[b]
Parity of last birth is 3+	22.9	40.4	36.3	49.5	49.4
Husband/father-in law is head of household	88.6	90.1	91.4	94.1	94.1
Asset score is high	83.5	48.9	59.9	27.9	31.2
Hindu religion	70.7	55.4	59.9	88.2	50.5
Number of women	157	325	267	559	644

[a] Estimates are unweighted.
[b] The MSMS survey did not specify the previous location if not Mumbai: 41.6% lived in Mumbai before marriage, 58.4% did not.

5 RELATIONSHIP BETWEEN AUTONOMY AND AUTONOMY PROXIES SUCH AS EDUCATION AND EMPLOYMENT

As a first step toward assessing the link between autonomy and maternal careseeking, it is instructive to look at the relationship between autonomy and other characteristics of women. Direct measures of autonomy have now emerged as more important indicators of women's agency, replacing proxies such as levels of education and employment, but the lack of consistency found between direct measures and their proxy antecedents means that doubts still remain over their interpretation. In slum settings, where women may still retain the cultural restriction of the village, there are few studies focusing on the development of women's autonomy.

Using the Maharashtra NFHS-2 data for the slum areas of Mumbai, relationships between the characteristics of women who have recently given birth and direct measures of autonomy can be explored using logistic regression modeling. Of the questions on autonomy posed in the NFHS-2 survey, our analysis focuses on the six that were answered by all women in the survey. These include whether women are involved in decisions to purchase jewelry and other major household items, to obtain health care for themselves, or to go and stay with natal family members, and whether women require permission to go to the market or to visit friends and relatives. We also looked at whether women are allowed to have money set aside that can be used at will. The survey questions were reduced to two categories for each dimension of autonomy (see Table 4).

Table 4 Odds ratios for autonomy among women in the Mumbai slums who have recently given birth, based on six regression models

Indicator	Woman involved in decision to:			Permission not needed for woman to:		Woman allowed to have money set aside
	Obtain health care for self	Purchase jewelry and other items	Go and stay with family	Go to market	Visit friends and relatives	
Employment						
No	1.00	ns	ns	ns	ns	1.00
Worked in past year	2.50*	ns	ns	ns	ns	1.72*
Age						
15-19	1.00	ns	1.00	ns	1.00	1.00
20-24	1.06	ns	1.58	ns	5.39 **	7.14**
25-29	2.51*	ns	2.57*	ns	3.84 *	8.30**
30+	1.32	ns	1.90	ns	5.17 **	12.60
Head of household						
Husband	1.00	1.00	ns	1.00	1.00	ns
Father-in-law	1.00	0.55*	ns	0.49**	0.54 *	ns
Father/brother or other person	0.31**	0.25**	ns	0.36**	0.32 *	ns
Religion						
Hindu	ns	ns	1.00	1.00	1.00	ns
Muslim	ns	ns	0.58**	0.61*	0.55 *	ns
Other	ns	ns	0.37	7.59**	0.53	ns
Place of previous residence						
Urban	1.00	1.00	ns	ns	1.00	ns
Rural	0.64*	0.62*	ns	ns	0.64 *	ns
Reads paper at least once a week						
No	ns	ns	ns	1.00	ns	ns
Yes	ns	ns	ns	1.83**	ns	ns
Watches TV at least once a week						
No	1.00	1.00	1.00	ns	ns	ns
Yes	2.08**	2.00**	1.50*	ns	ns	ns

Note: Data are based on NFHS-2 Mumbai slum mothers who had a birth during the three years preceding the survey, excluding women who were visitors at the time of the survey. The "other person" category for head of household includes the very few cases where the woman herself or other natal, non-natal, or unrelated person was head of household.

*significant at .05%
**significant at .01%
ns = Not significant

Table 4 presents the results of the six regression models fitted to these directly measured dimensions of autonomy from the Mumbai slum household subset of the Maharashtra NFHS-2. A number of factors were not found to be associated with direct measures of autonomy, including education (either the woman herself or her partner), age at marriage and age at first birth, and wealth levels as measured by asset scores. Higher parity was found to increase autonomy in many cases, but as parity is highly correlated with the age of the woman, we have included age only in the final models.

As seen in Table 4, employment of women, which is not common in slum districts, is associated with improved inclusion of women in obtaining health care. This is the only dimension of autonomy in which employment is important, apart from being allowed to set money aside, which has a more functional relationship with employment. This finding supports results from the MSMS survey, which found that employment was related to freedom of movement and access to resources, but not to other aspects of autonomy such as ability to visit kin and spousal discussion (Matthews et al., 2003). The factors that most commonly emerge as significant are the head of household, with compromised autonomy seen where the woman is not married to the head of household, the expected increase in autonomy with age, and lower autonomy for Muslim women. The place of previous residence is an important factor; we might expect this when considering visiting or staying with family members, but having lived in a rural area before marriage also reduces autonomy to obtain health care or to purchase jewelry and other items. Exposure to mass media, also shown to be important in the MSMS, is related to autonomy, especially in terms of watching television.

These determinants of autonomy for women in slum households who have recently given birth are different from those found in rural areas of Maharashtra. The equivalent regressions carried out using rural women's data from the Maharashtra NFHS-2 rather than the Mumbai slum data highlight the improvement that women experience in their social environment when making the transition from village to city. This improvement is despite the cramped conditions in slums, which can lead to close surveillance of women's behavior. In rural Maharashtra, although education of women remains irrelevant to women's autonomy, higher levels of education for woman's partners consistently restricts women's autonomy compared with women whose partners have less education. This pattern has been found elsewhere in the Asian context, where women with intermediate levels of socioeconomic status are often found to be less autonomous than their poorer and richer counterparts. Some authors attribute this to the contribution that a small improvement in status can make to women's ability to take up their prescribed role in society. The same effect is seen in the rural NFHS-2 data for increased assets and employment, both of which are associated with lower categories on at least two dimensions of autonomy for rural women. This is not seen in the slum sample. Similarities do exist, however, in that age, exposure to media, and head of household are important for autonomy in the rural context in the same way as in the slum setting.

6 MATERNAL CARESEEKING IN MUMBAI

The parous women surveyed in the Maharashtra NFHS-2 reported a total of 1,762 births during the three years preceding the survey. For the purposes of studying maternal health careseeking, the survey data on antenatal care and childbirth can be analyzed for all of these births, although some women have contributed twice to the data set. We excluded 243 cases of respondents who were visitors at the time of the survey from the analysis. The most commonly used indicators of the utilization of maternal health care are whether women receive antenatal care in the first trimester of pregnancy, whether they have three or more contacts during pregnancy, and the place where childbirth occurs.

Using this approach, details of the 378 pregnancies leading to live births recorded in Mumbai slums were analyzed. Making up this total are 272 births that were the only birth recorded for that mother, and 106 additional births from mothers contributing two births each. Similar sample compositions make up the numbers of births from rural areas of Maharashtra and nonslum urban areas. Table 5 shows the key maternal careseeking indicators from these domains, including sample sizes as well as the equivalent information from the MSMS.

Table 5 Maternal health careseeking in Maharashtra, Maharashtra NFHS-2 and MSMS

Indicator	Maharashtra NFHS-2[a]				
	Percentage Mumbai nonslum households	Percentage Mumbai slum households	Percentage urban areas outside Mumbai	Percentage rural Maharashtra	Percentage Mumbai Safe Motherhood Survey
Number of antenatal visits					
None	1.1	5.3	6.0	13.1	5.6
1 or 2	5.1	8.8	15.8	32.1	8.7
3 or more	93.8	85.9	78.2	54.7	85.7
Timing of first antenatal visit					
No visits	1.1	5.3	6.0	13.1	5.6
1st trimester	9.7	18.8	8.2	11.3	44.4
2nd trimester	21.6	24.1	29.0	34.0	14.3
3rd trimester	67.6	51.7	56.8	41.6	35.7
Place where childbirth occurs					
Home	6.8	17.9	22.7	66.3	24.8
Public hospital	34.1	46.7	33.1	17.0	55.4
Private hospital	59.1	35.5	44.2	16.7	9.2
Number of women	176	378	317	648	644

[a] Estimates are unweighted.

In terms of antenatal visits, the NFHS-2 and MSMS both report high levels of attendance for the World Health Organization (WHO) recommended number of visits. Although this leaves around 15 percent of women in Mumbai slums with inadequate attendance for antenatal care, the coverage compares favorably with rural Maharashtra, and also with urban areas outside Mumbai. In terms of antenatal contact during the first trimester of pregnancy, also recommended by WHO (WHO, 1996), the slum dwellers do particularly well, especially in the MSMS study area, whose catchment is served by a number of health providers. Further analysis of the MSMS data showed that problem care contacts, rather than routine checks during pregnancy, are sought frequently during the first trimester of pregnancy in slum districts of Mumbai, predominantly from private providers.

This level of service access is a characteristic of a highly served population of urban women, who although extremely poor and largely uneducated, have a range of options and are sophisticated careseekers. Despite this, MSMS results show that a substantial minority of women delay their first routine antenatal check until the seventh month of pregnancy, a timing significant for cultural reasons because it coincides with the public acknowledgement of the expected birth, and for practical reasons because the municipal authorities require that an antenatal visit be made before this time if a hospital delivery is to be assured (Matthews et al., 2003).

Institutional childbirth services are sought by the majority of women in urban Maharashtra. Unlike antenatal care, assistance during childbirth from a municipal provider is preferred because it is ostensibly free of charge, though there are various costs associated with publicly provided childbirth services, especially if a blood transfusion, C-section or other advanced procedure is

required. Although a large majority of the MSMS sample planned a municipal hospital birth in Mumbai, significantly less than this actually gave birth where they had planned, resulting in more than double the proportion of home births originally planned to occur in slum households. The custom of primiparous women returning home to their village to give birth under the care of their mothers gives rise to a small proportion of home and hospital births outside of Mumbai. Comparing the planned and actual childbirth locations of the MSMS sample suggested a general lack of planning, as well as late decisionmaking regarding where women should spend their final weeks of pregnancy. Almost one-fourth of the women finally gave birth at home (this compares with a slightly lower figure for Mumbai slums as a whole). The low percentage of women giving birth in a private facility in the MSMS sample compared with the NFHS Mumbai-wide sample underlines the poverty of the eastern suburbs.

7 AUTONOMY AS A CORRELATE OF MATERNAL CARESEEKING BEHAVIOR

Results of logistic regressions to find significant correlates of antenatal careseeking and childbirth location in Mumbai slums can be seen in Table 6. The table shows the odds of early and sufficient antenatal care contact, as well as the odds of institutional childbirth services for the more autonomous women compared with those with less autonomy as measured on the NFHS-2 dimensions. The uncontrolled odds ratio is the fixed effect of each dimension of autonomy on careseeking without controlling for other characteristics of women. When women's education, employment, age, religion, previous place of residence, and asset wealth are entered into a logistic regression, as well as their partner's level of education and their exposure to media, the controlled odds ratio is obtained.

The results show the importance of a number of autonomy measures in women's use of maternal health care. If women are involved in the decision to go and stay with family members, their odds of obtaining sufficient care during pregnancy, as well as institutional childbirth services, improves and this is clearly one of the most influential of the autonomy factors in maternal careseeking. Paradoxically, women's chance of obtaining care early enough in pregnancy declines when this dimension of autonomy is higher, but this may be because the decision to go and stay with natal kin does not have a straightforward interpretation when natal kin might be next door or hundreds of miles away. The size of the controlled odds ratios that are still significant also underlines the enduring effect of autonomy; for example, women involved in the decision to purchase jewelry and other items have more than twice the odds of other women to have three or more antenatal visits and to give birth in an institution. These results reflect the equivalent analysis of the MSMS data, which shows that antenatal careseeking is significantly related to access to resources and ability to visit natal kin, and that this effect is net of other factors (Matthews et al., 2003).

Some aspects of autonomy are not related to careseeking. For example, the role that women play in deciding to obtain health care for themselves (in general) may not be related to their careseeking during pregnancy and childbirth. Also, needing permission to visit the market has no effect on maternal careseeking. The net effects of autonomy on the place where childbirth occurs are more noticeable than the effects on antenatal careseeking, with a greater range of autonomy dimensions remaining important for childbirth than for antenatal care, after controlling for other factors. The effect of being able to have money set aside has a particularly strong influence on having an institutional birth.

Table 6 Separate effect of different dimensions of autonomy on maternal careseeking in slum areas of Mumbai, controlling for blocks of covariates, NFHS-2 Mumbai slums

Block of covariates controlled	Dimension of autonomy: Involvement in decision to obtain health care for self	Involvement in decision to purchase jewelry and other items	Involvement in decision to go and stay with family members	Permission not needed to go to market	Permission not needed to visit friends and relations	Allowed to have money set aside
Timing of first antenatal visit: Odds ratios for first trimester antenatal visit						
Uncontrolled	1.23	1.17	0.73**	1.22	1.28	1.18
All covariates controlled	1.19	1.14	0.63**	1.15	1.40	1.04
Number of antenatal visits: Odds ratios for 3+ antenatal care contacts						
Uncontrolled	1.10	2.55 **	2.70**	1.34	1.12	2.00**
All covariates controlled	0.83	2.02 *	2.48**	1.20	1.07	1.34
Place where childbirth occurs: Odds ratios for childbirth in an institution						
Uncontrolled	2.05**	3.54**	2.15**	1.75*	1.64*	3.01**
All covariates controlled	1.54	2.73**	1.20*	1.34	1.77*	2.69**

Source: NFHS-2, Mumbai slum sample excluding 37 visitors, total unweighted sample size = 378
*significant at .05%
**significant at .01%

The corresponding analysis applied to the rural strata of the NFHS-2 data shown in Table 7 shows some similarities and some surprising differences. The results for the number of antenatal visits are similar with significant effects of involvement in decisionmaking for purchasing jewelry and going to stay with family members. However, the effect of being able to go and stay with family members and the timing of the first visit in rural areas is reversed, such that a more autonomous women in this respect would have higher odds of an earlier visit. This effect does not remain significant once other covariates are controlled for, unlike the slum results. Involvement in the purchase of jewelry and other items is a significant influence on early antenatal contact in rural areas but not in slums. The role of autonomy in the choice of childbirth location is much less important in rural areas than in slums. There are no aspects of autonomy that are significantly related to childbirth location in rural areas because choice of location in rural areas is limited, with home births being the norm. Autonomy is more important in slum locations, where there are multiple options for childbirth location.

Table 7 Separate effect of different dimensions of autonomy on maternal careseeking in rural areas of Maharashtra controlling for blocks of covariates, NFHS-2 rural Maharashtra

Block of covariates controlled	Dimension of autonomy: Involvement in decision to obtain health care for self	Involvement in decision to purchase jewelry and other items	Involvement in decision to go and stay with family members	Permission not needed to go to market	Permission not needed to visit friends and relations	Allowed to have money set aside
Timing of first antenatal visit: Odds ratios for first trimester antenatal visit						
Uncontrolled	1.24	1.34**	1.42 **	1.04	1.08	1.58*
All covariates controlled	1.08	1.31*	1.28	0.92	1.16	1.17
Place where childbirth occurs: Odds ratios for childbirth in an institution						
Uncontrolled	1.22	1.21	1.32	1.13	0.95	2.06**
All covariates controlled	0.94	1.14	1.07	0.78	0.94	1.23

*significant at .05%
**significant at .01%

Fitting logistic models that include all dimensions of autonomy together—assuming that these dimensions are not correlated—gives the results shown in Table 8. Here, the importance of the autonomy variables is clear, given their prominence in the models. The lack of significant links between careseeking and traditional measures of women's progress, such as age at marriage and education, shows that the direct measurement of autonomy is relevant for maternal health. (Factors that were insignificant for all three careseeking outcomes were excluded from the models and not shown in Table 8.) Recent employment in slums restricts the opportunity to obtain a care contact early in pregnancy, and is not important for place where childbirth occurs. The most consistent influence on all three forms of careseeking is newspaper reading, which has a large effect particularly on the frequency of antenatal care visits.

Table 8 Odds ratios from logistic regression models to predict maternal careseeking in Mumbai slums, NFHS-2 Mumbai slums

Significant correlates	First antenatal care visit in first trimester	Three or more antenatal care visits	Childbirth in an institution
Decision on purchasing jewelry & other items made by:			
Partner /someone else	ns	1.00	1.00
Respondent / Jointly with partner	ns	1.96*	2.46**
Decision on going to stay with family members made by:			
Partner/someone else	1.00	1.00	ns
Respondent/Jointly with partner	0.40**	2.48**	ns
Permission for visiting friends and relatives			
Not allowed/permission needed	1.00	ns	ns
Permission not needed	1.66*	ns	ns
Allowed to have money set aside			
No	ns	ns	1.00
Yes	ns	ns	2.47**
Worked in the past 12 months			
No	1.00	ns	ns
Currently working/worked in past year	0.54*	ns	ns
Head of household			
Husband	ns	1.00	ns
Father-in-law	ns	3.65 **	ns
Father/brother or other person	ns	0.85	ns
Parity			
First birth	1.00	ns	1.00
Second birth	0.49**	ns	0.84
Third birth	0.50	ns	1.48
Fourth birth	0.55	ns	4.66**
Fifth birth or higher	0.42**	ns	4.05*
Number of assets			
None or one	ns	ns	1.00
Two or more	ns	ns	2.33**
Language			
Hindi	1.00	ns	1.00
Marathi	2.99**	ns	0.92
Southern Indian language	0.81	ns	0.93
Northern Indian language	1.61	ns	0.20**
Partner's level of education			
No education	ns	ns	1.00
At least complete primary	ns	ns	2.08*
Place of previous residence			
Urban	ns	1.00	1.00
Rural	ns	0.33**	0.12**
Reads newspaper at least once per week			
No	1.00	1.00	1.00
Yes	2.04**	5.35**	2.30*
Listens to radio at least once per week			
No	ns	1.00	ns
Yes	ns	2.73*	ns

Source NFHS-2, Mumbai slum sample excluding 37 visitors, total unweighted sample size = 378
*significant at .05%
**significant at .01%
ns = Not significant

Careseeking is not dependent on traditional autonomy proxies, but is more influenced by individual autonomy and age or parity, exposure to media, and cultural factors that relate to language and household structure. The move from rural to urban location is also central both to autonomy itself and to careseeking in pregnancy; those women who married into a city environment, having come from a village environment, are more vulnerable. Women in the urban category for previous place of residence include those who have always lived in the same locality as well as those who moved from one urban environment to another; these women have higher odds of three or more antenatal care visits as well as childbirth in an institution. The MSMS study, which collected much richer household and careseeking information, but only covers a small part of Mumbai, has similar results, and also shows that slum localities themselves vary considerably (Matthews et al., 2003). The determinants of careseeking for women in slum households who have recently given birth are different from those found in rural areas of Maharashtra. The equivalent regressions carried out using rural women's data from the Maharashtra NFHS-2, rather than the Mumbai slum data, underline the lack of importance of autonomy in rural areas, and the importance of the role of education in rural areas, compared with the slum areas, where access to media and autonomy levels become more influential.

