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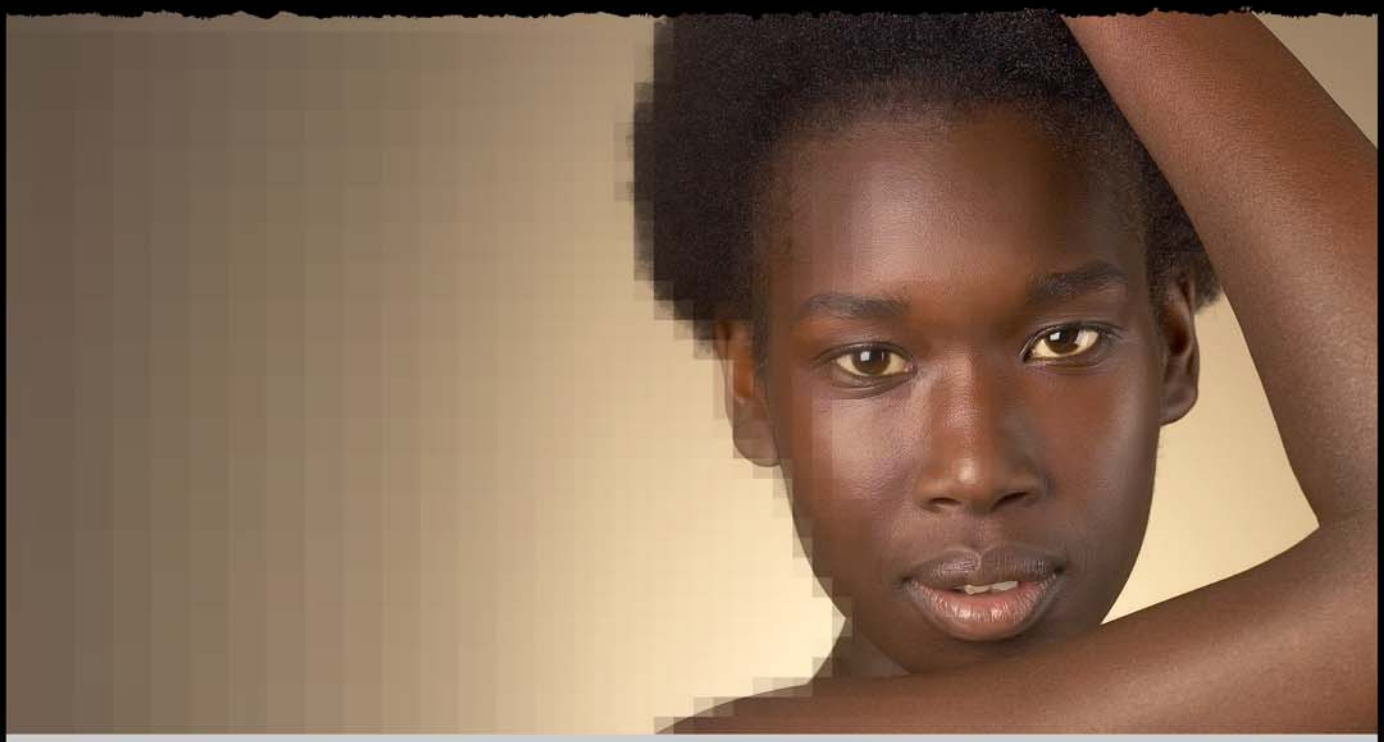

A FOCUS ON GENDER

COLLECTED PAPERS ON GENDER USING DHS DATA

August 2005

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A Focus on Gender

Collected Papers on Gender Using DHS Data

ORC Macro
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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).

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AUTHORS

Alaka Malwade Basu, Cornell University, USA

Martyn Brookes, Westminster Primary Care Trust, UK

Sonalde Desai, University of Maryland, USA

Michelle J. Hindin, Johns Hopkins Bloomberg School of Public Health, USA

Mian Bazle Hossain, Morgan State University, USA

Kiersten Johnson, ORC Macro, USA

Sunita Kishor, ORC Macro, USA

Gayatri Brij Koolwal, Cornell University, USA

Zoë Matthews, University of Southampton, UK

Zubia Mumtaz, David Thompson Health Region, AB, Canada

Sara Salway, University of Sheffield, UK

Emma Slaymaker, London School of Hygiene and Tropical Medicine, UK

R. William Stones, University of Southampton, UK

INTRODUCTION

Sunita Kishor

The MEASURE *DHS*+ phase of the Demographic and Health Surveys (DHS) project that was initiated in the last quarter of 1997 saw an increased effort to integrate gender into all aspects of the project, including in the content of DHS survey instruments. Accordingly, during the months following the launch of MEASURE *DHS*+, advisory groups of gender experts were constituted to provide input into the revision of the DHS questionnaires. Meetings over the next year led to several recommendations for gender-related changes/additions to the DHS women's and men's core questionnaires, as well as for the formulation of new or the revision of existing gender-related modules. In particular, the advisory groups advocated the inclusion of new questions on women's participation in household decisionmaking and on gender roles. In addition, new, more standardized questionnaire modules were formulated that provided information on women's status, domestic violence, and female genital cutting.

By early 2003, the revised DHS women's questionnaire (which included one or more of the new gender questions) had been implemented in more than 20 countries and the modules had been implemented in several countries. Given the large amount of new DHS gender-related data, it was decided to fund research that would explore the new gender-related DHS data within the context of demographic and reproductive health outcomes. The objective of the activity was to further the understanding of the role of gender in achieving desired population and health outcomes in the developing world. Given the importance of DHS data for the developing world, and the large sample sizes of these nationally representative surveys, any conclusions drawn about the role of gender will have relevance for development policy.

To this end, DHS, with funding from United States Agency for International Development (USAID) under the first phase of the MEASURE contract, invited papers from researchers recognized for their work in the areas of demography, reproductive health, and gender. The researchers were asked to focus on different demographic or health outcomes of interest to them and explore how and whether gender-related factors played a role. It was initially planned that authors would present their papers at a symposium to be held in Washington, D.C., in late 2003. For various reasons, the symposium was cancelled; however, this volume presents the five invited papers (and one written by DHS staff) as a group of working papers. We consider this collection to be a major contribution to the use of research to highlight the role of gender and related issues in achieving desired demographic and health outcomes. It is hoped that all of these papers will be revised and published in peer-reviewed journals and/or books.

To provide a context for the research presented in this collection, this introductory chapter presents information on the types of specific gender data now available in the DHS surveys and highlights the main findings of the papers included in this volume.

1 GENDER IN THE DEMOGRAPHIC AND HEALTH SURVEYS

The DHS surveys have typically provided information on fertility, mortality, family planning, and important aspects of health, nutrition, and health care for women and children, as well as for men, in several countries. Since 1984, DHS surveys have been conducted in over 70 developing countries around the world. The DHS program uses scientific sampling to collect, from

eligible individuals in sampled households, a comparative body of nationally representative information on population, nutrition, and health issues. Cross-cultural comparability of data is derived by implementing a core of near-identical questions across countries; additional country-specific information needs are met by including country-specific questions and/or special DHS modules. Three core questionnaires are commonly used by DHS: a household questionnaire, a woman's questionnaire, and a men's questionnaire. If comparable information is needed for a large number of countries on any given topic, it is important to include relevant questions in the appropriate core questionnaire, because it is these questionnaires that are implemented with little change across countries.

The data traditionally derived from the DHS core questionnaires can be used to develop a large number of indicators that indirectly shed light on gender relations and are commonly used to measure women's status and empowerment (Kishor and Nietzel, 1996). However, until the late 1990s, there were almost no questions that directly explored the gendered context of health and demographic outcomes. As mentioned earlier, in the first phase of the MEASURE *DHS*+ program (the fourth round of the DHS), advisory groups were formed to guide the integration of gender questions into DHS questionnaires. The identification of the gender questions to be included in the core questionnaire had to conform to several DHS-specific constraints, the most cogent of which was that DHS surveys are household surveys and the main focus of the surveys has traditionally been women of reproductive age. Hence, any investigation of gender had to be based on information that pertains to and can meaningfully be collected from individuals in households.[1] Additional constraints included: a) all questions needed to be implementable with little or no change in all DHS countries, b) questions needed to be relevant for understanding population, health, or nutrition (PHN) outcomes and changes in outcomes over time, and c) given the length of the DHS questionnaires and several competing priorities for the limited space on the survey, only a few core questions specifically addressing gender issues could be defined.

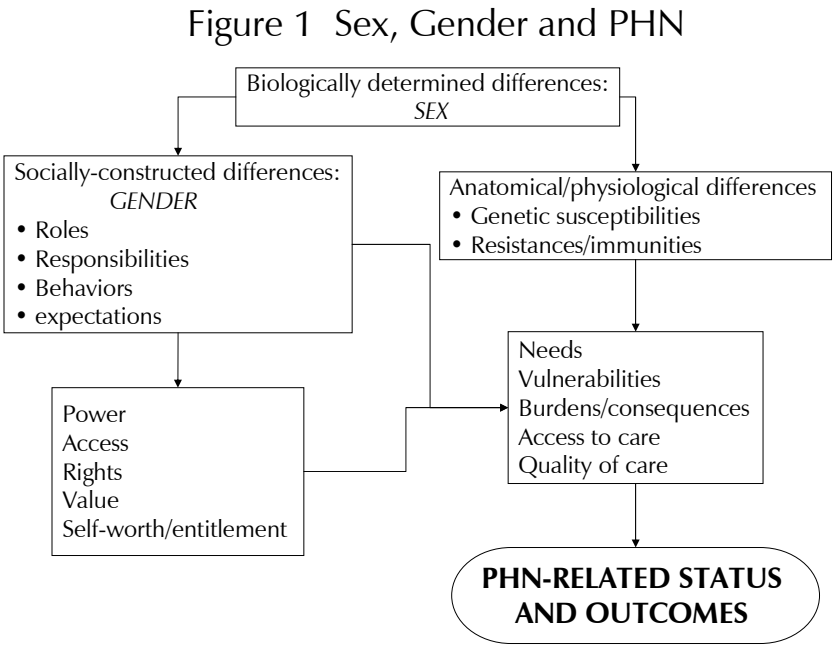
The inclusion of specific gender questions in the DHS questionnaires was guided by a common understanding of what gender is, how it relates to sex, and how sex and gender together and separately have the potential for affecting PHN outcomes. Figure 1 below summarizes these relationships. The biologically determined sex of an individual affects PHN outcomes because of anatomical and physiological differences and genetic susceptibilities and immunities associated with being biologically female or male.[2] By contrast, gender is the socially constructed derivative of sex and encompasses the different roles, rights, expectations and obligations that culture and society attach to individuals according to whether they are born with male or female sex characteristics. Different roles, rights, expectations, and obligations translate into differences in relative power, control of and access to resources, the value placed on survival and health, and the sense of entitlement and self-worth of women and men. While sex points to differences between men and women, gender makes men and women not just different, but also unequal: the rights, roles, and obligations of women tend to be subordinated to those of men. In many instances, gender-based power differentials give men not only greater absolute power than women, but also power over

[1] Once collected, the information can be aggregated to get community-level indicators, but the nature of the information would necessarily reflect the experience of individuals or describe how gender plays out at the household level.

[2] These differences go well beyond the most fundamental difference between the sexes, the ability to bear a child. Examples include women's greater susceptibility to iron deficiency anemia because of menstruation and increased susceptibility to HIV infection than men and men's lower life expectancy at birth compared with women, all else being the same.

women. Such gender differences in power, roles, rights, and entitlement affect women's and men's health, survival, nutrition, and fertility control, because they translate into differences in the kind of work men and women engage in and, relative to men, women's lower control over their bodies and sexuality, greater restrictions in accessing material and nonmaterial resources such as knowledge and information, and greater constraints in accessing needed health care, among other things.

Figure 1 Sex, Gender and Population/Health/Nutrition (PHN)



In keeping with this conceptualization of gender, DHS introduced four sets of gender-related questions into the women's core questionnaire in 1999: questions on women's participation in household decisionmaking, questions on gender-related hurdles in accessing health care, and two sets of questions on women's acceptance of gender-role norms that justify men's control over women. These questions are in addition to questions traditionally included in the DHS that yield several widely used indicators of women's status such as indicators of women's education, media exposure, employment and earnings control, and age at marriage and first childbirth. All of the new questions can be used to monitor women's empowerment within specific gender contexts. A focus on empowerment of women is justified given the gender differentials in power between women and men. Each of the new gender-related questions are discussed below.

Women's participation in household decisionmaking. Decisionmaking in households, particularly who participates in and has control over the process, is an aspect of gender relations that has both cross-cultural and household-level relevance. The choice of decisions to ask about in the woman's core questionnaire was guided by the need to make included decision areas relevant to all women whether they were currently married or not and had children or not, while also covering different aspects of household and individual functioning. Accordingly, the following question is asked of all women:

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?

Responses are coded as "Respondent"; "Husband/partner"; "Respondent and husband/partner jointly"; "Someone else"; "Respondent & someone else jointly"; and "Decision not made/not applicable."

Most cultures ascribe domestic roles, such as cooking and cleaning, to women. Accordingly, decisions about food were included in the list with the expectation that most women would be making these decisions. The atypical woman would be the one not making the decision, rather than the one making it. Decisions about the two different kinds of purchases (large purchases and purchases for daily needs) were meant to tap into economic decisionmaking in the household, while allowing for variation in participation according to the relative amount of money to be expended and according to whether the decisions are routine or not (purchases for daily needs being more routine than large purchases). Participation in decisions about visits to friends and family was expected to be most culture-specific; this type of decisionmaking is less likely to involve women in cultures where women's freedom of movement is restricted and where their interaction with birth-family members is more closely monitored by husbands and in-laws than in other cultures. Finally, decisions about women's own health care were thought to be fundamental to their self interest and of direct relevance for bringing about PHN-related change.

Hurdles in accessing health care. Women can face several gender-related constraints in accessing health care, constraints that define what is appropriate behavior for women. To measure the extent of these types of constraints, DHS asked all women the following question:

Many different factors can prevent women from getting medical advice or treatment for themselves. When you are sick and want to get medical advice or treatment, is each of the following a big problem or not?

Getting money needed for treatment?
Knowing where to go?
The distance to a health facility?
Having to take transport?
Not wanting to go alone?
Getting permission to go?
Concern that there may not be a female health provider?

The last three of the listed problems are clearly gender sensitive. Gender roles do not always permit women to go alone to places, or to go without permission, or to see male health providers. Few such restrictions apply to men. The first four of the listed problems are likely to be problems for not just women but also men. Even so, with men having greater control over resources than women, it can be argued that problems such as having money for treatment will also be gender sensitive and represent a greater hurdle for women than for men.

Gender-role norms that justify men's control over women. Of particular relevance to demographic and health programs is the need to determine the extent to which women, often the targets of such programs, have control over their own behavior, bodies, and sexuality. Accordingly, the following two sets of questions that explore women's acceptance of norms that subordinate women's bodily integrity and sexuality to men were included in the DHS:

> *Sometimes a husband is annoyed or angered by things that his wife does. In your opinion, is a husband justified in hitting or 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 to have sex with him?*
> > *If she burns the food?*
>
> *Husbands and wives do not always agree on everything. Please tell me if you think a wife is justified in refusing to have sex with her husband when:*
>
> > *She knows her husband has a sexually transmitted disease?*
> > *She knows her husband has sex with other women?*
> > *She has recently given birth?*
> > *She is tired or not in the mood?*

These are both attitude questions, rather than questions that ask women about their own experience. Agreement with the justifications for a husband beating his wife or for a wife refusing her husband sex attests to the socialization of women in traditional gender-role norms that give husbands rights over the behavior and bodies of their wives. The presumption behind these questions is that truly empowered women would not accept such obvious gender inequalities in power; such women would not agree with any justification for a husband beating his wife and would believe that a wife should have the right to decide when and whether she wants to have sex with her husband. Even so, the justifications presented to respondents in both questions were carefully chosen to provide variation in the perceived seriousness of the behavioral-norm violation. For example, even among women who accept the norm that it is a woman's duty to have sex with their husband when he wants to, a wife refusing her husband sex because she has recently given birth is likely to be a less serious gender-role violation than refusing sex because she is "tired or not in the mood." Similarly, not cooking food well or burning the food should be less of a justification for wife beating than neglecting the children even among women who justify wife beating.

In addition to the gender questions in the women's core questionnaire and the men's core questionnaire,[3] gender information is also available through gender-related modules, including the women's status module, the domestic violence module, and the female genital cutting (FGC) module.

[3] Similar gender norm questions and questions about women's participation in household decisionmaking were also added to the men's core questionnaire.

Women's status module. This module contains questions on several topics pertinent to women's status, including the following:

- More information[4] on women's most recent marriage, including the respondent's involvement in the choice of her spouse, how long she knew her spouse before she was married to him, and the type of marriage. In some countries consanguinity in marriage is also measured.

- Co-residence with in-laws.

- Birth family information, including education and employment status of mother and father and interaction with and perception of support from the birth family.

- Additional questions on household decisionmaking that investigate whether women make decisions about their own employment, contraceptive use, and decisions about children's health and welfare and on gender-role attitudes.

- Several financial autonomy measures, including control over money for different types of expenditures, ownership of assets, whether respondent has and operates a bank account, and whether she knows about and participates in any micro-credit scheme.

To date, this module has been implemented in its entirety in only two countries, Cambodia and Haiti. Similar information was sought using an earlier version of the module in the 1995 Egypt survey.

Domestic violence module. This module contains questions that allow the estimation of the prevalence of spousal emotional, physical, and sexual violence, nonspousal physical violence, violence during pregnancy, and violence by women against their husbands. In addition, women who have experienced spousal violence are asked about the timing of the initiation of the spousal violence, frequency of violence, and whether they have ever sought help. Information is also collected on the extent of marital control exercised by the husband. By 2003, this module (or some part of it) had been implemented in six countries. The module comes with a list of recommendations for its ethical implementation.

Female genital cutting module. This module is implemented in countries known to practice FGC and provides information on knowledge and prevalence of FGC. Women who have daughters are asked whether their daughter(s) have been circumcised. If no daughters are circumcised, women are asked about their intentions to circumcise their daughters. Women who have been circumcised are asked about the type and timing of the circumcision and the type of circumcisor. If the respondent has a daughter who is circumcised, similar information is sought about the circumcision of the daughter. Finally, questions are included on perceived advantages and disadvantages of the practice and whether the respondent is in favor of the practice continuing or not.

[4] The DHS questionnaire already provides information on women's current marital status and age at first marriage, spousal age and educational differences, whether the most recent marriage is polygamous, and whether the woman has been married once or more than once. Information on the current spouse's age, education, and employment is also collected.

Four of the six papers in this volume use gender-related information from the women's core questionnaire, one paper draws on both the women's and men's questionnaires, and one paper draws on information contained in the domestic violence module.

2 HIGHLIGHTS OF THE PAPERS INCLUDED IN THIS VOLUME

The first five papers in this volume focus on the new gender questions in the core questionnaire, particularly the questions on household decisionmaking, and examine how women's autonomy and empowerment[5] affect different PHN outcomes of interest. The last paper changes the focus from empowerment and autonomy to gender-based violence. It examines whether PHN outcomes of interest vary by women's experience of domestic violence.

Common to several of the papers is an obvious struggle to define women's empowerment and/or autonomy and then to adequately measure it. Each paper resolves this struggle in different ways: the Basu and Koolwal paper focuses attention on two types of decisionmaking autonomy, that which is altruistic and that which is selfish, and the Desai and Johnson paper focuses on the role of empowerment at the community versus the individual level, while the Matthews et al. and Hindin papers try to resolve the issue through a multidimensional approach to operationalizing autonomy. The papers also differ in the way they situate the search for the relationship between women's empowerment and PHN outcomes of interest: the Desai and Johnson paper seeks to validate the relationship by looking for consistency of results across a large number of countries, the Hindin and Mumtaz et al. papers seek to validate the relationship within and between countries that are being ravaged by similar problems, the Matthews et al. paper examines the validity of the relationship within a matrix of urban/rural and slum/nonslum locales of a single state in India; and the Basu and Koolwal paper also situates the analysis in one state of India but examine two sets of different outcomes. Finally, the PHN outcomes studied by the papers include child health, nutrition and mortality, women's nutrition, maternal care and reproductive health, as well as their risk of sexually transmitted diseases and condom use.

All the papers make important contributions to our ability to define gender issues at the individual and community level and understand how gender-driven differences in autonomy and empowerment and status as well as the experience of violence relate to a wide range of PHN outcomes. The papers are briefly discussed below.

The first paper in this volume, "Two Concepts of Female Empowerment: Some Leads From DHS Data on Women's Status and Reproductive Health," by Basu and Koolwal, is primarily a search for indicators that truly reflect women's empowerment and only secondarily an attempt to determine whether women's empowerment is related to health outcomes. Basu and Koolwal draw a distinction between attributes and behaviors that are instrumental in achieving outcomes desired by others in the family, and hence not likely to be contested (e.g., cooking for the household and looking after children), and other more selfish attributes and behaviors that may bring benefits primarily to women themselves. Although both instrumental and selfish attributes and behaviors are often lumped under a single empowerment category, the authors argue that the presence of instrumental attributes and behaviors does not constitute empowerment. In fact, in the case of

[5] Autonomy and empowerment have different definitions and researchers often draw sharp distinctions between the two. Here we use them interchangeably because the authors of the papers in this volume have chosen to use one or the other, and because irrespective of whether it is called autonomy or empowerment, it is most often measured by women's participation in household decisionmaking.

instrumental behaviors, empowerment would better be represented by information on whether women have the right to not indulge in these behaviors. Do they, for example, have the freedom to choose not to cook food one day or not attend to their children? By contrast, selfish attributes and behaviors, such as those that reflect women's control over their own bodies or health and their ability to indulge in leisure activities, are likely to be truer measures of women's empowerment because they reveal women's ability to do things for themselves even though these may not be of benefit to anyone else and could potentially be resisted by others.

Basu and Koolwal use the 1998-1999 India National Family Health Survey (NFHS-2) data for the state of West Bengal to illustrate the altruistic versus selfish notions of female empowerment and their separate implications for a range of indicators related to women's own health and the health of their children. The paper finds that selfish behaviors and attributes correlate more closely with women's improved food consumption and better reproductive health, all variables that relate to women themselves, than with child health outcomes. In addition, several of the instrumental behavior indicators are uncorrelated or negatively correlated with women's own welfare indicators. Child health outcomes were, as expected, better correlated with a mother's instrumental attributes and behaviors. Accordingly, the authors argue that women's ability to take care of their own health is merely an extension of their ability to self-indulge in other selfish empowerment behaviors, and that such empowerment may not be that which is necessary to achieve desirable child health outcomes.

This paper is an important step forward in our exploration of definitions as well as measures of women's empowerment. It goes beyond the oft-mentioned multidimensionality of empowerment to questioning whether te commonly identified dimensions are indeed all measuring empowerment; equally important, the paper points to the potential for trade-offs between women's own health versus child health resulting from the presence of the different dimensions of empowerment. This latter issue also relates to the question posed in the next paper by Desai and Johnson. They, too, try to identify the pathways by which women's empowerment may be benefiting child health and survival, but approach the question in a different way.

The Desai and Johnson paper, "Women's Decisionmaking and Child Health: Familial and Social Hierarchies," uses a comparative framework of 12 countries to examine the importance of individual and community level empowerment of women for the health and survival of children. For the analysis, empowerment is operationalized in terms of whether women are making household decisions independently or not, with no distinction being made between the different types of decisions. Community-level empowerment is defined in terms of cluster-specific estimates of women's ability to make independent decisions. Three child health outcomes are examined, namely children's vaccination status, nutritional status, and child mortality. The authors argue that women's decisionmaking power might be associated with improved child health outcomes through at least three pathways, namely more efficient decisionmaking by empowered women regarding day-to-day health-enhancing behavior and regarding emergency care, and more child-oriented allocation of household resources when women have household power.

The Desai and Johnson study finds that children benefit from women's empowerment, but they benefit more from living in areas where a large number of women are empowered than from the individual-level empowerment of their mothers alone. In addition, the empowerment of women matters more for some child health outcomes than others, and in some settings than in others.

Women's empowerment has the most consistent positive effect across countries on children's height-for-age and less so on child immunization and child mortality. Since height-for-age is a long-

term nutritional status measure, the authors suggest that perhaps women's empowerment is more critical to the ensuring of day-to-day care and attention to the nutrition and health of children, including infection prevention, and to the ability to divert household resources to ensure the fulfillment of child nutritional needs, than for accessing emergency and other health care for the child. The latter are necessary for the prevention of child mortality and for immunization and, the authors suggest, even less empowered women may be able to work through others in the household to ensure the necessary access.

Desai and Johnson also find that the relationship between women's empowerment and child health varies be region: it is weakest in sub-Saharan Africa and strongest in South Asia, with the Latin American and Caribbean countries falling in between. Accordingly, the authors argue that the relevance and role of women's empowerment may in part be dependent on the historical and cultural gender systems prevailing in different settings.

Perhaps the most important contribution of the paper is to show how the gender context is consistently important for child health outcomes, and in most countries, more important than individual agency. Nonetheless, the dialectic of context and individual agency is not so easily disentangled. While individual agency may be thwarted and rendered ineffective where few women are empowered, community-level empowerment still depends on the cumulation of the empowerment of individual agents. Collective action that aims at empowering communities of women, the authors suggest, is likely to have more far reaching health benefits than the increase in empowerment of isolated agents.

The paper "Village in the City: Autonomy and Maternal Health-seeking among Slum Populations of Mumbai," by Matthews et al., starts from where the Desai and Johnson paper leaves off. They examine the role that direct measures of women's autonomy play in women's timely use of maternal health care services in different groups of populations that would loosely constitute a type of community: slum and nonslum populations in the metropolitan city of Mumbai, India, and other urban and rural populations of Maharashtra (the western state of India in which Mumbai is located).

The paper uses a combination of data from the 1998-99 India NFHS-2 survey for the state of Maharashtra and from the Mumbai Safe Motherhood Survey (MSMS), a small-scale survey conducted in six slum pockets of Mumbai in 1999. Several direct and proxy measures of autonomy are examined for women who have recently given birth. Women in Mumbai slums, much like women in the rest of nonslum Mumbai and urban Maharashtra, are found to have higher autonomy and more timely use of maternal care services compared with women in rural Maharashtra. While this is not unexpected, the paper also finds, unequivocally, that women in Mumbai's slums, who are often recent migrants from rural areas, have higher autonomy and better access to timely maternal care than women in non-Mumbai urban areas of Maharashtra. Thus, the health care advantages of living in Mumbai appear to flow to even the socioeconomically constrained slum population; importantly, this population has also made the transition to higher autonomy. Direct individual-level measures of autonomy, much more so than autonomy proxies such as education, are positive correlates of maternal-care uptake in slum areas; but what is perhaps the most important contribution of the paper is the finding that the role that women's autonomy plays in women's use and access of maternal health care varies by whether women have meaningful health care choices or not. Where women have health care choices, as do even women in Mumbai slums, women's autonomy becomes more important than where health care choices are constrained, as in rural areas.

The Matthews et al. paper makes an important contribution to the autonomy and reproductive health literature. Not only does it emphasize the importance of individual-level measures of women's autonomy in studying women's access and use of maternal care, but it also points to the need for a nuanced, context-specific approach to studying the linkages between women's autonomy and health. Like the Desai and Johnson paper, it argues that the community gender context is important and can be influential in negating the effects of individual-level autonomy; but it then goes on to illustrate the types of communities in which individual-level autonomy is likely to assist in achieving desired health care outcomes and where individual-level autonomy is not effective. It carefully illustrates that in communities, such as the urban slums of Mumbai, where the health care context provides women with real health care options, individual-level autonomy is more important than where such choice is limited as in rural Maharashtra. This paper thus has an important implication for most countries on the path to development: women's autonomy is likely to become more important as development makes more health care choices available even in conditions of lagging economic change.

The Hindin paper, "Women's Autonomy, Women's Status and Nutrition in Zimababwe, Zambia and Malawi," poses a somewhat different question from the others. It first recognizes that an increasing number of populations are faced with a dual crisis: HIV/AIDS and acute food insecurity. If this is a common condition of populations, it becomes imperative to understand the role, if any, that women's status and individual autonomy play in helping them secure enough nourishment to remain healthy in such settings. The three countries included in this paper, Zimbabwe, Zambia, and Malawi, provide just such a setting, with high proportions of adults living with HIV/AIDS and past and ongoing food shortages. The adequate nourishment and health of women has an added importance in these countries, since here, along with all of the other critical roles that women play, women are also often the producers of food.

The paper uses women's body mass index (BMI) to explore the linkages between autonomy and women's nutrition. In particular, the paper explores the effects of women's autonomy and relative status on their likelihood of having chronic energy deficiency (CED), defined as having a BMI <18.5. Several different measures of autonomy are included in the analysis. Women's status relative to their husband is measured in terms of spousal age, educational, and occupational differences. Women's own autonomy is measured by their participation in different household decisions. Unlike the other papers using the DHS decisionmaking information, Hindin defines three different variables: number of decisions in which women have the final say, number of decisions in which the partner has the final say, and number of decisions in which women and partners have a joint say. Women's self-perceived status within the society is proxied by using an index of the number of domains (among a maximum of five) where women see wife beating as justified. By including this variable that reflects community norms about the status of women, Hindin tries to account for the community-level gender contexts discussed and operationalized much more specifically in the previous two papers.

The hypothesis that women with lower autonomy as measured by the patterns of household decisionmaking are at an increased risk of CED is upheld in Zambia and Malawi, but not in Zimbabwe. In Zambia and Malawi, women's CED is related positively to partners making more decisions alone. However, importantly, making more decisions by themselves or having no participation at all from partners also marks women as nutritionally disadvantaged. Hindin suggests that perhaps such women are at higher risk because their partners are unable or unwilling to contribute to the household. This finding also ties in with the Desai and Johnson paper, by

suggesting that complete decisionmaking autonomy in contexts where such autonomy is not the norm may isolate women and increase their disadvantage rather than decreasing it. No such association is found in Zimbabwe, where women have substantially more autonomy than in either of the other two countries.

Despite some important caveats, the conclusion of this paper is that women who have less autonomy are at a greater risk of having compromised nutritional status in societies ravaged by food shortages and disease and where female autonomy is low. This finding has implications that go well beyond the individual woman, since CED diminishes the productive capacity of women who are also often the producers of food. The policy implication is also clear: empowering women in food constrained societies, particularly in countries ravaged by the HIV epidemic, is likely to have benefits for the women, for their families, and for diminishing food insecurity for all.

The paper "Condom Use in Uganda and Zimbabwe: Exploring the Influence of Gendered Access to Resources and Couple-level Dynamics," by Mumtaz, Slaymaker, and Salway, examines the ways in which gender affects the adoption of behaviors that protect against the risk of HIV/AIDS. This paper takes as its point of departure the fact that one of the important consequences of gender construction is the justification of a hierarchy between the two sexes, which leaves women with less access to a variety of social, economic, and political resources than men. Since health and illness are gendered phenomena, the spread of HIV/AIDS has been influenced by gender systems and their inherent inequalities. Gender systems may promote the spread of HIV/AIDS through a number of routes, including reinforcing masculine identities that support dominance, sexual freedom, and sexual satisfaction for men; inequitable resource allocation, which creates women's dependence on men; and creating complex interplays between the norms and realities of partnership formation, which lead to multiple sexual partners and barriers to condom use. However, little is known about the ways in which gendered inequalities in access to resources and couple dynamics ultimately influence the adoption of protective behavior regarding HIV/AIDS.

Accordingly, this paper uses DHS data from the women's and men's questionnaires from Zimbabwe and Uganda, both countries with relatively high rates of HIV/AIDS, to examine the way 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. The outcome in this study, condom use at most recent sex, is the only feasible protective behavior available to individuals who are in a relationship in which sex is expected. The gender-related explanatory variables include the level of partner communication, patterns of decisionmaking, couple characteristics, and relative resource control in the partnership.

Despite the careful defining of different gender-related variables, this paper does not provide consistent support for the hypothesis that condom use is related to greater autonomy of women, although access to resources, particularly in the form of knowledge, is related to condom use. One of the most relevant factors for condom use is the socio-legal status of the relationship, with condoms being least likely to be used during sexual intercourse between partners who are married to each other. The use of a condom is usually motivated by the need to prevent pregnancy and not from a need to prevent infection. In light of these factors, the lack of a relationship between women's autonomy and condom use spurs the authors to question the validity of the hypothesis in important ways. They question whether gender power measured with indicators pertaining to women's own households and marital relationships should be expected to affect the use of condoms, in light of the fact that condoms are most likely to be used only in non-marital relationships. There is also the

question of whether the use of the condom can necessarily be equated to meeting the desires of the woman alone. Depending on the circumstance, condom use could also reflect men's power over the women with whom they want to have sex but do not want to bear the responsibility for children.

This paper calls attention to the need for a more careful definition of measures of couple dynamics and women's empowerment that can be used to evaluate gender power across relationships of various types. It further suggests that such relationships are better studied through a combination of qualitative and quantitative research.

The final paper in this volume, "Women at the Nexus of Poverty and Violence: How Unique Is Their Disadvantage?" by Kishor and Johnson, uses information collected with the DHS domestic violence module in Cambodia, the Dominican Republic, and Haiti. The paper examines whether and how women who are poor and have experienced domestic violence differ from other women, particularly poor women who have not experienced violence and non-poor women who have experienced violence. Poor women are those living in the bottom quintile of households arrayed according to a widely accepted wealth index. Women in different poverty/violence categories are compared both in terms of their individual, marital, and household characteristics and for selected reproductive health outcomes. The paper finds that women at the nexus of poverty and violence are not unique; they share with other poor women the characteristics that accompany poverty and with non-poor women who have experienced violence, the characteristics associated with violence. Also, for four different reproductive health outcomes, namely, ever having a non-live birth, having a sexually transmitted infection, having an unwanted birth, and contraceptive discontinuation, the paper conclusively finds that domestic violence increases the likelihood of a negative health outcome for all women, poor and rich.

The contribution of this paper is to underscore the need to take seriously the negative effects of domestic violence on women's health. It strongly suggests that domestic violence is not just a problem of the poor and is not just a problem that compromises women's physical health alone. The effects of domestic violence go far beyond to affect other aspects of women's reproductive life, their ability to have only the births they want, their ability to use contraception for as long as they need it, and their ability to protect themselves from sexually transmitted infections. In addition, the paper points to at least one intergenerational effect of violence, in that women who experience violence, rich or poor, are more likely to have ever had a non-live birth.

Together these papers add greatly to our understanding of the ways in which gender issues, situated largely within the household but also in the communities in which the households are located, affect many different demographic and health outcomes. However, the relationships uncovered are not all in the direction that may be predicted by advocates of women's empowerment. In fact, some aspects of women's empowerment are more beneficial for women's own health and share of household resources, including food and leisure, and some for women's access to health care, while others are more relevant to the health of children for whom women tend to be the primary caregivers. The papers also point to the fact that women's empowerment may be more important in settings where, in fact, women have more options than in others. There is also evidence that sometimes what matters is not individual-level empowerment but the empowerment of communities.

The conclusion of this collection of papers is that the gender context of households is important: women's ability to control various aspects of their own lives and the lives of their children remains cogent in achieving a large number of demographic and health outcomes. However,

women's empowerment is most likely to benefit women and to achieve other desired demographic and health goals when empowered women are not isolated but are embedded in empowered communities and have meaningful health and demographic choices.

REFERENCES

Kishor, S. and K. Neitzel. 1996. *The Status of Women: Indicators for Twenty-Five Countries.* DHS Comparative Studies No. 21. Calverton, Maryland, USA: Macro International Inc.

TWO CONCEPTS OF FEMALE EMPOWERMENT: SOME LEADS FROM DHS DATA ON WOMEN'S STATUS AND REPRODUCTIVE HEALTH

Alaka Malwade Basu and Gayatri Brij Koolwal

1 INTRODUCTION

In a seminal paper in 1983, Dyson and Moore introduced the concept of female autonomy to explain regional differences in demographic behavior in India. That paper and that concept inspired such an excited response in the literature that a Popline search on autonomy today produces more than a thousand hits. A related followup word, empowerment, gets even more hits.[1] These are astounding numbers and attest to the ideological and empirical appeal of the idea that as women begin to have a greater say in affairs, that is, as they become more autonomous, their families prosper demographically because birth and death rates in their households fall.

Dyson and Moore's paper, and one that followed closely on its heels (Mason, 1986), triggered numerous attempts to define female autonomy in terms of freedoms to do various kinds of things. This led to attempts to empirically measure female autonomy, initially at more local levels (e.g., Basu, 1992, referring to data collection in 1985-86). The emphasis on measurement issues soon overwhelmed interest on what the word itself meant (for a rare exception, see Jeffery and Basu, 1996, and the papers within). Using a Third World (and especially South Asian) cultural context, much of the literature zeroed in on physical mobility and control of decisionmaking within and outside the home as meaningful indicators of female autonomy. These indicators were useful because a few simple questions on this in small and large surveys were able to get a measure of female autonomy. They were also self-justifying because they were shown in these empirical surveys to have an association with lower fertility and lower infant and child mortality. These associations were often at the community level (e.g., Basu, 1992; Mason and Smith, 2000) as well as at the individual level (e.g., the references in Jejeebhoy, 1995).

Once such measures had been devised, the jump from "ability to go to the market" and "ability to decide what to cook," to autonomy and freedom was rapid and the spirit of the academic findings soon entered the activist literature and into documents such as Cairo plan of action (Sen et al., 1994). It is true that this spirit was derived more from the conceptualized autonomy effects of factors such as female education rather than direct measures of autonomy and empowerment, but they did posit empowerment as the relevant determinant of demographic behavior.

All of this work has been useful for demographic and gender policy, but has tended to beg the question of semantics. Trying to unpack the findings in this literature in new ways might help us better understand what it means for a woman in the Third World today to be autonomous or empowered. In this paper, we try to examine some of the implications of autonomy for women themselves. We do not question the finding that these survey measures of autonomy are correlated with strong positive effects on family welfare, but we ask if these measures of autonomy might have different implications for families and for women themselves. We use these different field-survey measures of autonomy to explore the question of whether there can be two kinds of empowerment, with somewhat different underlying capacities and freedoms involved.

[1] A search on February 23, 2004 produced 1,304 hits for *autonomy* and 2,275 for *empowerment*.

Since this is not a philosophical treatise on the meaning of personal autonomy, we will concentrate on the ways in which we use these words in the demography literature. Of necessity, we use them in a very practical way, but we also make some value judgment when we use them. By definition, autonomy and empowerment are good things, to be sought for themselves in addition to their side effect of inducing desirable demographic outcomes. We do not question that empowerment is a good thing in itself. We are concerned here with the question of whether what we measure as empowerment really represents empowerment as we tend to think it does.

While words like "autonomy" and "empowerment" are often used interchangeably, there have also been some attempts in the literature to distinguish between the two. The most popular distinction (e.g., Dixon-Mueller, 1998) seems to be one between the freedom or liberty to do certain things (autonomy) and the ability to resist controls over one's life or resist the denial of one's rights (empowerment). To the extent that no freedom is really complete (not even the freedom of the patriarch), Dixon-Mueller qualifies her definition by defining empowerment as the capacity to resist arbitrary controls and the denial of just right.

The word "process" is frequently used to distinguish between the two concepts. Malhotra, Schuler, and Boender (2002), for example, assert that empowerment is a process, the process through which women (since we are speaking of female empowerment) become able to resist contrary pressures and take charge of their own lives. In other words, they treat empowerment as a verb, as something that is happening, not something that has happened. Dixon-Mueller, on the other hand, thinks of empowerment both as a process (that of becoming empowered) and as a condition (that of being empowered). Dixon-Mueller's definition is more compelling because it allows one to identify more easily the empowered woman—once she is empowered she is presumably capable of doing things with this power that are more readily measurable than the activities that go into her acquiring the power to make her own decisions.

Seen in these ways, the empowered woman is presumably the autonomous woman, and it is not surprising that for operational research purposes the words tend to be used interchangeably (e.g., Jejeebhoy, 2000). Indeed, as Malhotra, Schuler, and Boender (2002) chronicle, the demographic literature is rife with even more words and phrases to describe what may vary in its details but in essence encapsulates a woman's ability to take charge of things in general and their own lives in particular. They record the frequent use of such words and phrases as agency and status (Gage, 1995; Tzannatos, 1999); women's land rights (Quisumbing et al., 1999); domestic economic power (Mason, 1998); bargaining power (Beegle et al., 1998; Hoddinott and Haddad, 1995); power (Agarwal, 1997; Beegle et al., 1998; Pulerwitz et al., 2000); or gender equality or gender equity (the World Bank, various years).

While we understand Malhotra, Schuler, and Boender's (2002) philosophical frustration with the many ways of describing what is presumably the same thing, from a purely empirical point of view, we do not think that this is a grave problem. Our concern instead is with some words that are missing from their list. In particular, we find it significant that nowhere in the discussions of female autonomy does the word responsibility occur. The idea of responsibility is of course implicit in Dixon-Mueller's use of the word "arbitrary" to characterize the controls that the empowered woman should be capable of resisting. This is more explicit in the Cairo document itself, which talks of the rights of women and families to decide freely and responsibly on the number and timing of their children.

We are concerned with the word "responsibility" here in a different way, the finding that rarely is the possibility entertained that what one defines and measures as female autonomy (however named) might in fact sometimes be not the woman's freedom to make her own decisions as much as the ability to make certain kinds of decisions and the responsibility to make only these kinds decisions. In other words, if the woman who appears autonomous or empowered in answers to questions about her decisionmaking ability on what to cook, to go to the market, or to take a sick child to the hospital will appear as autonomous or empowered when the questions are phrased somewhat differently to ask if she can choose to neglect these decisionmaking duties.

This aspect of autonomy becomes even more salient when we define autonomy on a graded scale in which the completely autonomous woman is the one who has full rights to decisionmaking on a matter. When this happens, it is likely to be a case of her having full responsibilities rather than full rights, other members of the household (the spouse in particular) abdicating their share of responsibility.

To explain this problem, we need to reflect a little more on the idea of freedom and its relationship to empowerment. That is, one needs a working definition of autonomy. As used and promoted by the contemporary discourse, it implies things such as freedom in decisionmaking, a control over one's life. But, in fact, Dyson and Moore (1983) are much more careful in the way they define the word. By autonomy they mean, "the capacity to manipulate one's personal environment" and "the capacity—technical, social, and psychological—to obtain information and to use it as the basis for making decisions about one's private concerns and those of one's intimates."

The first part of this definition says nothing about agency or individual freedom. The capacity to manipulate one's environment can be treated as a largely technical asset—the kind that education, for example, confers because it teaches women to recognize the first signs of illness, provides them with information on the medical facilities in their area, or teaches them the discipline of following the instructions of medical practitioners. These are all abilities worth having and the limiting effect of their absence is easy to imagine. Of course this is a kind of empowerment if by empowerment we mean the ability not to be flummoxed by written (or even oral) instructions but it is not so if we use the term to refer to the freedom to make choices.

Just because a woman says that she can go to the market on her own, that she makes decisions about what to cook for dinner, or about taking a sick child to the doctor, can we assume that she is autonomous in more than the technical manner that a narrow interpretation of Dyson and Moore's definition allows? Technical in the sense that if you can read, go to the market, or take a child to the doctor you are more exposed to information and more likely to get a child medically treated.

Freedom and choice is increasingly the way we define autonomy in the literature and it is with this notion in mind that our survey questions are usually designed. However, even if survey instruments like the Demographic and Health Surveys (DHS) are explicit about the limitations of their survey questions, the analysis we do from the data generated from these questions too easily implies that we are measuring what freedom is supposed to mean in an ideal world—an expansion of choices and freely made choices.

Another way of looking at the relationship between autonomy/empowerment and freedom is to ask what the penalty is for making choices contrary to what is commonly believed to be a demonstration of freedom. If an educated woman does not take charge of family health or does not

decide on the evening dinner menu, can she claim the excuse of exercising her freedom and get away with it? She knows that there are certain expectations of her as an educated woman, not only from her family, but from society and, increasingly, the state. The state has been quick to embrace relatively non-political interventions, such as expanding women's education, while neglecting to take charge of other crucial public health measures that are determinants of health as well (Basu, 1997; Desai and Alva, 1998)

We use these concepts of conditioning and punishment or penalty when we talk of undesirable behavior, such as women eating last in a home, women not seeking economic independence, or women remaining in a bad marriage. Here we suggest that the same reasoning can be applied to women maintaining egalitarian relations in the home, or insisting on taking paid work, or walking out of a bad marriage. We might still prefer the second kind of conditioning and obedience of social expectations because we begin with some basic ideas about what constitutes the good or the just life—and surely a world of gender equality, low child mortality, and (with some argument) low fertility constitutes such a life. Therefore, we can seek these goals even if we know that they are attained by as many constraints on people's behaviors as are the currently unjust outcomes in many parts of the world.

Although there are too few studies of what happens when deviation from approved norms occurs, one contemporary example comes from a survey in France (Blayo and Blayo, 2003) in which high fertility women (women with three or more pregnancies) were asked about societal responses to their third and higher order pregnancies. The pressure these women faced from husbands, peers, and even doctors to be more responsible, to at least consider an abortion, were so enormous that many of these women did abort their pregnancies.

There are specific examples of conditioning and pressure leading to desirable behavior that can not automatically be labeled autonomy or exercise of free choice. DHS data sets provide us with some of the best empirical methods of addressing the issue. Our primary concern is pragmatic rather than philosophical; fortunately, DHS has collected a large body of detailed information on women's status as well as a range of demographic and health outcomes.

In the following sections, we use the India National Family Health Survey (NFHS-2) to try to separate out measures of female autonomy and decisionmaking ability, which may reflect women's ability to take what might be called selfish charge of things, from measures that might be more ambiguous. These more ambiguous measures can include looking at women's exercise of choice and freedom, but they can also be construed as being instrumental, as giving women the responsibility and the technical ability to become better wives and mothers and to thus improve family welfare.

Our outcome measures are all directly or indirectly health related, but we select them to conceptually reflect two different kinds of maternal abilities and freedoms, one of which might be more contested than the other. When women's education and autonomy result in better conditions of birth and childcare, this can be achieved because these maternal abilities are useful to the family as a whole and are therefore not resisted in intrahousehold relationships. That is, women's autonomy here is being used for relatively altruistic purposes. Women's "status" correlations between childbirth

and childcare are as likely to be "instrumental" characteristics of women as they are to be manifestations of a deeper level of freedom and control.[2]

When women's autonomy is put to the service of meeting their own health and other needs, it is quite possible that there is much greater resistance. The extent to which women control their own bodies and health may be a better indicator of empowerment. That is, the goal of women's autonomy is not just to make them better wives and mothers. It is (or should be) as important to aim for a level of autonomy that makes them more conscious of their duties to themselves and their own welfare, physical as well as mental/emotional.

The demographic literature that emphasizes female empowerment for developing countries tends to focus on the instrumental strengths of female empowerment, even as it adds that female empowerment is good and right. This is a strategically useful emphasis because policymakers are always interested in addressing as many issues at a time as possible. The female empowerment literature from developed countries tends to emphasize the value of this empowerment as a means of serving women's self-interest (e.g., England, 2000), wherever this self-interest might lie. In this paper, we adopt this perspective of separating out the self-interest value of empowerment from its instrumental properties.

The NFHS-2 is rich with information that allows us to explore some of these distinctions. This paper will use the data for the state of West Bengal to describe some of these altruistic (instrumental) versus selfish (self-interest) notions of female autonomy, their implications for health outcomes, and their larger socioeconomic and cultural contexts.

2 THE DATA

The 1998-1999 NFHS-2 data for India were collected across 26 states in two phases, starting in 1998 and ending in 1999, and covered a representative sample of about 90,000 ever-married women age 15-49. Aside from collecting data on population, health, and nutrition, NFHS-2 added to the original survey by including data on the quality of health and family planning services, domestic violence, reproductive health, anemia, the nutrition of women, and the status of women. Hemoglobin levels were also included in NFHS-2 to assess the nutritional status of women and children.

In this paper, we have tried to use this rich data set to empirically estimate the individual effects of household and respondent characteristics on two categories of health related outcomes—those referring to the woman herself and those referring to her children. The estimation, specified by logistic regression, was applied to data from West Bengal. Odds ratios were then used to interpret the effects of the explanatory variables for each of the different outcome variables.

Summary statistics are presented in Tables 1 through 7; unless otherwise specified, each dependent variable was run on the same list of explanatory variables.

[2] As Kishor (2000) illustrates, even within a single category of outcome such as child health and survival, different dimensions of female empowerment may affect different proximate determinants of this outcome. We suggest that empowerment is not just multidimensional; it is also possible that we are including in our measures of empowerment variables that are not really empowering.

Table 1 Respondents' food consumption, 1998-1999 NFHS-2, West Bengal, India				
Variable	Description	Sample breakdown[1]		Sample size
Milk and curd	1 = Weekly or daily, 0 = Less than weekly	70.8% 29.2%	Weekly/daily Less than weekly	4,408
Fruits		79.0% 20.9%	Weekly/daily Less than weekly	4,408
Eggs		51.9% 48.0%	Weekly/daily Less than weekly	4,408
Chicken, meat or fish		27.2% 72.8%	Weekly/daily Less than weekly	4,408

[1] Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.

Table 2 Respondents' health, as related outcomes, 1998-1999 NFHS-2, West Bengal, India				
Variable	Description	Sample breakdown[1]		Sample size
Whether the respondent has severe or moderate anemia[2]	0 = Severe anemia (less than 7 g/dl) or moderate anemia (7-9.9 g/dl), 1 = Mild anemia (10-11.9 g/dl) or normal	14.3% 75.0%	Severe or moderate anemia No severe or moderate anemia	4,121
Respondent's Body Mass Index[2]	0 = Less than 18.5 (nutritional/chronic energy deficiency), 1 = 18.5 to 29.9	36.6% 55.0%	Deficiency No deficiency	4,121
Whether the respondent suffered health problems after the last birth[3]	0 = Yes, 1 = No	61.6% 36.6%	Yes No	1,147
Whether the respondent suffered from any reproductive health (RH) problems in the last three months[4]	0 = Yes, 1 = No	41.02% 54.74%	Yes No	4,408
Did respondent see anyone for advice or treatment to help her with the above-mentioned RH problems[4]	0 = No, 1 = Yes	70.5% 28.5%	No Yes	1,808

[1] Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.
[2] Estimation was run on the sample of women who were not currently pregnant and who had not given birth in the last two months.
[3] Night blindness; blurred vision; convulsions from fever; swelling of legs, body, or face; excessive fatigue; anemia; or any vaginal bleeding. NFHS recorded this variable only for women who had given birth in the last 5 years, for the last-born child 2 years of age and less.
[4] Problems with vaginal discharge; pain or burning while urinating/frequent or difficult urination; pain during intercourse and/or blood after sex.

Table 3 Respondents' overall health, as related to pregnancy, child health outcomes, and children's immunizations, 1998-1999 NFHS-2, West Bengal, India

Variable	Description	Sample breakdown[1]		Sample size
Whether the respondent received antenatal care in last pregnancy[2]	0 = No, 1 = Yes	9.5% 88.7%	No Yes	1,147
Did respondent deliver her last baby in a hospital or other medical facility[2, 3]	0 = No, 1 = Yes	48.4% 49.4%	No Yes	1,147
Whether the last-born child is alive[4]	0 = If the child died within the first five years of life, 1 = Yes	2.4% 97.5%	No Yes	1,870
Whether the last born child has moderate/severe anemia[5]	0 = Severe anemia (less than 7 g/dl) or moderate anemia (7-9.9 g/dl), 1 = Mild anemia (10-10.9 g/dl) or normal	42.3% 48.1%	Yes No	661
All vaccinations: Polio (1, 2, 3), DPT (1, 2, 3) and Measles[6]	0 = No, 1 = Yes	41.0% 50.8%	No Yes	712
No vaccinations[6]	0 = No, 1 = Yes	74.1% 14.0%	No Yes	712
At least one vaccine[6]	0 = No, 1 = Yes	13.1% 31.0%	No Yes	712

[1]Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.
[2]NFHS recorded these variables only for women who had given birth in the last 5 years, for the last-born child 2 years of age and less.
[3]This includes facilities in the public medical sector, NGO/trust hospital or clinic, or private medical sector (as opposed to at her own home, parent's home, or other home).
[4]We took women who had given birth in the last 5 years, to control for institutional and other time-related factors (quality of health care, etc.) that may affect the probability of the child's survival.
[5]NFHS recorded these variables only for women who had given birth in the last 5 years, for the last-born child 2 years of age and less. Children less than one year of age were excluded.
[6]Data for children's immunizations were collected in the survey only for children who were alive; as a result, for households where the last-born child had died, data on immunizations of the second-last born child (including the sex of the second-last-born child), if available, were used instead. Also, Polio 0 was excluded from the polio vaccination list, and BCG was also excluded in the analysis, since they are generally given at birth and we wanted to capture more of the respondent's and/or household's choices for their children rather than conditions at birth.

In our interpretation of results, we group the explanatory variables (Tables 4 through 7) into three categories. The first category includes the standard socioeconomic determinants of health outcomes. We treat the education of the respondent's husband as one more marker of socioeconomic status; this is why we have included it in the set of socioeconomic variables in our analytical tables. We treat the education of the respondent herself as both a socioeconomic marker as well as an empowerment one, but in our presentation we keep it in this first list because we wish to avoid giving it the status of a proxy for autonomy that is so automatically given to it in the contemporary literature. We then try to separate some of the remaining explanatory variables into a category that reflects what we call empowerment as self-indulgence. This category includes measures that stand for the woman's ability to do things for herself. The residual category consists of measures that might expand her freedom to think for herself but are more likely to reflect her enhanced capacities to act in the best interest as far as family health outcomes are concerned. That is, they might be a measure of technical ability and responsibility rather than freedom as defined by the ability to freely choose how to run her life.

Table 4 Demographic and socioeconomic characteristics, 1998-1999 NFHS-2, West Bengal, India

Variable	Description	Sample breakdown[1]		Sample size
Urban/rural dummy	0 = Rural, 1 = Urban	55.8% 44.2%	Rural Urban	4,408
Scheduled caste, scheduled tribe, other backward caste	0 = Yes, 1 = No	31.2% 68.4%	Yes No	4,408
Household Standard of Living Index	0 = Low, 1 = Medium, 2 = High	34.9% 44.4% 18.9%	Low Medium High	4,408
Number of household members	_	5.99	Sample mean	4,408
Sex of household head	0 = Male, 1 = Female	88.9% 11.1%	Male Female	4,408
Respondent's partner's education attainment[2]	0 = No education (N), 1 = Incomplete primary (IP), 2 = Complete primary (CP), 3 = Incomplete secondary (IS), 4 = Complete secondary (CS), 5 = Higher (H)	24.3% 18.2% 5.5% 23.7% 8.4% 19.2%	N IP CP IS CS H	4,408
Respondent's educational attainment[2]	0 = No education (N), 1 = Incomplete primary (IP), 2 = Complete primary (CP), 3 = Incomplete secondary (IS), 4 = Complete secondary (CS), 5 = Higher (H)	38.7% 17.8% 5.3% 21.7% 5.9% 10.3%	N IP CP IS CS H	4,408
Currently pregnant	0 = No or unsure, 1 = Yes	94.8% 5.2%	No Yes	4,408

[1]Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.
[2]Note that the original variable was 8 categories, 1=no education, 2=less than primary, 3=primary, 4=middle, 5=high school, 6=higher secondary, 7=graduate and above, 8=professional degree. The variables were re-categorized to make the estimation more easily interpretable.

Table 5 Measures of self-indulgent empowerment, 1998-1999 NFHS-2, West Bengal, India

Variable	Description	Sample breakdown[1]		Sample size
Respondent's age	0 = 29 and below, 1 = 30 and above	44.3% 55.7%	29 and below 30 and above	4,408
Gap in age between respondent's partner and respondent	0 = 0-2 years, 1 = 3-5 years, 2 = 6 to 9 years, 3 = 10 years and more	8.5% 26.9% 31.0% 26.9%	0-2 years 3-5 years 6-9 years ≥ 10 years	4,408
Usually reads newspaper or magazine at least once a week	0 = No, 1 = Yes	77.4% 22.6%	No Yes	4,408
Usually listens to the radio once a week	0 = No, 1 = Yes	56.9% 43.1%	No Yes	4,408
Permission required to visit family and friends[2]	0 = Not allowed to go at all for either, 1 = If permission required for either, 2 = No permission required	84.4% 15.6%	Permission required No permission required	4,408
Who decides on obtaining health care for respondent	0 = Husband or others in household, 1 = Jointly with husband or others in the household, 2 = Respondent makes the decision	51.4% 30.9% 17.7%	Husband/others Jointly Respondent	4,408
Allowed to have money set aside that respondent can use as she wishes	0 = No, 1 = Yes	43.0% 56.3%	No Yes	4,408
Does respondent think it is okay for a husband to beat his wife[3]	0 = Yes, 1 = No	19.2% 80.8%	Yes No	4,408

[1]Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.
[2]In West Bengal, no respondent said that she was not allowed to go visit family and friends.
[3]In at least one of the following scenarios: she is unfaithful, her family does not give money, she shows disrespect, she goes out without telling him, she neglects the house or children, and/or she doesn't cook properly.