8 DISCUSSION

The analysis presented in this paper provides evidence of the importance of women's autonomy in reproductive health. The survey responses show that in Mumbai slums the majority of young married women who have recently given birth report high levels of autonomy, especially when compared with their rural counterparts, but there is a sizeable minority of women in slums who face social, financial, and physical restrictions. In terms of maternal care, 14 percent of the NFHS-2 study sample from slums did not have the requisite three or more antenatal checks at the time of the survey, and there were even some who had no contacts at all. Only 19 percent of the sample had an antenatal care contact during the first three months of pregnancy, most waiting until later months. These results are similar to those of the concurrent MSMS study. Although this is a highly medicalized population, nearly all of whom plan a hospital birth, 15 percent of births occur at home in the slum.

As a counter argument to using education as a proxy for women's autonomy, it has been seen from our analysis that education is consistently unrelated to autonomy in slums. More commonly related factors are the head of household—with compromised autonomy seen where the woman is not married to the head of household—the expected increase in autonomy with age, and lower autonomy for Muslim women. The place of previous residence is also important; having lived in a rural area before marriage also limits autonomy. Exposure to mass media, also shown to be important in the MSMS study, is related to autonomy, especially in terms of watching television.

The results of multivariate analysis show that various dimensions of autonomy, as measured by direct survey questions, are important correlates of antenatal and childbirth careseeking. The ability of women to be involved in the decision to go and stay with family members is one of the most influential of the autonomy factors in maternal careseeking. Women involved in the decision to purchase jewelry and other items are more than twice as likely as other women to have three or more antenatal visits and to give birth in an institution. These results point to major similarities with the equivalent analysis of the MSMS data, a survey focused on a small area of Mumbai that shows, additionally, that levels of autonomy and careseeking can vary considerably by slum district.

Previous qualitative work has also identified that some women of reproductive age living in slum pockets in Mumbai are lacking in autonomy. Women's pregnancy narratives reported by Ramasubban and Singh (2005) suggest that social pressures and the existence or absence of support systems play a crucial role in maternal care and treatment-seeking during pregnancy and beyond. Steering a woman through the last stages of her first pregnancy has been culturally accepted as her natal family's responsibility. For subsequent births, women stay mostly in their husband's home. For multiparous pregnant women, the responsibilities for care of older children and additional household duties that go with being a mature and seasoned homemaker (particularly caring for the husband), continue unabated until she is ready to give birth. According to the same study, strong marital support sometimes comes from the mother-in-law, sisters-in-law, and husband, including the provision of good food for the pregnant woman, only light household duties, kindness and attention. In such cases, women, as a gesture of solidarity and identification, stay on in their husband's home even for the first birth, sending back parents who had come to fetch them in keeping with the custom.

In contrast to this, some parents and brothers of pregnant women are required to continue to extend their support even to subsequent pregnancies. This is particularly the case where daughters lack a support system in their conjugal homes and face gross ill-treatment. Natal support in such situations can be of the financial variety, toward the cost of hospitalization and tonics. Where women move into a nuclear setup, this natal assistance could be help with cooking and other household chores, such as filling water, or making available some special or extra foods. The atmosphere in conjugal homes can be lukewarm, indifferent, or even hostile to a woman's needs during pregnancy (Ramasubban and Singh, 2005).

Even for those women whose early pregnancies enjoy reasonable family support, the support system worsens steadily with every subsequent pregnancy. During the years when women are younger and sought after by their husbands, the joint family system impairs autonomy and access to health care except under the most extreme circumstances. Just when women come into their own, husbands become indifferent and sometimes hostile to their needs and indebtedness increases. The only positive accomplishment by the end of the childbearing years is that women have often developed the confidence to handle pregnancy and childbirth, and have built for themselves a support network in the neighborhood to obtain help when the need arises (Ramasubban and Singh, 2005).

The results from the analysis presented in this paper show that new mothers in the slum city find themselves in a different situation from those in rural areas. Autonomy levels are higher, despite less female employment, and many more health services are available. Household structures and family environments are extremely important to these women, and social conditions can vary widely from slum locality to locality. Women who have recently arrived from the village may be more vulnerable, as are those who do not have some media exposure. Comparing the autonomy-careseeking link seen in the slums with that in Maharastra villages shows that the role of autonomy in rural areas is much less important, especially regarding the place where childbirth occurs. Autonomy becomes more important in the slum location, where more careseeking choices are available.

Understanding the role of autonomy in health decisionmaking may be problematic because of the possible inappropriateness of the autonomy construct. Some authors argue that autonomy is not a useful concept in developing countries, and especially not in the Asian context (e.g., Jeffery and

Jeffery, 1997; Mumtaz, 2002). These authors emphasize the Western feminist origin of the idea of autonomy, which is based on an individualistic ideal. Jeffery and Jeffery also point out that the meaning of the word autonomy is hardly ever understood by women interviewed in large-scale surveys, and indeed, translations of the word always carry a negative connotation. In these cases, autonomy is not seen as desirable for a woman; autonomous characteristics are to be avoided. The creation of a new construct such as family embeddedness or centrality may be useful in terms of describing women's actual power, but the subsequent policy implications would be that women who are more peripheral to families and rejected by families need more support to access care effectively. This may be difficult to implement. It is certainly the case from our analysis that women who lived outside of Mumbai before marriage seek care less often. From the MSMS study it was found that those who have no older relatives in the household are less effective careseekers. These women are often in nuclear family situations, hold more responsibility, and are probably less embedded in the extended family. However, the importance of access to resources and freedom of movement—key factors associated with maternal careseeking, as demonstrated by this study—supports the continuation of interest in direct measures of autonomy.

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WOMEN'S AUTONOMY, STATUS, AND NUTRITION IN ZIMBABWE, ZAMBIA, AND MALAWI

Michelle J. Hindin

1 INTRODUCTION

There are several countries in southern Africa that have been experiencing both a food crisis and an HIV epidemic. According to UNAIDS (UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance, 2001), in 2002 an estimated 14.4 million people were at risk of starvation in Lesotho, Malawi, Mozambique, Swaziland, Zambia, and Zimbabwe. This food crisis, which has been evolving since the 1992 southern African drought, has also been associated with "alarmingly high prevalence rates" of HIV. In the past, households in these nations were able to cope with food crises through producing food, earning cash from food produced, and relying on trading and bartering; however, HIV/AIDS, according to UNAIDS, has led to an erosion of coping mechanisms with food shortages. I hypothesize that in these highly constrained settings, women with low autonomy and status will be less likely to obtain adequate food resources and will then be more likely to experience undernutrition or chronic energy deficiency (CED).

1.1 Defining a "Resource-Constrained" Context

As of 2003, there are six countries suffering from both periodic food shortages and the effects of high prevalence of HIV. These countries include Malawi, Zambia, and Zimbabwe. According to a mission report to the United Nations in 2003 (Morris and Lewis, 2003), there are three unique factors in the current food shortage in southern Africa. In this most recent food emergency, the shortage was worsened by HIV/AIDS through the loss of productive working adults who can bring food to households and, in particular, the loss of women who have been the main providers of food security in many of these households. In addition, many households have lost breadwinners and caregivers, leaving households even poorer and more vulnerable to starvation, and therefore more vulnerable to HIV. This report also suggests that populations highly affected by HIV are likely to experience continued food crises (Morris and Lewis, 2003).

In addition to the current food crisis, there has been a series of food shortages since the drought of 1992 (Southern African Development Community [SADC], Food, Agriculture and Natural Resources [FANR] Vulnerability Assessment Committee, 2003). A report from the SADC on Malawi, Zambia, and Zimbabwe finds that households affected by HIV (either through morbidity, mortality, or high demographic load characterized by a high dependency ratio or the presence of orphans) have reduced agricultural production and nonfarm income, which has led to lower levels of food security (SADC FANR Vulnerability Assessment Committee, 2003). A recent report on African food security suggests that the food price index has soared, and Zambia, Malawi, and Zimbabwe are among countries most adversely affected (Rukuni, 2002). By the end of 2001, an estimated 33.7 percent of adults in Zimbabwe, 21.5 percent of adults in Zambia, and 15 percent of adults in Malawi were living with HIV/AIDS (SADC FANR Vulnerability Assessment Committee, 2003).

1.2 HIV and Nutritional Status

Since the onset of the HIV epidemic, numerous studies have documented that one of the clinical problems associated with the disease is muscle wasting. Recent evidence, drawn from developed nations with access to antiretroviral therapies, demonstrates a continued strong link between HIV and nutritional status. Several recent reviews have documented that malnutrition is a major complication of HIV and that malnutrition is associated with increased mortality, faster disease progression and decreased functional status (Grinspoon and Mulligan, 2003; Wanke et al., 2003; Salomon et al., 2002). These studies, in developed nations, note that although antiretroviral therapies are commonly administered, nutritional complications with HIV persist.

In the developing world, HIV and nutrition continue to be linked in the same way as that seen in the early phases of the HIV epidemic in the developed world. In Malawi, a recent study of individuals admitted for tuberculosis showed that 80 percent of them had HIV. Among these patients, malnutrition, as measured by body mass index (BMI) was associated with mortality (Zachariah et al., 2002). Malnutrition was also prevalent among inpatients in a Burundi hospital, with food availability being the leading cause of malnutrition among HIV-seronegative patients and tuberculosis being a leading cause of malnutrition among HIV-seropositive patients (Niyongabo et al., 1999). In a context where HIV worsens nutritional status and food shortages increase vulnerability to HIV, women's roles as food providers have become increasingly complex and difficult. According to the United Nations Administrative Committee on Coordination/Sub-committee on Nutrition (ACC/SCN, 2001:7), "at the social level, food insecurity is a major cause of vulnerability to HIV." This operates through reduced agricultural production, leading to increased difficulties for households. For example, women can be forced to trade sex for food or money, increasing their vulnerability to HIV.

1.3 Women's Autonomy and Anthropometry

Although women have tended to be producers for the family in many agricultural settings, their lack of access to the income from this labor leaves them resource-poor (Abbas, 1997). There has been some evidence to suggest that women who have lower levels of autonomy and status within in the household are more likely to experience undernutrition (Hindin, 2000) or have a lower BMI (Bindon and Vitzthum, 2002; Baqui et al., 1994). The theoretical rationale for why this may be the case is outlined in a paper on Zimbabwe by Hindin (2000), who suggests that women's health can be adversely affected if they are unable to negotiate for themselves, particularly in resource-constrained settings.

A combination of factors suggests that women with less autonomy and status will have poorer health, based on having a higher prevalence of CED. These factors include the fact that many households in these settings have been affected by the HIV/AIDS epidemic either directly, through loss of a family member, or indirectly, through the poor economic prospects in communities that have experienced substantial losses in the economically independent population. In addition, Malawi, Zambia, and Zimbabwe have undergone a series of droughts that have led to poor food security throughout these nations. At the same time, gender norms in these countries often arise out of patrilineal and patrilocal practices that put women at a disadvantage when it comes to intrahousehold bargaining and resource allocation. In these highly resource-constrained settings, women with low autonomy will be less likely to obtain adequate food resources and may, in the long run, be at greater risk for contracting HIV/AIDS or having a more rapid progression of the disease if they have already contracted the virus. In addition, since women are the primary producers of food

in these nations, the HIV/AIDS epidemic can compromise women's ability to devote as much time to food production because of additional care-giving responsibilities, adding indirectly to food insecurity in all constrained households.

2 METHODOLOGY

2.1 Sample

Three Demographic and Health Surveys were obtained from MEASURE DHS for these analyses: the 1999 Zimbabwe Demographic and Health Survey (DHS), the 2000 Malawi DHS, and the 2001-2002 Zambia DHS. Each of these surveys collected nationally representative data on reproductive health issues from women age 15-49. For the purposes of this paper, in each of the three countries, the sample was limited to nonpregnant married or cohabiting women who had not given birth in the past three months. Since many of the key issues in this paper are focused on relationships, the sample needed to be limited to those women in partnerships. All women who reported being in a partnership at the time of the survey were included; however, a variable was created to determine whether or not the partner was co-residing at the time of the survey. Because there are different sets of nutritional guidelines and weight expectations for pregnant and lactating women, the sample was limited to women who were not currently pregnant or had recently given birth. These constraints led to a sample of 2,667 women in Zimbabwe, 3,485 women in Zambia, and 6,854 women in Malawi.

2.2 Dependent Variable

CED is based on an internationally derived standard. It is a dichotomous measure based on the standard BMI cutoff of <18.5 (James et al., 1988).

2.3 Independent Variables

Measures of sociodemographic characteristics and women's and partners' characteristics. The sociodemographic characteristics of the sample are divided into two groups: household characteristics and women's characteristics. Urban residence is a dichotomous variable based on the woman's place of usual residence. Household wealth was calculated as a weighted sum of whether or not the household had the following items: electricity, radio, television, scooter, bicycle, cement floor, and flush toilet. The weights were calculated as the inverse of the proportion of households in the sample that had these items. The number of births the woman had was used as a dichotomous variable, with women having no births compared with other women. Household size was left as a continuous measure of the number of individuals per household. Two additional sociodemographic measures were included to better describe the partnership: the first was whether or not the woman and her partner were currently in the same household at the time of the survey, and the second measure was whether or not the partner was polygynous. Whether or not the woman was literate (excluded in the Zimbabwe analysis because of collinearity with education) and her current employment status at the time of the survey were included as dichotomous variables; however, the woman's occupation was used instead of current employment status. Occupation was divided into six categories: unemployed, working in agriculture, unskilled manual, skilled manual, nonmanual, and professional. Since few women were in skilled manual jobs, for modeling, the skilled and unskilled manual laborers were combined. Women's ages were used as continuous measures. Education (for both the respondent and her partner) was coded in four levels: no schooling, some primary school, completed primary school, and began secondary school or more. Partners'

characteristics include their age, education, and occupation. In Zambia, women were asked whether they were ever physically abused by their spouses, and this variable was included in the Zambian analyses.

2.4 Measures of Women's Relative Status, Women's Status in Society, and Decisionmaking Autonomy

Women's relative status. Women's relative status is conceptualized as their status relative to their partner's status in terms of age, education and occupation. For age, three categories were used on the basis of the continuous measures of age: 1) respondents who were four or more years older than their partners, 2) respondents who were six or more years younger than their partners, or 3) everyone else who was near the same age as their partners. For education, four levels were used for both respondents and their partners: no schooling, some primary school, completed primary school, or attended some secondary school or more. Relative educational status was calculated as a difference between the partners' schooling levels with three categories: respondent has more, the couple has same level, or the partner has more. For occupation, six levels were used for the respondents and their partners: not working, agricultural, unskilled manual, skilled manual, nonmanual, and professional. A relative occupational difference was calculated using five categories: both unemployed, both in agriculture, respondent at a higher level, couple at equal levels, and partner at a higher level. In Malawi, no women reported that their partners were unemployed, so there is no category for "both unemployed." Few women in all three countries were in unskilled manual labor, so unskilled manual and skilled manual levels were combined for the multivariate analyses.

Women's status in society. In each of the surveys, women were asked about their attitude toward wife beating.

> *Sometimes a husband is annoyed or angered by things which his wife does. In your opinion, is a husband justified in beating his wife in the following situations:*
>
> *If she goes out without telling him?*
> *If she neglects the children?*
> *If she argues with him?*
> *If she refuses sex with him?*
> *If she burns the food?*

From these dichotomous variables (yes/no), an index was created on the basis of whether women think it is justified for a husband to beat his wife, under any of the circumstances. This variable is used as a proxy to measure women's status or lack thereof (self-perceived) within each of the three countries.

Measures of decisionmaking. Depending on the survey, a different set of domains were included in terms of decisionmaking. The domains included for the Zimbabwean women are based on a series of four questions about who makes the decisions. In Zimbabwe and Malawi, women were asked—

> *Who in your family usually has the final say on the following decisions?*
>
> *Your own health*
> *Large household purchases*

Daily household purchases
Visits to family, friends, or relatives
Food to be cooked each day

In Malawi, an additional domain was included:

Number of children and when

In Zambia, the domains included the following:

Your own health care
Large household purchases
Visits to family, friends, or relatives
Number of children and when

For each of these questions, the women were given the following response options: 1) themselves (respondent), 2) husband/partner, 3) respondent and husband/partner jointly, 4) someone else, and 5) respondent and someone else jointly. A set of dichotomous variables was created for each of the decisionmaking domains to reflect patterns of decisionmaking. For each domain, the variable was coded as 1 if the woman had final say over that decision alone and "0" if the woman did not have final say alone. A similar set of dichotomous variables was created for each domain on the basis of whether or not the partner had final say in the decision or whether the final decision was made jointly. From the sets of dichotomous variables, indices were created to show the number of domains in which women or their partners had final say or whether the final decision was made jointly. Because the goal of these indices is to represent a range of domains, it was anticipated that alpha coefficients, showing the inter-item correlations, would be moderate—around 0.70. In Zimbabwe, the decisionmaking indices had alpha coefficients as follows: for respondent having the final decision (Cronbach's alpha=0.58), partner having the final say (Cronbach's alpha=0.65), and joint final decision (Cronbach's alpha=0.67). In Zambia, the decisionmaking indices had alpha coefficients as follows: for respondent having the final decision (Cronbach's alpha=0.50), partner having the final say (Cronbach's alpha=0.74), and joint final decision (Cronbach's alpha=0.73). In Malawi, the decisionmaking indices had alpha coefficients as follows: for respondent having the final decision (Cronbach's alpha=0.70), partner having the final say (Cronbach's alpha=0.76), and joint final decision (Cronbach's alpha=0.71).

2.5 Statistical Analyses

The analyses were completed in four parts. First, descriptions of the study population and its sociodemographic measures, women's status, and decisionmaking autonomy were provided for each country. With ordered logistic regression, possible confounders of the relationship between CED and decisionmaking autonomy were tested by modeling the associations between decisionmaking and the sociodemographics, woman's characteristics, women's relative status, and women's status in society. Bivariate associations with CED were explored with cross-tabulations, and multivariate logistic regression was used to explore associations with adjustment for confounders.

3 RESULTS

3.1 Background Characteristics

Table 1 shows the percent distribution of women by sociodemographic characteristics, women's characteristics, husband's or partner's characteristics, couple's characteristics, women's relative status, and women's autonomy in household decisionmaking. In Zimbabwe, the percentage of women with CED is 4.6, in Zambia, the percentage of women with CED is 13.9, and in Malawi, it is 6.8. Some characteristics are quite similar across the three countries, with all residences being predominately rural (70 to 80 percent), most women having had at least one birth (94 to 96 percent), and polygyny being confined to a minority of households (approximately 16 to 17 percent). More than 50 percent of the women report currently working at the time of the survey, with most employed in agricultural jobs on their own land. The mean age of the samples ranges between 31 and 32 years old. Zambia has the largest number of people per household with 6.3; Zimbabwe has 5.6, and Malawi has 5.3 people in the average household. Malawi has some of the lowest indicators for women, with the lowest literacy rate and the highest percentage of women and men who did not attend any formal schooling. In Zimbabwe, 29 percent of women reported that their partner was not living with them, in contrast to 13 percent in Malawi and 6 percent in Zambia. Whether or not the partner lives in the household can have an important relationship with both the availability of food resources and women's autonomy in decisionmaking.

Table 1 Percent distribution of women in Zimbabwe, Zambia, and Malawi, by selected background variables, DHS surveys in Zimbabwe (1999), Zambia (2000-01), and Malawi (2000)

Variable	Zimbabwe	Zambia	Malawi
Chronic energy deficiency			
No	95.4	86.1	93.2
Yes	4.6	13.9	6.8
SOCIODEMOGRAPHIC CHARACTERISTICS			
Residence			
Rural	72.0	69.7	79.9
Urban	28.0	30.3	20.1
Household wealth			
Range	0-128.0	0-174.1	0-130.0
Mean (SD)	7.7 (12.6)	6.9 (14.3)	7.1 (13.8)
Number of births			
None	6.2	5.5	6.3
One or more	93.8	95.5	93.7
Household size			
Range	1-20	1-26	1-21
Mean (SD)	5.6 (2.7)	6.3 (2.9)	5.3 (2.4)
Husband/partner living in household			
No	28.7	6.2	12.9
Yes	71.3	93.8	87.1
Husband/partner is polygynous			
No	84.3	82.9	82.6
Yes	15.7	17.1	17.4
WOMEN'S CHARACTERISTICS			
Literate			
No	26.0	43.5	48.6
Yes	74.0	56.5	51.4
Currently working			
No	45.6	35.4	38.8
Yes	54.4	64.6	61.2
Age			
Range	15-49	15-49	15-49
Mean (SD)	31.6 (8.7)	30.9 (8.8)	30.7 (8.9)
Education level			
None	10.7	15.9	34.2
Some primary	25.3	42.2	43.5
Completed primary	24.3	20.6	7.5
Secondary or more	39.6	21.4	16.5
Occupation			
Not working	41.5	35.4	41.2
In agriculture	27.1	41.3	51.3
Unskilled/skilled manual	8.7	3.5	3.6
Nonmanual	17.9	17.5	1.4
Professional	4.8	2.3	2.5
HUSBAND'S/PARTNER'S CHARACTERISTICS			
Age			
Range	17-88	17-87	16-85
Mean (SD)	36.4 (11.7)	38.0 (11.4)	37.0 (10.6)
Education level			
None	6.3	8.5	15.3
Some primary	19.7	25.3	36.5
Finished primary	23.4	25.2	9.2
Secondary or more	50.6	41.0	38.9
Occupation			
Not working	3.6	2.5	0.0
In agriculture	19.8	55.4	59.2
Unskilled manual	13.2	0.7	0.7
Skilled manual	19.2	15.9	21.6
Nonmanual	24.3	18.9	26.0
Professional	36.5	6.6	6.9

Continued …

Table 1 *(continued)*

Variable	Zimbabwe	Zambia	Malawi
COUPLE'S CHARACTERISTICS/ WOMEN'S RELATIVE STATUS			
Age difference between partners			
Woman older by 4 years or more	1.3	0.9	1.2
Same age (woman<4 years older, partner<6 years older)	45.3	44.8	52.4
Partner older by 6 years or more	53.4	54.4	46.4
Education level difference between partners			
Woman more	15.3	11.4	10.1
Same level	51.4	41.9	47.0
Partner more	33.3	46.7	42.9
Occupational type difference between partners			
Both unemployed	7.5	1.3	u
Both in agriculture	12.0	48.5	40.9
Woman higher	16.7	11.5	3.6
Same level	11.3	9.0	2.8
Partner higher	52.2	42.5	52.7
Woman ever beaten by partner			
No	u	58.1	u
Yes		41.9	
AUTONOMY IN DECISIONMAKING			
Final say over health care			
Partner	31.1	52.0	69.7
Joint	13.2	13.0	7.5
Woman	55.7	35.0	22.8
Final say over large purchases			
Partner	35.7	61.7	80.7
Joint	46.4	26.9	12.5
Woman	17.9	11.3	6.7
Final say over what to cook			
Partner	3.0	u	64.4
Joint	5.8		13.3
Woman	91.2		22.3
Final say over household purchases			
Partner	15.7	u	40.3
Joint	21.7		10.8
Woman	62.6		48.9
Final say over visiting relatives			
Partner	20.4	55.3	36.0
Joint	46.1	28.0	45.0
Woman	33.5	16.7	19.0
Final say over number of children and when			
Partner	u	51.1	43.7
Joint		39.1	47.1
Woman		9.8	9.2
Respondent decisionmaking index			
Range	0-5	0-4	0-6
Mean (SD)	2.6 (1.3)	0.7 (0.9)	1.3 (1.5)
Joint decisionmaking index			
Range	0-5	0-4	0-6
Median (SD)	1.4 (1.3)	1.1 (1.3)	3.4 (1.9)
Partner decisionmaking index			
Range	0-5	0-4	0-6
Median (SD)	1.0 (1.3)	2.2 (1.5)	2.9 (1.6)

Continued …

Table 1 *(continued)*

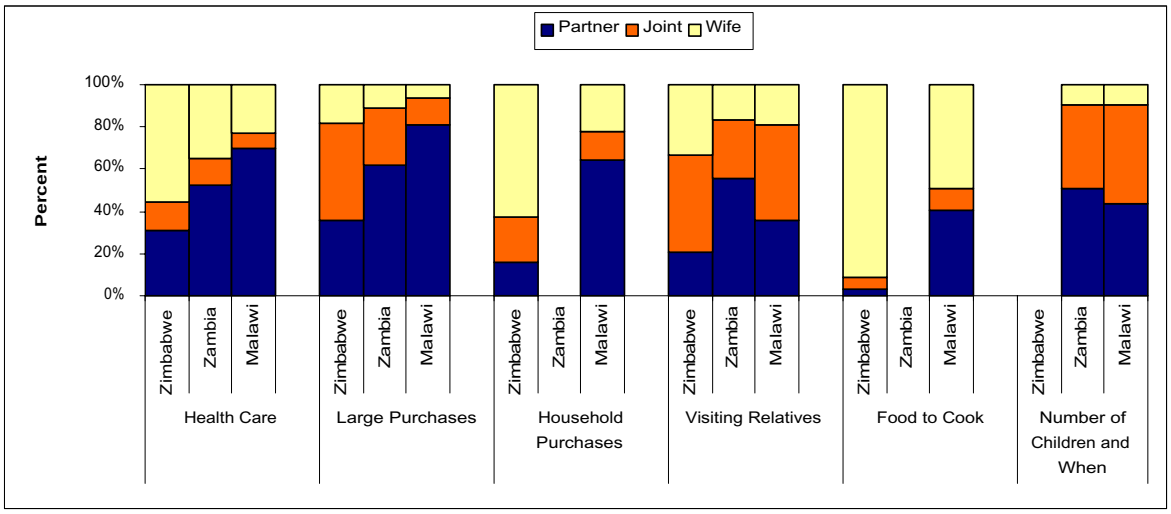
Variable	Zimbabwe	Zambia	Malawi
WOMEN'S STATUS IN SOCIETY			
Okay to beat wife if she goes out without permission			
No	70.6	17.6	82.4
Yes	29.4	82.4	17.6
Okay to beat wife if she neglects the children			
No	67.0	36.2	77.7
Yes	33.0	63.8	22.3
Okay to beat wife if she argues with her spouse			
No	64.2	43.5	80.6
Yes	35.8	56.5	19.4
Okay to beat wife if she refuses to have sex			
No	73.6	47.5	81.1
Yes	26.4	52.5	18.1
Okay to beat wife if she burns the food			
No	87.2	52.2	83.2
Yes	12.8	47.8	16.6
Wife beating index, 0-5, mean (SD)	1.4 (1.6)	3.0 (1.8)	0.9 (1.5)
Number	2,667	3,485	6,854

u = Unknown (not available)

In terms of women's relative status, in all three countries only a few women (approximately 1 percent) are older than their partners by more than four years; in Zimbabwe and Zambia, most partners are more than six years older than their wives; in Malawi, most couples are the same age. In all three countries, women and men attain about the same level of education, or men have more education than their partners. In Zimbabwe, 17 percent of women have a higher status job than their partner, compared with 12 percent in Zambia and 4 percent in Malawi.

The patterns of household decisionmaking are shown in Figure 1. In Zimbabwe, women have substantially more autonomy than women do in either of the other two countries. Although the decisionmaking domains vary by country, a general pattern emerges. In Malawi, men are more likely to have the sole final say over large household purchases and women's own health care. In Zimbabwe, women are more likely to have the sole final say than their partners over their own health care, household purchases, and what food to cook; the decisions concerning large purchases and visiting relatives are primarily made jointly. In Zambia, men are more likely to have the sole final say in all four domains queried. Three of the four decisions are more often made jointly than by the respondent alone, but more women have the final say over their health care. In terms of women's status in society, 88 percent of women in Zambia, 54 percent of women in Zimbabwe, and 36 percent of women in Malawi believe that wife beating is justified in at least one of the five domains posed in the questionnaire (data not shown).

Figure 1 Percent distribution of persons who contribute to the final decision by country, according to household decisionmaking domain



3.2 Factors Associated with Decisionmaking Autonomy

Tables 2 through 4 show the results of ordered multivariate logistic regressions with each of the three decisionmaking autonomy indices as outcomes and with sociodemographics, women's characteristics, women's relative status, and women's status in society as independent variables for each country. For each country, three separate models were run. Net of the other factors in the models, many of the same factors are associated with decisionmaking autonomy across the three countries. Among the sociodemographic characteristics, having an urban residence, a partner living at home, and a polygynous partner are all associated with decisionmaking autonomy. In all three countries, urban women report that their partners have the final say in fewer decisions, and in Zambia and Malawi, urban residence is associated with more decisions where the woman has final say. In all three countries, having the partner living in the same household as the woman is associated with fewer decisions being made by the women and more decisions being made by the partner. In both Zimbabwe and Malawi, the presence of a male partner is associated with more joint final say. Polygynous men have more final say than women in Zimbabwe and Malawi, and in all three countries, polygynous households have the fewest number of decisions made jointly. Higher levels of household wealth are associated with more joint decisionmaking and less decisionmaking by the women alone, and in Zambia, women in larger households make fewer final household decisions alone.

In terms of women's characteristics, age is a consistent factor associated with decisionmaking in all three countries. Older women report having the final say alone in more decisions, and younger women report more decisions being made by their partners alone. In Malawi, older women also report more jointly made decisions. In Zimbabwe, more educated women report having the final say in fewer decisions, but have more joint decisions. In Zambia and Malawi, more educated women report having more final say in decisions and report that their partners have the final say in fewer of the decisions. In Zimbabwe, women employed in nonmanual and professional occupations have the final say in more domains, compared with unemployed women, and professional women report that their partners have the final say in fewer domains. In Zambia, compared with unemployed women,

women in nearly all occupations have the final say in more decisions and report that their partners have the final say in fewer decisions. In Malawi, there is a general trend toward employed women having the final say in more domains, and it is clear that women's employment is inversely related to partners having the final say in more domains. Employed women in Malawi also report more decisions being made jointly.

Few of the relative status variables are statistically significant in these models, after controlling for the sociodemographic characteristics, women's characteristics, and women's status in society. In Zimbabwe, the only significant result is that when both women and their partners work in agriculture, they make more joint decisions. In Zambia and Malawi, women who have more education than their partners make more decisions, and in Malawi, women with more education than their partners have partners who make fewer decisions. In Zambia, women who are more than four years older than their partners make more decisions jointly, and fewer decisions are made by their partners. In terms of relative occupational status, women who report having a higher level of education than their partners also make fewer decisions on their own or jointly, and they have partners who make more decisions. When the partners have a higher level of education, women make fewer of the decisions, and more decisions are made solely by the partner. In Malawi, couples who both work in agriculture made fewer decisions jointly than couples at the same occupational level who do not work in agriculture. In all three countries, women's attitudes toward wife beating are related to household decisionmaking. In Zimbabwe and Zambia, women who find wife beating justifiable are more likely to report that their husbands have the final say in more household decisions. In Malawi, women who find wife beating justifiable have the final say themselves in more household decisions.

Table 2 Multivariate ordered logistic regression of variables associated with decisionmaking autonomy in Zimbabwe (odds ratios), DHS survey in Zimbabwe (1999)

Variable	Number of decisions where respondent has final say	Number of decisions where partner has final say	Number of decisions where final say is made jointly
SOCIODEMOGRAPHIC CHARACTERISTICS			
Urban residence	1.22+	0.71**	1.22+
Household wealth	1.00	1.00	1.00
Had at least one birth	1.23	0.90	1.01
Household size	0.94	1.01	1.03+
Partner is at home	0.32***	1.76***	1.71***
Partner is polygynous	1.14	1.54***	0.50***
WOMEN'S CHARACTERISTICS			
Women's age (years)	1.02***	0.98***	1.00
Women's education level			
None (comparison)	1.00	1.00	1.00
Some primary	0.85	0.97	1.29
Completed primary	0.69*	1.07	1.52*
Secondary or more	0.78	0.96	1.52*
Women's employment			
Not working (comparison)	1.00	1.00	1.00
In agriculture	1.13	1.00	0.94
Unskilled	1.46	0.67	1.11
Skilled manual	1.08	0.82	1.07
Nonmanual	1.56*	0.84	0.87
Professional	1.69*	0.40***	1.24
WOMAN'S RELATIVE STATUS			
Age difference			
Woman older	1.08	1.01	1.04
Same age (comparison)	1.00	1.00	1.00
Partner older	0.98	1.12	0.87
Education level difference			
Woman more	1.10	0.82	1.04
Same level (comparison)	1.00	1.00	1.00
Partner more	1.03	0.96	1.04
Occupational level			
Both unemployed	0.76	1.21	0.90
Both in agriculture	0.81	0.74+	1.65***
Woman higher	0.73+	1.25	1.02
Same level (comparison)	1.00	1.00	1.00
Partner higher	0.71+	1.09	1.09
WOMEN'S STATUS IN SOCIETY			
Number of domains where wife beating is justified	1.03	1.11***	0.89***
Number	1,872	1,872	1,872

***P < 0.001; **P < 0.01; *P < 0.05; +P < 0.10

Table 3 Multivariate ordered logistic regression of factors associated with decisionmaking autonomy in Zambia (odds ratios), DHS survey in Zambia (2000-01)