Table 6 Measures of respondents' "responsibility" in the household, 1998-1999 NFHS-2, West Bengal, India

Variable	Description	Sample breakdown[1]		Sample size
Contribution to total family earnings[2]	0 = None (not working), 1 = Almost none, 2 = Less than half, 3 = About half, 4 = More than half, 5 = All	73.6% 4.8% 7.0% 3.0% 2.9% 6.3%	None Almost none Less than half Half More than half All	4,408
Who decides what to cook	0 = Husband or others in household, 1 = Jointly with husband or others in the household, 2 = Respondent makes the decision	12.5% 18.1% 69.4%	Husband/others Jointly Respondent	4,408
Who decides on purchasing jewelry or other major household items	0 = Husband or others in household, 1 = Jointly with husband or others in the household, 2 = Respondent makes the decision	48.0% 34.2% 17.8%	Husband/others Jointly Respondent	4,408
Permission required to go to the market[3]	0 = Not allowed to go at all for either, 1 = If permission required for either, 2 = No permission required	1.1% 78.2% 20.7%	Not allowed to go Permission required No permission required	4,408

[1]Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.
[2]Initially, we had included an employment variable in addition to the share of earnings variable, which was categorized as 0 = Not working, 1 = Worked in the last 12 months, and 2 = Currently working. However, "worked in last 12 months" had very few observations, causing convergence problems. Hence, since "contribution to total family earnings" already captures the work (and extent of work) done by the respondent, we added a new category to this variable, 0 = None (not working), and dropped the employment variable.
[3]Because of the small number of observations for women who did not have permission to go to the market, we also created a two-category variable (0 = Needs permission/not allowed to go, 1 = No permission needed) and ran the different estimations on this variable as well. The results did not change; permission required to go to the market was not statistically significant in most cases.

Table 7 Additional explanatory variables, 1998-1999 NFHS-2, West Bengal, India

Variable	Description	Sample breakdown[1]		Sample size
Current age of the last-born child[2, 3]	Years	7.7 years	Sample mean	3,776
Whether the mother does not have moderate or severe anemia (women who are not currently pregnant)[2]	0 = No, 1 = Yes	15.0% 74.2%	No Yes	4,121
Sex of the last-born child[2, 3]	1 = Male, 2 = Female	47.8% 41.3%	Male Female	3,927

[1]Percentages may not add up to 100 due to missing data for some of the variables. The total number of respondents was 4,408.
[2]These explanatory variables were included in the children's hemoglobin equation along with the household and respondent characteristics (with the exception of whether the respondent was pregnant or not). Criteria for moderate and severe anemia are given in Table 2.
[3]481 women in the sample had never given birth, and since age of the last-born child was used for children's hemoglobin levels (recorded only for children who were alive), the sample for this variable excluded children who had died (151 cases; age at death was a separate variable). Sex of the child was also included in the regression for whether the respondent had postpartum care, whether the last-born child was still alive, and children's immunizations.

2.1 Empowerment as Self-indulgence

An important way to capture the notion of a woman's autonomy that is likely to be an index of self consideration, rather than merely or largely a proxy for responsibility, is to look at the ways in which she can be unproductively free. If she is employed, she is contributing to family income; if she decides what to cook, she frees her mother-in-law or other potential cooks from the responsibility of the kitchen; if she shops for food, she leaves her husband free to gossip with his friends. When a woman does nothing productive or useful, she may be said to be pleasing herself, and it is informative to search the NFHS-2 data set for some proxies for such selfish uses of time.

Leisure may seem to be a strange thing to worry about for poor households given their intense preoccupation with day-to-day survival, but there is no doubt that some access to leisure enhances the quality of life, not only of the leisured individual but also of his or her associates. Women have traditionally not had great access to the type of leisure that allows one to pursue artistic or musical endeavors, but the gender difference in this indicator of welfare is also very sharp when one looks at very simple forms of leisure, such as a chance to relax. Poor women seem to be the worst affected in this regard, in both absolute terms and in terms of their difference from poor men. Empirically this is very difficult to demonstrate on any large scale. The conventional method would be to net out the time spent on economically productive activities and allocate the rest to leisure, but economically productive activities are difficult to measure, with so much of it being unpaid work.

Leisure is not a clearly defined activity; it can often be combined with work (e.g., gossiping with neighbors while peeling potatoes). The notion of leisure is alien to many poor women, as evidenced by many women in a survey in Kerala, India (Saradamoni, 1977), mentioning washing clothes and cleaning the house when asked what they did in their free time. To the extent that this is so, it is true that statistics may understate women's access to leisure. Nevertheless, the NFHS-2 data offer us a few variables that might serve as proxies for leisure and therefore proxies for self-indulgence. The first of these relates to the spending of time on the mass media. The data sets asked women if they had read a newspaper in the past week, listened to the radio in the past week, or watched television in the past week. In our analysis, we use the first two variables, but in our discussion we focus on the radio-listening variable as a marker of leisure because reading newspapers requires literacy and might exclude large numbers of our sample. Watching television requires a television, which are often prohibitively expensive. Listening to the radio is relatively easily done (it is probably rarely done without a simultaneous productive activity, but we can be generous and assume that the woman who listens to the radio is spending time on herself). Moreover, radios are relatively inexpensive and its absence in a home says less about a family's income than about its willingness or desire to spend money. Individual ownership of a radio is unnecessary due to the amount of shared exposure to media. It is just as likely that a radio belongs to a neighbor or the community as a whole.

Mass media does enter into demographic analyses in studies of various outcome measures, but generally through data on household goods. The assumption is that mass media exposes women to better ways of doing things and that this accounts for the greater efficiency or even autonomy of women. However, supporting this assumption requires a better content analysis of the programs that are popular among the women who watch/listen to them, and we do not have much evidence on this subject (for an exception to this statement, see Faria and Potter's 1999 work on the mini-serials on television in Brazil).

Absent a thorough content analysis of mass media, the little evidence we have suggests that it is not for these instrumental reasons that women watch television or listen to the radio. For example, in focus group discussions in Bangladesh and West Bengal (Basu and Amin, 2000), women overwhelmingly admitted that they listened to virtually nothing but music and religious programs on the radio.[3]

Another nonproductive freedom in the NFHS-2 data is the measure of the ability to visit friends and relatives without permission. We treat this measure separately from those related to abilities to do things for the family—make spending decisions, decide what to cook, take a child to the hospital, and to earn an income. This is because the traditional Indian family is characterized by an expected transfer of a woman's loyalty upon marriage from her natal to her marital home.

We also include in our possible measures of self-indulgence the ability that the woman has to put aside some money for her own use. Interestingly, this measure looks at this ability regardless of who has earned the money—it is therefore a potentially important source of information about empowerment if it includes women who can claim spousal earnings for their own use. Such self-interest is a marker of freedom in the best sense of the word, and we suggest that it is a more realistic measure of a woman's ability to be empowered than merely adding to family income. As discussed in the next section, we treat the income earning variable as a more ambiguous measure of female autonomy.

The decisionmaking that a woman exercises in the matter of her own health care is also a variable that we want to examine for its correlation with the power to invest in herself, and the NFHS-2 question on this issue helps us to test its value. In addition, we accept the anthropological suggestion that the greater the age gap between spouses, the larger the gender differences in domestic authority.

The NFHS-2 has data on a useful and specific kind of freedom measure that implies a special kind of self-indulgence—the freedom that a woman is willing to give a man to be domestically violent. The woman who sees no circumstances as justifying such violence is the woman with the greatest sense of self; she values her body and her being strong enough to value its right to be protected from assault. If she fails in her domestic duties, she sees no reason for that to justify a beating; even more boldly, she does not even acknowledge the right of a husband to get violent with an unfaithful wife. The NFHS-2 showed that more than 40 percent of women do not believe that failure in domestic duty or unfaithfulness by a wife justifies domestic violence. Consequently, rather than trying to establish a hierarchy of reasons under which a woman believes that domestic violence is justified, the self-empowerment measure is better captured by separating out the women with a zero-tolerance policy on spousal violence from those who think at least some circumstances call for such violence.

2.2 Empowerment as Responsibility

The remaining variables in our list of explanatory variables in Tables 4 through 7 represent autonomy as choice of course—it is more than likely that when women choose to look after their children, this altruism is a genuine exercise of freedom because child welfare is a proxy for maternal

[3] Our focus on unproductive time is analogous to Presser's (1986) emphasis on the leisure needs of women that are an important determinant of low fertility in developed societies. As she points out, the less children one has, the less tiring it is.

happiness. As Williams (2001) says in his criticism of John Stuart Mill's informal definition of liberty as consisting "of doing what one desires," this must actually mean "the *capacity to do* what one desires (you are not unfree if you simply choose not to do something you desire)" (italics ours).

It is conceivable that these variables represent an enhanced capacity to manipulate the external environment to certain ends, this capacity being engendered by rises in both technical abilities as well as a sense of responsibility. At the same time, these abilities and these responsibilities could represent a restriction of choice in that they do not as readily translate into better health outcomes for women themselves, as our analysis suggests.

Economic independence is an important marker of female autonomy in much of the demographic literature. The assumption is that it leads to a greater control by women over how resources are allocated and, hence, a greater control over their own lives. However, when women's income is used for family welfare, it might be an instrumental use of income for relatively altruistic purposes and may not imply greater freedom to self indulge as well.

Two of the freedom/decisionmaking measures in the analysis are particularly ambiguous and highlight the importance of not using this combination of questions to construct indices of overall autonomy, as is frequently done in the literature (e.g., Balk, 1994; Hashemi et al., 1996; Jejeebhoy, 2000; Morgan et al., 2002; Ghuman, 2003). The first of these measures is the freedom to go to the market to shop. While it is true that we prefer to treat this as a measure of doing things for the family, we are aware that it also represents a real physical freedom, which is usually enjoyable enough to be interpreted as a measure of self-indulgence. If this were not the case, it would not be so common for marketing to be the first activity that men allot to themselves when they get involved in household work (United Nations, 1991).

The second ambiguous measure is decisionmaking on what to cook. While the NFHS reports do not explicitly treat this variable as a measure of autonomy, the general tendency in numerous analyses of NFHS data is to do so. This variable tends to get added to studies of female autonomy, but it is not much more than a marker of domestic duty. Being given the freedom to decide what to cook is too close to being told to cook and being told to take charge of the kitchen.

The statistical analysis in the following pages finds that our measure of self-indulgence correlates with measures of women's own health-related outcomes more readily than with child outcomes. That is, they are not instrumental and therefore not causes of the health outcomes they correlate with. Instead, they are merely another way of measuring women's ability to pay attention to their own well-being. What is even more illuminating is that they are often poorly related to child outcomes, suggesting that women's self-indulgence might not be so good for child health and that what we want is responsible rather than truly autonomous women if child health is to improve.[4]

These concepts anticipate our empirical results. As mentioned already, we looked at two sets of outcomes, those related to women and those related to their children. In the case of the former, in addition to looking specifically at reproductive health problems, we are fortunate to be able to include measures from the NFHS-2 on some potential precursors of reproductive health problems—food consumption and hemoglobin levels. As previously mentioned, in the case of child outcomes, we try to exploit some of the rich information that NFHS-2 has on child survival, health care, and nutritional levels.

[4] On this issue, see the provocative paper by Hobcraft (2000).

The dependent variables used in this analysis are also laid out in Table 4. The tables with the results are given in the following section (Tables 8 to 15). Since there were many categorical explanatory variables used in the estimation, estimation was first run using the lowest category as the reference for each categorical variable, and then odds ratios for changes in between each category were calculated for each outcome.

3 WOMEN'S EMPOWERMENT AND WOMEN'S HEALTH-RELATED OUTCOMES

In this section, we look at the influences on women's investment in themselves, as defined by outcomes that are related to their health both directly as well as indirectly. Some of these outcomes have to do with food and nutrition, and others with health awareness, health problems, and action on health problems.

3.1 Food Consumption

The NFHS-2 asked questions about the frequency of consumption of milk and curd, pulses and beans, green leafy vegetables, other vegetables, fruits, eggs and chicken, and meat or fish. Before the pattern of consumption of these various foods can be interpreted, it is important to understand the cultural associations of these foods in our sample group.

Throughout the country, milk, curd, and fruits may be called high-status foods. That is, the greater ability to have them suggests either better economic resources or a greater importance being given to the person eating them. The latter, the household status of the consumer, is important—rarely, for example, would the domestic servants of even rich households be given a glass of milk or a piece of fruit to eat, precisely because these are the foods of the gods and thus of the elites.

Eggs and chicken, and meat or fish have strong regional associations. In West Bengal, meat and chicken have had a long history of being status foods, to be eaten when affordable and to be eaten by those who matter in the home. Even the Brahmins (who are traditionally strictly vegetarian in the rest of India) are fond of their fish and meat and expected to see them in a complete meal. Green leafy vegetables have an ambiguous position, being popular for price and taste reasons, but not thought of as having high or low status.

This ambiguity is even more marked for the residual categories of pulses and beans and other vegetables. Other vegetables in particular are what one eats when one cannot eat the high-status foods for reasons of money or rank. It is immaterial that from a nutritional point of view (and especially given the fact that the high-status foods are usually consumed/afforded in amounts that are too small to have much nutritional impact) these mundane status foods are what would go into a medically recommended healthy diet today.

In our analysis, we focus on the high-status or elite foods—milk and curd, fruit, chicken and eggs, and meat or fish. In addition, we restrict the consumption variable to consumption at least once a week, since daily consumption of these luxury foods is too rare to capture any relationships.

Tables 8 and 9 give estimation results for consumption of food (milk and curd, fruits, eggs, and meat). Figure 1 offers a more concise representation of these results by plotting odds ratios for explanatory variables (both empowerment and responsibility-related), which were significant at the

Table 8 Odds ratios for respondents' food consumption, 1998-1999 NFHS-2, West Bengal, India

Variable		Milk/curd (at least weekly)	Fruit (at least weekly)	Eggs (at least weekly)	Chicken, meat and fish (at least weekly)
SOCIOECONOMIC CIRCUMSTANCES					
1. Location (1=Urban, 0=Rural)		1.0298	1.7918**	1.2931**	1.4839**
2. Not in SC, ST, or OBC (1=Yes, 0=No)		1.3354**	1.3301**	1.5156**	1.3360**
3. Household Standard of Living Index (Ref: Low)	Medium	2.1574**	2.0894**	1.3324**	1.4696**
	High	3.6550**	3.6617**	1.4672**	1.8871**
4. Number of household members		0.9910	0.9537**	0.9987	0.9980
5. Sex of household head (1=Female, 0=Male)		0.7898	1.0574	0.9636	0.9660
6. Spouse's educational attainment (Ref: no education)	Incomplete primary (IP)	1.1645	1.1258	0.9134	1.2041
	Complete primary (CP)	1.4682*	1.5862	1.3220**	1.2167
	Incomplete secondary (IS)	1.4513**	1.3435	1.2520**	1.1339
	Complete secondary (CS)	1.6468**	1.9162**	1.3676**	1.2964
	Higher (H)	2.2598**	1.6574**	1.2780	1.0932
7. Respondent's educational attainment (Ref: no education)	Incomplete primary (IP)	1.0880	1.4706**	1.2461**	1.2289**
	Complete primary (CP)	1.2599	1.7883**	1.0106	1.3269
	Incomplete secondary (IS)	1.2707*	1.9464**	1.1701	1.2240
	Complete secondary (CS)	1.7682**	1.8996**	0.9221	0.7630
	Higher (H)	1.4437*	3.4449**	1.5179**	1.2327
8. Whether respondent is pregnant (1=Yes, 0=No)		1.2993	1.2125	1.1245	1.0089
EMPOWERMENT VARIABLES					
9. Respondent's age (0=29 and below, 1=30 and above)		1.1047	0.8319*	0.8912	0.9599
10. Age gap between respondent's partner and herself (Ref: 0-2 years)	3-5 years	0.7484**	0.9212	1.0168	1.2077
	6-9 years	0.8274	0.7087**	1.0511	1.4150**
	10 years and more	0.7506**	0.9245	1.0870	1.5179**
11. Whether respondent usually reads a newspaper/magazine at least once a week (1=Yes, 0=No)		1.3250**	1.7644**	1.2884**	1.4085**
12. Whether respondent usually listens to the radio once a week (1=Yes, 0=No)		1.2703**	1.3547**	1.3810**	1.5409**
13. Is respondent allowed to visit family and friends (Ref: permission needed)	Permission needed[1]	-	-	-	-
	No permission required	1.3702*	0.5790**	1.1341	0.9327
14. Decisionmaking: Respondent's health care (Ref: husband/others decide)	Jointly with husband/others	0.8375	0.8259	1.1592	0.8883
	Own decision	1.1291	1.0110	1.0543	0.8920
15. Whether respondent is allowed to have money set aside to use as she wishes		0.9497	1.2245*	1.2639**	1.4863**
16. Whether respondent does not think domestic violence is justified (1=Yes, 0=No)		1.1263	0.9253	1.5572**	1.2792**
RESPONSIBILITY VARIABLES					
17. Respondent's contribution to total family earnings (Ref: none)	Almost none	0.7074*	1.1026	1.2507	1.0096
	Less than half	0.6357**	0.6229**	0.9095	0.7510**
	About half	0.6604	0.9816	0.6243**	0.9194
	More than half	1.0249	1.0009	0.7043	1.1410
	All	0.8010	1.0331	0.9796	0.8194
18. Decisionmaking: What to cook (Ref: husband/others decide)	Jointly with husband/others	0.8533	0.8503	1.0445	0.6179**
	Own decision	1.0427	1.0097	1.2989**	0.8626
19. Decisionmaking: Purchasing jewelry/other household items (Ref: husband/others decide)	Jointly with husband/others	1.0417	1.2067	1.0120	1.0351
	Own decision	0.8356	0.8263	1.1377	1.1433
20. Is respondent allowed to go to market (Ref: not allowed to go)	Permission needed	0.9228	1.1014	0.9438	0.2816**
	No permission required	0.7148	0.6950	0.9438	0.2893**
Sample Size		3,863	3,861	3,863	3,865
Wald Chi-square		607.59	774.81	435.90	356.15

** = significant at α = 0.05, * = significant at α = 0.10

[1] In West Bengal, no respondent answered that she was not allowed to go visit family and friends, so the reference was changed to "permission needed."

0.05 level or lower. In Figure 1, there is a clear distinction between the effects of self-indulgent empowerment (positive) versus responsibility (negative). Leisure (as measured by reading the newspaper and/or listening to the radio regularly), being able to keep money for personal use, and having a negative attitude towards domestic violence had a strong positive effect on all categories of elite food consumption. In addition, looking at intracategory effects, being able to decide about her own health care as opposed to others playing a part in the decision, was also positively correlated with milk consumption (Table 9).

The effects of leisure, in particular, were not only the most consistent but also among the strongest for all empowerment variables. Being able to read the newspaper regularly had a larger effect than the radio variable for milk and fruits, whereas radio had a larger effect for eggs and meat. We do not say that increased leisure causes higher consumption of milk and fruit. Although it is possible that there is some causation if she learns of the nutritional value of these foods from the radio or newspaper, the cultural value attached to these foods is well known enough not to need reinforcing by the media. It is much more likely that both these variables—listening to the radio regularly and eating high-status foods—merely reflect the same thing, that is, a certain amount of self-indulgence and the financial wherewithal to afford it.

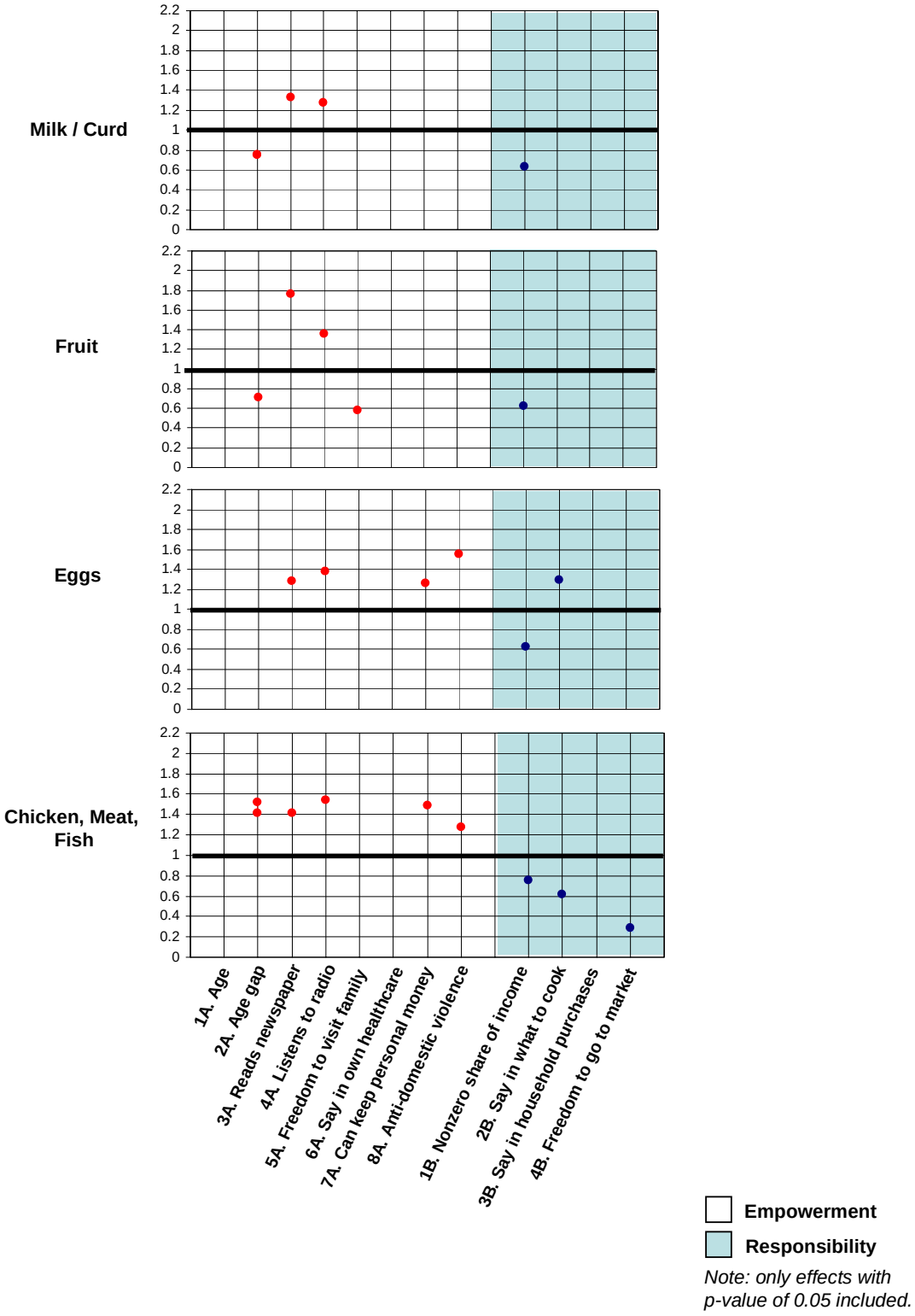
In some cases, there is a negative impact of age gap between spouses on milk and fruits consumption. Wherever this variable is evaluated, it tends to be measured in a negative direction; that is, the larger the age gap between wife and husband, the lower her consumption of these choice foods. This finding is consistent with the possibility that a larger age gap translates into a greater degree of hierarchy in spousal relations. However, the intracategory effects for fruit consumption (Table 9) were slightly more ambiguous. While increasing the age gap from 3-5 years to 6-9 years also decreased the odds of consuming fruit regularly in West Bengal by a factor of 0.77, an increase in age from 6-9 years to 10 years or more increased the odds of consuming fruit in West Bengal by 1.3. Gap in age also had a strong positive impact on meat consumption and no effect on consumption of eggs, possibly pointing to some more fundamental differences between consumption of vegetarian and nonvegetarian foods.

Table 9 Odds ratios for changes between categorical variables of respondents' food consumption, 1998-1999 NFHS-2, West Bengal, India

Variable		Milk/curd (at least weekly consumption)	Fruit (at least weekly consumption)	Eggs (at least weekly consumption)	Chicken, meat and fish (at least weekly consumption)
SOCIOECONOMIC CIRCUMSTANCES					
Household Standard of Living Index	(Medium→High)	1.6941**	1.7525**	1.1011	1.2840*
Respondent's partner's educational attainment	(CS→H)	1.3722**	.8649	.9345	.8432
	(IS→CS)	1.1347	1.4263**	1.0922	1.1433
	(CP→IS)	.9885	.8470	.9470	.9319
	(IP→CP)	1.2607	1.4089	1.4473**	1.0104
Respondent's educational attainment	(CS→H)	.8165	1.8134**	1.6460**	1.6156**
	(IS→CS)	1.3915*	.9759	.7880	.6233**
	(CP→IS)	1.0086	1.0884	1.1579	.9224
	(IP→CP)	1.1579	1.2161	.8109	1.0797
EMPOWERMENT VARIABLES					
Age gap	(6 to 9 years→ 10 years or more)	.9072	1.3045**	1.0341	1.0726
	(3 to 5 years→6 to 9 years)	1.1055	.7693**	1.0337	1.1716
Is respondent allowed to visit family and friends	(Permission needed → No permission required)	-	-	-	-
Decisionmaking: Respondent's health care	(Jointly with husband/others→ Respondent makes decision)	1.3483*	1.2241	.9095	1.0042
RESPONSIBILITY VARIABLES					
Respondent's contribution to total family earnings	(More than half → All)	.7815	1.0321	1.3909	.7181
	(Half→ More than half)	1.5518	1.0196	1.1281	1.2410
	(Less than half→ Half)	1.0389	1.5758	.6864*	1.2242
	(Almost none → Less than half)	.8986	.5649*	.7272	.7438
Decisionmaking: What to cook	(Jointly with husband/others →Respondent makes decision)	1.2219*	1.1874	1.2435**	1.3961**
Decisionmaking: Purchasing jewelry and other household items	(Jointly with husband/others →Respondent makes decision)	.8021	.6847**	1.1241	1.1045
Is respondent allowed to go to market	(Permission needed → No permission required)	.7746*	.6309**	1.0344	1.0271

** = significant at α = 0.05, * = significant at α = 0.10

Figure 1 Odds ratios for respondents' food consumption, 1998-1999 NFHS-2, West Bengal, India



Note: only effects with p-value of 0.05 included.

Among the responsibility variables, the respondent's contribution to household income had an equally strong negative impact on all four categories of consumption. It appears that women's income is not a good reflection of a woman's status in the home. It is good for family welfare (as our results below indicate) but does not seem to do much for the welfare of women.

The effects of the remaining decisionmaking variables are mixed and varied enough for us not to be able to make any convincing case for the equation of decisionmaking with greater self-indulgence. Being able to visit family and friends (empowerment), while having a small positive effect on consumption of milk, had a strong negative effect on fruits consumption. It is not surprising that a respondent's share in cooking decisions, which may reflect duty rather than autonomy, is a weak variable in relation to consumption practices.

However, these results lead us to reevaluate our classification of one of the empowerment measures. It appears that the freedom to go out to the market is not an important measure of self-indulgence in West Bengal. While most results were not significant, taking "not being allowed" as the reference, a change in "permission being needed" to go to the market to had very strong and negative impact on the consumption of eggs, meat and fish. (Figure 1 and Table 8).

Where women's own consumption is concerned, the most positive correlates are found with positive socioeconomic outcomes (income, upper-caste, partner's education) and with variables that describe their leisure and ability to indulge themselves (free to listen to the radio, read the newspaper, go to the market, and set aside some money for their own use). Respondents with higher outcomes for these variables are also more able to eat the kind of food that is traditionally reserved for the highest status individuals in a home. Respondents who do not share these characteristics are not as likely to consume these foods regularly, even if they have greater decisionmaking power over household affairs, and contribute an increased share of income to the household. Such respondents are more likely to end up eating the default nonstatus food items that everyone eats to live—foods such as other vegetables and pulses and beans, which might be good for their health, but do not suggest a high domestic status.