Variable	Number of decisions where respondent has final say	Number of decisions where partner has final say	Number of decisions where final say is made jointly
SOCIODEMOGRAPHIC CHARACTERISTICS			
Urban residence	1.03***	0.69***	1.06
Household wealth	1.00	1.00	1.00
Had at least one birth	1.12	1.02	1.09
Household size	0.96***	1.00	1.01
Partner is at home	0.38***	1.89***	1.26
Partner is polygynous	1.00	1.39***	0.66***
WOMEN'S CHARACTERISTICS			
Women's age (years)	1.02***	0.99**	1.00
Literate	0.87	1.02	1.13
Women's education level			
None (comparison)	1.00	1.00	1.00
Some primary	0.83	1.17	0.94
Completed primary	0.81	1.38*	0.84
Secondary or more	0.96	0.86	1.36+
Women's employment			
Not working (comparison)	1.00	1.00	1.00
In agriculture	2.45***	0.61**	1.03
Unskilled manual	0.52	0.48	2.05
Skilled manual	2.67***	0.48**	1.19
Nonmanual	3.28***	0.34***	1.27
Professional	4.55***	0.14***	2.89***
WOMEN'S RELATIVE STATUS			
Age difference			
Woman older	1.22	0.84*	1.23**
Same age (comparison)	1.00	1.00	1.00
Partner older	1.03	0.69	1.39
Education level difference			
Woman more	1.48**	0.95	0.78+
Same level (comparison)	1.00	1.00	1.00
Partner more	1.00	0.98	1.01
Occupational level			
Both unemployed	1.10	1.39	0.48+
Both in agriculture	0.75+	1.05	1.19
Woman higher	0.52**	1.26***	0.59*
Same level (comparison)	1.00	1.00	1.00
Partner higher	0.50**	2.45***	0.76
WOMEN'S STATUS IN SOCIETY			
Number of domains where wife beating is justified	0.97	1.10***	0.91***
Number	2,663	2,663	2,663

***P < 0.001; **P < 0.01; *P < 0.05; +P < .10

Table 4 Multivariate ordered regression of factors associated with decisionmaking autonomy in Malawi (odds ratios), DHS survey in Malawi (2000)

Variable	Number of decisions where respondent has final say	Number of decisions where partner has final say	Number of decisions where final say is made jointly
SOCIODEMOGRAPHIC CHARACTERISTICS			
Urban residence	1.20*	0.66***	1.66***
Household wealth	0.99***	1.00	1.01*
Had at least one birth	1.00	1.07	0.96
Household size	1.00	1.01	0.97+
Partner is at home	0.29***	2.03***	1.72***
Partner is polygynous	1.44***	0.89+	0.75***
WOMAN'S CHARACTERISTICS			
Women's age (years)	1.01***	0.98***	1.01*
Literate	0.81*	0.96	1.29**
Women's education level			
None	1.00	1.00	1.00
Some primary	1.65***	0.73***	0.99
Completed primary	2.58***	0.55***	0.96
Secondary or more (comparison)	3.42***	0.21***	1.08
Women's employment			
Not working (comparison)	1.00	1.00	1.00
In agriculture	1.40***	0.72***	1.19*
Unskilled/skilled manual	1.29	0.59*	1.62+
Nonmanual	1.98*	0.21***	2.71**
Professional	1.21	0.15***	5.77***
WOMAN'S RELATIVE STATUS			
Age difference			
Woman older	1.25	1.06	0.74
Same age (comparison)	1.00	1.00	1.00
Partner older	1.13*	1.00	0.92
Education level difference			
Woman more	1.33***	0.83**	1.01
Same level (comparison)	1.00	1.00	1.00
Partner more	0.92	1.22*	0.84*
Occupational level			
Both in agriculture	1.01	1.15+	0.76**
Woman higher	1.32	1.09	0.68
Same level (comparison)	1.00	1.00	1.00
Partner higher	1.00	0.86	1.06
WOMEN'S STATUS IN SOCIETY			
Number of domains where wife beating is justified	1.04*	1.01	0.95*
Number	4,333	4,333	4,333

***P < 0.001; **P < 0.01; *P < 0.05; +P < 0.10

4 FACTORS ASSOCIATED WITH CHRONIC ENERGY DEFICIENCY

4.1 Sociodemographic Characteristics and Women's and Partner's Characteristics

In Table 5, the unadjusted associations with CED are explored with cross-tabulations and chi-square tests. In all three countries, more rural women have CED than urban women. In Zambia, fewer nulliparous women have CED than women who have at least one birth. In both Zambia and Malawi, fewer literate women have CED than nonliterate women, and fewer women with more education have CED. In Zambia, more women in agricultural work have CED than women in other occupations or unemployed women. More women with partners who have more education have CED in Zambia and Malawi, and in Zambia, fewer women with partners employed in occupations other than agriculture have CED.

Table 5 Percent distribution of variables and associations with chronic energy deficiency, DHS surveys in Zimbabwe (1999), Zambia (2000-01), and Malawi (2000)

Variable	Zimbabwe	Zambia	Malawi
SOCIODEMOGRAPHIC CHARACTERISTICS			
Residence			
Rural	5.2	15.7***	7.3***
Urban	3.2	9.9	4.6
Number of births			
None	5.1+	12.1*	7.4
One or more	3.8	14.0	6.7
Partner/partner living in household			
No	4.7	16.7	7.3
Yes	4.6	13.7	6.7
Partner/partner is polygynous			
No	4.7	13.5	6.5
Yes	4.1	16.0	7.8
WOMEN'S CHARACTERISTICS			
Literate			
No	6.1	16.1***	7.5*
Yes	5.0	12.2	6.0
Currently working			
No	4.8	6.5	7.0
Yes	4.4	6.5	6.6
Education level			
None	5.2	20.5***	7.4**
Some primary	4.6	16.7	7.0
Completed primary	5.9	14.4	7.6
Secondary or more	3.7	10.3	4.3
Occupation			
Not working	4.8	13.7***	7.1
In agriculture	4.2	17.3	7.2
Unskilled manual/skilled manual	4.2	13.7	7.7
Nonmanual	4.0	8.1	2.5
Professional	8.6	3.8	5.4
PARTNER'S CHARACTERISTICS			
Education level			
None	4.8	20.5***	7.7*
Some primary	3.7	16.8	8.0
Completed primary	5.5	14.4	6.7
Secondary or more	4.5	10.3	5.3
Occupation			
Not working	4.0	11.7***	u
In agriculture	4.6	17.4	7.8
Unskilled manual	5.6	4.3	5.4
Skilled manual	4.5	8.9	6.1
Nonmanual	4.5	10.7	6.6
Professional	4.6	7.9	5.1

Continued…

Table 5 *(continued)*

Variable	Zimbabwe	Zambia	Malawi
COUPLE'S CHARACTERISTICS/WOMEN'S RELATIVE STATUS			
Age difference between partners			
Woman older	5.9	12.1**	5.0*
Same age (+/- 2 years)	5.0	18.9	7.5
Partner older	4.1	13.3	5.9
Education level difference between partners			
Woman more	2.7	17.0	7.0
Same level	5.2	13.4	7.0
Partner more	4.6	13.6	7.0
Occupational type difference between partners			
Both unemployed	6.7	9.3***	u
Both in agriculture	4.0	18.1	7.7
Woman higher	4.8	8.4	6.3
Same level	5.2	9.6	6.6
Partner higher	3.7	13.2	7.2
Woman ever beaten by partner			
No	u	15.3+	u
Yes		13.1	
AUTONOMY IN DECISIONMAKING			
Final say over health care			
Partner	5.3	14.1	7.1+
Joint	5.0	13.9	5.5
Woman	4.6	13.0	5.8
Final say over household purchases			
Partner	3.5	u	7.2*
Joint	5.0		6.1
Woman	5.3		5.5
Final say over large purchases			
Partner	4.4	15.4*	7.0
Joint	5.1	11.7	5.3
Woman	5.2	12.1	6.2
Final say over what to cook			
Partner	2.6	u	8.1***
Joint	4.7		7.0
Woman	4.6		5.6
Final say over visiting relatives			
Partner	4.9	14.5	7.2
Joint	4.7	12.3	6.2
Woman	5.7	13.9	7.1
Final say over number of children and when			
Partner	u	14.5	7.5+
Joint		12.9	6.1
Woman		13.0	5.1
WOMEN'S STATUS IN SOCIETY			
Okay to beat wife if she goes out without permission			
No	4.7	13.2	6.6
Yes	4.3	14.1	7.2
Okay to beat wife if she neglects the children			
No	4.4	13.7	6.7
Yes	5.4	13.9	6.9
Okay to beat wife if she argues with her spouse			
No	4.7	12.5*	6.6
Yes	4.3	14.9	7.1
Okay to beat wife if she refuses to have sex			
No	5.3+	13.0	6.7
Yes	3.7	14.2	6.8
Okay to beat wife if she burns the food			
No	4.6	12.5*	6.4**
Yes	4.7	15.3	8.1

***P < 0.001; **P < 0.01; *P < 0.05; +P < .0.10
u = Unknown (not available)

4.2 Women's Relative Status, Women's Status in Society, and Decisionmaking Autonomy

In Zambia and Malawi, women in couples where both partners are the same age are more likely to have CED than are women in couples where one partner is older. On the basis of findings concerning the association between CED and agricultural work in Zambia, it is not surprising to note that when both members of the couple are employed in agriculture, more women have CED. Decisionmaking is most associated with CED in Malawi, where the trend suggests that more women with partners who make more decisions have CED. Some individual measures of women's attitudes toward wife beating are associated with CED in Zambia and Malawi, and fewer women who report ever being beaten by their partners have CED in Zambia. Since Zambia has the only survey that includes this question, it was eliminated from the final set of models in order to make the analyses more similar.

5 MULTIVARIATE REGRESSION OF CHRONIC ENERGY DEFICIENCY

For each country, four models were run for CED with logistic regression. Modeling was done in a block fashion, where the first model includes only sociodemographic and women's characteristics, the second model adds couple characteristics and women's relative status, the third model adds women's status in society and woman's joint final say in decisionmaking, and the fourth model adds partner's final say in decisionmaking and removes woman's and joint final say. Since the variables did not substantially change in the presence of other blocks, the final models, with all variable blocks included, are presented for each country (Table 6). The association of variables in isolation can be seen in Table 5, while the multivariate models adjust for other factors, recognizing that some constructs are measured by several factors. For example, the construct of women's educational status can be measured by both schooling completion and literacy. These models have a smaller sample size than described earlier because of missing values in several variables.

In terms of sociodemographics, none of the factors are significantly associated with CED in Zimbabwe. In Zambia, fewer women from large households have CED, and the trend is the same in Malawi. In Malawi, fewer urban women have CED than rural women. In terms of the women's characteristics, there are no significant associations in Malawi. Age is associated with CED in both Zimbabwe and Zambia. In Zimbabwe, more younger women have CED, and in Zambia, more older women have CED. Higher levels of education are associated with lower rates of CED in both Zimbabwe and Zambia, after controlling for the other variables presented in the models. In Zimbabwe, more women in a professional occupation have CED, which is a trend seen in Table 5. This counterintuitive result may be a product of small sample sizes or other factors, possibly body image, that determine why women are in a professional occupation.

Some of the women's relative status variables are associated with CED. In both Zambia and Malawi, women who are with a partner who is at least six years older are less likely to have CED, as compared with women who have partners who are the same age. In Zimbabwe, as compared with women in couples whose members have the same level of education, fewer women have CED when either member of the couple has more education. In contrast, in Zambia, more women who have higher levels of education than their partners have CED. This trend is also seen in the bivariate associations shown in Table 5. In terms of women's status in society, or lack thereof, more women who feel that wife beating is justified in more domains are less likely to have CED, though this result does not attain significance at the $P<0.05$ level. Bivariate associations show the same trend (odds

Table 6 Multivariate logistic regression of variables associated with chronic energy deficiency (body mass index <18.5) (odds ratios), DHS surveys in Zimbabwe (1999), Zambia (2000-01), and Malawi (2000)

Variable	Zimbabwe	Zambia	Malawi
SOCIODEMOGRAPHIC CHARACTERISTICS			
Urban residence	0.72	1.11	0.67+
Household wealth	1.00	0.99	0.99
Had at least one birth	0.91	1.48	0.79
Household size	0.98	0.94**	0.95+
Partner is at home	0.89	0.68	0.56
Partner is polygynous	0.76	1.22	1.27
WOMEN'S CHARACTERISTICS			
Women's age (years)	0.94***	1.02**	1.00
Literate	–	0.97	0.97
Women's education level			
None (comparison)	1.00	1.00	1.00
Some primary	0.58	0.78	0.99
Completed primary	0.62	0.61+	1.04
Secondary or more	0.21**	0.58+	0.72
Women's employment			
Not working (comparison)	1.00	1.00	1.00
In agriculture	1.01	0.82	0.78
Unskilled/skilled manual	1.67	0.51	2.02
Nonmanual	1.04	0.44	1.35
Professional	3.88*	0.11+	3.71
WOMAN'S RELATIVE STATUS			
Age difference			
Woman older	1.38	0.42	0.87
Same age	1.00	1.00	1.00
Partner older	0.96	0.71**	0.78*
Education level difference			
Woman more	0.37*	1.57*	0.96
Same level	1.00	1.00	1.00
Partner more	0.50*	0.85	0.93
Occupational level			
Both unemployed	0.60	0.34	u
Both in agriculture	0.89	1.09	1.18
Woman higher	1.01	1.00	0.38
Same level	1.00	0.75	1.00
Partner higher	0.66	0.86	0.45
WOMEN'S STATUS IN SOCIETY			
Number of domains where wife beating is justified	0.84+	1.02	0.95
AUTONOMY IN DECISIONMAKING			
Woman has final say (no. of decisions)	1.02	0.90	0.94
Partner has final say (no. of decisions)[1]	0.99	1.08+	1.07*
Joint final say (no. of decisions)	1.01	0.95	0.94+
Number	1,788	2,627	4,281

***P < 0.001; **P < 0.01; *P < 0.05; +P < 0.10; – dash indicates variable dropped due to colinearity

u = Unknown (not available)

[1]Modeled separately using all variables shown except woman's and joint decisionmaking.

ration [OR]=0.89, P=0.15). This surprising result may be due to how widely accepted wife beating is in Zimbabwe and how it reflects gender norms that tolerate violence towards women (Hindin, 2003).

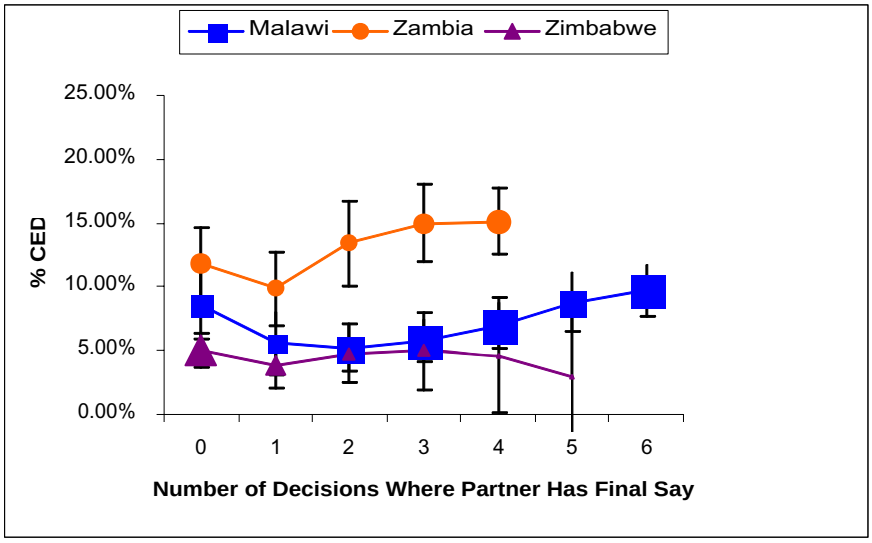
Patterns of decisionmaking autonomy are similar in Zambia and Malawi. In both Zambia and Malawi, the more domains in which partners have the final say, the more likely the woman is to

have CED. In Zambia, this result is statistically significant before multivariate adjustment (OR=1.12, P=0.01 [data not shown]), but it becomes attenuated (OR=1.08, P=0.054) with the presence of the factors in the model. In Malawi, the trend is that the more joint decisions made by the couple, the less likely the woman is to have CED.

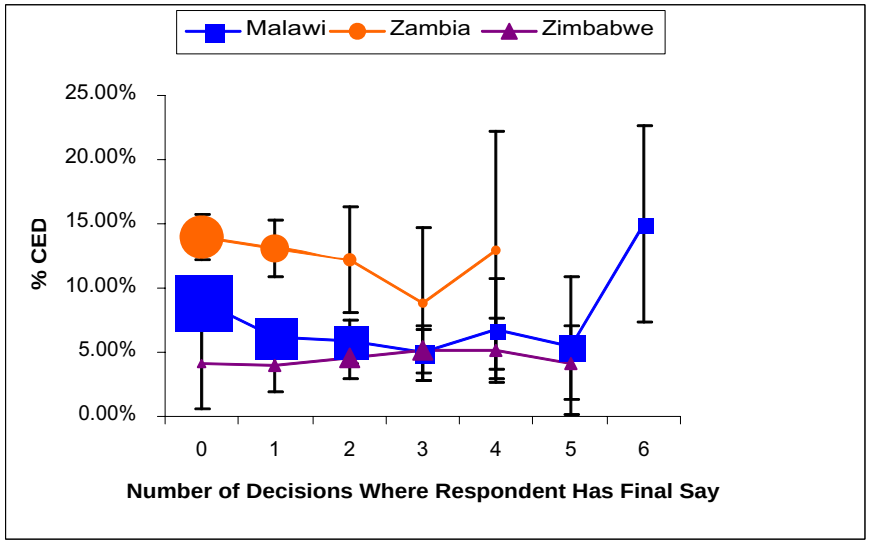
Figure 2 is designed to further explore the relationship between decisionmaking autonomy and CED. In figures 2A and 2B, there is a small but interesting group where partners make no final decisions and women make all the final decisions. Each panel in the figure presents the percentage of women who have CED, by their reported decisionmaking pattern, with a separate panel for the number of decisions made by either member of the couple (Figures 2A and 2B) and decisions made jointly (Figure 2). The markers for the lines (squares in Malawi, circles in Zambia, and triangles in Zimbabwe) vary in size depending on how many people report making a certain number of the decisions. For example, if 1,000 women in Malawi reported that they made one decision jointly with their partner, the square is bigger than that shown if only 100 women reported making the decisions jointly. In addition, 95 percent confidence intervals are used to show the errors around the estimates of CED. Although the percentages reported are not adjusted for confounders, the findings displayed, when run in logistic regression, do not vary substantially with and without multivariate adjustment.

In Figure 2 (Panel A), the percentage of women with CED is shown by reported decisionmaking by the partner. In all three countries, starting with the first decision made by the partner, women are at higher risk of CED. However, when women report that their partners have the final say in none of the decisions, women are more likely to have CED. This pattern needs to be interpreted with caution, since the proportion of women who report that their partners have no final say is relatively small, except in Zimbabwe (and the percent difference is small). Despite the small sample of women who report that their partners do not have the final say in any of the decisions, when this point is modeled separately from the linear trend in Malawi, the odds ratio of having CED if the husband makes none of the decisions is 2.23 (P<0.01), while the significance and magnitude of the linear trend without the point increase the adjusted odds ratio of having CED from 1.07 (P<0.05) (Table 6) to an adjusted odds ratio of 1.16 (P<0.001). These differences in the significance and magnitude suggest that this group, where partners have none of the final say, in Malawi is a different group than the others. Figure 2 (Panel B) shows a similar pattern whereby when women report having the final say in all decisions, they are at an increased risk of having CED. (This group of women, who have all of the final say in decisions, is the same group of women who report that their partners have none of the final say.) If this point is modeled separately from the linear trend, women who have the final say in all six decisions in Malawi are 1.76 (P<0.001) times more likely to have CED, and the linear trend without these women increases the adjusted odds ratio of having CED from 0.94 (P>0.10) (Table 6) to 0.86 (P<0.01). These results suggest that women who have the highest level of autonomy are the worst off—even compared with women who have no final say in any of the decisions. Figure 2 (Panel C) shows the relationship between joint decisionmaking and CED in all three countries. While there is some evidence of a U-shaped pattern to the relationship between joint decisionmaking and CED in Zambia and Malawi, the upward trend in CED with more joint decisions is not statistically significant.

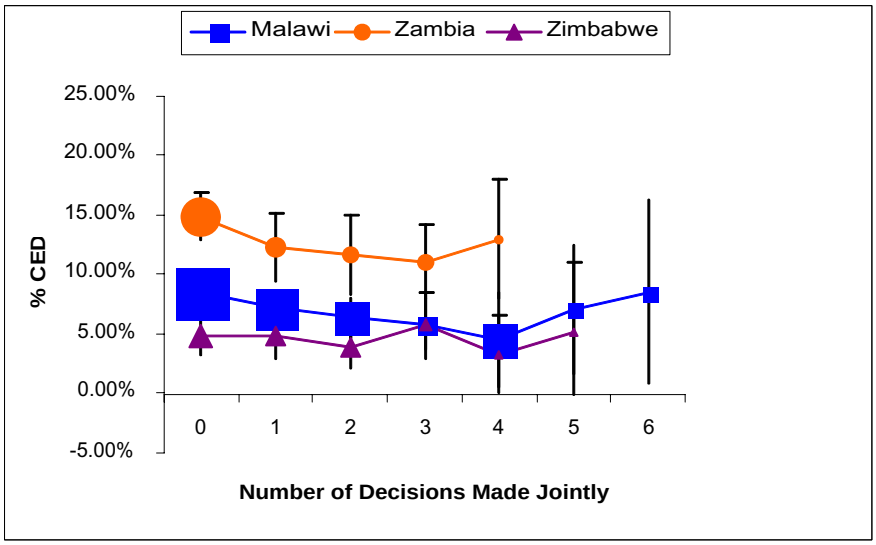
Figure 2 Percentage of women with chronic energy deficiency (CED) according to the number of decisions made (A) by the partner, (B) by the respondent, and (C) jointly



Panel A



Panel B



Panel C

6 DISCUSSION

The three countries studied have experienced not only the devastation of the HIV epidemic, but also the difficulties associated with chronic droughts and food shortages. This paper has shown that some of these difficulties may be affecting households and women's health. Although levels of CED are not as high as one might expect, some women are experiencing undernutrition that could be caused by either food shortages or illness related to HIV. For women in Zambia and Malawi, there is a relationship between patterns of household decisionmaking and their nutritional well-being. In both of these countries, women who live with partners who have more decisionmaking autonomy are also more likely to have CED. However, a different pattern emerges when women either have all of the final say or partners have none of the final say—a situation that may indicate households where partners contribute little to the household. More women who have the final say in all decisions (or who have partners who make none of the decisions) have CED than would be expected, and this group is statistically significantly different from what would be expected in Malawi. Further exploration is needed to see whether this trend is true in other countries outside those in this region, as this group may have important implications for women's empowerment. It is possible that women who have so much control are in a situation where they are forced to make all of the decisions because their partner is no longer a functioning part of the household. Several other studies document that women's autonomy is associated with poorer outcomes for women; in particular, more autonomous women may experience more interpersonal violence (Jewkes, 2002; Koenig et al., 2003; Hindin and Adair, 2002). These studies point out that the context for women's status and autonomy makes a difference and that when women behave in a manner opposite that of traditional gender roles, their well-being may be at greater risk. In the three countries in this study, women may be at risk for greater conflict and less negotiation power if they are more autonomous, given the historical levels of patriarchy in these countries. In addition, women may not be able to fulfill their traditional roles as food producers, because of both droughts and HIV, which, in turn, leads to greater food insecurity for themselves and their households.

The results, or lack thereof, in Zimbabwe generally support the hypothesis that women will be at greatest risk for CED in resource-constrained settings where they have little status and autonomy. Zimbabwean women have substantially more decisionmaking autonomy than do the women in Zambia and Malawi. In addition, the women surveyed in Zimbabwe appear to be the least resource constrained of the three countries (as would be expected from many markers of economic development). For example, Zimbabwe includes the most educated women of the three samples. Although the results of a similar analysis in Zimbabwe by Hindin (2000) showed a small but significant association between women's decisionmaking autonomy and CED, the present study did not find these results. On one hand, this is surprising since Zimbabwe has some of the highest prevalence rates of HIV, a political situation that has become increasingly difficult, and the same drought as the other two nations in this study. However, just 4.8 percent of the women surveyed could be defined as having CED, and in fact, a larger proportion of women were obese in Zimbabwe in 1999 (9 percent) than were experiencing CED. The gradient of stronger associations in poorer countries supports the central hypothesis of this paper. Women who live in the most constrained settings, and who have lower levels of autonomy than their partners, are most likely to have CED.

Several other important results emerged in this three-country comparison. One of the most striking results is that women in Zimbabwe have substantially more final say in household decisions than do women in Zambia or Malawi. Among the most significantly associated factors with

decisionmaking autonomy are age and occupation. In all three countries, older women and women with higher status jobs have more decisionmaking autonomy. Older women are less likely to make joint decisions. In all three countries, women with high-status jobs are less likely to have their partners having the final say in decisions by themselves, and in Malawi and Zambia, professional women are more likely to make decisions jointly. While a recent paper has noted alarmingly high levels of women who report that they find wife beating acceptable in Zimbabwe (Hindin, 2003), the levels of acceptance of wife beating are just as high in Zambia. In all three countries, making joint decisions is inversely associated with attitudes towards wife beating whereby women who report more joint decisions also report that they think wife beating is justified in fewer domains.

While there is support for the central hypothesis of this paper, there are some important limitations to these results. The data are cross-sectional, so the direction of the relationship between women's autonomy and CED is unclear. While most would argue that women with limited bargaining power in the household would not be able to negotiate for themselves well enough, it is also possible that women who began their marriages or relationships with a higher BMI were also better negotiators in household decisions. Conversely, women who had lower BMIs at the start of the marriage or partnership may also have been poorer bargainers. In addition, while the observed relationship between CED and decisionmaking has been found in two of the countries, the relationship observed could be due to a third factor that was unmeasured. Although a design comparing the 1994 and 1999 Zimbabwe DHS surveys was considered, the measures of women's decisionmaking autonomy were different—both in terms of domains and in terms of the way the questions were asked (in 1994, joint final say was not an option, and low autonomy was measured as the number of domains in which women had no say). Although Hindin (2000) found that more women with no say in household decisions had CED, the data available were different. In fact, in an attempt to create a similar measure of decisionmaking as the one used in the 1999 Zimbabwe DHS survey with the 1994 data, it was found that only the decision about whether the woman can work outside the home was significantly associated with a lower BMI but not CED. This domain was not included in the 1999 Zimbabwe DHS survey, making a direct comparison impossible. The other two measures, reconceptualized to match the 1999 Zimbabwe DHS survey, were not significant anymore.

Despite the limitations of this study, there are some important results worthy of policymaker and public health attention. If the women in this study with CED are not already infected with HIV, they are more likely to be susceptible because of their need to provide food security through any means possible, including such avenues as sex work. In addition, with the recent food shortages and droughts, women in rural households could be even more essential, as they are the primary providers of food for the household. HIV/AIDS in these settings will prevent women from carrying out this primary role under two scenarios. First, if the women are infected themselves, they may experience muscle wasting and loss of physical strength, rendering them less able to tend to the crops, leading to food insecurity for themselves and their families. Second, if women need to care for family and household members who are ill because of HIV/AIDS, they will have less of an opportunity to adequately farm and produce food for themselves and their households. These factors taken together put women and their families at substantial risk of food insecurity, with women who are unable to contribute to household decisions with their partners least able to minimize this risk.

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CONDOM USE IN UGANDA AND ZIMBABWE: EXPLORING THE INFLUENCE OF GENDERED ACCESS TO RESOURCES AND COUPLE-LEVEL DYNAMICS

Zubia Mumtaz, Emma Slaymaker, and Sarah Salway

1 INTRODUCTION

An estimated 5 million new HIV/AIDS infections occurred in sub-Saharan Africa in 2003, most the result of heterosexual transmission (UNAIDS, 2003). Strategies to prevent the spread of HIV have focused on raising awareness of risk factors, promotion of condom use, reduction of numbers of sexual partners, treatment of sexually transmitted diseases (STDs) and postponement of first sex (Nduati and Kiai, 1997; Kim et al., 1997; Marcus, 1993). There is, however, an increasing appreciation that behavior and choices are shaped by not only what individuals know, but also by larger contextual factors that may limit or promote levels of personal control (Caldwell et al., 1999; Cohen and Trussell, 1996; Rosenstock and Strecher, 1994). It is therefore important to understand the wider sociocultural and economic forces, as well as the patterns of interpersonal power relations, that drive women's and men's susceptibility to HIV infection. The sociocultural construction of gender emerges as a key factor in these processes.

The sociocultural construction of gender "structures all aspects of life" and is best defined as a "set of criteria by which we all learn to distinguish 'femaleness' and 'maleness,'" aside from obvious biological differences between women and men (Greenhalgh, 1995). Gender norms shape the lives of both women and men in fundamental ways, determining their sense of selfhood and identity, cutting across class and other social divisions. At the same time, the sociocultural construction of gender is not a timeless universal but constituted within historical, social, and life-cycle contexts, with an astonishingly wide-ranging variability across and within cultures (Standing, 1991; Di Stephano, 1990; Annandale and Clark, 1996). Notwithstanding this cross-cultural variation, an important consequence of most gender constructions is the justification of hierarchy between the two sexes. Most things feminine tend to be devalued, and in large parts of the world women have less access to a variety of economic, social, and political resources than men (Di Stephano and Lorber, 1998).

Health and illness are gendered phenomena characterized by marked inequalities between women and men (Okojie, 1994; Vlassoff, 1994). Although a subject of limited systematic research, studies have shown marked differences in women's and men's biological, psychological, behavioral, and social vulnerability to ill health (Verbrugge, 1985, 1989; Celentano et al., 1990; Lundberg, 1990). Given the often heterosexual dimension of the infection, the HIV/AIDS epidemic is particularly affected by gender systems and their inherent inequalities. It has been argued that gender systems in sub-Saharan Africa promote the spread of HIV through a variety of routes including *inter alia*: masculine identities that support dominance, sexual freedom, and sexual satisfaction (Schoepf, 1998; Ssali et al., 1992); inequitable material resource allocation, meaning widespread female poverty and economic dependence upon men (Kaleeba et al., 1991); and a complex interplay between the norms and reality of partnership formation which implies both multiple sexual partners and barriers to condom use due to ideals of trust, honesty, and commitment within unions (Varga, 1997).

Despite this recognition, there has been little systematic investigation of the routes through which the sociocultural construction of gender actually influences risk-related behaviors or the factors that might encourage changes in elements of gender systems that promote safer behavior vis-à-vis HIV/AIDS. In particular, we know little about the ways in which gendered inequalities in access to resources and couple dynamics ultimately influence the adoption of protective behaviors. Moreover, most of the evidence is based on small-scale or qualitative studies, making it difficult to assess the generalizability of findings or the size of the effects.

The present analysis uses national-level quantitative survey data from two African countries to examine the ways in which gendered inequalities in access to resources and gendered patterns of interaction between partners are related to the adoption of protective behavior, specifically condom use.

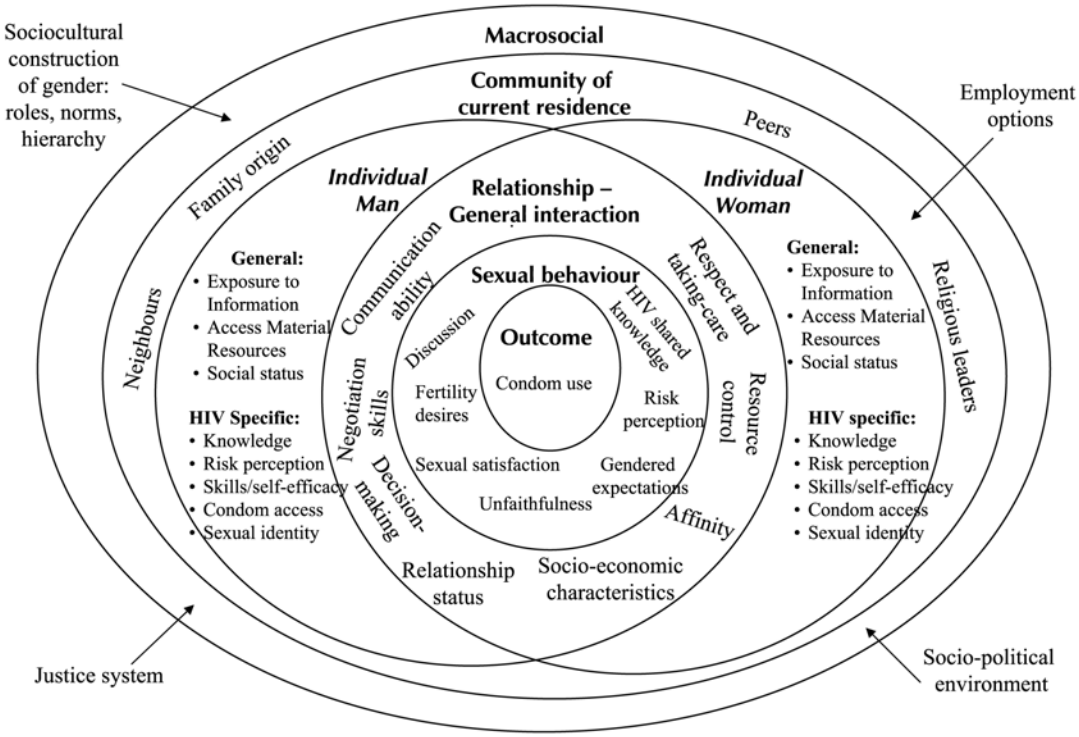
2 GENDERED ACCESS TO RESOURCES, COUPLE DYNAMICS, AND CONDOM USE: A CONCEPTUAL FRAMEWORK

Explanatory models of health behavior, such as Rosenstock and Kirscht's Health Belief Model (1974) and Rogers' Protection Motivation Theory (1983), have traditionally focused on the idea that individual cognitive factors directly influence the motivation to protect oneself and thereby actual behavior. The assumption of individual control over health-related behavior, implicit in these explanations, is untenable when attempting to explain sexual risk-taking (Rosenstock and Strecher, 1994). Sexual behavior varies; it is, by its very nature, a product of interaction between two individuals and not the result of individual action and decisions only (Ingham and van Zessen, 1997). The same individuals may interact differently with another set of partners, producing a separate set of behaviors. The interaction between a particular couple is influenced by characteristics of the individual partners, who, in turn are located in a wider social milieu. Figure 1 illustrates the various levels at which the couple's interactional, individual, and sociocultural variables may act to influence sexual behavior.

The outcome of interest for the present study is condom use. Compared with other potentially protective behaviors, such as avoidance of high risk sexual partners, condom use is a simple outcome to measure. Furthermore, for individuals who are within regular unions where sexual intercourse is an expected part of the relationship, it is the only feasible protective behavior.

In Figure 1, condom use (Layer 1) is surrounded by five outer layers. Layer 2 depicts the sexual interaction between the couple, which in turn is located within a general relationship between the two partners (Layer 3). Characteristics of the individual partners constitute another outer layer (Layer 4) and the larger macrosocial environment the final outer layers (Layer 5 and 6). All the layers interact with each other in multiple and complex ways. The sociocultural construction of gender is seen to permeate all layers in the model. This framework forms the conceptual backdrop for the present analyses. Relationships between its various components, in particular those between gendered access to resources (Layer 4), couple-level dynamics (Layer 3), and condom use (Layer 1) are analyzed.

Figure 1 Dynamics of sexual behavior: Influence of individual, community, and macrosocial variables on the sexual behavior of couples



Adapted from Rademaker et al., 1992; Ingham and van Zessen, 1997

Looking at Figure 1, the outermost layers (Layer 5 and 6) represent the larger macrosocial environment, which provides the framework within which the microlevel gender ideology operative at the couple level is anchored. A key aspect of this layer is the social construction of masculinity and femininity that prizes obedience and submission in women, while giving men the freedom to form multiple sexual partnerships. The latter are in fact a symbol of manhood, power, and wealth (Schoepf, 1998). Additional factors include poverty, a result of a colonial legacy, quasi-totalitarian regimes, burdensome debt-services, and structural adjustment programs. These have resulted in young people having to migrate in search of jobs, with resultant disruption of families and increased opportunity for extra-marital/partner sexual contacts (Collins and Rau, 2000).