3.2 Anemia

For this analysis, women who were not pregnant and had not given birth in the last two months constituted the relevant population. We also defined anemia as a binary variable equal to 1 if the respondent had severe or moderate anemia at the time of the survey, and 0 if she had mild or no anemia (see Table 2).

This variable is important from the female empowerment perspective because we know that anemia is a major accomplice in poor reproductive health outcomes, and a woman's ability to prevent it depends more on her knowledge of anemia prevention and on how much of the iron-rich food she can consume than on her ability to consume what we have earlier called high-status foods. In other words, hemoglobin levels are not a good proxy for self-indulgent empowerment, so there need not be a strict correlation between this variable and the food consumption variables discussed above.[5]

[5] We are also not taking into account the impact on hemoglobin levels of factors such as altitude or smoking habits, the former because only 1 of the 158 PSUs in West Bengal is at an altitude above 1,000 meters, and the latter because smoking levels are uniformly low for the respondents in this sample. As a result, anemia rates that are not adjusted for smoking and altitude are almost identical to the corresponding adjusted rates.

The results shown in Tables 10 and 11 confirm our mixed expectations. Better socioeconomic outcomes, which were shown above to have a systematically positive effect on food consumption, seem to have a more varied impact on respondents' anemia. Household income and upper-caste status have a strong positive effect on reducing the chances the respondent will be anemic, but the respondent's education or her spouse's education had virtually no significant impact.

Also, looking at Figure 2, no empowerment or responsibility variables were significant at a p-value of 0.05, although a large age gap between spouses did have some negative relation with anemia.

Some unexpected results from the empowerment variables include the finding that women who controlled decisions over their own health care had increased odds of having moderate or severe anemia of about 1.3 (whether this was a jump from not having any input [Table 10] or having only some input [Table 11] is unclear). The leisure variables were not significant either, compared with the strong, positive effect they had on food consumption discussed earlier.

Any significant effects of the responsibility measures were weak or mixed. Respondents who contribute more than half of household income, as opposed to none, are 1.5 times more likely to have anemia, but this is qualified by the results in Table 10, where the odds of not having anemia are significantly positive or negative, depending on whether the respondent contributes "less than half" or "more than half" as compared with half.

3.3 Body Mass Index

Tables 10 and 11 and Figure 2 look at the probability of being well nourished (but not obese) compared with being undernourished (what we call thin, defined in Table 2). Again, only women who were not pregnant and had not given birth in the past two months were included in this analysis. Like respondents' anemia, body mass index (BMI) is an objective measure of women's health status and it is not clear how much it reflects female empowerment. It probably does capture the woman's ability to eat not just high-status foods, but to eat enough of whatever she eats. This ability certainly has diminishing returns, in that self-indulgence here can lead to obesity.

Socioeconomic resources are implicated the most strongly in women's BMI values, as seen in the strong positive relationship between BMI and income as well as urban residence. Women with a very high level of education are also 1.7 times more likely to be healthy versus very thin. As with consumption of food, the number of household members has a small negative impact on BMI.

Looking at the effect of self-indulgent empowerment, older women are more likely to be healthy than malnourished; leisure also has a positive impact on BMI. However, the remaining results for the empowerment as well as the responsibility variables are scattered and do not help us understand our central questions. Decisionmaking power over health care has a small negative effect, suggesting the need for further analysis, because one would expect that women who have control over their own health care decisions would have reduced chances of anemia and a healthy BMI.

3.4 Health Problems Suffered After the Last Birth

Once again, it is not clear what we are measuring in this variable—differences in delivery-related health problems, differences in the ability to recognize and acknowledge such health

Table 10 Odds ratios for respondents' health-related outcomes, 1998-1999 NFHS-2, West Bengal, India

Variable		No Anemia[1]	Body Mass Index (healthy versus very thin)[1]	No health problems after last birth (all women)	No reproductive health (RH) problems in last three months (all women)	Sought advice for RH problems in last three months (all women)
SOCIOECONOMIC CIRCUMSTANCES						
1. Location (1=Urban, 0=Rural)		0.9497	1.7994**	1.5030**	1.7643**	1.2274
2. Not in SC, ST, or OBC (1=Yes, 0=No)		1.4017**	1.1074	0.7051**	0.8607*	1.3024*
3. Household Standard of Living Index (Ref: Low)	Medium	1.2562*	1.7436**	1.1275	1.2160**	1.1326
	High	1.7263**	3.5168**	1.6504	1.4584**	1.5469*
4. Number of household members		1.0025	0.9779*	0.9944	0.9904	1.0023
5. Sex of household head (1=Female, 0=Male)		0.9666	1.0765	1.1054	0.9650	1.2472
6. Spouse's educational attainment (Ref: no education)	Incomplete primary (IP)	1.0071	0.8921	1.2693	0.9455	1.3095
	Complete primary (CP)	1.0266	1.1572	1.4632	1.0554	1.5683
	Incomplete secondary (IS)	1.0125	1.0055	0.8658	1.0265	1.4793*
	Complete secondary (CS)	1.0981	0.8893	1.1088	1.2034	1.5921*
	Higher (H)	1.0546	1.1063	0.7555	0.9984	1.5390
7. Respondent's educational attainment (Ref: no education)	Incomplete primary (IP)	1.1252	1.0652	1.0038	1.0793	1.5321**
	Complete primary (CP)	1.3636	1.1739	1.0218	1.2517	1.1624
	Incomplete secondary (IS)	1.3736*	1.0813	1.1104	0.8279	1.1799
	Complete secondary (CS)	1.1540	1.3936	1.2871	1.0867	0.8922
	Higher (H)	1.1190	1.7021**	1.1280	0.9539	1.2343
8. Whether respondent is pregnant (1=Yes, 0=No)		-	-	0.8460	1.0275	1.0515
EMPOWERMENT VARIABLES						
9. Respondent's age (0=29 & below, 1=30 & above)		0.9658	1.3691**	1.0770	1.0519	1.2372*
10. Age gap between respondent's partner and herself (Ref: 0-2 years)	3-5 years	0.8043	1.2002	1.1667	0.8897	0.9125
	6-9 years	0.6814*	1.0560	1.0957	1.1331	1.1079
	10 years and more	0.7387	1.1377	1.1811	0.9557	1.3002
11. Whether respondent usually reads a newspaper/ magazine at least once a week (1=Yes, 0=No)		1.1447	1.5805**	1.1679	1.1915	1.0328
12. Whether respondent usually listens to the radio once a week (1=Yes, 0=No)		0.9214	1.1162	0.9085	0.9031	1.0020
13. Is respondent allowed to visit family and friends (Ref: permission needed)	Permission needed[2]	-	-	-	-	-
	No permission required	0.9297	1.0271	0.7464	1.1862	1.3003
14. Decisionmaking: Respondent's health care (Ref: husband/others decide)	Jointly with husband/others	1.0285	0.7950*	0.8597	1.1964*	0.8346
	Own decision	0.7467*	0.8747	1.1453	1.1728	0.6759*
15. Whether respondent is allowed to have money set aside to use as she wishes		0.9363	1.1098	1.5127**	1.0450	1.2669*
16. Whether respondent does not think domestic violence is justified (1=Yes, 0=No)		1.0242	0.9247	1.1117	1.6500**	0.9825
RESPONSIBILITY VARIABLES						
17. Respondent's contribution to total family earnings (Ref: none)	Almost none	1.1542	0.8715	0.9652	1.0347	0.8390
	Less than half	0.9039	1.1731	1.1544	0.9888	0.7689
	About half	1.6415	0.8206	0.4710	0.6792*	0.8324
	More than half	0.6630*	0.7035	1.4643	1.0392	0.9347
	All	0.9478	0.8632	0.7717	1.1917	0.9551
18. Decisionmaking: What to cook (Ref: husband/others decide)	Jointly with husband/others	0.8956	0.9681	1.5195*	1.0111	1.0385
	Own decision	0.9465	1.0704	1.5809**	1.0927	1.0102
19. Decisionmaking: Purchasing jewelry/other household items (Ref: husband/others decide)	Jointly with husband/others	1.0978	1.2085	0.8948	0.8248*	1.2693
	Own decision	1.3590	1.0649	1.5328	0.5865**	0.9501
20. Is respondent allowed to go to market (Ref: not allowed to go)	Permission needed	0.5921	0.6658	0.4218	0.7032	0.7512
	No permission required	0.6843	0.7054	0.2877*	0.8765	0.7904
Sample Size		3,225	3,307	1,041	3,855	1,571
Wald Chi-square		74.62	430.20	52.95	233.63	89.99

** = significant at α = 0.05, * = significant at α = 0.10

[1] Only non-pregnant women were included; also, women who had given birth in the past two months were excluded.

[2] In West Bengal, no respondent answered that she was not allowed to go visit family and friends, so the reference was changed to "permission needed."

problems, or differences in the ability to see problems where none exist. Our suspicion, looking at the direction of most of the significant effects below, is that we are capturing better (or at least more) reporting rather than clinical health problems.

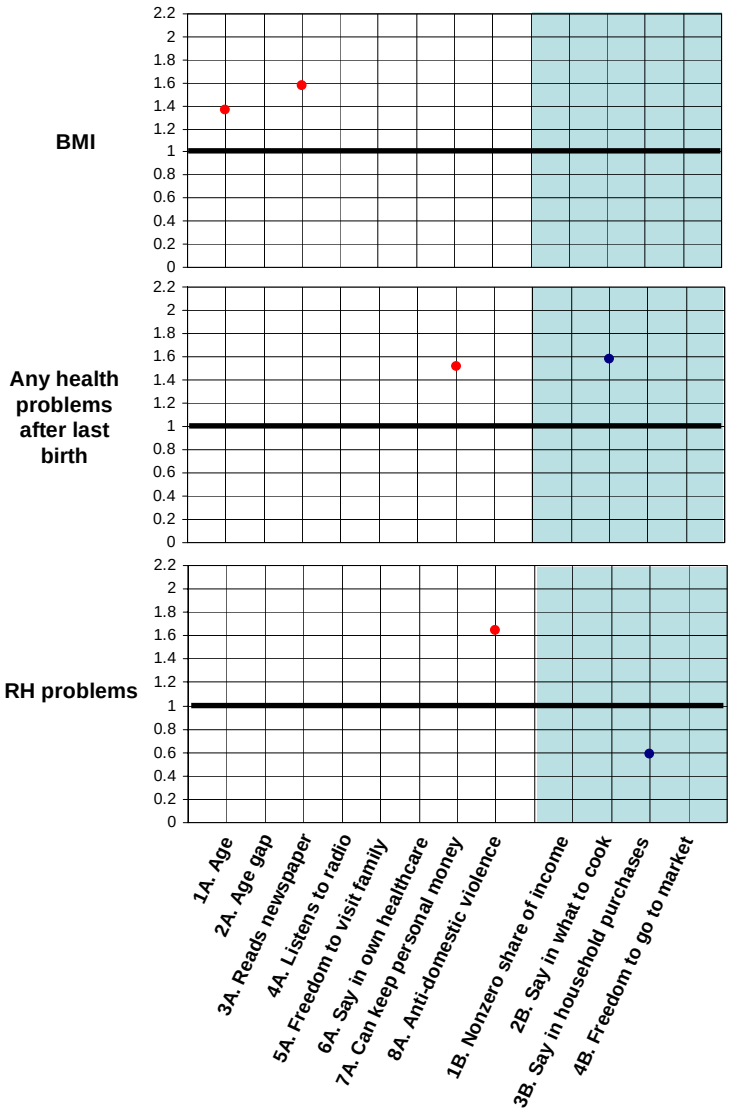
Given these ambiguities, it is not surprising that the significant variables here were few and varied. In Table 10, a woman residing in an urban residence and having her own money to spend has reduced chances of health problems after the last birth, but upper-caste status actually increases them. Looking at Figure 2, only being able to keep personal money and having greater input in cooking decisions were statistically significant at the 0.05 level.

Table 11 Odds ratios for changes between categorical variables of respondents' health-related outcomes, 1998-1999 NFHS-2, West Bengal, India

Variable		No anemia	Body Mass Index (healthy versus very thin)	No health problems after last birth (all women)	No reproductive health (RH) problems in last three months (all women)	Sought advice for RH problems in last three months (all women)
SOCIOECONOMIC CIRCUMSTANCES						
Household Standard of Living Index	(Medium→High)	1.3742*	2.0170**	1.4637	1.1994	1.3658*
Respondent's partner's educational attainment	(CS→H)	.9603	1.2440	.6813	.8297	.9666
	(IS→CS)	1.0845	.8844	1.2807	1.1723	1.0762
	(CP→IS)	.9862	.8688	.5917	.9726	.9432
	(IP→CP)	1.0193	1.2971	1.1527	1.1163	1.1976
Respondent's educational attainment	(CS→H)	.9696	1.2213	.8764	.8777	1.3834
	(IS→CS)	.8401	1.2887	1.1591	1.3126	.7561
	(CP→IS)	1.0073	.9211	1.0866	.6614**	1.0150
	(IP→CP)	1.2118	1.1020	1.0179	1.1597	.7586
EMPOWERMENT VARIABLES						
Age gap	(6 to 9 years→ 10 years or more)	1.0840	1.0773	1.0779	.8435*	1.1735
	(3 to 5 years→6 to 9 years)	.8472	.8799	.9391	1.2734**	1.2142
Is respondent allowed to visit family and friends	(Permission needed → No permission required)	-	-	-	-	-
Decisionmaking: Respondent's health care	(Jointly with husband/others→ Respondent makes decision)	.7260*	1.1001	1.3323	.9802	.8099
RESPONSIBILITY VARIABLES						
Respondent's contribution to total family earnings	(More than half → All)	1.4296	1.2270	.5270	1.1467	1.0218
	(Half→ More than half)	.4039**	.8572	3.1086	1.5301	1.1229
	(Less than half→ Half)	1.8159*	.6995	.4080*	.6869	1.0826
	(Almost none → Less than half)	.7831	1.3460	1.1960	.9557	.9164
Decisionmaking: What to cook	(Jointly with husband/others → Respondent makes decision)	1.0567	1.1056	1.0404	1.0807	.9727
Decisionmaking: Purchasing jewelry and other household items	(Jointly with husband/others → Respondent makes decision)	1.2379	.8811	1.7129*	.7110*	.7485
Is respondent allowed to go to market	(Permission needed → No permission required)	1.1557	1.0594	.6822	1.2465	1.0521

** = significant at α = 0.05, * = significant at α = 0.10

Figure 2 Odds ratios for respondents' overall health, 1998-1999 NFSH-2, West Bengal, India



Empowerment

Responsibility

Note: only effects with p-value of 0.05 included.

This outcome variable also reflects a lower tolerance for problems after delivery in cases where there is less time or resource to indulge them. The negative effect with caste is consistent with this interpretation, as is the finding that, compared with having no input, women who controlled decisions over cooking had significantly fewer reports of such problems (Table 11).

It is also possible that women with more responsibility in the household have greater ability to recognize such problems, and are more likely to report them as such. That may be why women who do not need permission to go to the market are much more likely to have experienced these problems (Table 10), as well as women who earn a greater share of household income (Table 11). These are all somewhat speculative interpretations, and need more qualitative fieldwork to be supported or rejected.

3.5 Reproductive Tract Problems

This variable presents the same problems of interpretation as the variable for delivery-related health problems. This variable includes what women see as a problem, what kinds of problems are treated as part of a normal reproductive system (e.g., Zurayk, 2001; Jain et al., 1996), and how willing women are to talk about these issues. We are afraid that any findings that we get here can be construed as lending support to our hypotheses, so we are interested in this variable for its effect on the analysis of the action taken on reported problems.

Socioeconomic conditions played a significant role in that (all else equal) respondents from urban households and more wealthy backgrounds were less likely to have suffered from reproductive tract problems (Tables 10 and 11). Women from lower-caste and larger households were also less likely to encounter these problems, which may corroborate somewhat with the interpretation in the previous section that women who are busier will report these problems less.

We find that women with greater responsibility in the household report more reproductive health problems, whereas women with more self-indulgent power report fewer. The finding that nontolerance for domestic violence is associated with a lower level of reported reproductive tract problems is consistent with our suspicion that the survey's question on tolerance of domestic violence was capturing some aspect of the women's personal experience with domestic violence.[6]

Women who do not tolerate domestic violence are nearly 1.7 times more likely to not have such problems (Figure 2), whereas women who had the sole decision over household purchases (relative to no input) are equally likely to have such problems. This empowerment/responsibility distinction also holds for variables that were less significant (p-value of 0.10). Women who decided their health care jointly with others (as opposed to having no input) were 1.2 times more likely not to have reproductive health (RH) problems, but women who had higher contributions to household income as well as any input in decisions over household purchases (Tables 10 and 11) were much more likely to report such problems. This last finding is also consistent with the idea that contribution to family income is not a good proxy for the woman's ability to look after herself.

3.6 Sought Advice for Reproductive Tract Problems

This variable can be taken as a measure of self-indulgent empowerment, though self-indulgence is probably too strong a word to describe what we mean here: the ability and willingness

[6] Given the positive relationship between domestic violence and poor reproductive health outcomes (e.g., Jejeebhoy, 1995), this positive relation between stated tolerance and reproductive health problems makes sense.

to take enough care of themselves and not to disregard what could be a potentially serious health problem.

These results so closely parallel the food consumption results above that the empowerment as self-indulgence variable seems to us to be strengthened as a valid measure of real control. Better resource and access characteristics, as measured by the standard of living index and husband's education, are strongly implicated in care-seeking for reproductive health problems. The impact of the respondent's education occurs only at lower levels of education.

With regard to the variables of self-indulgence, while there are no effects that are significant at a p-value of 0.05, the relationship with age and ability to set aside money for personal use was positive. However, sole decisionmaking on her own health care is negatively correlated with seeking reproductive health care, a finding suggestive of sole decisionmaking representing responsibility rather than empowerment. Indeed, this negative role of sole decisionmaking ability on personal health comes up repeatedly in this analysis and calls into question the autonomy it supposedly represents.

As for the responsibility variables in our list, none of these seem to increase the woman's seeking of care for reproductive health problems.

4 WOMEN'S EMPOWERMENT AND CHILD-RELATED HEALTH OUTCOMES

Female empowerment that accomplishes positive outcomes for children is sometimes different from the empowerment that achieves positive outcomes for women themselves. The former are in a sense more a function of women's ability and heightened sense of responsibility rather than simply an outcome of their ability to have their own way. That is, these abilities and responsibilities may be more easily ceded to women who are nevertheless not free agents in the way they conduct their own lives. The following analysis of the major influences on child-related health outcomes allows us to explore this distinction. We begin with a set of outcome measures that contribute to both maternal and child health and then consider measures that are more child-specific—survival status of the last child, hemoglobin level of the last child, and immunization status of the last child. The results are presented in Tables 12 through 15 and Figures 3 and 4.

4.1 Antenatal Care

Antenatal care for the woman is more a function of a household's resource constraints than a woman's freedom. When respondent characteristics are significant, they are of the kind that increase her instrumental ability, an ability which serves household interest as much as and perhaps more than it reflects a concern for the woman herself. In our analysis we find that antenatal care is related to a number of socioeconomic indicators such as urban residence, income, and caste. Particularly important is the effect of women's education, particularly at higher levels of education. This, together with the finding that education was scarcely important in women's own health-related outcomes discussed in the sections above, strongly suggests its instrumental role rather than its role in increasing the capacity to be self-interested.

There is a relatively sparse effect of the standard socioeconomic measures (urban residence, caste, standard of living, husband's education).[7] In fact, lower caste women were 2.33 times more

[7] Compared with similar analyses done by us for other parts of India.

likely to have had antenatal care (Table 12). This testifies to the more widespread availability of services in West Bengal as well as a more egalitarian ideology about their use. These results are also consistent with the summary statistics in Table 3, where 89 percent of women in West Bengal had antenatal care for their last pregnancy. While this paper is not about the political and policy issues that determine access to antenatal care, the West Bengal findings are significant enough to merit mention here.

The empowerment variables show that younger women, as well as respondents who are much younger than their husbands, are more likely to have received antenatal care in their last pregnancy (Tables 12 and 13). While the finding for younger women may reflect period effects, the age-gap measure needs further investigation.

In terms of decisionmaking power, it is significant that the results are mixed and perhaps context specific. For example, respondents that do not need permission to visit family and friends are much less likely to have received antenatal care in the last pregnancy, a puzzling result in line with the fruit-consumption results.

Contribution to total household income had a negative impact on antenatal care at higher levels of income, reflective perhaps of both time constraints as well as the fact that earned income does not necessarily lead to empowerment.

4.2 Place of Delivery of Last Birth

This variable is related to the welfare of the child, but we can see that it is also related to the welfare of the woman in a more direct way than the child measures. That is, while the child variables may reflect empowerment as self-indulgence, this variable has implications for women's physical health.

Respondents in urban areas were significantly more likely to have gone to a medical facility for their last birth. The household standard of living effect was strong and as well. The traditional marker of female autonomy, education, is also significant here and autonomy is particularly high for higher levels of education, as for the antenatal care outcome. The spouse's education was not significant.

The effects of the power and responsibility variables vary. As with the antenatal care measure, younger women were 1.5 times more likely to have their last-born child delivered in a medical facility, but indulgences such as listening to the radio regularly had a negative effect, as did decisionmaking power over what to cook.

Thus, it seems that the instrumental power of women is most important in determining positive outcomes in this estimation.

4.3 Survival Status of Last Child

All women, both pregnant and nonpregnant, whose last birth took place within the five years preceding the survey were included in this estimation. It is intriguing that income as well as maternal education, both variables so crucial in research in the 1970s and 1980s, had only weak effects on this variable (Table 12). We think this is partly a period effect now that health services and health knowledge are more pervasive, and partly a state effect, in that West Bengal has had a stronger

Table 12 Odds ratios for respondents' overall health as it relates to pregnancy and related child health outcomes, 1998-1999 NFHS-2, West Bengal, India

Variable		Antenatal care in last pregnancy	Last-born child was delivered in medical facility	Last-born child still alive[1]	No anemia (last-born child)[1]
SOCIOECONOMIC CIRCUMSTANCES					
1. Location (1=Urban, 0=Rural)		2.7111**	7.3777**	1.1140	1.1091
2. Not in SC, ST, or OBC (1=Yes, 0=No)		0.4290**	0.8399	1.1467	1.8017**
3. Household Standard of Living Index (Ref: Low)	Medium	1.6782	1.8318**	0.7706	1.8089**
	High	3.1757	3.3614**	1.5377	1.6427
4. Number of household members		1.0003	0.8850**	1.1534**	0.9511
5. Sex of household head (1=Female, 0=Male)		0.8988	0.7895	0.7748	1.0821
6. Spouse's educational attainment (Ref: no education)	Incomplete primary (IP)	1.1544	0.8778	1.0166	1.0950
	Complete primary (CP)	2.6285	1.0063	2.1446	0.6280
	Incomplete secondary (IS)	1.2576	1.0857	1.8928	0.9460
	Complete secondary (CS)	0.8088	0.9091	2.4684	0.5195
	Higher (H)	0.6499	1.0736	1.1996	1.2100
7. Respondent's educational attainment (Ref: no education)	Incomplete primary (IP)	0.9380	1.9167**	4.5588**	1.0469
	Complete primary (CP)	1.4879	2.2477**	1.2975	0.6611
	Incomplete secondary (IS)	3.1097**	3.4899**	1.7684	2.1117**
	Complete secondary (CS)[2]	-	8.7090**	1.9265	1.8082
	Higher (H)[2]	-	-	-	1.7703
8. Whether respondent is pregnant (1=Yes, 0=No)		1.2127	1.2642	0.2898**	-
EMPOWERMENT VARIABLES					
9. Respondent's age (0=29 and below, 1=30 and above)		0.4877**	0.6453*	0.8673	0.6515
10. Age gap between respondent's partner and herself (Ref: 0-2 years)	3-5 years	0.9948	0.8411	7.1089**	1.4786
	6-9 years	2.3694*	0.6899	1.2443	1.3441
	10 years and more	1.3850	0.7707	0.6949	1.5647
11. Whether respondent usually reads a newspaper/magazine at least once a week (1=Yes, 0=No)		2.4529	1.2324	2.4476	4.2934**
12. Whether respondent usually listens to the radio once a week (1=Yes, 0=No)		1.4480	0.7403*	0.9099	0.8277
13. Is respondent allowed to visit family and friends (Ref: permission needed)	Permission needed [3]	-	-	-	-
	No permission req.	0.2044**	1.6586	0.1539*	1.3965
14. Decisionmaking: Respondent's health care (Ref: husband/others decide)	Jointly with husband/others	0.6130	0.7901	3.2051**	0.7126
	Own decision	0.4899	0.8083	1.9884	1.4870
15. Whether respondent is allowed to have money set aside to use as she wishes		0.6684	0.7947	1.6559	0.8821
16. Whether respondent does not think domestic violence is justified (1=Yes, 0=No)		1.1407	0.8436	1.7219	1.6908**
RESPONSIBILITY VARIABLES					
17. Respondent's contribution to total family earnings (Ref: none)	Almost none	2.4006	1.2792	1.0463	2.5957
	Less than half	1.8638	0.9292	0.6514	0.5444
	About half	0.6289	1.9004	1.2058	1.1506
	More than half	0.8259	1.1990	0.6976	1.4805
	All	0.3966*	1.4286	0.5019	0.8560
18. Decisionmaking: What to cook (Ref: husband/others decide)	Jointly with husband/others	1.5118	1.1707	2.9489*	1.6802
	Own decision	1.5645	0.5939**	3.0462**	1.6067
19. Decisionmaking: Purchasing jewelry/other household items (Ref: husband/others decide)	Jointly with husband/others	1.5848	1.0977	0.3115**	1.1577
	Own decision	1.0692	1.1114	0.3141*	1.0306
20. Is respondent allowed to go to market (Ref: not allowed to go)	Permission needed [4]	0.5035	1.6524	-	0.8825
	No permission required	1.6374	1.6462	-	0.5991
ADDITIONAL VARIABLES					
21. Sex of the last-born child (1=female, 0=male)		-	-	1.0260	0.9047
22. Whether mother does not has moderate/severe anemia (non-pregnant mothers only)		-	-	-	2.6729**
23. Current age of the last-born child		-	-	-	2.0218**
Sample Size		888	1,038	1,560	554
Wald Chi-Square		109.08	289.62	136.56	113.05

** = significant at α = 0.05, * = significant at α = 0.10

[1]Child survival was estimated for women whose last birth took place within 5 years preceding the survey; children's anemia was estimated for the last-born child who was at least one year old, but was no more than two years old.

[2]Note also that the respondent completing higher education (H≠0) or complete secondary schooling (CS≠0) predicted positive outcomes for antenatal care, last-born child's survival, and delivery in a medical facility perfectly, so those observations were dropped and those variables not used.

[3]In West Bengal, no respondent answered that she was not allowed to go visit family and friends, so the reference was changed to "permission needed."