The next layer (Layer 4) addresses individual-level characteristics that each partner in a sexual relationship brings to the interaction. Important among these are employment options, access to material resources, education, and information. Notwithstanding women's traditional involvement in food-production activities in sub-Saharan Africa, recent research highlights joint systems of agricultural production that commonly privilege men over women (Whitehead and Kabeer, 2001; Bryceson, 1995; Vierich, 1986). Furthermore, women's income-generating opportunities outside the agricultural sector are often limited by the wider gender structures to low paid, informal, irregular work (Masika and Joekes, 1996).

Gendered access to material resources and female poverty have been highlighted as important factors contributing to the HIV epidemic in sub-Saharan Africa (Schoepf, 1998). While commercial sex is an obvious gendered consequence of poverty (Kaleeba et al., 1991; Schoepf, 1998), sexual relationships outside a mainly monogamous marriage are also a common economic strategy among women in Uganda (Kaleeba et al., 1991; Ogden, 1996). Sexual clientship can also be a condition of employment or promotion for working women (Schoepf, 1998). The exclusion of women from secure resource flows may limit their options regarding sexual behavior, encouraging multiple partners and condom-free sex.

The other aspects of Layer 4 that have important implications for condom use are education and exposure to information, in particular HIV-related knowledge. Governments in a large number of sub-Saharan countries have conducted health education campaigns to increase HIV awareness. The extent to which this information reaches its target depends upon exposure to various media, itself largely determined by education and socioeconomic circumstances. Access to education and information on HIV/AIDS varies importantly by sex. In much of sub-Saharan Africa, women have lower levels of education and literacy compared with men (UNICEF, 1998). Surveys conducted during the early stages of the epidemic in Uganda show women also had lower rates of exposure to HIV-related information, particularly through the formal mass media campaigns (Foster and Furley, 1989; Anderson et al., 1990).

As expected, research to-date shows a positive relationship between education and HIV-related knowledge (Gregson et al., 1998). Whether this knowledge actually translates into protective behavior is, however, unclear (Akwara et al., 2003; Kirunga and Ntozi 1997; Smith et al., 1999; Grosskurth et al., 1995; Quigley et al., 1997; Senkoro et al., 2000; Kilian et al., 1999). The assumption that education may facilitate changes in behavior in response to health promotion (Fylkesnes et al., 1997) is also unsubstantiated. Gregson et al. (1998) found in Zimbabwe that knowledge about AIDS is weakly associated with condom use, while Akwara et al. (2003) found no relationship at all in Kenya. Educated, higher socioeconomic-status individuals, particularly men, may have greater disposable income and lifestyles that increase rather than decrease the risk of exposure to HIV (Berkley et al., 1989; Dallabetta et al., 1993; Hargreaves and Glynn, 2002; Quigley et al., 1997).

Cross-sectional surveys show no major differences in the relationships between education and HIV infection rates between women and men. However, the pathways through which the statistical relationships act may be quite different. While educated, well-placed women may have lifestyles comparable to similarly placed men, it is also possible that they are at an increased risk because of their husband/partner's behaviors (Schoepf, 1998; Hargreaves and Glynn, 2002). A positive relationship between a woman's risk of HIV and her husband's education is well documented (Allen et al., 1991). Gender values of male dominance may override any postulated protective effects of women's education and knowledge.[1]

Education, by virtue of the cognitive skills it imparts, can also have an impact on health-seeking behavior and exposure to health interventions (Kilian et al., 1999), as well as interpersonal communication. Furthermore, educational attainment may impart status and confidence, thus

[1] It is, however, worth noting that because of the long latent period of HIV infection, the HIV positive cases today may have been infected before HIV-related health education campaigns, including sex education in schools, were instituted. It is therefore possible that these messages, which are commonplace now, may have their first impact amongst the most educated today and that the association between schooling and HIV status may change over time.

shaping the gendered identity of an individual. In contexts of low educational achievement for women, one might therefore expect higher levels of female education to be associated with more egalitarian relationships between couples, reflecting a lower degree of male dominance and greater female involvement.

Though the relationships between employment, education, information, and access to material resources have been documented in small-scale studies, there has been little systematic study of how they influence sexual behavior, and in particular, condom use in the context of gender relations. The present analysis, therefore, includes an exploration of the role of women's and men's employment, educational level, exposure to sources of information, and HIV-related health knowledge on condom use, both within and outside of marriage.

Layer 3 in Figure 1 shows the general relationship of the couple. The model recognizes that condom use is dependent on the type of relationship between the man and woman. Our empirical analysis looks for differential behavior in marital/cohabiting and non-marital sexual interactions. Although common-law relationships with a steady boyfriend are socially recognized in sub-Saharan Africa, they often primarily constitute an economic survival strategy for women (Schoepf, 1998). Similarly, polygamy may be an entrenched cultural institution, but women in such unions are disadvantaged since they have to compete for their husband's resources (Brahmbatt, 2002). These aspects of relationships add an element of precariousness in the relationship that may constrain a woman's ability to negotiate contentious issues, including condom use.

Additional aspects that may have an important bearing on condom use include the level of couple communication, patterns of decisionmaking, and resource control. Gendered values that prize female submission also act to exclude women from decisionmaking processes in other aspects of their lives. This exclusion is believed to be the key underlying cause of women's limited access to material and social resources (Correa and Reichmann, 1994). This exclusion may also result in limited decisionmaking involvement around sexual issues. An important aspect of couple interaction that may determine condom use is the extent of knowledge of HIV and perception of risk that each of the partners holds and the degree to which this information is discussed and shared. Sharing of disease information (HIV or other sexually transmitted infections [STIs]) with spouses or partners has been found to be uncommon (Morgan et al., 2001; Meursing and Sibindi, 1995).

The inner-most layer, Layer 2 (Figure 1) refers to sexual interaction of the couple. Condom use is a male-controlled activity over which women have limited control (Connel, 1985). Married/partnered women in particular face extra challenges when negotiating condom use because of the fear of being suspected of promiscuity by their spouses/partners (Schoepf, 1998; Meursing and Sabinde, 1995; Marcus 1993). Communication about sexual issues is closely interwoven with gender norms and expectations that prevent women from voicing their concerns (Dixon-Mueller, 1993; Blanc and Wolff, 2001).

There has been little exploration of these relationships, in particular of the routes through which couple dynamics affects condom use. Our analysis explores the role of the sociolegal status of the sexual relationship, gender values, levels of couple communication, patterns of decisionmaking, and resource control on condom use.

3 METHODOLOGY AND DATA

Because gender norms and values are characteristics of social systems rather than individuals (Mason, 1993), a comparison of patterns between two populations was felt to be useful, in addition to an exploration of predictors within each population. Two sub-Saharan countries with significantly differing HIV prevalence were selected. Uganda has successfully reduced its adult prevalence of HIV to 5 percent, while Zimbabwe, which has been severely affected by AIDS, has an adult prevalence of 25 percent.

The data are drawn from the Demographic and Health Surveys (DHS) conducted in Zimbabwe in 1999 and in Uganda in 2001.[2] The surveys used a two-stage sample design to obtain a nationally representative sample of households. All women age 15-49 in each sample household were eligible for interview. In addition, all men aged 15-55 in every second household in Zimbabwe and every third household in Uganda were eligible for interview. The focus of the current paper is respondents who were currently married and/or cohabiting with a partner, a total of 3,609 women and 1,239 men in Zimbabwe, and 4,675 women and 1,180 men in Uganda. A proportion of respondents in each country were matched partners, yielding 907 and 994 couples in Zimbabwe and Uganda, respectively.

The questionnaires in the two countries followed the standard DHS Round 4 formats. Beside sections on fertility and family planning issues, a whole section addressing HIV/AIDS and a smaller section addressing indicators of women's and men's gendered position were included. Two groups of variables, postulated to reflect gendered access to resources (Layer 4) and gendered couple dynamics (Layer 3) were developed.

3.1 Gendered Access to Resources[3]

Employment and occupation.[4] Employment status is commonly used as a proxy measure of access to resources (Safilios-Rothschild, 1990; Goetz and Sen Gupta, 1996), though the assumption that a woman's employment implies unconditional control over her income is debatable (Mason, 1993, 1995). The literature indicates that steady, well-paid work has a positive effect on women's lives, while informal, low-paying work does not (Acharya and Bennet, 1982). For the present analysis, we combine employment and occupation into a proxy measure of access to material resources. Both women and men were asked if they had been employed at any time in the 12 months preceding the survey and the nature of their work. Responses to the two questions were combined to create a nominal variable categorized into homemakers (not working among men), professionals/technical workers, sales and service, clerical/skilled workers, agricultural workers, and unskilled manual workers.

[2] Details of DHS survey methods and main results may be found on the MEASURE DHS web site http://www.measuredhs.com.

[3] Additional variables that were explored, but did not have significant relationships with condom use, are type of remuneration for work done, women's level of contribution to household expenditures, and justification for wife's refusal to have sex with her husband.

[4] In addition, economic status was indicated with a complex variable reflecting life-style purchase and consumption patterns meaningful in these contexts. Type of flooring material, sources of drinking water, sanitation facilities, availability of electricity, ownership of specific consumer durables, and modes of transport are used. A value between 0 and 10 was assigned to each item, a higher value reflecting greater purchasing power. The exact value assigned was calculated by using an inverse ratio of the prevalence of the specific item in the population. The final score each respondent got was further categorized into five classes: very poor, poor, middle class, and rich. These categorizations are arbitrary and are based on our understanding of the value of various items.

Exposure to sources of information. Access to information is strongly determined by class and gender. An "exposure to sources of information score" was developed to measure the extent to which women and men are exposed to radio, TV, and newspapers. A value of zero was assigned for no exposure to a radio, TV or newspaper to a maximum of two for daily exposure to the same media. The score ranges from 0 to 6.

HIV/AIDS-specific knowledge. A score was developed as a composite variable based on knowledge of HIV, specifically 1) whether the respondent has heard of HIV, 2) knows it is possible to prevent infection, 3) knows that risk can be lowered by sticking to one faithful uninfected partner, 4) knows that risk can be lowered by using condoms, 5) knows that a healthy looking person can have HIV infection, 6) knows that a mother can transmit HIV infection to her baby, 7) knows that mother-to-child transmission can occur during pregnancy, 8) knows that mother-to-child transmission can occur during delivery, and 9) knows that mother-to-child transmission can take place while breastfeeding. A score of one was assigned for each correct answer to these questions, giving a possible score from 0 to 9.

3.2 Gendered Couple Dynamics

Four measures assumed to reflect the gendered dynamics of a couple were developed. These include the status of the relationship, level of communication, resource control, and patterns of decisionmaking.

Status of the relationship. Respondents self-classified their current marital status as either "married" or "living together." Though this is a subjective measure, it is of interest to examine how reported relationship status relates to other aspects of couple dynamics and condom use. Instances of polygamy were also explored.

Level of communication. The level of communication between couples was assessed by developing a communication score based on whether the woman had discussed family planning with her husband/partner in the past year. A woman was also asked whether her husband/partner approved of a couple using a family planning method and whether his desired family size was the same as hers. A woman's ability to report her partner's opinions about these issues was assumed to reflect greater communication. A value of zero was assigned if there was no discussion of family planning issues, 1 if once or twice in the past year, and 2 if more often. A value of 1 was assigned if the woman could report her husband's approval/disapproval, 0 if not, and 1 if she could report his fertility desires, 0 if not. These scores were summed to give a score ranging from 0 to 4. An equivalent score was developed for men. The binary variable "whether HIV discussed with partner" was also included in the analysis.

Resource control. Even among formally employed women, access to and control over their wages may be circumscribed (Mason, 1995; Kabeer, 1995). The degree to which a woman has control over her income is assumed to be reflective of (and in turn influence) other dimensions of the couple's relationship. Women working for a wage were asked, *Who mainly decides how the money you earn will be used?* The responses were coded into three categories, 1) the respondent alone decides, 2) the decision is made jointly by the woman and her husband, and 3) the husband alone makes the decisions.

Patterns of decisionmaking. For the present analysis, a decisionmaking score was developed based on answers to four questions about who has the final decision over 1) large household

purchases, 2) daily purchases, 3) visits to family, and 4) friends and the food to buy. For each question, women who reported that they made the decision alone were given a score of 1, those who said it was a joint decision (with their partner or someone else) were given a score of 0.5, and those who did not participate in the decisionmaking process were given a score of 0. These scores were summed to give an index ranging from 0 to 4.

Attitudes toward wife beating. A score was developed based on summing up the responses to whether a wife should be beaten if 1) she goes out without informing her husband, 2) neglects the children, 3) argues with her husband/partner, 4) refuses to have sex, and 5) burns the food; a score of one being given for each affirmative response. Values ranged from 0 to 5. It is assumed that men or women who express lenient attitudes toward wife beating are likely to be in less egalitarian relationships than those who do not condone wife beating.

Acceptability of woman's refusal to have sex. A score of a woman's attitude regarding the acceptability of female refusal to have sex was developed. This was based on questions regarding the circumstances in which a woman can refuse sex with her husband. These circumstances included the following: when she is tired, when she has just given birth, if she thinks he has mutliple partners, and if he has an STI. One point was assigned for each circumstance in which the respondent thought that a woman could refuse sex, giving a range of possible scores between 0 and 4.

3.3 Analysis Strategy

Because the variables aimed at describing the gendered dimensions of couple dynamics in these DHS related to regular partners, our analyses were restricted to married/cohabiting men and women in each of the surveys. The first stage of our analysis involved a detailed exploration of the levels and differentials in the indicators of women's and men's gendered access to resources and gendered couple dynamics. We present only the key results from these models due to shortage of space.

In the next stage of our analysis, we modeled the predictors of condom use at last sexual intercourse with a married/cohabiting partner, and condom use at last sexual intercourse with a nonregular partner, separately for both married men and married women in the two countries.[5] Here we were interested to describe and compare the relationships between men's and women's access to resources and their reports of condom use in the two types of sexual interaction. Is there any evidence that women with greater access to resources (including education, specific HIV-related knowledge, material goods, condoms) are more likely to use condoms? Do the relationships between resource access and condom use vary depending on the sexual partner? Are the relationships found for women mirrored by the men, or are men's predictors quite different? How do these relationships vary between the two contexts, Zimbabwe and Uganda? Also, for the marital condom use models, are women's and men's reports of couple dynamics associated with condom use? Do indicators of egalitarian relations (greater communication, female involvement in decisionmaking, and resource control) predict condom use?

Finally, we examined the couples data to explore whether gendered couple dynamics have an independent effect on condom use within marital/cohabiting sex. The couples data allow us not only to examine the effects of the couple-level variables described above (communication, decision-

[5] All models were developed using the Stata 'svy' set of commands to take into account the clustered nature of the samples.

making, and resource control), but also to examine the combined effects of husband and wife individual characteristics (including education, HIV knowledge, and condom access). Therefore, although the couples data relate to a select subsample and the results cannot be generalized to all married men and women, the analysis does offer insight into the routes by which gender systems can affect condom use.

The model-building process had to proceed slowly and sequentially with detailed exploration of relationships between all measures of interest. Three factors made the analyses particularly complex: definition of the outcome measure, condom use; a diverse set of independent measures of gendered dynamics and access to resources; and the interaction effect of modern contraceptive use.

3.3.1 Measuring Condom Use

Condom use was measured as reported use at the most recent sex, both for marital and extra-marital partners. In the analysis of couple data, the male partner's report of condom use at most recent sex was taken as the outcome variable, in preference to the female partner's report or to a combined measure of both partners' reports. The results from the models for individual married men and married women suggested that the predictors of condom use were different for the two sexes. Substantial disagreement over whether a condom was used at last sex makes a measure based on the reports of both partners difficult to analyze. Among the matched Ugandan couples for whom data were available, there were 40 cases where either the man or woman reported condom use, but in only 17 of these did both partners report use. In Zimbabwe, the figure was 16 out of 67. It is possible that the two partners are not referring to the same sexual act, because spouses are not necessarily interviewed on the same day and recall of last sexual intercourse may vary between partners. Agreement between partners on use of condom at last sexual intercourse was found to be higher where partners agreed on the timing of the most recent sex. Condom use for family planning purposes may be inconsistent because couples may only use a condom during the woman's fertile period. If the majority of condom users are inconsistent users it will be difficult to find clear associations with use. Whenever a cross-sectional measure of use at last sex is used, a substantial proportion of inconsistent condom users will be classified as non-users. The characteristics shared by condom users will be spread between the two outcome groups (used a condom at last sex and did not use) and any associations diluted.

3.3.2 Model-building Process

In our analytical framework, determinants of condom use operate at several inter-related levels. Our analysis mirrored this framework by considering the effects of sociodemographic characteristics of the individual, individual access to resources, and characteristics of the couple. Regression models were built up at each level of this hierarchy and then combined into a single model. All regression models were created using the step-down approach and took into account the stratified and clustered nature of survey sample. The score variables were modeled as both linear variables and categorical variables; if they behaved in a linear manner, they were retained in the model as linear variables, otherwise they were broken down to their component parts that were then modeled separately (e.g., in the model for condom use with extra-marital partners for Ugandan women, the only component of the media exposure index that was important was newspaper reading). The factors included in the sociodemographic model were age, education, occupation, and socioeconomic status. The individual access to resources model included media exposure score, HIV knowledge score, acceptability of wife-beating score, and the variables that described household and individual decisionmaking. The third model contained the characteristics of the couple: duration of

the marriage, whether formally married, the score of couple communication, the desire for more children, and whether the respondent had discussed HIV with his or her partner. The variables that were important at each level were combined into a single model, and unimportant variables were eliminated using the step-down approach. In the sections that follow, we present only the final models.

3.3.3 Modern Contraceptive Use as an Effect Modifier

Our analyses were aimed at exploring relationships between indicators of gendered position and condom use. Women with greater access to resources and greater control within their intimate relationships are postulated to be more likely to use modern contraception. At the same time, women using a modern method of contraception are less likely to use condoms, both because they may perceive no need and because they may find it harder to convince a partner of the need for such double protection.[6] Therefore, any relationship between indicators of "gender equality" or "women's gendered position" and condom use is likely to be masked unless the analysis adjusts for the effect modification of modern contraceptive use. In the analyses that follow, we stratify by modern contraceptive method use wherever possible. The analysis was performed separately for the individuals/couples in each group. However, this was not possible for Ugandan married men, for whom current contraceptive use was not collected.[7] The couple data are based on a subsample of married people and it was not possible to stratify the Zimbabwean married couples by contraceptive use (there were no significant predictors of condom use once stratified). A model could not be fitted for Ugandan couples in which the woman reported using a modern method of contraception because only one of the couples reported condom use at most recent sex.

4 FINDINGS

4.1 Levels and Differentials in Indicators of Gendered Access to Resources

Table 1 shows the distribution of measures of access to resources and couple dynamics among currently married/cohabiting women and men in Zimbabwe and Uganda, respectively. Fifty-eight percent of women and 71 percent of men in Zimbabwe report being employed, compared with 84 percent of women and 98 percent of men in Uganda. Despite high labor force participation rates, women are less likely to work in professional or skilled/clerical occupations than men in both countries. The largest proportions of women in both countries work in agricultural or unskilled occupations. Controlled for potential confounders, work in the agricultural industry is significantly associated with lower odds of cash remuneration, compared with work in the professions in both countries (results not shown).

[6] In Uganda, less than 2 percent of women who were using a modern method of contraception reported condom use at last marital sex, and in Zimbabwe the figure was less than 3 percent.

[7] Ugandan men were asked what method of contraception they used the last time they had sex with their different partners; however, it was thought that this variable would not be comparable with the answers to the question about current use that was used for Ugandan women and Zimbabweans in this analysis.

Table 1 Distribution of the measures of gendered access to resources and couple dynamics among currently married (cohabiting) women and men, DHS surveys in Zimbabwe (1999) and Uganda (2001)

Measures	Zimbabwe		Uganda	
	Women	Men	Women	Men
ACCESS TO RESOURCES				
Education (%)				
Any education	91	96	74	92
Primary	46	37	61	66
Secondary	42	50	11	19
Higher	3	9	3	7
Employment (%)				
Not working	42	29	16	2
Working	58	71	84	98
Professional/technical	5	10	2	5
Skilled/clerical	9	19	2	6
Sales and services	17	20	7	13
Agricultural	26	14	68	65
Unskilled manual	1	8	5	9
Missing cases	-	(1)	(6)	(1)
Exposure to sources of information score (mean, range 0-6)	2.1	3.1	1.2	1.9
HIV-related knowledge score (mean, range 0-9)	6.1	6.5	6.7	7.0
COUPLE DYNAMICS				
Type of sexual union (%)				
Living together	7.9	2.3	3.3	8.0
Decisionmaking - woman's health (%)				
Woman alone makes final decision	50	-	44	-
Husband/woman make decision jointly	13	-	18	-
Husband alone makes final decision	32	-	38	-
Some one else makes the final decision	6	-	1	-
Resource control - woman's income (%)				
Woman alone makes the final decision	49	-	54	-
Husband/woman make decision jointly	38	-	30	-
Husband alone makes final decision	12	-	15	-
Decisionmaking score (mean, range 0-4)	2.6	-	2.7	2.0
Communication score (mean, range 0-4)	3.3	3.0	2.3	2.1
Missing cases	-	-	-	(5)
Number	3,553	1,203	4,675	1,167

The survey data suggest that Zimbabwe is characterized by near-universal schooling, with 96 percent of men and 91 percent of women having attended school. In contrast, educational opportunities in Uganda are gendered, with 78 percent of women compared to 94 percent of men report having attended school. Both women and men in Zimbabwe have greater exposure to sources of information compared to their counterparts in Uganda. However, Ugandans have higher HIV-related knowledge scores. Within each country, women have lower exposure to sources of information and lower HIV-related knowledge compared with men. Considering that the primary focus of HIV-related health education messages has been on condom use, it is perhaps surprising that nearly 27 percent of women and 20 percent of men in Zimbabwe did not identify condom use as a protective measure. This aspect of knowledge was more gendered in Uganda, with 37 percent of women compared with 23 percent of men failing to identify condom use as a protective behavior.

In both countries, education and socioeconomic status are positively associated with exposure to sources of information and HIV-related knowledge in both women and men. Only

women's employment is positively associated with these two measures. Exposure to sources of information is itself an independent predictor of HIV-related knowledge in both countries. This suggests that, independent of education, health education messages via the radio, TV, and newspapers are an important source of HIV knowledge (results not shown). HIV knowledge was higher among married men and women in Uganda, despite the lower scores for media exposure.

Turning to couple dynamics, living together, versus being formally married, was more commonly reported by women in Zimbabwe and by men in Uganda. In Uganda, 30 percent of the couples in the subsample disagreed about this, compared with only 9 percent of the Zimbabwean couples. Couple communication around family planning issues appears to be common in both countries, though more so in Zimbabwe, and is positively associated with education, number of living children, and a desire for limiting child-bearing, in both countries. There were significant differences in the levels of communication and decisionmaking process reported by men and women in both countries. The sociolegal status of the union emerged as an important predictor of couple communication. Women in polygamous unions (marital or partnered) had lower communication scores compared with women in monogamous unions in both Zimbabwe and Uganda.

In both countries, most women working for a wage had full or partial control over the use of the income. Nearly 50 percent of women in Zimbabwe and Uganda who work and are paid in cash reported that they alone decide how their wages will be spent. Another 38 percent in Zimbabwe and 30 percent in Uganda decide jointly with their husbands/partners. However, formal marriage and coresidence are negatively associated with women making the final decision (in both countries).

Fifty percent of women in Zimbabwe and 44 percent in Uganda report that they alone make the final decision regarding their health. Neither education, nor occupation emerged as important predictors of women's final decisionmaking authority regarding their own health in both countries. Only a small proportion of women with a higher education (3 percent in both countries) have significantly higher odds of making the final decision regarding their own health. In Zimbabwe, coresidence is negatively associated with women's final decisionmaking authority, while in Uganda, marriage and coresidence are negatively associated with final decisionmaking authority. In Uganda, men's normative role in final decisionmaking is brought out by the fact that only three variables, type of sexual union (formal marriage versus consensual unions), polygynous union, and socioeconomic status were significant. Marriage is positively, while polygynous union is negatively, associated with men's final decisionmaking in the two domains examined (purchase of large household items and visit to friends and family) (data not shown).

4.2 Sexual Activity and Predictors of Condom Use Among all Married Men and Women

4.2.1 Zimbabwe

Table 2 shows the distribution of condom use at last sexual intercourse by type of sexual partner. More sexually active women (87 percent) than men (67 percent) reported a spouse/partner as their last sexual partner. Conversely, more men than women reported sexual intercourse with boyfriend/girlfriend/fiancé, casual acquaintances, relatives, or commercial sex workers (CSW). Heterosexual, extra-marital/partner sexual activity is also more commonly reported by men than women. In Zimbabwe, 30 percent of married/partnered men compared with 10 percent of married/partnered women reported extra-marital sexual partners in the 12 months preceding the survey.

Table 2 Sexual activity and condom use, DHS surveys in Zimbabwe (1999) and Uganda (2001)

	Zimbabwe		Uganda	
Sexual activity and condom use	Women	Men	Women	Men
Percentage who used a condom at most recent sex with an extra-marital partner (N)				
Boyfriend/girlfriend	41 (22)	73 (69)	23 (87)	53 (51)
Friend	50 (10)	59 (75)	44 (25)	76 (71)
Casual acquaintance	67 (9)	0 (3)	25 (12)	61 (23)
Other	0 (1)	-	0 (1)	38 (8)
Commercial sex worker	-	83 (23)	-	100 (4)
Percentage who used a condom at most recent sex with spouse (N)	4.0 (3,547)	6.1 (1,184)	2.2 (4,709)	3.8 (1,154)

Reported rates of condom use vary by type of relationship with the partner. Nine percent of sexually active women compared with 27 percent of sexually active men reported condom use at last sexual intercourse. Condom use with a spouse/partner is a rare event, with only 6 percent of men and 4 percent of women reporting such behavior. Use rates increase with boy/girlfriend or fiancée, but are still characterized by gender differences. More men than women report condom use with nonregular partners (Table 2).

Reasons for using condoms differ by type of sexual partner. Among married condom users, 54 percent of women and 73 percent of men reported that they initiated or insisted on use to protect themselves against pregnancy. Only 15 percent of women and 9 percent of men reported use to prevent STIs, and 9 percent of women and 4 percent of men reported that use within marriage was to prevent both STIs and pregnancy. No men and only 2 percent of women said they insisted upon condom use because they did not trust their partner. No men and 5 percent of women said a condom was used at last marital sexual intercourse because of their partner's insistence/request. In contrast, condom use at last extra-marital sex was primarily explained in terms of STI prevention. Sixty percent of men and 51 percent of women cited STI protection as the reason for use, and 30 percent of men and 6 percent of women gave both STI and pregnancy prevention as their reason. Eleven percent of women and 2 percent of men said that they mistrusted their partner.

Condom Use with Marital (or Regular) Partner

As noted above, condom use within marriage is uncommon, reported by only 4 percent of women and 6 percent of men in Zimbabwe. Table 3 presents the final models for the predictors of condom use at last marital sex for married (cohabiting) Zimbabwean men and women stratified by whether use of a modern method of contraception was reported. The predictors are largely inconsistent across the four models—there are differences both between men and women and between the modern method users and those not using modern methods of contraception. The women's models reveal more significant associations, possibly because the sample sizes were larger, affording greater power to detect relationships. Among the men who reported use of modern contraception, only sociolegal status of the union emerged as a significant predictor of condom use at last marital sex. Those who reported living together had odds of condom use 8.5 times higher than those who reported formal marriage. There was some evidence that those in marriages of shorter duration were less likely to use condoms than those who had been married/partnered for 10 years or more, but the effect was of questionable significance. Among the men who did not report modern contraceptive use, the most important predictor of condom use at last marital sex was socioeconomic status group, with the odds of use rising steeply with higher socioeconomic group. In

addition, the man's HIV knowledge score, modeled linearly, was found to be positively associated with condom use. Among Zimbabwean women who reported using a modern method of contraception, age was negatively associated with condom use at last marital sex, while having a professional or unskilled manual occupation carried odds of use significantly higher than those of nonworkers. Counterintuitively, there was evidence that among this group, women who had more lenient attitudes towards wifebeating were more likely to have used a condom at last marital sex. Among the non users of modern contraception, the wife-beating score showed the expected negative association with condom use. Furthermore, greater communication with one's partner and having discussed HIV with one's partner were both positively associated with condom use at last marital sex, though the effects were not large. Having been married less than 10 years also increased the odds of use when compared with those who had been married (partnered) for longer.

Table 3 Predictors of condom use at last marital sex among currently married (cohabiting) Zimbabwean men and women, stratified by current use of modern contraceptive methods, DHS survey in Zimbabwe (1999)

Predictors of condom use	Adjusted odds ratio	P-value	95% CI
MEN			
Users of modern contraceptive methods (N=613)			
Married 10+ years	1.00	-	-
Married less than 10 years	0.35	0.051	(0.12-1)
Formally married	1.00		
Living together	8.53	0.076	(0.8-91.41)
Nonusers of modern contraceptive methods (N=560)			
SES group 1	1.00		
SES group 2	2.92	0.039	(1.06-8.04)
SES group 3	4.23	0.007	(1.49-12.04)
SES group 4	8.98	0.055	(0.95-84.59)
HIV knowledge score	1.36	0.004	(1.11-1.67)
WOMEN			
Users of modern contraceptive methods (N=1,629)			
Age (linear term)	0.93	0.002	(0.89-0.97)
Not working	1.00	-	-
Professional occupation	4.71	0.018	(1.31-17.02)
Clerical/skilled manual occupation	0.32	0.134	(0.07-1.42)
Sales/service occupation	1.12	0.785	(0.48-2.61)
Agricultural occupation	1.04	0.913	(0.49-2.23)
Unskilled manual occupation	4.09	0.045	(1.04-16.16)
Acceptability of wife beating score	1.24	0.027	(1.02-1.49)
Nonusers of modern contraceptive methods (N=1,771)			
Acceptability of wife beating score	0.83	0.026	(0.71-0.98)
Married 10+ years	1.00	-	-
Married less than 10 years	1.78	0.010	(1.15-2.75)
Woman's couple-communication score	1.24	0.024	(1.03-1.49)
Did not discuss HIV with partner	1.00	-	-
Discussed HIV with partner	1.35	0.008	(1.08-1.69)

Note: Logistic regression odds ratios. Outcome data were missing for 13 cases, 27 cases, 26 cases, and 81 cases in models 1 to 4, respectively.

Condom Use with Nonregular Partners

There were insufficient numbers of married Zimbabwean women who reported extra-marital sex (N=42) to allow us to explore the predictors of condom use. However, the final model for the predictors for Zimbabwean men are shown in Table 4. The most important predictors are socioeconomic status group and sexual partner being a commercial sex worker. Odds of condom use were more than 5 times higher among men who reported that their last extra-marital partner was a commercial sex worker, compared with those who reported a partner who was not a commercial sex worker. Compared with the lowest socioeconomic category, those in the highest socioeconomic group had odds of condom use almost 18 times higher. Although these two associations suggest that knowledge and recognition of HIV risk may influence men's behavior, there was no association between the score on HIV-related knowledge or exposure to sources of information and condom use at last extra-marital sex.

Table 4 Predictors of condom use at last extra-marital sex among currently married (cohabiting) Zimbabwean men, DHS survey in Zimbabwe (1999)

Predictor of condom use at last extra-marital sex	Adjusted odds ratio	P-value	95% CI
Last extra-marital partner not a CSW	1.00	-	-
Last extra-marital partner was a CSW	5.13	0.029	(1.19-22.24)
Married 10+ years	1.00		-
Married less than 10 years	3.23	0.017	(1.24-8.41)
Man's couple communication score	1.81	0.003	(1.24-2.66)
Lowest SES category	1.00	-	-
Second SES category	4.44	0.009	(1.45-13.53)
Third SES category	6.92	0.002	(2.09-22.86)
Highest SES category	17.58	0.004	(2.53-121.88)
Not able to get a condom or doesn't know	1.00	-	-
Able to get a condom	3.94	0.025	(1.19-13.05)

Note: N=170
CSW = Commercial sex worker
SES = Socioeconomic status

There is evidence to suggest that the nature of a man's relationship with his regular partner may influence his behavior in his nonregular sexual encounters. Men who have been married less than 10 years have odds of condom use significantly higher than those who have been married 10 years or longer, and a higher couple communication score predicts condom use at last extra-marital sex. Reporting an ability to access condoms is also associated with higher odds of use.

4.2.2 Uganda

Eighty-seven percent of women and 80 percent of men in Uganda reported a spouse as their last sexual partner. As in Zimbabwe, sex with boyfriend/girlfriend/fiancée, other friends, or casual acquaintances was uncommon, but relatively more common in men than women (Table 2). More married/partnered men than women (21 percent and 11 percent, respectively) reported extra-marital sexual partners in the 12 months preceding the survey.

Again, as in Zimbabwe, there are large sex differences in reported rates of condom use. Seven percent of women and 15 percent of men reported condom use at last sexual intercourse. Even more so than in Zimbabwe, marital condom use was a rare event with only 2 percent of women and 4

percent men reporting such use. The condom use rate is higher with nonregular partners with 23 percent of women and 53 percent of men reporting use with a boy/girlfriend or fiancée.

As in Zimbabwe, the majority of marital condom users gave pregnancy prevention as their main reason for use: 93 percent of men and 69 percent of women, compared with just 5 percent of men and 14 percent of women who cited STI prevention as their reason. Among the extra-marital condom-users, 62 percent of men and 53 percent of women reported they initiated or insisted upon use to protect themselves against STIs, compared with just 15 percent of women and 6 percent of men who report use for pregnancy prevention purposes. In extra-marital sexual encounters, 27 percent of women and 28 percent of men cited both pregnancy and STI prevention as their reasons for condom use.