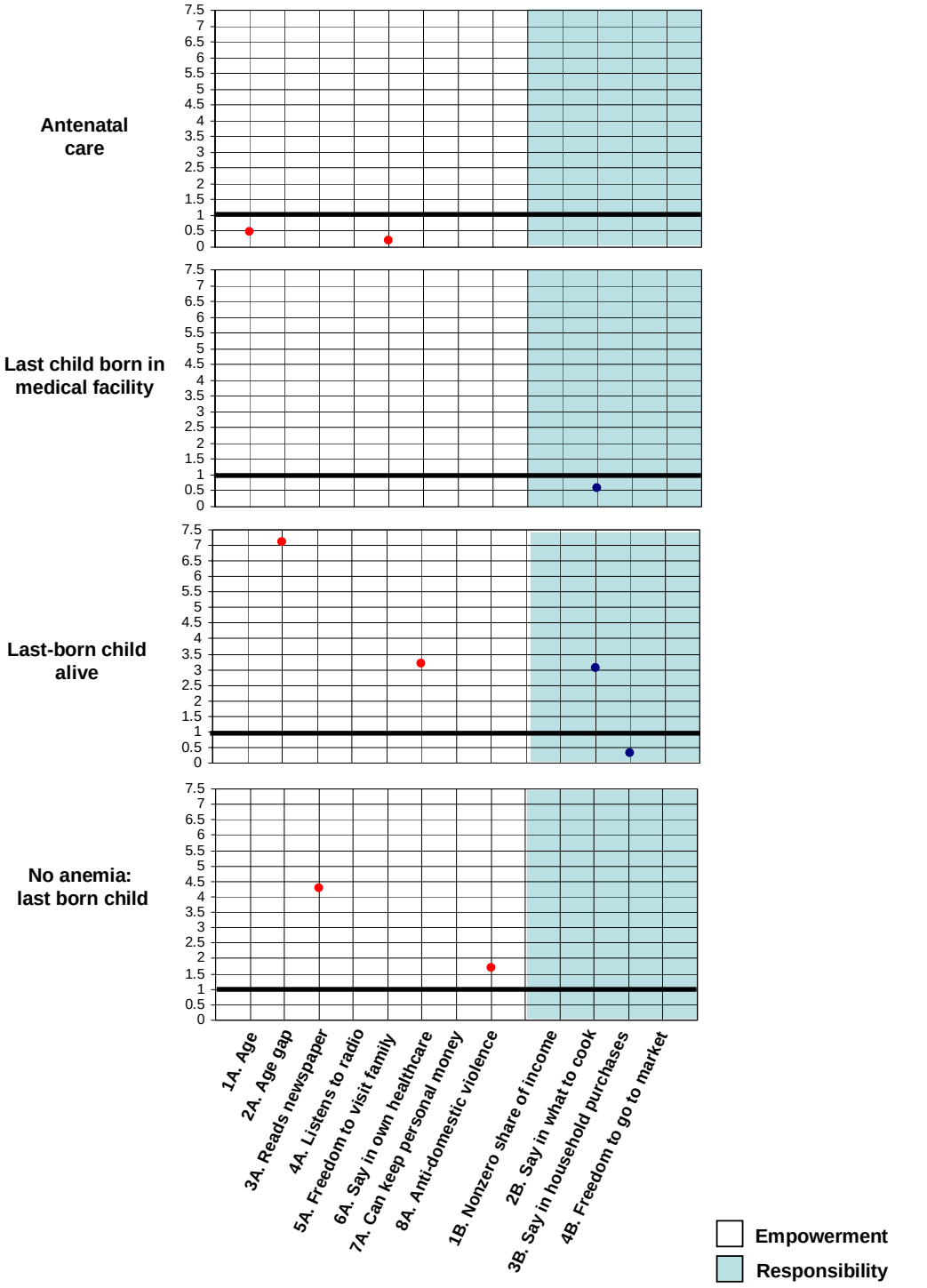
[4]Respondents' needing permission to go to the market was not included for child survival because it perfectly determined survival of the last-born child.

Table 13 Odds ratios for changes between categorical variables of respondents' overall health as it relates to pregnancy and related child health outcomes, 1998-1999 NFHS-2, West Bengal, India

Variable		Antenatal care in last pregnancy	Last-born child was delivered in medical facility	Last-born child still alive	No anemia (last-born child)
SOCIOECONOMIC CIRCUMSTANCES					
1. Household Standard of Living Index	(Medium→ High)	1.8924	1.8350	1.9955	.9080
2. Respondent's partner's educational attainment	(CS→H)	.8035	1.1810	.4859	2.3290*
	(IS→CS)	.6432	.8373	1.3041	.5491
	(CP→IS)	.4784	1.0788	.8825	1.5063
	(IP→CP)	2.2769	1.1464	2.1096	.5734
3. Respondent's educational attainment	(CS→H)	-	2.4832	-	.9790
	(IS→CS)	-	2.4954*	1.0893	.8563
	(CP→IS)	2.0900	1.5526	1.3629	3.1942**
	(IP→CP)	1.5861	-	.2846	.6314
EMPOWERMENT VARIABLES					
4. Age gap	(6 to 9 years→ 10 years or more)	.5845	1.1169	.5584	1.1641
	(3 to 5 years→6 to 9 years)	2.3818**	.8202	.1750**	.9090
5. Is respondent allowed to visit family and friends	(Permission needed → No permission required)	-	-	-	-
6. Decisionmaking: Respondent's health care	(Jointly with husband/others → Respondent makes decision)	.7993	1.0229	.6203	2.0866*
RESPONSIBILITY VARIABLES					
7. Respondent's contribution to total family earnings	(More than half → All)	.4801	1.1914	.7195	.5782
	(Half→ More than half)	1.3131	.6309	.5785	1.2866
	(Less than half→ Half)	.3375	2.0451	1.8509	2.1135
	(Almost none → Less than half)	.7764	.7264	.6226	.2097**
8. Decisionmaking: What to cook	(Jointly with husband/others →Respondent makes decision)	1.0348	.5073**	1.0329	.9562
9. Decisionmaking: Purchasing jewelry and other household items	(Jointly with husband/others →Respondent makes decision)	.6747	1.0125	1.0084	.8902
10. Is respondent allowed to go to market	(Permission needed → No permission required)	3.2517	.9962	-	.6789

** = significant at α = 0.05, * = significant at α = 0.10

Figure 3 Odds ratios for child health outcomes, 1998-1999 NFHS-2, West Bengal, India



Note: only effects with p-value of 0.05 included.

history of such public engagement. Indeed, of the few socioeconomic variables that are significant for this outcome, most relate to the demographics of the household, namely pregnancy (where women who were currently pregnant were 3.4 times more likely to have seen their last-born child die) and the number of household members (which also had a positive effect).

The age gap between the respondent and her spouse showed up as a very strong positive effect on child survival in the move from 0-2 to 3-5 years, but decreased in the shift from 3-5 to 6-9 years (Table 13 and Figure 3). We speculate that the dominant factors affecting this change are increased resources in the first case and decreased empowerment in the second.

Coming to the measures of self-indulgent empowerment, there are many variables that had a significant effect (although, as in previous estimations, these results are mixed). Control over own health care decisions had a strong positive effect, but not needing permission to visit family and friends actually had a negative impact on child survival in West Bengal, compared with the reference of needing permission.

The responsibility variables show that the respondent who is allowed to go to the market had a strong and positive effect on the odds of child survival in the state. Furthermore, decisionmaking power over what to cook had a strong and positive effect on child survival, probably reflecting a combination of maternal altruism and responsibility, but control over household purchasing had a large and negative effect on child survival.

These findings are in line with our proposition that child welfare is better served by the instrumental variables denoting responsibility than it is by straightforward female empowerment.

4.4 Hemoglobin Level of Youngest Living Child

As with all the other outcomes related to children, their relationship to women's empowerment in general could be interpreted to reflect both instrumental and self-indulgent capabilities. However, looking at the different components of women's empowerment that the NFHS-2 has information on, the role of instrumentality becomes more apparent. This is not to suggest that instrumentality does not imply some type of self-indulgence, but that power (or conditioning) also focuses on the woman's welfare, and may not necessarily benefit the child's welfare.

Maternal characteristics are much stronger than women's education in terms of children's anemia. A woman's hemoglobin level and how she takes care of herself are much more important than household resources or a woman's education.

This notion is supported by the empowerment/responsibility distinction. The responsibility variables have no statistically significant effect (except when there is a jump in contribution to family earnings from almost none to less than half, as shown in Table 13), whereas leisure, censuring domestic violence, and having control on her own health care are all positively associated.

4.5 Immunization Status of Child

We look in this paper at three measures of child related health outcomes as expressed through their immunization status—whether the last-born child has received all the necessary immunizations, any immunizations at all, and no immunizations. Our analysis shows that women's empowerment can work differently for women themselves and for family and child welfare.

Data for children's immunizations were collected in the survey only for children who were alive; as a result, for households where the last-born child had died, data on immunizations of the second-last-born child (including the sex of the second-last-born child), if available, were used instead.

Both household and environmental characteristics (captured in urban-rural residence and husband's education measures) were important for immunization (Tables 14 and 15). Urban households were much more likely to have their child vaccinated for any vaccine. Interestingly, lower caste households were also more likely to have their children vaccinated (similar to the result for antenatal care). Education (particularly of the respondent) also had a positive relationship. Income level had little effect here.

The effects of empowerment and responsibility are much less systematic than in the previous results (Figure 4). The negative relationship between the respondents' current age and the likelihood of her child getting any immunizations or getting the full regimen of immunizations can probably be explained by the fact that older mothers had their babies at a time when immunization coverage was more limited.

But the self-indulgent variables have interesting effects. Women who controlled their own health care decisions were also 5.5 times more likely to give the last child at least one immunization. However, keeping money for personal use, a variable that was associated with positive health outcomes for women, actually decreased the possibility of at least one immunization by a factor of two.

One of the most important deviations from previous results is the now positive impact of women's share of household income on child immunizations. While there is a negative effect on this variable for the lowest contribution income, women who contributed all of the household income were nearly 8 times more likely to have given their child at least one vaccine (Figure 4). This is qualified somewhat by the negative impact of decisionmaking power over cooking and household purchases (Tables 14 and 15), both of which could be related to time allocation problems.

Table 14 Odds ratios for children's immunizations, 1998-1999 NFHS-2, West Bengal, India

Variable		All vaccines	No vaccines	At least one vaccine
SOCIOECONOMIC CIRCUMSTANCES				
1. Location (1=Urban, 0=Rural)		2.3894**	0.2993**	2.9059**
2. Not in SC, ST, or OBC (1=Yes, 0=No)		0.7015	2.2943**	0.7955
3. Household Standard of Living Index (Ref: Low)	Medium	1.0211	0.9537	0.8968
	High	0.7240	-	-
4. Number of household members		0.9480**	1.0397	1.0083
5. Sex of household head (1=Female, 0=Male)		0.9303	1.2700	0.7575
6. Spouse's educational attainment (Ref: no education)	Incomplete primary (IP)	0.8770	1.0251	1.1493
	Complete primary (CP)	1.1904	0.3424*	2.2771
	Incomplete secondary (IS)	1.8362**	0.5484	1.8595
	Complete secondary (CS)	1.6099	0.5877	2.0205
	Higher (H)	1.5093	0.4712	2.7407
7. Respondent's educational attainment (Ref: no education)	Incomplete primary (IP)	1.4937	0.5079*	1.5449
	Complete primary (CP)	1.2851	0.7262	2.0180
	Incomplete secondary (IS)	3.5825**	0.2210**	2.1797
	Complete secondary (CS)[1]	3.2668**	0.7305	0.8961
	Higher (H)	6.0563**	-	-
8. Whether respondent is pregnant (1=Yes, 0=No)		0.8410	1.8862	0.2657**
EMPOWERMENT VARIABLES				
9. Respondent's age (0=29 and below, 1=30 and above)		0.4167**	1.9407**	0.5672
10. Age gap between respondent's partner and herself (Ref: 0-2 years)	3-5 years	0.8936	1.0025	0.8069
	6-9 years	0.6101	0.6832	1.2296
	10 years and more	0.8717	1.2186	0.5069
11. Whether respondent usually reads a newspaper/ magazine at least once a week (1=Yes, 0=No)		1.4339	0.2529	1.8221
12. Whether respondent usually listens to the radio once a week (1=Yes, 0=No)		0.9862	0.9827	1.1066
13. Is respondent allowed to visit family and friends (Ref: permission needed)	Permission needed[2]	-	-	-
	No permission required	1.2252	0.6605	2.3151
14. Decisionmaking: Respondent's health care (Ref: husband/ others decide)	Jointly with husband/others	0.7240	1.1673	0.7078
	Own decision	1.4189	0.4867	5.4520**
15. Whether respondent is allowed to have money set aside to use as she wishes		1.1484	1.3914	0.5008**
16. Whether respondent does not think domestic violence is justified (1=Yes, 0=No)		0.9934	0.9831	1.2658
RESPONSIBILITY VARIABLES				
17. Respondent's contribution to total family earnings (Ref: none)	Almost none	1.6702	0.8907	0.0911**
	Less than half	1.0691	0.5808	1.3264
	About half	1.1000	0.8585	0.4104
	More than half	0.9074	1.0374	1.6244
	All	4.1459**	0.1616**	7.9738**
18. Decisionmaking: What to cook (Ref: husband/others decide)	Jointly with husband/others	0.8568	1.4774	0.5023
	Own decision	0.4235**	1.6852	0.6188
19. Decisionmaking: Purchasing jewelry/other household items (Ref: husband/others decide)	Jointly with husband/others	1.2582	0.7108	2.3369
	Own decision	0.3557**	8.2146**	0.2285*
20. Is respondent allowed to go to market (Ref: not allowed to go)	Permission needed[3]	1.2138	-	-
	No permission required	1.7301	0.3119	1.2542
ADDITIONAL VARIABLES				
21. Sex of the last-born child (1=female, 0=male)		0.8807	0.9258	0.9190
Sample Size		605	487	258
Wald Chi-square		125.77	40.74	53.0

** = significant at α = 0.05, * = significant at α = 0.10

[1]Respondents having higher education led to a perfect positive outcome for all DPT vaccines, and hence perfect negative outcome for all vaccines/no vaccines, which included DPT as one of the vaccines.

[2]In West Bengal, no respondent said that she was not allowed to go visit family and friends, so the reference was changed to "permission needed."

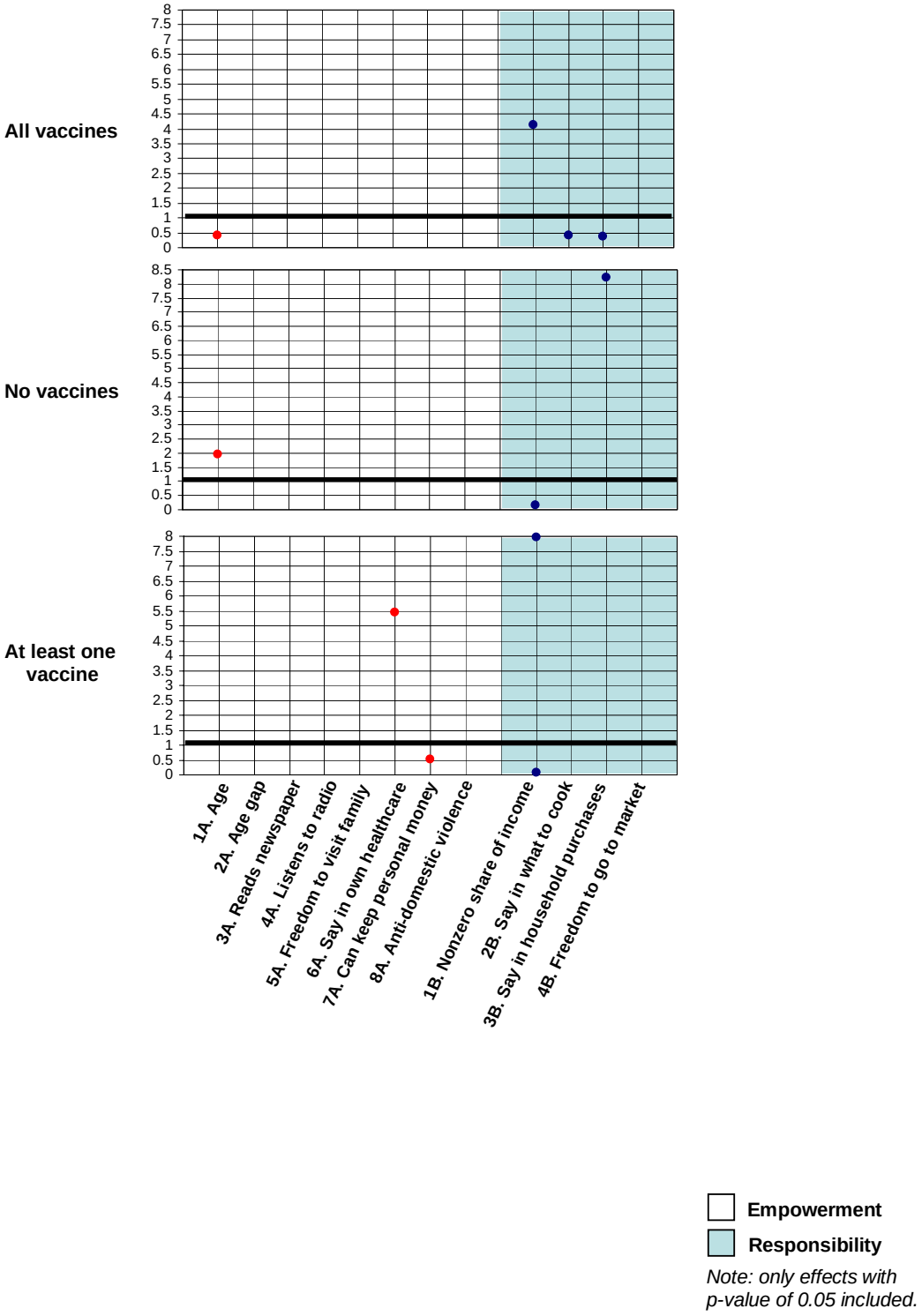
[3]Respondents' needing permission to go to the market was not included for polio (and hence all vaccines/no vaccines since polio was one of the vaccines included in the list) because, by including it with not needing permission, 5 successes (all polio vaccines = 1) were completely determined.

Table 15 Odds ratios for changes between categorical variables of children's immunizations, 1998-1999 NFHS-2, West Bengal, India

Variable		All vaccines	No vaccines	At least one vaccine
SOCIOECONOMIC CIRCUMSTANCES				
1. Household Standard of Living Index	(Medium→High)	.7090	-	-
2. Respondent's partner's educational attainment	(CS→H)	.9375	.8017	1.3564
	(IS→CS)	.8767	1.0717	1.0866
	(CP→IS)	1.5425	1.6013	.8165
	(IP→CP)	1.3573	.3340*	1.9813
3. Respondent's educational attainment	(CS→H)	1.8539	-	-
	(IS→CS)	.9118	1.7835	.4111
	(CP→IS)	2.7878**	.3043*	1.0801
	(IP→CP)	.8603	1.4298	1.3062
EMPOWERMENT VARIABLES				
4. Age gap	(6 to 9 years→ 10 years or more)	1.4288	1.7835	.4123**
	(3 to 5 years→6 to 9 years)	.6827	.6815	1.5239
5. Is respondent allowed to visit family and friends	(Permission needed → No permission required)	-6	-	-
6. Decisionmaking: Respondent's health care	(Jointly with husband/ others→ Respondent makes decision)	1.9596*	.4169	7.7022**
RESPONSIBILITY VARIABLES				
7. Respondent's contribution to total family earnings	(More than half → All)	4.5690*	.1557*	4.9088
	(Half→ More than half)	.8248	1.2084	3.9584
	(Less than half→ Half)	1.0289	1.4780	.3093
	(Almost none → Less than half)	.6401	.6520	14.5655**
8. Decisionmaking: What to cook	(Jointly with husband/others →Respondent makes decision)	.4942**	1.1406	1.2319
9. Decisionmaking: Purchasing jewelry and other household items	(Jointly with husband/others →Respondent makes decision)	.2826**	11.5562	.0977**
10. Is respondent allowed to go to market	(Permission needed → No permission required)	1.4253	-	-

** = significant at α = 0.05, * = significant at α = 0.10

Figure 4 Odds ratios for children's immunizations, 1998-1999 NFHS-2, West Bengal, India



5 DISCUSSION

Much of the literature on maternal characteristics as a determinant of health outcomes focuses on female empowerment as an important intervening variable in the relationship. It is argued in this literature that when women are empowered they become better wives and mothers, at least as far as health outcomes are concerned. In recent years, this literature has focused on reproductive health as being particularly sensitive to women's status and autonomy and there is a growing amount of literature that infers that these variables are also crucial to improving reproductive health.

However, it is much less clear about what it is that we measure when we talk of women's autonomy and empowerment. Measures that have gained popularity in recent years include the ability to do things such as make child health care decisions, move freely outside the home, and have a say in household expenditures. At least some of the popularity of these measures rests on the fact that they are derived from questions that are easy to ask in a large-scale survey, but it is not completely obvious that they are proxies of a greater control by women over their own lives because they can be answered much more ambiguously than a standard survey is able to capture and because at least some of these freedoms can coexist with severe constraints.

The concept of female empowerment is worth disentangling into absolute and instrumental components. The India NFHS-2 data helped to empirically explore these distinctions, and we used these data to propose that when empowerment is defined as freedom it should reflect women's abilities to look after themselves as much as their enhanced abilities to contribute to household (especially child) welfare. If it involves only (or primarily) the latter, it might be more appropriate to say that the empowerment is instrumental or reflects a greater responsibility for the family rather than a greater freedom of choices. True freedom requires some measure of self-indulgence and the freedom to do relatively unproductive things. The freedom to listen to the radio, to visit friends and relatives, to be against domestic violence under any circumstances, and to set aside money for personal use are proxies for this kind of unproductive autonomy. We found that these unproductive freedoms correlated better with reproductive health outcomes (such as food consumption, anemia, and health care for reproductive tract problems) that were related to women themselves rather than to their reproductive capacities as defined by the ability to bear healthy and surviving children. We also found that women's decisionmaking abilities in the household might increase women's ability to improve household (and especially child) welfare but does not necessarily lead to women's ability to look after themselves.

In Figures 1 through 4, we tried to distinguish between health-related outcomes that reflect self-indulgence and those that reflect responsibility. We separated the independent variables in the same way. The figures support our hypothesis that for women's own health outcomes, empowerment variables have an overwhelmingly positive effect whereas the responsibility variables (with a few exceptions) have a negative effect; this is relaxed if not reversed in many cases for children's outcomes.

The paper also raises questions about the applicability of characterizing some commonly used variables as measuring female empowerment. In particular, the share of household income is a problematic variable. While it has a positive (or statistically insignificant) relationship with children's outcomes, it has a negative relationship with women's own consumption of elite foods and other personal health outcomes. Another unanticipated finding related to the measure of control over decisionmaking that a woman has over her own health care. This measure almost always had a negative or statistically insignificant negative impact on a woman's welfare (food consumption,

anemia, BMI, seeking advice for RH problems), but a positive impact on most of the child health outcomes. This is probably related to the fact that having sole responsibility for her own health care is indicative of too little support for her own needs, while giving women the instrumental capacities to look after their children.

We have presented two hypotheses for the conceptualization of the relationship between women's empowerment and maternal and child health in demographic analysis. The data presented from the India NFHS-2 generally support the hypotheses, but further analysis is needed using data from other countries to refine our arguments and present a more complete picture.

REFERENCES

Agarwal, B. 1997. *Bargaining and gender relations: Within and beyond the household*. Food Consumption and Nutrition Division Discussion Paper No. 27. Washington, D.C.: International Food Policy Research Institute.

Balk, D. 1994. Individual and community aspects of women's status and fertility in Bangladesh. *Population Studies* 48(1): 21-45.

Basu, A.M. 1992. *Culture, the status of women and demographic behavior: Illustrated with the case of India*. Oxford: Clarendon Press.

Basu, A.M. 1997. Underinvestment in children: A reorganization of the evidence on the determinants of child mortality. In *The continuing demographic transition,* ed. G.W. Jones, R.M. Douglas, J.C. Caldwell and R.M. D'Souza. Oxford: Clarendon Press.

Basu, A.M. and S. Amin. 2000. Conditioning factors for fertility decline in Bengal: History, language identity, and openness to innovations. *Population and Development Review* 26(4): 761-794.

Blayo, C. and Y. Blayo. 2003. The social pressure to abort. In *The Sociocultural and Political Aspects of Abortion: Global Perspectives*, ed. A.M. Basu Westport, Connecticut: Praeger Publishers.

Beegle, K., E. Frankenberg, and D. Thomas. 1998. Bargaining power within couples and use of prenatal and delivery care in Indonesia. *Studies in Family Planning* 32(2): 130.

Desai, S. 2000. Maternal education and child health: A feminist dilemma. *Feminist Studies* 26(2): 425-448.

Desai, S. and S. Alva. 1998. Maternal education and child health: Is there a strong causal relationship? *Demography* 35(1): 71-81.

Dixon-Mueller, R. 1998. *Female empowerment and demographic processes: Moving beyond Cairo*. Policy and Research Papers No. 13. Paris: IUSSP.

Dyson, T. and M. Moore. 1983. On kinship structure, female autonomy, and demographic behavior in India. *Population and Development Review* 9(1): 35-60.

Emirbayer, M. and A. Mische. 1998. What is agency? *American Journal of Sociology*. 103(4): 962-1023.

England, P. 2000. Conceptualizing women's empowerment in countries of the north. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen. New York: Oxford University Press.

Faria V.E. and J.E. Potter 1999. Television, telenovelas, and fertility change in north-east Brazil. In *Dynamics of values in fertility change*, ed. R. Leete New York: Oxford University Press. 252-272.

Gage, A.J. 1995. Women's socioeconomic position and contraceptive behavior in Togo. *Studies in Family Planning* 26(5): 264-277.

Ghuman, S.J. 2003. Women's autonomy and child survival: A comparison of Muslims and non-Muslims in four Asian countries. *Demography* 40(3): 419.

Hashemi, S., S. Schuler, and A. Riley. 1996. Rural credit programs and women's empowerment in Bangladesh. *World Development* 24: 635-683.

Hobcraft, J. 2000. The consequences of female empowerment for child well-being: A review of concepts, issues and evidence in a post-Cairo context. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen New York: Oxford University Press.

Hoddinott, J. and L. Haddad. 1995. Does female income share influence household expenditures? Evidence from Côte d'Ivoire. *Oxford Bulletin of Economics and Statistics* 57(1): 77-96.

Jain A., K. Stein, M. Arends-Kuenning, M.R. Garate. 1996. *Measuring reproductive morbidity with a sample survey in Peru.* Working Papers No. 9. New York: Population Council, Programs Division.

Jeffrey, R. and A.M. Basu, eds. 1996. Girls' schooling, women's autonomy and fertility change in South Asia. Delhi: Sage Publications.

Jeffery, R. and P. Jeffery 1995. Jats and Sheikhs in Bijnor: Schooling, women's autonomy and fertility outcomes. In *Girls' schooling, women's autonomy and fertility change in South Asia*, ed. R. Jeffery and A. M. Basu. New Delhi, Sage Publishers.

Jejeebhoy, S.J. 1995 *Women's education, autonomy, and reproductive behaviour: Experience from developing countries*. Oxford: Clarendon Press.

Jejeebhoy, S.J. 2000. Women's autonomy in rural India: Its dimensions, determinants, and the influence of context. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen. New York: Oxford University Press.

Kishor, S. 2000. Empowerment of women in Egypt and links to the survival and health of their infants. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen. New York: Oxford University Press.

Malhotra, A., S.S. Schuler, and C. Boender. 2002. *Measuring women's empowerment as a variable in international development.* Commissioned paper of the Gender and Development Group of the World Bank, Washington, D.C.: The World Bank
http://www.worldbank.org/poverty/empowerment/events/feb03/pdf/malhotra.pdf?

Mason, K. 1986. The status of women: Conceptual and methodological issues in demographic studies. *Sociological Forum* 1(2): 284-300.

Mason, K. 1998. Wives' economic decision-making power in the family: Five Asian countries. In *The changing family in comparative perspective: Asia and the United States,* ed. K.O. Mason Honolulu: East-West Center.

Mason, K.O. and H.L. Smith. 2000. Husbands' versus wives' fertility goals and use of contraception: The influence of gender context in five Asian countries. *Demography* 37(3): 299-311.

Morgan. S.P., S. Stash, H.L. Smith, and K.O. Mason. 2002. Muslim and non-Muslim differences in female autonomy and fertility: Evidence from four Asian countries. *Population and Development Review* 28(3): 515-537.

Presser, H. 1986. Comment on "Changing values and falling birth rates." *Population and Development Review* 12 (Suppl.).

Pulerwitz, J., S.L. Gortmaker, and W. DeJong. 2000. Measuring sexual relationship power in HIV/STD research. *Sex Roles* 42(7/8): 637-660.

Quisumbing, A.R., E. Payongayong, J.B. Aidoo, and K. Otsuka. 1999. *Women's land rights in the transition to individualized ownership: Implications for the management of tree resources in western Ghana.* Food Consumption and Nutrition Division Discussion Paper No. 58. Washington, D.C.: International Food Policy Research Institute.

Saradamoni, K. 1977. Labor statistics: Wages, earnings and employment. In *Population Statistics in India*, ed. A. Bose, D.B. Gupta, and G. Raychaudhuri. New Delhi: Vikas.

Sen, G., A. Germain, and L.C. Chen 1994. *Population policies reconsidered: Health, empowerment and rights*. Harvard: Center for Population and Development Studies.