Condom Use with Marital (or Regular) Partner

Unlike the diverse results for Zimbabwe, the Ugandan models of condom use at last marital sex showed some common predictors. Among women, whether users of modern contraception or not, education emerged as an important predictor of condom use (Table 5). In both models, women with higher-level education had odds of condom use significantly greater than those with no or only primary schooling. Among women who were not users of modern contraception, their HIV knowledge score and media exposure score were also positively associated with condom use. Clearly,

Table 5 Predictors of condom use at last marital sex among currently married (cohabiting) Ugandan men and women, stratified by current use of modern contraceptive methods, DHS survey in Uganda (2001)

Predictors of condom use	Adjusted odds ratio	P-value	95% CI
MEN			
All married men (N=1,135)			
Media exposure score	1.38	0.003	(1.11-1.7)
Married 10+ years	1.00	-	-
Married less than 10 years	1.90	0.041	(1.03-3.52)
Man's couple communication score	2.23	0.000	(1.49-3.33)
WOMEN			
Users of modern contraceptive methods (N=688)			
No education/Primary education	1.00	-	-
Secondary education	1.59	0.527	(0.37-6.79)
Higher education	6.63	0.012	(1.52-28.82)
Formally married	1.00	-	-
Living together	6.11	0.013	(1.48-25.28)
Nonusers of modern contraceptive methods (N=3,779)			
No education/Primary education	1.00	-	-
Secondary education	2.11	0.008	(1.22-3.66)
Higher education	2.59	0.032	(1.09-6.2)
Media exposure score	1.55	0.000	(1.34-1.79)
HIV knowledge score	1.29	0.000	(1.14-1.46)
Woman's couple communication score	1.57	0.000	(1.29-1.9)

Note: Logistic regression odds ratios. Outcome data were missing for 28 cases, 22 cases, and 171 cases in models 1 to 3, respectively.

women's access to information appears to facilitate use of condoms within marriage. There is also evidence that the nature of couple dynamics influences use of condoms within marriage. Among both women who were nonusers of modern contraception and the all male sample, a positive association was found between the communication score and condom use. Among the men, the odds of using a condom doubled for each one point increase on the communication score. In addition, among women who were using a modern method of contraception, those who reported living together, rather than being formally married, were far more likely to have used a condom at last sex, and among the men, those married for less than 10 years were more likely to report condom use than those married 10 years or longer.

Condom Use with Nonregular Partners

For the predictors of condom use with nonregular partners, Table 6 shows the final models for married men and married women separately. Among men, the media exposure score was positively associated with condom use in extra-marital sex, as was the case for marital sex (Table 5). Being able to access a condom and working in a sales/service occupation were also associated with condom use. Among women, those who reported reading a newspaper every day had odds of condom use almost nine times higher than those who did not read a newspaper on a daily basis. The woman's score on "acceptability of female refusal to have sex" also showed a significant, positive association with condom use at last extra-marital sex. Although the numbers would not support a stratified analysis, current use of contraception was found to be a significant independent predictor of condom use at last extra-marital sex. Women who reported that they were using condoms as their method of contraception were far more likely than those not using a method to have used a condom at last extra-marital sex. However, those women who reported using a modern method of contraception were also more likely than nonusers to have used a condom at last extra-marital sex. A counterintuitive finding was that women with higher household decisionmaking scores, that is those who reported more involvement in household decisions, were less likely to have used a condom at last extra-marital sex.

Table 6 Predictors of condom use at last extra-marital sex among currently married (cohabiting) Ugandan men and women, DHS survey in Uganda (2001)

Predictors of condom use	Odds ratio	P-value	95% CI
Men (N=160)			
Media exposure score	1.47	0.045	(1.01-2.15)
Not able to get a condom or doesn't know	1.00	-	-
Able to get a condom	12.87	0.000	(4.15-39.95)
Agricultural occupation	1.00	-	-
Not working	0.17	0.141	(0.02-1.83)
Professional occupation	9.67	0.069	(0.83-112.27)
Clerical/skilled manual occupation	0.56	0.435	(0.13-2.42)
Sales/Service occupation	4.44	0.036	(1.1-17.82)
Unskilled manual occupation	1.12	0.853	(0.33-3.85)
Women (N=125)			
Not using any contraception	1.00	-	-
Using a modern method of contraception	5.04	0.038	(1.09-23.25)
Using condoms for contraception	167.68	0.000	(11.9-2360.4)
Using a traditional method of contraception	2.20	0.400	(0.34-14.01)
Household decisionmaking score	0.43	0.008	(0.24-0.8)
Doesn't read a newspaper daily	1.00	-	-
Reads a newspaper approximately every day	8.94	0.016	(1.52-52.37)
Ability to refuse sex score	2.04	0.004	(1.26-3.3)

4.2.3 Predictors of Condom Use Among Matched Couples: Further Exploration of Couple Dynamics

The final stage of our analysis involved fitting models for condom use at last marital sex among monogamous matched couples to examine whether there was any evidence that the combined characteristics of the two partners influences condom use. As mentioned above, the outcome measure used in this phase was the male partner's report of condom use at last marital sex.

In Uganda, the matched-couple analysis was restricted to those not using a modern method of contraception, since there were insufficient reports of condom use at last sex among the modern method users to support an analysis. The results tended to support the findings of the other models of marital condom use, namely that communication between partners and access to information are important predictors of use. The model-building process showed that when entered into the models alone, both the men's and the women's individual reports of media exposure, HIV knowledge, and couple communication were significant predictors of condom use. However, when both the men's and the women's scores were entered into models together, the variables tended to lose significance, reflecting the fact that they were multicollinear. The data do not show whether the men's or the women's access to information is more important, and we opted to include combined scores in the final model (Table 7). However, the two other variables suggest that couple dynamics are important in determining marital condom use. These include a greater age difference between partners being associated with lower odds of using a condom, and condom use being significantly more likely among couples who agreed on future fertility preferences compared with those who did not agree.

The matched couple data were modeled as one group for Zimbabwe because stratification by modern method of contraception resulted in the loss of all significant associations. The model for Zimbabwe is somewhat more difficult to interpret than the Ugandan model. However, certain patterns common to the earlier results do emerge, such as the importance of the sociolegal status of the union. Where the woman in the couple reports that the union is a cohabitation rather than a formal marriage, condom use at last sex is more common. There is also evidence that couple communication and, specifically, discussion of HIV are related to the use of condoms within marriage. In couples where the man reports that he has discussed HIV with his wife, the odds of using a condom at last marital sex are more than three times higher than in couples where the man reports no such discussion. However, once the man's report of discussion of HIV is controlled for, whether or not the woman also reports HIV discussion is not related to the odds of using a condom. The couple communication score behaved slightly differently, with the woman's score showing a significant positive association with condom use. The other variables that show significant associations with condom use at last marital sex relate to fertility behavior. Compared with couples where the woman wants another child soon, those who want to delay or stop childbearing were more likely to report condom use at last sex. However, having controlled for fertility desires, couples who are currently using a modern method of contraception are less likely to have used a condom at last sex than those who are not using a modern method.

Table 7 Predictors of condom use at last marital sex among monogamous matched couples, DHS surveys in Uganda (2001) and Zimbabwe (1999)

Predictors of condom use	Adjusted odds ratio	P-value	95% CI
Uganda: nonusers of modern contraceptive methods (N=670)			
Difference between man's and woman's ages	0.91	0.025	(0.83-0.99)
Combined score on media exposure	1.22	0.007	(1.06-1.4)
Combined score on HIV knowledge	1.22	0.047	(1-1.5)
Combined score on couple communication	1.47	0.001	(1.18-1.83)
Couple do not agree on fertility preference	1.00	-	-
Couple agree on fertility preference	3.84	0.018	(1.27-11.65)
Zimbabwe: all monogamous couples (N=758)			
Woman reports 'formally married'	1.00	-	-
Woman reports 'living together'	12.42	0.005	(2.19-70.46)
Man and woman disagree about marital status	1.00	-	-
Man and woman agree about marital status	19.07	0.004	(2.61-139.32)
Woman wants more children soon	1.00	-	-
Woman undecided/wants later	3.79	0.017	(1.27-11.25)
Woman wants no more children	3.52	0.020	(1.22-10.19)
Couple do not give same fertility preference	1.00	-	-
Couple give same fertility preference	0.78	0.482	(0.39-1.57)
Not using a modern method of contraception	1.00	-	-
Currently using a modern method of contraception	0.27	0.000	(0.14-0.53)
Woman's score on couple's communication	2.72	0.044	(1.03-7.23)
Man's score on couple's communication	0.36	0.058	(0.13-1.04)
Difference in scores of couple's communication	3.33	0.052	(0.99-11.22)
Man says couple have not discussed HIV	1.00	-	-
Man says couple have discussed HIV	3.18	0.039	(1.06-9.55)
Woman says couple have not discussed HIV	1.00	-	-
Woman says couple have discussed HIV	1.32	0.432	(0.66-2.62)

5 CONCLUSIONS AND DISCUSSION

5.1 Male versus Female Patterns

The objective of this investigation was to examine empirically the ways in which gendered differences between female and male access to household resources and to resources in the wider society influence couple dynamics and the adoption of condom use as an HIV protective behavior. Our results confirm the well-documented differentials in access to resources between women and men. While women are as likely to be employed as men, their distribution by occupation and type of remuneration shows that women are more likely to work in informal, unskilled, poorly paid, or non-paying occupations than men.

Notwithstanding high levels of labor force participation, there is no association between women's employment and control over personal income, decisionmaking authority (even regarding their own health), or condom use in either Zimbabwe or Uganda. This finding raises the question of whether women's employment has the potential to transform their gendered positions and enable them to challenge the entrenched gender norms of male dominance and female passivity in sexual matters. Clearly, the type of occupation and the context in which it is carried out are more important than employment per se. For example, women's work in the professions is positively

associated with exposure to sources of information, the HIV-related knowledge index, and condom use, while work in agriculture is not. Overall, where the large majority of women work in informal, irregular, low paying, and unskilled occupations, employment does not appear to be particularly transformative of gender relations nor does it appear to enable women to insist on use of condoms by men.

Education is the other important resource to which women have limited access compared with men. Although primary education is nearly universal in Zimbabwe, there are large gender differentials at the post-primary level. In Uganda, the gendered differentials are large even at the primary level. Men also have greater exposure to sources of information, itself an independent predictor of HIV-related knowledge, compared with women. Education emerged in Uganda as an important predictor of women's reported condom use within marriage, and among nonusers of modern contraception, media exposure and HIV-specific knowledge were additional important, independent predictors. In the model of condom use at last extra-marital sex, newspaper reading emerged as an important predictor for Ugandan women, again suggesting that education/literacy and access to information do facilitate condom use. In Uganda, our findings suggest that heightened access to information among women is associated with HIV-protective behavior. In contrast, among Zimbabwean women, we found no evidence of significant differentials in condom use within or outside of marriage by level of education or access to information. This may reflect the fact that educational levels are higher generally among Zimbabwean women or that other factors, particularly those related to couple dynamics, act to dilute the impact of women's education or knowledge.

Comparing the predictors of condom use among men and women in each country, we find some similarities and some contrasts. In Zimbabwe, there is evidence that socioeconomic status differentials in condom use are important for both men and women. Whereas the measure of socioeconomic status emerged as a predictor in two of the three male models, it was occupation that retained significance in the model of condom use within marriage for women. Nevertheless, both these variables reflect socioeconomic status and it is important to recognize that in addition to gendered influences, there may be other factors that cut across gender to create barriers to condom use for both poor men and poor women. Duration of marriage emerged as another factor common to male and female models in Zimbabwe, suggesting the importance of couple dynamics. In terms of contrasts between men and women, HIV knowledge emerged as an important predictor of condom use within marriage in one of the models for Zimbabwean men, but not for women, perhaps suggesting that men can put their knowledge into practice more easily than women. In addition, reported access to condoms was significantly related to condom use at last extra-marital sex for both Zimbabwean and Ugandan men, but did not emerge as an important variable in any of the women's models, a finding consistent with the body of anthropological research that identifies men as being more powerful and proactive than women in sexual relationships (Connel, 1985; Schoepf, 1998).

5.2 Importance of Couple Characteristics

The results presented above confirm that a conceptual model that focuses on the sexual dyad rather than the characteristics of individuals alone better reflects reality. We find evidence of differential patterns of condom use within marital and extra-marital sexual encounters, as well as differential use between couples who report formal marriage rather than cohabitation. Duration of marriage and indicators of couple dynamics also emerge in several of our models as significant, independent predictors of condom use.

Our analyses show that condom use is more common with nonregular partners than with spouses/regular partners. This finding agrees with previous research from the same region (Blanc and Wolff, 2001; Gregson, 1998) and suggests differences in perception of risk of HIV infection between a spouse and nonregular partner. The models of condom use at last extra-marital sex for men also suggest that risk perception plays a role in determining use. Zimbabwean men were far more likely to use a condom with a commercial sex worker than another type of extra-marital partner (Table 4), and among Ugandan men a higher media exposure score was associated with condom use (Table 6). However, as the literatures suggests, risk perceptions may not always be accurate. Multiple extra-marital sexual partners are common, particularly among men, and couples rarely share information regarding their HIV-positive status with their spouse (Meursing and Sibinde, 1995). We can only postulate the reasons for low marital condom rates. Men may consider their wives or regular partners as "clean women" (Schoepf, 1998); they may feel safer experiencing sexual satisfaction, that centers around penetration, with their wives (Ssali et al., 1992; de Bruyn, 1992). The literature also suggest that it may be incorrect to assume that women want their husband/partner to use condoms, but are prevented from doing so. Many women are ambivalent about condom use in marriage and believe condomless sex is a sign of trust, honesty, and commitment in a marriage. Insisting upon condom use would amount to an admission to themselves of a partner's potential unfaithfulness, thus reducing self-esteem (Varga, 1997; Meursing and Sibinde, 1995). The most likely barrier to condom use within a regular union, however, is desire for children.

Type of sexual union also emerges as an important factor in condom use. Although formal marriage is the norm, cohabiting relationships were reported by a significant minority of respondents. Though reported marital status is ambiguous and disagreement between partners was common, this variable emerged as a significant predictor of condom use in several of the models. A cohabiting relationship was associated with higher odds of condom use at last marital sex than a formal marriage in some of the models for both countries. This relationship may be explained in part by fertility desires and contraceptive choices. That is, cohabiting couples may be at the start of their childbearing years and be reluctant to use other modern methods that could be perceived as possibly compromising later fertility. This may also explain why condom use is higher among those married for less than 10 years than among those married for longer in several of the models. However, it seems likely that at least part of the association may reflect the nature of the couple's dynamics. Certainly, even among Ugandan women who are modern method users, odds of condom use at last marital sex are more than six times higher among cohabiting women than formally married women (Table 5). This suggests that cohabiting women may have more options than those who are formally married.

Our results provide evidence that couple dynamics, and communication between partners in particular, play a part in determining use of condoms. In Zimbabwe, among women who were not currently using a modern method of contraception, condom use was more common at last marital sex among women who had discussed HIV with their partner, those with a higher couple communication score and those with a lower acceptability of wife-beating score. Among Zimbabwean men, those with a higher couple communication score (relating to their regular partner) were more likely to report condom use at last extra-marital sex, suggesting that more open, egalitarian marital relationships may even imply safer sexual practices beyond marriage. The matched couples analysis for Zimbabwe (Table 7) also suggests that couple dynamics are important determinants of condom use, because both the communication score and discussion of HIV were associated with higher odds of use. In Uganda, the communication score was significantly associated

with condom use at last marital sex among both men and those women who were non-users of modern contraception. The matched couple analysis also confirmed the importance of couple communication. As well as the significance of the direct couple communication score, a larger age difference between partners was associated with lower odds of use, perhaps reflecting a lower level of discussion. It was also interesting to find that among Ugandan women, condom use at last extra-marital sex was more likely among those women who reported a greater ability to refuse sex, suggesting that greater power in sexual relations may translate into HIV-protective behavior.

5.3 Zimbabwe versus Uganda

Levels of reported condom use were higher among the Zimbabwean married men and women in both marital and extra-marital sex than their Ugandan counterparts. However, in our search for predictors of condom use, models for Zimbabwe were more erratic and more difficult to fit than those for Uganda. Despite these complexities, we have identified a number of factors that appear to show some consistency across the two countries, notably couple communication and discussion. However, the two countries differ in some respects. There is evidence that media exposure is a determinant of reported condom use among both men and women in Uganda; no such pattern was apparent for Zimbabwe. Despite higher average scores for media exposure in Zimbabwe, HIV-related knowledge scores were lower on average than among their Ugandan counterparts. This suggests that the use of the mass media as a vehicle for HIV awareness education has been more successful in Uganda and that individuals in Uganda are better able to act on information acquired than those in Zimbabwe. Nevertheless, levels of condom use remain low, particularly in regular sexual unions.

5.4 Measuring Gendered Influences on Condom Use

This analysis has shown that gendered inequalities in access to resources and couple dynamics influence the use of condoms among couples in Zimbabwe and Uganda. However, considering the central role that is frequently given to power differentials between men and women in explaining the HIV epidemic, we might have expected to see larger and more consistent effects. Odds ratios relating to socioeconomic variables and the status of the union are far bigger than any of those related to measures of gendered couple dynamics, and many of the variables explored showed no relationship with condom use at all (e.g., decisionmaking, control of women's income). A number of methodological issues may account for these results. The measures of couple dynamics available relate to the regular partnership and are therefore of questionable relevance to understanding nonregular encounters where the balance of power between the actors may be very different. Many of the indicators are standard measures that have been included in surveys in varied cultural settings around the world. While the desirability of international comparisons is recognized, it is doubtful that these measures have a consistent meaning across contexts. Kabeer (1999) provides a useful discussion of the importance of meaning in the selection of indicators of empowerment, and highlights the fact that a measure may be indicative of a transformation in gender relations in one setting while not in another. The extent to which individual-level cross-sectional analyses can illuminate gendered constraints on HIV protective behaviors is limited. Such analyses may provide clues as to the types of women (and sets of individual circumstances) who are managing to exercise relatively greater control over their sexual behavior and thereby suggest pressure points or way in which change might be brought about for other women. However, because such analyses involve looking for differentials between women who are operating within the same gender system, their potential for increasing our understanding of the gendered ways of being and doing which constrain the possibility of women protecting themselves against HIV is limited. Finally, condom use cannot

be considered as reflective of greater female power or a more egalitarian relationship between partners. In many cases, condom use is related to the unilateral exercise of power by the male partner. The conflation of condom use for contraceptive purposes with condom use as an HIV-protective behavior complicates our search for predictors of use. Taken together, these methodological complexities suggest the need for more careful development of indicators of couple dynamics and empowerment of women and the integration of qualitative and quantitative approaches if we are to better understand the form and scale of gendered constraints to HIV-protective behaviors.

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