Tzannatos, Z. 1999. Women and labor market changes in the global economy: Growth helps, inequalities hurt and public policy matters. *World Development* 27(3): 551-569.

United Nations. 1991. *The world's women: trends and statistics.* New York: United Nations.

Williams, B. 2001. From freedom to liberty: The construction of a political value. *Philosophy and Public Affairs* 30(10): 3-26.

Zurayk H. 2001. The meaning of reproductive health for developing countries: The case of the Middle East. *Gender and Development* 9(2): 22-27.

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.

REFERENCES

Agarwal, B. 1994. *A field of one's own: Gender and land rights in South Asia*. Cambridge: Cambridge University Press.

Batliwala, S. 1994. The meaning of women's empowerment: New concepts from action. In *Population policies reconsidered: Health, empowerment and rights*, ed. G. Sen, A. Germain, and L.C. Chen. Cambridge, Massachusetts: Harvard University Press. 127-138.

Blumberg, R.L., ed. 1991. *Gender, family and economy: The triple overlap*. Newbury Park, California: Sage Publications.

Bruce, J., C. Lloyd, and A. Leonard, 1995. *Families in focus: New perspectives on mothers, fathers and children*. New York: The Population Council.

Bryk, A.S. and S.W. Raudenbush. 1992. *Hierarchical models: Applications and data analysis methods*. Newbury Park, California: Sage Publications.

Dixon-Mueller, R.B. 1978. *Rural women at work: Strategies for development in South Asia*. Baltimore, Maryland: Johns Hopkins University Press.

Duraisamy, P. and R. Malathy. 1991. Impact of public programs on fertility and gender specific investment in human capital of children in India: Cross-sectional and time series analysis. In *Research in population economics*, Vol. 7, ed. T.P. Schultz. Greenwich, Connecticut: Jai Press.

Dwyer, D. and J. Bruce, eds. 1988. *A home divided: Women and income in the third world*. Stanford, California: Stanford University Press.

Filmer, D. and L. Pritchett. 2001. Estimating wealth effects without expenditure data—or tears: An application to educational enrollments in states of India. *Demography* 38(1).

Jejeebhoy, S.J. 2000. Women's autonomy in rural India: Its dimensions, determinants, and the influence of context. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen. New York: Oxford University Press.

Jejeebhoy, S.J. and Z.A. Sathar. 2001. Women's autonomy in India and Pakistan: The influence of religion and region. *Population and Development Review* 27(4): 687-712.

Kabeer, N. 1994. Reversed realities: Gender hierarchies in development thought. New York: Verso Books.

Kabeer, N. 2001. Reflections on the measurement of women's empowerment. In *Discussing women's empowerment-theory and practice.* Sida Studies No. 3. Stockholm: Novum Grafiska AB.

Kishor, S. 2000. Empowerment of women in Egypt and links to the survival of their infants. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen. New York: Oxford University Press.

Kritz, M.M., P. Makinwa-Adebusoye, and D.T. Gurak. 2000. The role of gender context in shaping reproductive behaviour in Nigeria. In *Women's empowerment and demographic processes: Moving beyond Cairo*, H. Presser and G. Sen. New York: Oxford University Press.

Leacock, E. 1978. Women's status in egalitarian society: Implications for social evolution. *Current Anthropology* 19: 247-275.

MacLeod, A. 1992. Hegemonic relations and gender resistance: The new veiling as accommodating protest in Cairo. *Signs* 1: 533-557.

Malhotra, A., S.R. Schuler, and C. Boender. 2002. *Measuring women's empowerment as a variable in development.* World Bank Working Paper. Washington, D.C.: The World Bank.

Mason, K.O. 1986. The status of women: Conceptual and methodological issues in demographic studies. *Sociological Forum* 1(2): 284-300.

Mason, K.O. and H.L. Smith. 2003. Women's empowerment and social context: Results from five Asian countries. Washington, D.C.: The World Bank.

Mukhopadhyay, C.C. and P.J. Higgins. 1988. Anthropological studies of women's status revisited: 1977-1987. *Annual Review of Anthropology* 17:461-495.

O'Barr, J.F., ed. 1982. *Perspectives on power: Women in Africa, Asia and Latin America*. Durham, North Carolina: Duke University Press.

Presser, H. and G. Sen, eds. 2000. *Women's empowerment and demographic processes: Moving beyond Cairo*. New York: Oxford University Press.

Rosaldo, M.Z. 1980. The use and abuse of anthropology: Reflections on feminism and cross cultural understanding. *Signs* 5: 389-417.

Rutstein, S. 1999. Wealth versus expenditure: Comparison between the DHS wealth index and household expenditures in four departments of Guatemala. Unpublished.

Rutstein, S., K. Johnson, and D. Gwatkin. 2000. Poverty, health inequality, and its health and demographic effects. Paper presented at the 2000 Annual Meeting of the Population Association of America, Los Angeles, California.

Sacks, K. 1982. An overview of women and power in Africa. In *Perspectives on Power: Women Africa, Asia and Latin America,* ed. J.F. O'Barr. Durham, North Carolina: Duke University Press.

Smith, L.C., U. Ramakrishnan, A. Ndiaye, L. Haddad, R. Martorell. 2003. The importance of women's status for child nutrition in developing countries. In *Household decisions, gender, and development: A synthesis of recent research*, ed. A.R. Quisumbing. Washington, D.C.: International Food Policy Research Institute.

Thomas, D. 1990. Intra-household resource allocation: An inferential approach. *Journal of Human Resources* 25: 635-664.

Visaria, L. 1993. Female autonomy and fertility behaviour: An exploration of Gujarat data. In *Proceedings of International Population Conference of International Union for Scientific Study of Population, Montreal*, Vol. 4, Liege, Belgium: IUSSP. 263-275.

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

Zoë Matthews, Martyn Brookes, R. William Stones, and Mian Bazle Hossain

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

	Maharashtra NFHS-2[a]				
Characteristic	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

	Woman involved in decision to:			Permission not needed for woman to:		
Indicator	Obtain health care for self	Purchase jewelry and other items	Go and stay with family	Go to market	Visit friends and relatives	Woman allowed to have money set aside
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.

REFERENCES

Amin, S., Diamond, I., Naved, R.T. and Newby, M. 1998. Transition to adulthood of female garment factory workers in Bangladesh in the changing social context. *Studies in Family Planning* 29(2), Adolescent Reproductive Behavior in the Developing World, pp. 185-200

Balk, D. 1994. Individual and community aspects of women's status and fertility in rural Bangladesh. *Population Studies* 48:21-45.

Bhatia, J. and J. Cleland 1995. Self-reported symptoms of gynaecological morbidity and their treatment in south India. *Studies in Family Planning* 26:203-216.

Bloom, S.S., D. Wypij, and M. Das Gupta. 2001. Dimensions of women's autonomy and the influence on maternal health care utilization in a north Indian city. *Demography* 28(1):67-78.

Caldwell, J.C. 1986. Routes to low mortality in poor countries. *Population and Development Review* 12(2):171-220.

Campanelli, P. 1997. Testing survey questions: New directions in cognitive interviewing. *Bulletin de Methodologie Sociologique.* pp 3-17.

Cleland, J., N. Kamal and A. Sloggett. 1996. Links between fertility regulation and the schooling and autonomy of women in Bangladesh. In R. Jeffery and A. Basu (Eds.) *Girls schooling, women's autonomy and fertility change in south Asia.* New Delhi: Sage Publications.

Crook, N., R. Ramasubban, and B. Singh. 1991. A multi-dimensional approach to the social analysis of the health transition in Bombay. In J.G. Cleland and A.G. Hill (Eds.) *The Health transition: Methods and measures: Proceedings of an international workshop, London, June 1989*. Health Transition Series No. 3. Canberra, Australia: Health Transition Centre, The Australian University.

Das Gupta, M. 1987. Selective discrimination against female children in rural Punjab, India. *Population and Development Review* 13: 77-100.

Dixon-Mueller, R. and J. Wasserheit. 1991. *The culture of silence: Reproductive tract infections among women in the Third World.* New York: International Women's Health Coalition.

Durrant, V.L. and Z.A. Sathar. 2000. *Greater investments in children through women's empowerment: A key to demographic change in Pakistan?* Population Council Working Paper No. 137. New York: Population Council.

Dyson, T. and T. Moore. 1983. On kinship structure, female autonomy, and demographic behavior in India. *Population and Development Review* 9(1):35-54.

Filippi,V.G.A., W.J. Graham, and O.M.R. Campbell. 1990. *Utilizing survey data on maternity care in developing countries: An illustrative study*. Publication No. 3, Maternal and Child Epidemiology Unit, London School of Hygiene and Tropical Medicine. London: London School of Hygiene and Tropical Medicine

Fortney, J. and J. Smith. 1999. Measuring maternal morbidity. In Berer, M. and T.K. Sundari Ravindran, *Safe motherhood initiatives: Critical issues*, Reproductive Health Matters, Blackwell Science Ltd.

Ganapathy, S., J. Ramakrishna, and Z. Matthews. 1998. Birthrights and rituals: Care and careseeking in the intrapartum period in rural Karnataka. In C.P. Puri and P.F.A. Van Look (Eds) *Sexual and reproductive health: Recent advances, future directions.* New Age International Press Ltd.

Govindasamy, P. and A. Malhotra. 1996. Women's position and family planning in Egypt. *Studies in Family Planning* 27 (6):328-340.

Graham, W.J. 2002. Now or never: The case for measuring maternal mortality. *The Lancet* 359(9307):701-704.

Graham, W.J., C. Ronsmans, V. Filippi, O. Campbell, E.A. Goodburn, T. Marshall, C. Shulman, and J. Davies. 1995. *Asking questions about women's reproductive health in community-based surveys: Guidelines on scope and content.* Maternal and Child Epidemiology Unit Publication No. 6. London: London School of Hygiene and Tropical Medicine.

Griffiths, P.L., P.R.A. Hinde, and Z. Matthews. 2001. Infant and child mortality in three culturally contrasting states of India. *Journal of Biosocial Science 33:*603-622.

Hobcraft, J. 2000. The consequences of female empowerment for child well-being: A review of concepts, issues and evidence in a post-Cairo context. In Harriet B. Presser and Gita Sen (Eds*) Women's empowerment and demographic processes: Moving beyond Cairo*, New York: Oxford University Press.

Hossain, M.B., J.F. Philips, B. Pence, and I.D. Diamond. 2000. The effects of constrained women's status on infant and child mortality in four rural districts of Bangladesh. Paper presented at the Annual Meeting of the Population Association of America, Los Angeles, CA, 23-25 March.

Hulton, L.A., Z. Matthews, and R.W. Stones. 2000. *A framework for the evaluation of quality of care in maternity services.* UK: University of Southampton.

International Institute for Population Sciences (IIPS) and Macro International Inc. 1995. *National Family Health Survey (NFHS-1), India, 1992-93: Maharashtra.* Mumbai: India.

International Institute for Population Sciences (IIPS) and Macro International Inc. 2002. *National Family Health Survey (NFHS-2), India, 1992-93: Maharashtra.* Mumbai: India.

Jeffery, R. and P. Jeffery. 1997. Population, gender and politics: Demographic change in rural north India. Cambridge: Cambridge University Press.

Jejeebhoy, S. 1991. Women's status and fertility: Successive cross-sectional evidence from Tamil Nadu, India. *Studies in Family Planning* 22:217-230.

Jejeebhoy, S. 1995. *Women's education, autonomy and reproductive behavior: Experience from developing countries.* Oxford: Clarendon Press.

Jejeebhoy, S.J. 2000. Women's autonomy in rural India: Its dimensions, determinants and the influence of context. In H.B. Presser and G. Sen (Eds.*) Women's empowerment and demographic processes*: *Moving beyond Cairo*. New York: Oxford University Press.

Jejeebhoy, S.J. and Z.A. Sathar. 2001. Women's autonomy in India and Pakistan: The influence of religion and region. *Population and Development Review* 27 (4):687-712.

Kausar, F., P. Griffiths, and Z. Matthews. 1999. *Poverty and maternal health care utilisation in Maharashtra: Associated influences on infant mortality and morbidity*. Opportunities and choices working paper. UK: University of Southampton.

Khan, A. 1999. Mobility of women and access to health and family planning services in Pakistan. *Reproductive Health Matters* 7(14): 39-48.

Kishor, S. 2000. Empowerment of women in Egypt and links to the survival and health of their infants. In H.B. Presser and G. Sen (Eds.*) Women's empowerment and demographic processes*: *Moving beyond Cairo*. New York: Oxford University Press.

Koblinsky, M., K. McLaurin, P. Russell-Brown, and P. Gorbach (Eds.). 1995. *Indicators for reproductive health programme evaluation: Final report of the subcommittee on safe pregnancy*. The Evaluation Project. Chapel Hill, North Carolina, USA: Carolina Population Centre.

Matthews, Z., S. Mahendra, A. Kilaru, and S. Ganapathy. 2001. Antenatal care, careseeking and morbidity in rural Karnataka, India: Results of a prospective study. *Asia-Pacific Population Journal (June)*: 11-28.

Matthews, Z., R. Ramasubban, B. Singh, and R.W. Stones. 2003. *Autonomy and maternal health-seeking among slum populations of Mumbai, Social Statistics*. Applications and Policy Working Papers. Available at http://www.ssrc.soton.ac.uk/archive/00008141/. Southampton, UK: Southampton Statistical Research Institute.

Matthews, Z., R. Ramasubban, B. Singh, L. Hulton, and R.W. Stones. 2002. *The Mumbai Safe Motherhood Survey: Questionnaire Modules*. UK: University of Southampton.

Mason, V. 1989. *Women's experience of maternity care – a survey manual.* London: Office of Population Censuses and Surveys, Social Surveys Division. Her Majesty's Stationary Office.

Morgan, P. and B. Niraula. 1995. Gender inequality and fertility in two Nepali villages. *Population and Development Review* 21(3): 541-561.

Mumtaz, Z. 2002. Gender and reproductive health: A need for reconceptualisation. Ph.D. dissertation, London School of Hygiene and Tropical Medicine.

Okojie, C.E. 1994. Gender inequalities of health in the third world. *Social Science and Medicine* 39(9): 1237-47.

Oppenheim Mason K. 1995. Is the situation of women in Asia improving or deteriorating? *Asia-Pacific Population Research Report* 6:1-20.

Ramasubban, R. and N. Crook. 1995. Spatial patterns of health and mortality. In S. Patel, and A. Thorner (Eds.) *Bombay, metaphor for modern India*. Bombay, India: Oxford University Press.

Ramasubban, R. and B. Singh. 2001. Weakness ("Ashaktapana") and reproductive health among women in a slum population in Mumbai. In C.M. Obermeyer (Ed), *Cultural perspectives on reproductive health*. New York: Oxford University Press.

Ramasubban, R. and B. Singh. 2005. Women's reproductive health narratives from Mumbai. In M. Koenig and S. Jejheebhoy (Eds.) *Reproductive health in India: New evidence and issues.* Proceedings of a meeting in Pune. New Delhi: Ford Foundation.

Rosenfield, A., and D. Maine. 1985. Maternal mortality—A neglected tragedy: Where is the M in MCH? *The Lancet* (July):83-85.

Santow, G. 1995. Social roles and physical health: The case of female disadvantage in poor countries. *Social Science and Medicine* 40: 147-161.

Sathar, Z. and S. Kazi. 1997. *Women's autonomy, livelihood and fertility: A study of rural Punjab*. Pakistan Institute of Development Economics Research Report. Islamabad.

Starrs, A. 1997. *The safe motherhood action agenda: Priorities for the next decade, report on the safe motherhood technical consultation.* Colombo, Sri Lanka: Family Care International and the Agency Group for Safe Motherhood.

Steele, F., I. Diamond and S. Amin. 1996. Immunization uptake in rural Bangladesh: A multilevel analysis. *Journal of the Royal Statistical Society* (Series A) 159:289-299.

Stewart, M.K., C.K. Stanton, and O. Ahmed. 1997. *Maternal health care.* DHS Comparative Studies No. 25. Calverton, Maryland: Macro International Inc.

Sutton, S. 1997. Theory of planned behavior. In Baum et al. (eds.) *Cambridge handbook of psychology, health and medicine.* Cambridge, U.K.: Cambridge University Press.

Thaddeus, S. and D. Maine. 1994. Too far to walk: Maternal mortality in context. *Social Science and Medicine* 38(8): 1091-1110.

United Nations. 1995. *The challenge of urbanization: The world's largest cities.* Population Division ST/ESA/SER.A/151. New York: United Nations.

United Nations. 2001. *The state of the world's cities*. Geneva: United Nations Centre for Human Settlements.

Vermunt, J.K. 1997. LEM, a general program for the analysis of categorical data. Tilburg, The Netherlands: Tilburg University.

Villar, J. and P.Bergsjø. 1997. Scientific basis for the content of routine antenatal care: Philosophy, recent studies, and power to eliminate or alleviate adverse maternal outcomes. *Acta Obstetrica et Gynecologica Scandinavica* 76:1-14.

Villar J., H. Ba'aqeel, and G.Piaggio. 2001. WHO antenatal care randomised trial for the evaluation of a new model of routine antenatal care. *The Lancet*, 357:1551-1564.

Visaria, L. 1993. Female autonomy and fertility behavior: An explanation of Gujerat data. *Proceedings of the International Population Conference*. 4:263-275. Leige, Belgium: International Union for the Scientific Study of Population.

World Health Organization (WHO). 1996. *Antenatal care, report of a technical working group*. Geneva: World Health Organization (Ref. WHO/FRH/MSM/96.8).

Yesudian, C.A.K. 1988. *Utilisation of health services by the urban poor in Bombay*. Deonar, Bombay, India: Tata Institute of Social Sciences.

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 Survelliance, 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)*

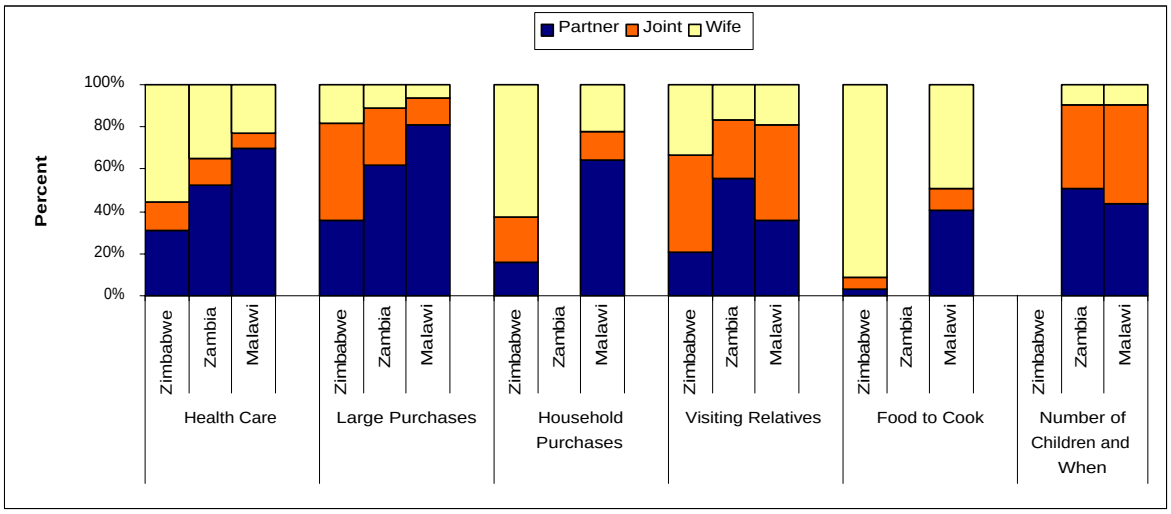
Variable	Zimbabwe	Zambia	Malawi
WOMEN'S STATUS IN SOCIETY			
Okay to beat wife if she goes out without permission			
No	70.6	17.6	82.4
Yes	29.4	82.4	17.6
Okay to beat wife if she neglects the children			
No	67.0	36.2	77.7
Yes	33.0	63.8	22.3
Okay to beat wife if she argues with her spouse			
No	64.2	43.5	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).

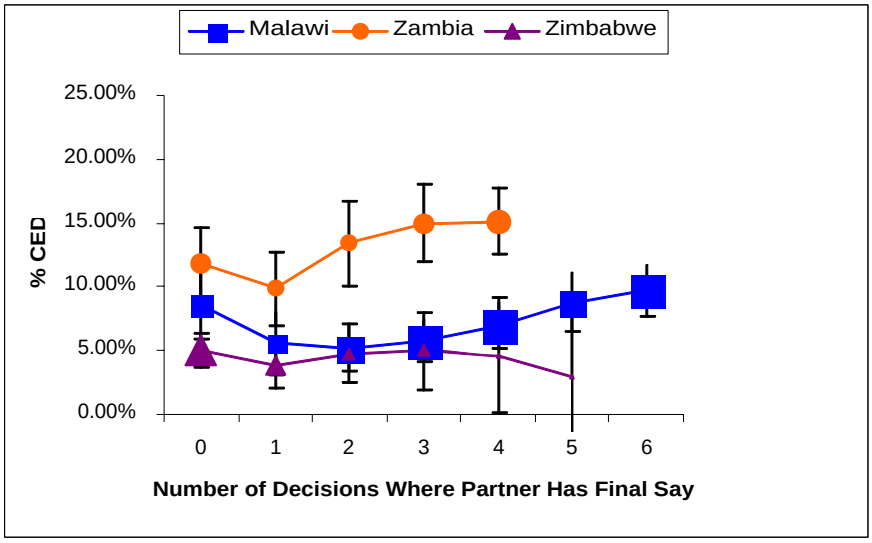
Patterns of decisionmaking autonomy are similar in Zambia and Malawi. In both Zambia and Malawi, the more domains in which partners have the final say, the more likely the woman is to

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.

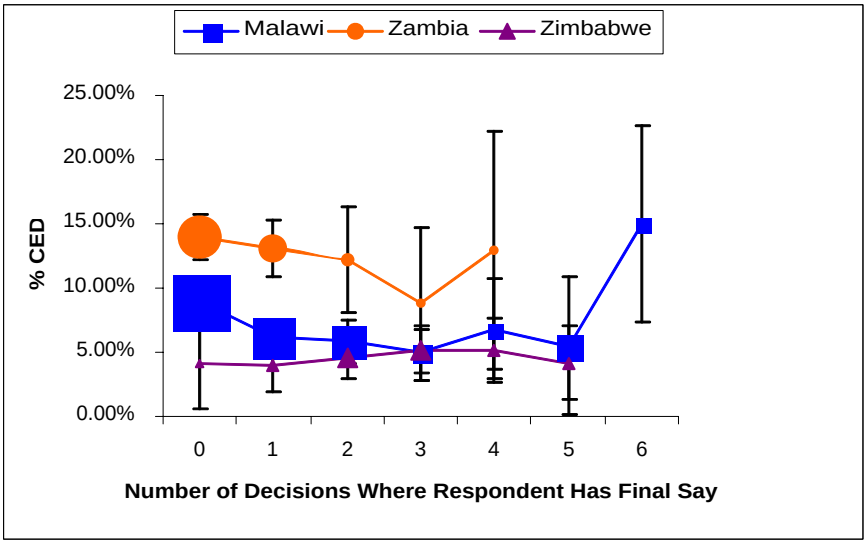
Figure 2 is designed to further explore the relationship between decisionmaking autonomy and CED. In figures 2A and 2B, there is a small but interesting group where partners make no final decisions and women make all the final decisions. Each panel in the figure presents the percentage of women who have 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.

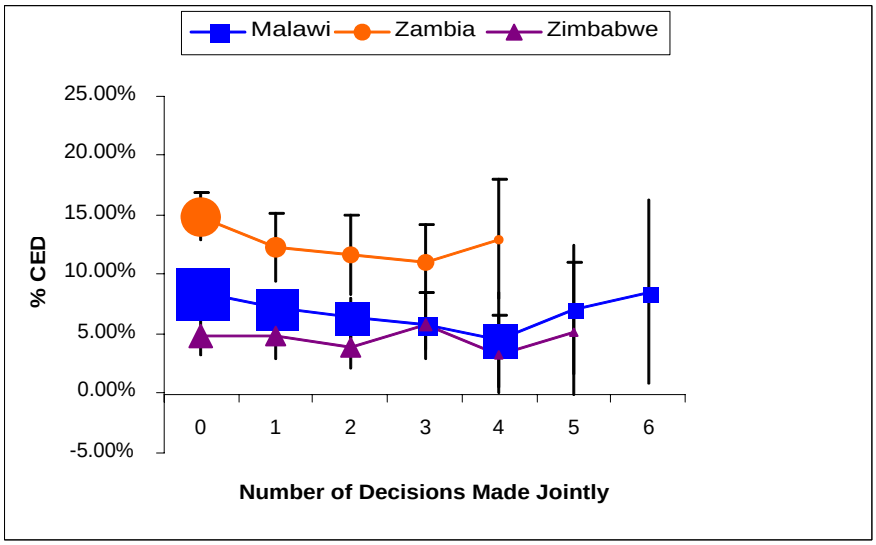
Figure 2 Percentage of women with chronic energy deficiency (CED) according to the number of decisions made (A) by the partner, (B) by the respondent, and (C) jointly



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.

REFERENCES

Abbas, J.D. 1997. Gender asymmetries in intrahousehold resource allocation in sub-Saharan Africa: Some policy implications for land and labor productivity. In L. Haddad, J. Hoddinott, and H. Alderman (Eds.), *Intrahousehold resource allocation in developing countries: Models, methods and policy.* Baltimore, Maryland: Johns Hopkins University Press. 249-262.

Administrative Committee on Coordination/Subcommittee on Nutrition (ACC/SCN). 2001. *Nutrition and HIV/AIDS*. Report Number 20. Geneva: ACC/SCN.

Baqui, A.H., S.E. Arifeen, S. Amin, and R.E. Black. 1994. Levels and correlates of maternal nutritional status in urban Bangladesh. *European Journal of Clinical Nutrition* 48: 349-357.

Bindon, J.R. and V.J. Vitzthum. 2002. Household economic strategies and nutritional anthropometry of women in American Samoa and highland Bolivia. *Social Science and Medicine* 54: 1299-1308.

Grinspoon, S. and K. Mulligan. 2003. Weight loss and wasting in patients infected with human immunodeficiency virus. *Clinical Infectious Diseases* 36: S69-S78.

Hindin, M.J. 2000. Women's power and anthropometric status in Zimbabwe. *Social Science and Medicine* 51: 1517-1528.

Hindin, M.J. 2003. Understanding women's attitudes towards wife beating in Zimbabwe. *Bulletin of the World Health Organization* 81: 501-508.

Hindin, M.J. and L.S. Adair. 2002. Who's at risk? Factors associated with intimate partner violence in the Philippines. *Social Science and Medicine* 55: 1385-1399.

James, W.P., A. Ferro-Luzzi, and J.C. Waterlow. 1988. Definition of chronic energy deficiency in adults. Report of a working party of the International Dietary Energy Consultative Group. *European Journal of Clinical Nutrition* 42: 969-981.

Jewkes, R. 2002. Intimate partner violence: causes and prevention. *Lancet* 359: 1423-1429.

Koenig, M.A., S. Ahmed, M.B. Hossain, and A.B. Khorshed Alam Mozumder. 2003. Women's status and domestic violence in rural Bangladesh: Individual- and community-level effects. *Demography* 40: 269-288.

Morris, J.T. and S. Lewis. 2003. *Mission report: Lesotho, Malawi, Zambia, and Zimbabwe—22-29 January 2003*. New York: United Nations.

Niyongabo, T., D. Henzel, J.M. Ndayishimyie, J.C. Melchior, A. Ndayiragije, J.B. Ndihokubwayo et al. 1999. Nutritional status of adult inpatients in Bujumbura, Burundi (impact of HIV infection). *European Journal of Clinical Nutrition* 53: 579-582.

Rukuni, M. 2002. Africa: Addressing growing threats to food security. *Journal of Nutrition* 132: 3443S-3448S.

Salomon, J., T.P. De, and J.C. Melchior. 2002. Nutrition and HIV infection. *British Journal of Nutrition* 87(Supp. l): S111-S119.

Southern African Development Community (SADC) Food, Agriculture, and Natural Resources (FANR) Vulnerability Assessment Committee. 2003. *Towards identifying impacts of HIV/AIDS on food security in southern Africa and implications for response: Findings from Malawi, Zambia and Zimbabwe*. Harare, Zimbabwe: SADC FANR.

UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance. 2001. *Epidemiological fact sheets on HIV/AIDS nd sexually transmitted infections. Zimbabwe. 2002 update* (revised). Available at http://www.who.int/emc-hiv/fact_sheets/pdfs/Zimbabwe_EN.pdf.

Wanke, C.A., M. Silva, A. Ganda, J. Fauntleroy, D. Spiegelman, T.A. Knox et al. 2003. Role of acquired immune deficiency syndrome—defining conditions in human immunodeficiency virus-associated wasting. *Clinical Infectious Diseases* 37(Suppl. 2): S81-S84.

Zachariah, R., M.P. Spielmann, A.D. Harries, and F.M. Salaniponi. 2002. Moderate to severe malnutrition in patients with tuberculosis is a risk factor associated with early death. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 96: 291-294.

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.

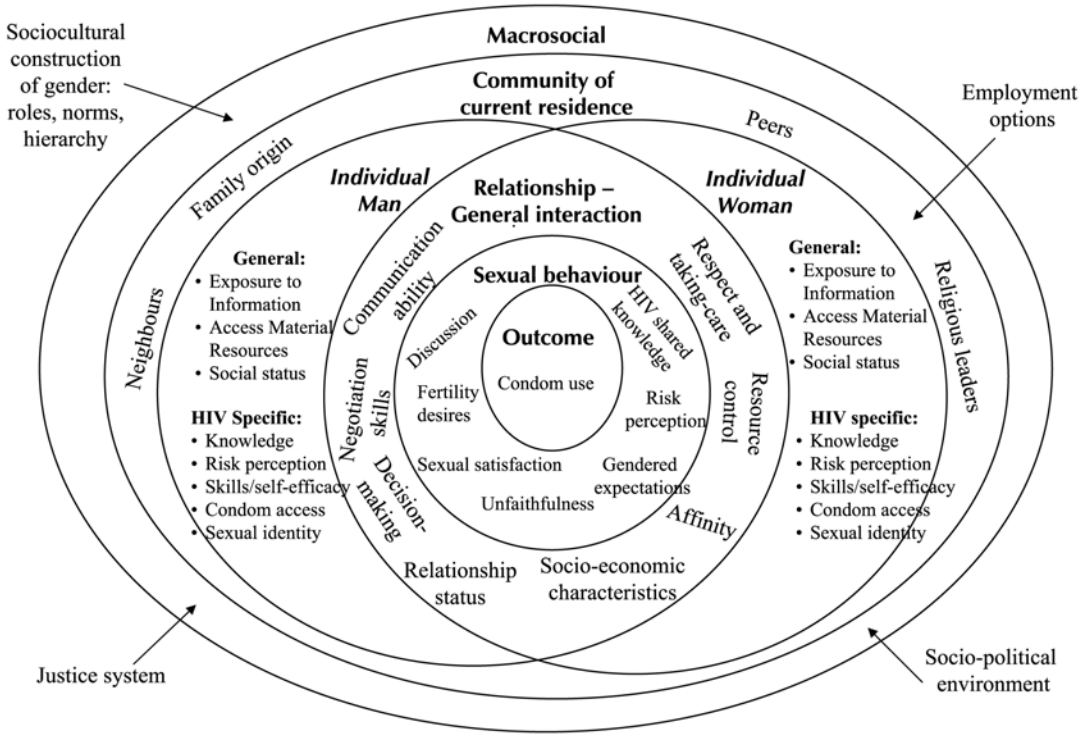
2 GENDERED ACCESS TO RESOURCES, COUPLE DYNAMICS, AND CONDOM USE: A CONCEPTUAL FRAMEWORK

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.

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[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)

Sexual activity and condom use	Zimbabwe		Uganda	
	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.

REFERENCES

Acharya, M. and L. Bennett. 1982. *Women and the subsistence sector: Economic participation and household decisionmaking in Nepal.* World Bank Staff Working Paper 526. Washington, D.C.: World Bank.

Akwara, P., N. Madise, and A. Hinde. 2003. Perception of risk of HIV/AIDS and sexual behaviour in Kenya. *Journal of Biosocial Science* 35: 385-441.

Allen, S., et al. 1991. Human immunodeficiency virus infection in urban Rwanda. Demographic and behavioral correlates in a representative sample of child-bearing women. *Journal of the American Medical Association* 266: 1657-1663.

Anderson, S.R., J.W. Bainbridge, A. Shah, G. El-Jasser, H.D.D. Brook, and M. Kapila. 1990. AIDS education in rural Uganda—a way forward. *International Journal of STDs and AIDS* 1: 335-339.

Annandale, E. and J. Clark. 1996. What is gender? Feminist theory and the sociology of human reproduction. *Sociology of Health and Illness* 18(1): 17- 44.

Becker, G. 1981. *A treatise on the family*. Cambridge, Massachusetts: Harvard University Press.

Berkley, S.F., W.R. Widy, and S.I. Okware. 1989. Risk factors associated with HIV infection in Uganda. *Journal of Infectious Diseases* 160: 22-30.

Blanc, A. and B. Wolff. 2001. Gender and decisionmaking over condom use in two districts in Uganda. *African Journal of Reproductive Health* 5(3): 15-28.

Brahmbhatt, H., D. Bishai, F. Wabwire-Mangen, G. Kigozi, M. Wawer, and R. Gray. 2002. Polygyny, maternal HIV status and child survival: Rakai, Uganda. *Social Science and Medicine* 55: 585-592.

Bryceson, D.F. (Ed.) 1995. *Women wielding the hoe: Lessons from rural Africa for feminist theory and development practice*. Oxford: Berg Publishers.

Caldwell, J.C., I.O. Orubuloye, and P. Caldwell. 1999. Obstacles to behavioral change to lessen the risk of HIV infection in the African AIDS epidemic: Nigerian research. *Health Transition Review* 9: 113-124.

Celentano, D.D., M.S. Linet, and W.F. Stewart. 1990. Gender differences in the experience of headache. *Social Science and Medicine* 30: 1289-1295.

Cohen, B. and J. Trussell. 1996. *Preventing and mitigating AIDS in sub-Saharan Africa: Research and data priorities for the social and behavioral sciences*. Washington D.C.: National Academy Press.

Collins, J. and B. Rau. 2000. United Nations Research Institute for Social Development (UNRISD) Programme on social policy and development. Paper Number 4. Washington, D.C.: UNRISD and UNAIDS.

Connel, R.W. 1985. Theorizing gender. *Sociology* 19(2): 260-272.

Correa, S. and R. Reichmann. 1994. *Population and reproductive rights: Feminist perspectives from the South.* London: Zed Books.

Dallabetta, G.A., P.G. Miotti, and J.D. Chiphangwi. 1993. High socioeconomic status is a risk factor for human immunodeficiency virus Type 1 infection, but not for sexually transmitted diseases in women in Malawi: Implications for HIV-1 control. *Journal of Infectious Diseases* 167: 36-42.

de Bruyn, M. 1992. Women and AIDS in developing countries. *Social Science and Medicine* 34(3): 249-262.

Di Stefano, C. 1990. Dilemmas of difference: Feminism, modernity and postmodernism. In L. Nicholson (Ed.) *Feminism and postmodernism.* New York: Routledge.

Di Stefano, C. and J. Lorber. 1998. Paradoxes of gender [review]. *Summer* 23 (4): 1068-1072.

Dixon-Mueller, R. 1993. The sexuality connection in reproductive health. *Studies in Family Planning* 24(5): 269-82.

Forster, S.J. and K.E. Furley. 1989. 1988 Public awareness survey on AIDS in Uganda. *AIDS* 3: 147-154.

Fylkesnes, K., et al. 1997. The HIV epidemic in Zambia: Socio-demographic prevalence patterns and indications of trends among childbearing women. *AIDS* 11: 339-345.

Goetz, A. M. and R. Sen Gupta. 1996. Who takes the credit? Gender, power, and control over loan use in rural credit programs in Bangladesh. *World Development* 24(1): 45-63.

Greenhalgh, S. 1995. Anthropology theorizes reproduction: Integrating practice, political economic and feminist perspectives. In S. Greenhalgh (Ed.) *Situating fertility.* Cambridge: Cambridge University Press.

Greenhalgh, S. 1991. *Women in the informal enterprise: Empowering or exploitation?* Working Paper No. 33. New York: Population Council Research Division.

Gregson, S., T. Zhuwau, R.Y. Anderson, and K. Chandiwana. 1998. Is there evidence for behavior change in response to AIDS in rural Zimbabwe? *Social Science and Medicine* 46(3): 321-330.

Grosskurth, H. 1995. A community trial of the impact of improved sexually transmitted disease treatment on the HIV epidemic in rural Tanzania: Baseline survey results. *AIDS* 9: 927-934.

Hargreaves, J. and J. Glynn. 2002. Educational attainment and HIV-1 infection in developing countries: A systematic review. *Tropical Medicine and International Health* 70(6): 489-498.

Hillier L., L. Harrison, and D. Warr. 1998. "When you carry condoms all the boys think you want it": Negotiating competing discourses about safe sex. *Journal of Adolescence* 21(1): 15-29.

Ingham, R. and G. van Zessen. 1997. Towards an alternative model of sexual behavior: From individual properties of interactional processes. In Van Campenhoudt, L.M. Cohen, G. Guizzardi, and D. Hausser (Eds.) *Sexual interactions and HIV risk: New conceptual perspectives in European research.* London: Taylor and Francis.

Jejeebhoy S. and Z. Sathar. 2001. Women's autonomy in India and Pakistan: The influence of religion and region. *Population and Development Review* 27(4): 687-712.

Kabeer, N. 1995. *Necessary, sufficient or irrelevant? Women, wages and intra-household power relations in urban Bangladesh*. Institute of Development Studies, Working Paper 25. Sussex, U.K.: IDS.

Kabeer, N. 1999. *The conditions and consequences of choice: Reflections on the measurement of women's empowerment.* United Nations Research Institute for Social Development Discussion Paper No. 108. Geneva: UNRISD.

Kaleeba, N., S. Ray, and B. Willmore. 1991. We miss you all: AIDS in the family. Harare, Zimbabwe: Women and AIDS Support Network.

Kilian, A.H., et al. 1999. Reductions in risk behavior provide the most consistent explanation for declining HIV-1 prevalence in Uganda. *AIDS* 13: 391-398.

Kim, N., B. Stanton, X. Li, K. Dickerson, and J. Galbraith. 1997. Effectiveness of the 40 adolescent AIDS-risk reduction interventions: A quantitative review. *Journal of Adolescent Health* 20: 204-215.

Kirunga, C.T. and J.P. Ntozi. 1997. Socioeconomic determinants of HIV serostatus: A study of Rakai District, Uganda. *Health Transition Review* 7(suppl.): 175-188.

Lorber, J. 1994. *Paradoxes of gender*. New Haven and London: Yale University Press.

Lundberg, O. 1990. *Inequality in health: On class and sex differences in illness*. Stockholm: Stockholm University, Swedish Institute for Social Research 11.

Marcus, R. 1993. *Gender and HIV/AIDS in sub-Saharan Africa: The cases of Uganda and Malawi*. Report 13. Brighton, U.K.: Bridge (development-gender) Institute of Development Studies, University of Sussex.

Masika, R. and S. Joekes. 1996. *Employment and sustainable livelihoods: A gender perspective*. Report 37. Brighton, U.K.: Institute of Development Studies, University of Sussex.

Mason, K. 1993. The impact of women's position on demographic change during the course of development. In N. Federici and K. Mason (Eds.) *Women's position and demographic change.* Oxford: Clarendon Press.

Mason, K. 1995. *Gender and demographic change: What do we know?* Liege, Belgium: International Union for the Scientific Study of Population.

Meursing, K. and F. Sibindi. 1995. Condoms, family planning and living with HIV in Zimbabwe. *Reproductive Health Matters* 5: 56-67.

Morgan, D. et al. 2001. Genital ulceration in rural Uganda: Sexual activity and the implications for HIV control. *Sexually Transmitted Diseases* 28(8): 431-436.

Nduati, R. and W. Kiai. 1997 *Communicating with adolescents about AIDS: Experience from Eastern and Southern Africa*. Ottawa, ON: International Development Research Center.

Ogden, J.A. 1996. Reproductive identity and the proper woman: The response of urban women to AIDS in Uganda. Ph.D. dissertation, University of Hull.

Okojie, C.E. 1994. Gender inequalities of health in the Third World. *Social Science and Medicine* 39(9): 1237-1247.

Quigley, M. et al. 1997. Sexual behavior patterns and other risk factors for HIV infection in rural Tanzania: A case-control study. *AIDS* 11: 237-248.

Rademakers, J., J.B. Luijks, G. Zessen, W. Zijlmans, C.J. Straver, and G. Rijt. 1992. *AIDS prevention in heterosexual contacts: Risk perception, intention and interaction.* Amsterdam: Swets and Zeitlinger.

Rogers, R.W. 1983. Cognitive and physiological processes in fear appeals and attitude change: A revised theory of protection motivation. In J.T. Cacioppo and J.T. Petty (Eds.) *Social psychophysiology, a source book.* New York: Guilford.

Rosenstock, I.M. and J.P. Kirscht. 1974. The health belief model and personal health behavior. *Health Education Monographs* 2: 470-473.

Rosenstock, I.M. and V.J. Strecher. 1994. The health belief model and HIV risk behavior. In J.L. Peterson and R.J. Diclemente (Eds.) *Preventing AIDS: Theories and methods of behavioral interventions*. New York: Plenum Press.

Rubin, G. 1975. The traffic in women: Notes on the "political economy of sex." In R. Reiter (Ed.) *Towards an anthropology of women.* New York: Monthly Review Press.

Safilios-Rothschild, C. 1990. Socio-economic determinants of the outcomes of women's income-generation in developing countries. In S. Parpart (Ed.) *Women, employment and the family in the international division of labour*. Philadelphia, Pennsylvania: Temple University Press.

Schoepf, B.G. 1998. Inscribing the body politic: Women and AIDS in Africa. In M. Lock and P. Kaufert (Eds.) *Pragmatic women and body politics.* Cambridge: Cambridge University Press.

Senkoro, K., et al. 2001. HIV incidence and HIV-associated mortality in a cohort of factory workers and their spouses in Tanzania 1991 through 1996. *Journal of Acquired Immune Deficiency Syndrome* 23(2): 194-202.

Smith, J. et al. 1999. Education attainment as a predictor of HIV risk in rural Uganda: Results from a population-based study. *International Journal of Sexually Transmitted Diseases and AIDS* 10: 452-459.

Standing, H. 1991. *Dependence and autonomy: Women's employment and the family in Calcutta.* London and New York: Routledge.

Standing, H. and M. Kisekka. 1989. *Sexual behavior in sub-Saharan Africa: A review and annotated bibliography*. London, UK: Overseas Development Administration.

Stata Corporation. 2003. Stata/SE 8.2 for Windows. College Station, Texas: Stata Corporation.

Ssali, A., T.G. Barton, G.M. Katongole and J. Seeley. 1992. Exploring sexual terminology in a vernacular in rural Uganda—Lessons for health education. Paper presented at VIII International Conference on AIDS, session 00255/D63.

UNAIDS/WHO. 2003. *AIDS epidemic update 2003*. Geneva: Joint United Nations Program on HIV/AIDS and World Health Organization.

UNICEF. 1998. *Children and women in Uganda: A situation analysis*. Kampala: UNICEF.

Varga, C. 1997. Sexual decision-making and negotiation in the midst of AIDS: Youth in KwaZulu-Natal, South Africa. *Health Transition Review* 7(suppl. 3): 45-67.

Verbrugge, L.M. 1985. Sex differentials in health. *Public Health Reports* 97: 417-437.

Verbrugge, L.M. 1989. The twain meet: Empirical explanations of sex differences in health and mortality. *Journal of Health and Social Behavior* 30: 282-304.

Vierich, H. 1986. Agricultural production, social status and intra-compound relationships. In J.L. Moock (Ed.) *Understanding Africa's rural households and farming systems*. Boulder, Co: Westview.

Vlassoff, C. 1994. Gender inequalities in health in the Third World: Uncharted ground. *Social Science and Medicine* 39(9): 1249-1259.

Whitehead, A. and N. Kabeer 2001. *Living with uncertainty: Gender, livelihoods and pro-poor growth in rural sub-Saharan Africa*. Institute of Development Studies Working Paper 134. Brighton, UK: Institute of Development Studies.

Whitehead, A. 1991. Women in food production in sub-Saharan Africa. In A. Sen and J. Dreeze (Eds.) *The political economy of hunger.* Oxford: Clarendon Press.

WOMEN AT THE NEXUS OF POVERTY AND VIOLENCE: HOW UNIQUE IS THEIR DISADVANTAGE?

Sunita Kishor and Kiersten Johnson

A common assumption in the literature on domestic violence[1] is that women who are poor are more likely to experience violence than women who are not poor (Ellsberg et al., 1999; Heise, 1998; Jewkes, 2002). Poverty is not necessarily seen as a causal factor, but it is generally assumed to significantly increase the risk of domestic violence. On the other hand, the association between poverty and domestic violence is unlikely to be entirely unidirectional: the perpetration and experience of such violence may contribute to aggravating, perpetuating, or even "causing," household poverty (Byrne et al., 1999). Although research adequately documenting the assumed relationships between domestic violence and poverty is limited, the very likelihood of circularity in the poverty-violence relationship suggests an urgency to understand whether and how violence and poverty are related and whether the circumstances of women caught at the nexus of poverty and violence differ from those of other women, particularly women who may also be beaten but are not poor. In particular, is there reason to expect that health outcomes for women who experience domestic violence are going to be more negative the poorer the women are, or do poverty and the experience of violence exert unrelated but mutually reinforcing effects that mark women at the nexus of poverty and violence as particularly doomed? Accordingly, two central questions are examined in this paper: How uniquely disadvantaged are women at the nexus of poverty and domestic violence, and what are the relative roles of poverty and violence in this disadvantage, if any?

Existing studies that have focused on women at the nexus of poverty and violence (Menard, 2001; Miles-Doan, 1998; Raphael, 2001) do not shed light on the cross-cultural validity of the poverty-violence relationship, nor do they permit an evaluation of the health risks of women at the nexus of poverty and violence relative to those for other women. This is largely because such research has tended to be restricted to special populations (e.g., populations in housing projects, in shelters) and is based on data from the developed world. In fact, with only a few notable exceptions, almost no research exists that examines the relative effect on women's health of being at the nexus of household poverty and domestic violence in developing countries, where the absolute and relative meaning of poverty is likely to be different from that in the developed world.

The lack of comparative studies examining the nature of the poverty-violence-health relationships is in part due to the data requirements of such an endeavor. Not only should the data include population-level information on the poverty, domestic violence, and health status of individuals, but all indicators need to be defined similarly across all the cultures to be compared. This paper begins to fill the research void in this area by using data on demographic and reproductive health, spousal violence, and a household poverty-wealth indicator from the Demographic and Health Surveys (DHS). These surveys are conducted in the developing world and typically collect nationally representative data on demographic and health indicators for women age 15-49, as well as on the characteristics of the households they live in. The household-level data permit the calculation of an asset-based wealth index that has been shown to be robust (Filmer and

[1] While the discussion is in terms of domestic violence, it may be noted that the measure of violence used in the paper includes only violence by an intimate partner, called spousal violence in this paper.

Pritchett, 2001; Gwatkin et al., 2000). Population at the lower end of this wealth index is identified as poor and population at the upper end as wealthy. In a selected set of countries, DHS has also collected information from respondents on domestic violence, permitting an examination of the complex relationship between violence and the poverty status of the household, as well as related health and demographic outcomes. In this paper, we use the domestic violence and wealth index data to identify women who report spousal violence and belong to the poorest 20 percent of the population as being at the nexus of poverty and violence. Health disadvantage is measured in terms of four different indicators that proxy women's inability to meet their demographic and reproductive health needs: 1) having a non-live birth, 2) having a sexually transmitted infection, 3) having an unwanted birth, and 4) contraceptive discontinuation.

In this paper we use data from Cambodia, the Dominican Republic, and Haiti, where a largely identical set of questions on domestic violence were fielded as part of the DHS surveys in those countries. Despite the greater geographical proximity and the linked histories of Haiti and the Dominican Republic, all three countries are arrayed differently along the socioeconomic continuum. In fact, on many counts, Haiti appears more similar to Cambodia than to the Dominican Republic. In 1999, the Dominican Republic was economically the most advanced of the three countries, with a per capita gross domestic product (GDP) of $1,910 growing at a rate of 6.2 percent, with 64 percent of its population living in urban areas; by contrast, Cambodia had a per capita GDP of $260 growing at a rate of 2.2 percent, and only 16 percent of its population in urban areas. The corresponding values for Haiti were $460 per capita GDP with a growth rate of 1 percent and 35 percent of its population living in urban areas (World Bank, 2001). The under-five mortality rate per 1,000 live births was 47 in the Dominican Republic compared with 116 in Haiti and 143 in Cambodia. Adult female illiteracy was highest at 80 percent in Cambodia, followed by 54 percent in Haiti, and 17 percent in the Dominican Republic (World Bank, 2001). The Dominican Republic's rank on the United Nation's Human Development Index in 2001 was highest among the three, at 86. By contrast, Cambodia's rank was 121 and Haiti's was 134 (United Nations Development Programme, 2001). Thus, although the three countries included in this paper were selected because they were the only three with an identical set of questions on domestic violence, this brief comparison suggests that together they proxy a random sample of developing countries. Consequently, we expect that conclusions from this paper will be relevant to most developing countries.

Specifically, in the sections that follow, we use the data from Cambodia, the Dominican Republic, and Haiti to examine the characteristics and the reproductive health of women who live at the nexus of poverty and domestic violence and compare them with women in other violence/poverty situations. Women's reproductive health is of particular interest in this analysis, as previous studies have shown associations between poverty and domestic violence, between poverty and reproductive health (Gazmararian et al., 1996; Pebley et al., 1996), and between domestic violence and reproductive health (Moore, 1999; Plichta and Abraham, 1996; Stark and Flitcraft, 1996). Accordingly, in section 1 we review the extent to which the linkages between poverty and domestic violence are established in the literature. We also review the degree to which the relative reproductive health disadvantage for women at the nexus of poverty and violence has been empirically established. This is followed by a discussion of definitions and methodologies used in this paper (section 2). The analysis of the data begins in section 3, in which the profiles of women who have experienced domestic violence are described and compared with those of women who have never experienced such violence. This section provides a context for sections 4 and 5, where the

linkages between poverty, violence, and reproductive health are evaluated. Finally, the summary and conclusions are discussed in section 6.

1 A REVIEW OF WHAT IS KNOWN ABOUT WOMEN AT THE NEXUS OF POVERTY AND VIOLENCE

In this section of the paper, we first review the literature on the relationship of poverty to domestic violence, and then we briefly discuss the literature related to the selected health outcomes of interest examined in this paper.

1.1 The Relationship of Poverty to Domestic Violence

A common assumption in the literature is that domestic violence is more widespread among the poor. A variety of domestic violence perspectives espouse this idea, largely based on the concept that families living in impoverished conditions are subject to higher levels of stress than families not living in poverty and that as a result of experiencing high levels of stress, poor families are more prone to family violence than families that are not in impoverished conditions (Martin et al., 1999). A similar argument posits that "economically excluded" (unemployed or underemployed) men experience a specifically "male" stress due to an inability to fulfill their culturally defined roles as breadwinners. This male stress is theorized to be a contributing factor to the disproportionately high rates of domestic violence reported by poor women, especially women living in public housing (DeKeseredy and Schwartz, 2002; Raphael, 2001). However, the question of whether poverty contributes to the prevalence of domestic violence, whether violence in the home leads to or exacerbates poverty, or whether the two processes are circular and interactive is one that has only begun to be investigated by the research community (Byrne et al., 1999; Runge et al., 2001), leading to a dearth of literature on the direction or the relationship. Thus, it is by necessity that this discussion of the literature deals primarily with poverty as a risk factor, rather than as a potential outcome.

Despite the assumptions of significantly different risks for domestic violence depending on household economic situation, a critical inquiry of the empirical literature finds uneven support for even this contention: some analyses indicate that poverty is a strong predictor of violence (Ellsberg et al., 1999), whereas others find it to be an insignificant factor after controlling for other variables such as education or residence (Diop-Sidibé, 2001); further, some find that poverty has an effect on the likelihood of domestic violence in some geographic locations but not others (Johnson, 2003; Martin et al., 1999). The varying effects found for household economic status in the literature on domestic violence are not surprising given the large variability in defining household wealth, income, or (socio)economic status. Some researchers use income (Kim and Cho, 1992; Rodgers, 1994) and others have used information on assets (Diop-Sidibé, 2001; Johnson, 2003; Martin et al., 1999), with definitions and data being subject to different sets of assumptions and caveats.

Another potential source of variation in terms of defining the poverty-wealth status of households in analyses of domestic violence is the assumption of the interchangeability of the terms "economic status" and "socioeconomic status." Indicators of economic status are restricted in content to the accepted economic sources of data (e.g., income, assets, expenditures). However, some studies (Ellsberg et al., 1999; Hoffman, et al., 1994) analyze the effects of socioeconomic status on domestic violence; these studies create a composite variable in order to measure socioeconomic status, incorporating into a single metric household income, educational attainment, and prestige of occupation or sanitary conditions. Specifying a socioeconomic status indicator, rather than an

economic status indicator, increases the likelihood that the relationship between the economic status of the household and violence will be obscured by the presence of other variables, such as education, that have effects independent of wealth on the probability that a woman will experience domestic violence (Johnson, 2003).

Nonetheless, even similar definitions of wealth/poverty yield varying relationships with domestic violence. For example, Statistics Canada's National Survey on Violence against Women (Rodgers, 1994) used income as its measure of poverty (the poor being those in households with income less than $15,000 per annum) and found that the poor were twice as likely as the rest of the population to report having experienced violence in the past year (6 and 3 percent, respectively). By contrast, Kim and Cho (1992) used household disposable income in their epidemiological study of domestic violence in Korea and found only small differences in the prevalence of domestic violence by reported disposable income. Neither study controls for factors such as age, education, and residence, among others, so that the association between poverty and domestic violence in these studies remains inconclusive.

Other studies use a household wealth indicator for their analyses, based on assets data. These studies yield inconsistent results even when they use similar multivariate methodologies. For example, Diop-Sidibé (2001), in her analysis of domestic violence in Egypt, and Martin et al. (1999), in their study on domestic violence in northern India, used similarly limited wealth indicators based on simple counts of assets owned by households. The Egypt study found no relationship between ever experiencing violence and wealth, but it found a significant relationship between experiencing violence in the past year and wealth—violence was 50 percent less among women in poor households. The study in India found that poverty was significantly related to domestic violence in three out of the five districts studied. However, the very limited range of these wealth scores, as well as the fact that neither study appears to have weighted these scores by the number of household members, limits the validity of the results.

A more recent iteration of the asset-based wealth index approach is based on the work of Filmer and Pritchett (2001) and was tested extensively using a full complement of DHS surveys (Gwatkin et al., 2000). A large number of assets are statistically reduced using principal components analysis; the first principal component serves as the basis for a wealth index. Using this asset-based wealth index in a comparative analysis of domestic violence in Haiti and Nicaragua, Johnson (2003) found mixed support for a positive relationship between poverty and violence. In this paper, we use this wealth index to assign households to five different population groups along the wealth-poverty spectrum (see below).

Thus, evidence of the influence of household economic status on the likelihood of violence is not always upheld by the literature: results are inconsistent and often based on nonrobust indicators of the household wealth-poverty status, and suggest great variability across regions.

1.2 Linkages Between Poverty, Domestic Violence, and Selected Reproductive Health Outcomes

Much literature exists that links violence to adverse health outcomes. While some of this does control for the socioeconomic status of the household, there is little research that attempts to establish whether women who are at the nexus of poverty and violence are more disadvantaged than women who are poor but have not experienced spousal abuse, or those who have experienced abuse but are not poor. The four reproductive health-related outcomes considered here are 1) ever having

had a non-live birth (either a miscarriage, an abortion, or a stillbirth), 2) having had a sexually transmitted infection (STI) in the 12 months preceding the survey, 3) having a birth that was not wanted at all, and 4) contraceptive discontinuation (having ever used contraception but not currently using it). The latter two outcomes reflect women's ability to prevent unwanted pregnancies and are thus only indirect proxies of women's reproductive health. Research suggests that all of these four outcomes have significant associations with the experience of violence by women.

1.2.1 Having a Non-live Birth and Violence

Abusive spousal behavior can threaten a pregnancy in many ways. Direct risks to the viability of a pregnancy include physical trauma to the abdomen, due to violence, or intentional abortion to preclude an unwanted birth. Jejeebhoy (1998) found that women in Uttar Pradesh, India, who had ever been beaten by their husband were almost twice as likely to experience a fetal death, even after controlling for a variety of social, economic, and demographic factors; Leung et al. (2001) failed to show significant differences in pregnancy outcome by experience of domestic violence, but this analysis was limited to bivariate methods. Indirect risks to the viability of the fetus that have been associated with domestic violence include increased levels of stress, as well as delays in seeking antenatal care (Newberger et al., 1992; Taggart and Mattson, 1995).

1.2.2 Sexually Transmitted Infections and Violence

Many empirical studies indicate that women who have experienced spousal violence are more likely to suffer a range of gynecological problems, including STIs (Augenbraun et al., 2001; Plichta and Abraham, 1996; Schei, 1991). Recent reports from communities hard-hit by HIV/AIDS also point to an association between experience of violence and acquisition of HIV: Maman et al. (2001) found that, when controlling for confounding variables, HIV-positive women had a larger number of physically violent partners in their lifetimes than did HIV-negative women. They also found that HIV-positive women were more than twice as likely as HIV-negative women to report current experience of violence and report greater frequency of violent events. Violence is likely to be both a contributing factor to contracting an STI, as well as an outcome of the disclosure of an STI to a partner (Zierler et al., 1996).

1.2.3 Unintended Pregnancies and Violence

Unintended pregnancy and sporadic use of contraception are interrelated outcomes; both are positively associated with domestic violence in the literature (Campbell et al., 1995; Gazmararian et al., 2000). In a small study (n=165), Wingood and DiClemente (1997) found that women in abusive relationships were much less likely to use condoms than nonabused women and were more likely to experience further abuse if they attempted to discuss condom use with their partners. Goodwin et al. (2000), using population-based data obtained from the Pregnancy Risk Assessment Monitoring System found that women with unintended pregnancies had 2.5 times the risk of experiencing physical abuse compared with women whose pregnancies were intended, after controlling for demographic and other potentially confounding factors. Goodwin et al. also provide some insight into the reproductive health of women who are at the nexus of poverty and violence: they found that although women on Medicaid were significantly more likely to experience abuse, the association between unwanted pregnancy and abuse was stronger for women not on Medicaid than for women who were.

A fairly detailed review of the literature suggests that while women at the nexus of poverty and violence are often believed to be particularly disadvantaged with respect to their reproductive health, there is almost no empirical analysis of the relationship and, when there is, the results do not necessarily conform to expectations (Goodwin et al., 2000).

2 DATA, DEFINITIONS AND METHODOLOGY

2.1 Data

This study uses data from DHS surveys conducted in Cambodia and Haiti in 2000 and in Dominican Republic in 2002. In the three countries, all women age 15-49 in the sample households were eligible to be interviewed. A subsample of the households in the DHS survey was selected for the domestic violence module. In keeping with the ethical guidelines provided by the World Health Organization (1991) on the conduct of domestic violence research, special training was provided for this component of the survey. In addition, two mechanisms were used to protect the security of women: Within each household, only one randomly selected eligible woman received the module, and the module was not implemented if privacy could not be obtained. Weights were constructed to make the data on violence nationally representative.[2] Since this paper examines spousal violence, the effective sample includes only women who have ever been married (Table 2.1).

Table 2.1 Sample size

Number of women age 15-49 in selected households, number in domestic violence subsample, and number of ever-married women with information on domestic violence, DHS surveys in Cambodia (2000), Dominican Republic (2002), and Haiti (2000)

Country	Total sample	Domestic violence subsample	Ever-married women with information on domestic violence
Cambodia	15,351	2,403	2,403
Dominican Republic	23,384	8,746	6,807
Haiti	10,159	3,389	2,347

2.2 Definitions

The two variables central to the discussion in this paper are domestic violence and the poverty-wealth status of the household to which the respondent belongs. Accordingly, the definitions of these variables are discussed in some detail.

2.2.1 Domestic Violence

Domestic violence is defined here as violence experienced by women at the hands of their current or earlier spouse(s). Ever-married women are women who are or have been legally married or are living together or have lived together with a man as if married. Accordingly, the terms "spouse" or "husband" include male partners who are not legally the husband of the respondent. The measure of spousal violence does not include emotional violence reported by women and is restricted to physical or sexual violence.

[2] Sample and weighting details are given in national-level reports available from ORC Macro, Calverton, Maryland, or on the Internet at www.measuredhs.com.

The spousal violence indicator used in this paper is derived from responses given by ever-married women to three different sets of questions on violence. The first set is based on a modified and greatly shortened Conflict Tactics Scale (CTS) used by Straus (1990) and asks women whether their current or last husband ever did the following:

- Push you, shake you, or throw something at you?
- Slap you or twist your arm?
- Punch you with his fist or with something that could hurt you?
- Kick you or drag you?
- Try to strangle you or burn you?
- Threaten you with a knife, gun, or other type of weapon?
- Attack you with a knife, gun, or other type of weapon?
- Physically force you to have sexual intercourse even when you did not want to?
- Force you to perform types of other sexual acts you did not want to?

Women could answer "yes" or "no" to each item, and in cases when the answer was a "yes," women were asked about the frequency of the act in the 12 months preceding the survey.

Although it is the most commonly used quantitative measure of domestic violence, the original CTS has been criticized on several grounds (DeKeseredy and Schwartz, 1998). The modified CTS in use here accounts for the two major criticisms by including questions on sexual violence and by not assuming that violence takes place only in circumstances characterized by conflict. Further the literature on the CTS has emphasized that that physical trauma is but one component of the damage sustained by an abused spouse (see brief review in Gordon 2000). Accordingly, the violence measure used here does not weight violence that has resulted in injury more than violence with no reported injuries.

In addition to the modified CTS, women were asked whether they had experienced violence at the hands of anyone other than their current or last husband, with the question, "From the time you were 15 years old, has anyone other than your (current/last) husband hit, slapped, kicked, or done anything else to hurt you physically?" Women who responded "yes" to this question were asked about the person(s) who had done this and the frequency of such violence during the 12 months preceding the survey. A similar question was used to measure violence during pregnancy. Frequency of abuse in the past 12 months was assessed; however, the operationalized definition of violence in this paper does not account for frequency of violence.

In this paper a woman is counted as having experienced spousal violence if she says "yes" to either one or more of the modified CTS questions, if she reports that a previous husband was violent since she was 15, or if she reports violence during a pregnancy perpetrated by a current or past husband. If any of the violence took place in the 12 months preceding the survey, she is counted as having experienced recent violence.

The prevalence of spousal violence among ever-married women is high in all three countries, ranging from 17 percent in Cambodia to 29 percent in Haiti, with the prevalence in the Dominican Republic being in the middle at 22 percent (Table 2.2). Most women who report ever experiencing spousal violence in Cambodia and Haiti also report experiencing it in the 12 months preceding the survey (88 and 73 percent). In the Dominican Republic, however, only about one in two women who have ever experienced spousal violence report recent violence. These data suggest that, typically, between one in five and one in three ever-married women report any experience of violence by a spouse, but that the proportion of women who have experienced violence recently among those who have ever experienced violence may vary dramatically between countries. This paper does not examine the conditions that facilitate a cessation of violence; however, it can be speculated that the ability to end a violent relationship will be of great importance. This ability will be affected by several factors, including the legality and ease of divorce, a woman's economic independence and access to financial resources to support her children, if any, and the social respect given to women who have divorced their husbands.

Table 2.2 Experience of spousal violence

Percentage of ever-married women who reported experiencing spousal violence ever, in the 12 months preceding the survey, and never, DHS surveys in Cambodia (2000), Dominican Republic (2002), and Haiti (2000)

Experience of spousal violence	Cambodia	Dominican Republic	Haiti
Ever experienced spousal violence	17.4	22.3	28.8
Experienced spousal violence in past year	15.4	11.0	21.0
Never experienced spousal violence	82.6	77.7	71.2
Number of women	2,403	6,807	2,347
Among those who have ever experienced spousal violence, percentage who experienced it in the past year	87.8	49.3	72.8

The question of whether the DHS violence estimates underestimate the true extent of violence experienced by women remains despite the many precautions put in place during fieldwork. DeKeseredy and Schwartz (1998) note that while all victimization surveys have a certain amount of underreporting, it is assumed that surveys that incorporate questions on intimate violence are particularly susceptible to this shortcoming. DeKeseredy and Schwartz (1998) and others (Ellsberg et al., 2000) advocate that longer, more probing questions be asked following the short, simple measures embodied in the CTS. It is therefore reassuring that, for Cambodia at least, there is independent corroboration of the prevalence of violence estimated by DHS. The 1996 Household Survey of Domestic Violence in Cambodia (Ministry of Women's Affairs and Project Against Violence, 1996) estimated that one in every six (16 percent) women in Cambodia was physically abused by her husband and more than one in ten men reported abusing their wives.

2.2.2 The Poverty-Wealth Measure

In addition to measuring violence, this paper rests critically on the ability to estimate the poverty/wealth status of the households in a uniform and comparable manner. The wealth index used here is one recently developed and tested in a large number of countries with regard to inequities in household income, use of health services, and health outcomes (Gwatkin et al., 2000). It is an indicator of wealth that is consistent with, though different from, expenditure and income

measures (Rutstein, 1999). It is best interpreted as an indicator of a household's permanent income status.

This wealth index is 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, ranging from a television to a bicycle or car, as well as dwelling characteristics, such as type of drinking water available, sanitation facilities used, roofing, and flooring.

Each asset was assigned a weight (factor score) generated through principle components analysis, and the resulting asset scores were standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one (Gwatkin et al., 2000). Each household was then assigned a score for each asset, and the scores were summed by household. The sample was then divided into population quintiles; each quintile was designated a rank, from one (poorest) to five (wealthiest), and individuals were ranked according to the total score of the household in which they live.

A caveat in the use of this measure is that the indicator, like other measures of household wealth, does not permit analysis of within-household distributions of wealth. This caveat is particularly important in the context of the possible circularity of the poverty-violence relationship. Since the index rating that attaches to the individual woman comes from the household, the relative economic status of the women (separate from the household) cannot be determined. If, for example, a woman belongs to a wealthy household, but spousal violence is preventing her from holding a well-paying job, then the negative impact of violence on her own economic status is unlikely to be captured by this variable. No attempt is made in this paper to determine causality for any associations found between violence and poverty.

2.3 Methodology

Two different methodologies are used in this paper, each driven by the specific question that needs to be answered. In trying to identify differences between women at the nexus of poverty and violence and other women, differences in the means for different groups are tested for significance. Multivariate logistic regression techniques are used in the analysis of the linkages between poverty, violence, and the four reproductive and demographic health variables. Bivariate techniques are preferred for comparisons because the question to be answered is whether poor women who are subject to violence are uniquely different in their characteristics from other women, particularly women who are also poor but have not experienced spousal violence and those who are not poor but have experienced spousal violence. Multivariate techniques were deemed to be more appropriate in trying to determine whether women at the nexus of poverty and violence are more disadvantaged than other women in terms of their reproductive health. In this case, we want to ensure that the effect of being poor and experiencing violence is a net measurement separate from other variables that are known to affect each health variable considered.

The variables used to describe women and as controls in the regressions include the following.

Household characteristics. Other than wealth, urban-rural residence and residence in a nuclear family are defined. A woman who lives alone or lives with a spouse with or without children is counted as living in a nuclear family.

Individual characteristics. The characteristics defined include women's current age (measured in years), their current marital status and number of times married, their age at first marriage (used both as a grouped or continuous variable), women's parity (either in terms of their number of living children or number of children ever born), their education (both grouped by level or number of years of education), and their employment status (whether they are currently doing any work other than their housework). Several of these variables are considered to be relevant because of their linkages to women's empowerment, access to knowledge, and other resources. Education has been shown to be a source of empowerment for women, facilitating their ability to gather and assimilate information, to manipulate aspects of their circumstances within a modern world, and to interact effectively with modern institutions (Caldwell, 1986; Kishor, 2000; however, see Malhotra and Mather, 1997).

A woman who marries at a later age has likely had the opportunity to pursue higher education or to be employed, either of which also may cultivate a greater sense of autonomy (Mason, 1987). Although this variable is highly significant in bivariate analyses, there is only mixed support for its association with ever experience of violence in multivariate analyses (Johnson, 2003; Martin et al., 1999). Similarly, women who work are often assumed to be more empowered economically and, by extension, socially, vis-à-vis their male partners, and thus may be less likely to experience domestic violence. However, if employment confers empowerment, it may be dependent on the cultural context; the argument may not apply uniformly across settings (Malhotra and Mather, 1997), and it has inconsistent associations with the likelihood of violence across countries (Johnson, 2003). Age is included here because several anthropological and empirical studies undertaken in disparate cultures (Fernandez, 1997 [India]; Johnson, 2003 [Nicaragua and Haiti]; McCluskey, 2001 [Belize]) find that age is negatively associated with the experience of violence. Some of these studies suggest that as women's age increases, their social status also increases, and they become less vulnerable to acts of domestic violence. High fertility has been associated with domestic violence both as a potentially causal factor (Martin et al., 1999, who found little support for this contention) as well as an outcome of violence (Campbell et al., 1995).

Another variable included in individual characteristics is whether a woman's father beat her mother. Several studies have found that when either a husband or a wife has a family history of violence (i.e., that the parents of a husband or wife had incidents of domestic violence), the risk of domestic violence in the union of the index wife and husband increases significantly (Kalmuss, 1984; Seltzer and Kalmuss, 1988). There is no indicator of whether a woman's father-in-law beat her mother-in-law available in these data sets.

Characteristics of women's marriages and husbands. Interspousal age and educational differences are used to describe a woman's marriage, and the husband's age, education, and frequency with which he is drunk are selected husbands' characteristics. Information on husband's age is collected only for current husbands, and the information on husband's education is collected only for current or last husbands for women who were formerly married. Thus, among women who have been married more than once, the husbands who beat them may not necessarily be the ones whose characteristics are being reflected in these measures.

There is uneven support for men's education as a risk factor for experience of domestic violence. While one study found that husbands with less education were more likely to report hitting their wives compared with husbands with more education (Martin et al., 1999), others did not find any effect (Hoffman et al., 1994; Johnson, 2003). Increased frequency of drunken episodes on the

part of husbands or male partners has been associated with increased likelihood of committing acts of intimate violence in several studies (Heise, 1998; Johnson, 2003). While the empirical evidence supports the contention that alcohol consumption is a significant determinant of domestic violence, there still remains some question as to the pathways by which the alcohol use functions.

3 PROFILES OF WOMEN ACCORDING TO THEIR EXPERIENCE OF SPOUSAL VIOLENCE

Before discussing the linkages between spousal violence and poverty, it is important to determine whether women who report spousal violence differ in specific ways from women who have not experienced spousal violence. This discussion also provides a context in which the experience of violence by some and not other women can be viewed. Accordingly, Table 3.1 compares the profiles of women who report experiencing spousal violence ever, in the past one year, and never. The descriptors include those that describe women's household situation and their individual characteristics, as well as the characteristics of their marriages and of their husbands. The latter two are included because the type of violence being examined is spousal violence and the sample is restricted to ever-married women.

Table 3.1 shows that the individual and circumstantial profiles of women who experience violence are not very different from the corresponding profiles for women who have not experienced spousal violence. Women who have ever experienced spousal violence differ significantly from women who have not experienced spousal violence only in that they appear to be of higher parity, to be more likely to have had fathers who beat their mothers, and to have husbands who are frequently drunk. Also, the mean spousal age difference (husband's age minus wife's age) is lower among women who report spousal violence than among those who have never experienced spousal violence. In particular, women who have husbands who are younger than them are overrepresented among women who have ever experienced violence.

Another consistent descriptor of women who have ever experienced spousal violence is that they are significantly less likely than women who do not report such violence to be currently married and are more likely to have been married more than once. This result must be carefully interpreted, however, since spousal violence can be an important factor in the disruption of marriages. In this sample of ever-married women, spousal violence is likely to be a "cause" of the current marital status of women and not a result.

The educational profiles of women themselves and those of their husbands also differ significantly between women who have experienced violence and those who have not in all countries, but the direction of the relationship is not consistent between countries. In Cambodia and the Dominican Republic, women who have experienced violence are more likely than women who have not to be overrepresented among women with no education and underrepresented among women with secondary or higher education, and to have husbands with less education. In Haiti, however, the reverse appears to be true: Women who have experienced spousal violence are more educated and are more likely to have husbands with more education, compared with women who have never experienced spousal violence. A similarly reversed profile is observed in Haiti when compared with Cambodia and the Dominican Republic with regard to the spousal educational difference (husband's number of years of education minus wife's number of years of education). In Cambodia and the Dominican Republic, the mean spousal educational difference (in years) is larger among women who have never experienced spousal violence than among women who have experienced such violence, whereas in Haiti, the opposite is true.

Table 3.1 Characteristics of ever-married women who have and have not experienced spousal violence

Characteristics of ever-married women who have experienced any spousal violence ever, in the past year, and never, DHS surveys in Cambodia (2000), Dominican Republic (2002), and Haiti (2000)

	Experienced violence by spouse								
	Cambodia			Dominican Republic			Haiti		
Characteristic	Ever	Past year	Never	Ever	Past year	Never	Ever	Past year	Never
Household characteristic									
Percent rural	85.0	85.4	83.6	29.9	28.2	33.7	60.8	67.1	60.6
Percent living in nuclear family	68.3	67.2	61.0	57.5	60.7	59.7	47.6	47.7	40.6
Respondent's characteristic									
Mean age (years)	35.0	34.7	34.2	31.9	29.6	32.2	33.4	30.9	33.2
Current marital status									
Percent currently married	81.2	83.2	87.6	65.6	71.2	80.8	76.3	83.7	88.7
and married only once	71.2	74.0	81.9	32.4	40.0	55.9	46.3	53.0	57.8
and married more than once	10.0	9.2	5.6	33.2	31.2	24.8	30.0	30.7	30.8
Percent formerly married	18.8	16.8	12.4	34.4	28.8	19.2	23.7	16.3	11.3
Percent married more than once	14.3	12.7	6.6	49.8	44.9	32.6	47.1	40.6	35.4
Age at first marriage									
<15 years	3.6	3.5	3.2	22.7	25.6	14.5	7.3	8.9	6.2
15-19 years	55.2	54.1	55.5	56.1	55.5	50.9	50.5	49.4	49.0
20-24	31.4	32.2	31.3	16.3	15.3	24.4	34.7	34.6	30.6
25+	9.8	10.3	10.0	4.9	3.6	10.2	7.6	7.1	14.1
Mean age at first marriage	19.6	19.7	19.5	17.2	16.9	18.7	19.2	19.0	19.8
Number of children ever born									
None	2.9	2.7	7.9	5.8	7.5	9.0	8.4	9.7	8.9
1-2	24.8	25.4	29.3	37.4	37.2	41.8	27.9	33.9	34.9
3-4	28.6	28.9	28.8	39.3	39.7	34.7	20.0	22.3	24.4
5+	43.8	43.0	33.9	17.6	15.6	14.5	43.7	34.1	31.8
Mean number of children ever born	4.3	4.3	3.8	3.0	2.9	2.7	4.0	3.5	3.7
Education									
No education	37.1	36.2	29.7	5.0	4.5	5.1	35.4	35.3	43.4
Primary only	54.0	55.1	56.7	56.5	59.7	49.2	44.0	46.9	41.0
Secondary or higher	8.8	8.6	13.6	38.5	35.7	45.7	20.6	17.8	15.7
Mean number of years of education	2.4	2.4	5.2	7.4	7.3	8.2	3.2	2.9	2.8
Percent currently employed	83.5	82.7	84.9	58.69	55.4	50.1	68.6	63.9	64.0
Mother beaten by father									
Yes	18.6	20.1	9.3	21.0	25.3	10.5	16.0	19.5	11.2
No	66.8	65.8	78.9	76.1	71.0	87.3	70.4	69.2	78.2
Don't know	14.6	14.1	11.8	2.9	3.8	2.9	13.6	11.4	10.6
Marriage characteristic									
Spousal age difference									
Wife older than spouse	24.1	24.1	18.4	22.0	20.8	14.1	21.0	18.3	15.1
Wife 0-4 years younger	50.0	50.5	51.0	34.2	36.6	35.3	33.9	35.6	32.1
Wife 5-9 years younger	19.0	19.1	21.1	20.9	21.5	27.3	22.6	22.9	30.1
Wife 10-14 years younger	4.5	4.0	6.2	12.3	12.5	12.0	12.8	13.4	11.7
Wife 15+ years younger	2.4	2.3	3.2	10.5	8.7	11.2	9.7	9.8	11.0
Mean spousal age difference	2.4	2.4	3.1	4.9	4.9	5.6	4.3	5.2	5.8
Spousal education difference									
Both have no education	12.9	12.4	9.1	2.3	2.4	2.7	16.5	17.6	25.0
At least one has some edeucation									
Wife has more education	20.4	21.3	14.6	12.7	13.9	9.7	17.3	12.9	18.2
Spouses have the same education	12.2	13.0	15.4	2.3	2.8	2.8	3.7	4.2	6.9
Husband has more education	54.5	53.3	60.9	82.8	80.9	84.8	62.4	65.3	49.9
Mean difference (years)	1.6	1.6	1.9	5.0	4.8	5.4	2.2	2.3	1.7

Continued …

Table 3.1 (continued)

Characteristic	Experienced violence by spouse								
	Cambodia			Dominican Republic			Haiti		
	Ever	Past year	Never	Ever	Past year	Never	Ever	Past year	Never
Husband's characteristic									
Mean age	36.7	36.7	36.7	36.6	34.8	38.1	36.8	36.0	38.9
Level of education									
No education	21.2	21.4	13.7	10.0	11.7	7.1	20.9	22.8	30.9
Primary only	57.7	57.8	54.5	0.0	0.0	0.2	44.2	44.5	39.7
Secondary or higher	21.2	20.8	31.8	90.0	88.3	92.7	34.9	32.8	29.4
Mean number of years of education	4.0	4.0	5.0	12.1	11.9	12.9	5.5	5.4	4.5
Drunk frequently	32.9	33.9	7.4	27.2	35.1	6.7	10.7	5.5	1.7
Number of women	420	369	1,983	1,519	749	5,287	676	492	1,670

Note: Shading indicates association is not significant at $p<0.05$.
[1] Refers only to age of current husband; available only for currently married women.
[2] Refers to education of current husband for currently married women and last husband for formerly married women.

Most other characteristics appear to distinguish women who have experienced violence from those who have not in some, but not all, countries. For example, in Haiti and the Dominican Republic only, the age at first marriage among women who report spousal violence is significantly lower on average than among women who do not report such violence. In particular, women who married at age 25 and above are at least twice as likely to be found in both countries among women who report no violence than among those who do.

Rural-urban residence fails to distinguish between women according to their experience of spousal violence in both Cambodia and Haiti. However, in the Dominican Republic, women who have never experienced spousal violence are more likely to be living in rural areas than women who have experienced spousal violence. Notably, in Haiti, rural residence is associated with women being more likely to report spousal violence in the past year. One possible explanation for this could be that rural women are less able than urban women to access social, legal, and economic resources necessary to leave violent relationships. Residence in a nuclear family provides a context for greater spousal violence in Cambodia and Haiti, but not in the Dominican Republic. A woman's current employment status does not distinguish her in terms of whether she has experienced violence or not in Cambodia, but in the Dominican Republic and Haiti, women who have experienced spousal violence are more likely than those who have not to be employed. No direction of causality can be inferred here since this result is consistent both with the possibility that a women's employment could lead to the experience of violence, as well as the possibility that experience of violence may result in the need for financial independence within or as a result of the violent relationship.

4 THE POVERTY-VIOLENCE ASSOCIATION: IS THERE ANY?

The discussion in the previous section reveals that very few factors consistently distinguish women who have experienced spousal violence in all three countries. Variables such as education, and circumstances such as having a spouse of a similar age and education, often considered empowering for women (Mason, 1987), do not have a consistently similar relationship to the likelihood of experiencing spousal violence. An examination of the association between spousal violence and the wealth index (Table 4.1) also reveals that the likelihood of spousal violence does not necessarily bear the oft assumed monotonically negative association with increasing wealth.

The cross-tabulations of the wealth index and the likelihood of having experienced spousal violence (ever or in the past one year) yielded only one consistent result across all countries, namely, that the associations are statistically significant. Beyond that, the direction and strength of the association is different in each country. In Cambodia alone, women in the poorest quintile are more likely than women in the other quintiles to have ever or recently experienced violence. Even in Cambodia, however, the likelihood of spousal violence declines with wealth only from the first to the third quintile. The likelihood of experiencing violence does not vary at all between the top three quintiles. In the Dominican Republic, by contrast, only women in the wealthiest quintile have a significantly reduced likelihood of experiencing spousal violence; a similar proportion of women in the first quintile (the poorest 20 percent of the population) through the fourth quintile report experiencing spousal violence. In Haiti, the association between the experience of spousal violence and the wealth index takes the shape of an inverted U, with women in the third quintile being the most likely to have experienced spousal violence.

Not only is wealth status of the household not consistently related to the likelihood that a woman experiences violence, wealth does not necessarily serve to facilitate the ending of violence (Table 4.1). If wealth were in fact enabling women to, for example, leave a violent relationship (one way in which violence can be ended), then the proportion of women who report violence in the past one year among those who have ever experienced spousal violence should decline with wealth. However, Table 4.1 shows that this proportion does not vary consistently with wealth. Only in the Dominican Republic does this proportion decline more or less steadily with wealth.

Table 4.1 Spousal violence by wealth quintile

Percentage of ever-married women who have ever experienced spousal violence, experienced spousal violence in the past year, and never experienced spousal violence, by wealth quintile of the household in which they reside, DHS surveys in Cambodia (2000), Dominican Republic (2002), and Haiti (2000)

	Wealth quintile				
Occurrence of spousal violence	First (poorest)	Second	Third	Fourth	Fifth (wealthiest)
CAMBODIA					
Ever	24.4	18.6	15.1	14.4	14.4
Past year	22.2	16.4	12.2	13.4	12.5
Never	75.6	81.4	84.9	85.6	85.6
Number of women	486	499	499	432	487
Percent who experienced violence in the past year among those who have ever experienced violence	90.8	88.2	81.3	93.5	87.1
DOMINICAN REPUBLIC					
Ever	23.8	24.6	25.1	22.1	16.3
Past year	12.7	13.3	12.6	10.1	6.7
Never	76.2	75.4	74.9	77.9	83.7
Number of women	1,059	1,473	1,420	1,442	1,413
Percent who experienced violence in the past year among those who have ever experienced violence	53.6	54.1	50.2	45.8	40.9
HAITI					
Ever	28.9	26.6	35.2	26.7	26.8
Past year	20.3	22.7	29.7	18.9	14.0
Never	71.1	73.4	64.8	73.3	73.2
Number of women	463	432	455	513	484
Percent who experienced violence in the past year among those who have ever experienced violence	70.1	85.2	84.4	70.8	52.3

At a minimum, this discussion suggests that women who are the poorest, both absolutely and relative to others in the population (which is what being in the first quintile of the wealth index implies), are not necessarily the ones who have the highest prevalence of spousal violence. This still leaves open the question of whether women who are poor and are subject to spousal violence differ in significant ways from other women. Although women who are poor may not necessarily be the ones most likely to experience violence, women who are poor and experience violence may nonetheless be particularly disadvantaged in terms of their backgrounds and reproductive health. The rest of the paper addresses this issue using the variable reflecting ever experience of violence by women rather than just the experience of violence in the past year. (Ever experience of violence includes any recent experience.) This choice is based on the belief that the association of violence and current poverty status is more likely to result from a long-term history of violence than from just the current experience of violence. In a few cases, the only reported experience of violence may have occurred in the past year, however. For these women, ever experience of violence would be the same as current experience; thus, for them, the association will not be measuring long-term effects. The results should be interpreted as capturing mainly, but not entirely, the long-term effects of spousal violence.

5 WOMEN AT THE NEXUS OF VIOLENCE AND POVERTY: ARE THEY UNIQUE IN THEIR DISADVANTAGE?

The situation of women who are at the nexus of poverty and spousal violence is examined first by comparing their household, individual, spousal, and marital characteristics with women who are not poor and/or have not experienced violence and second by determining the extent to which these women, in particular, are disadvantaged with regard to specific reproductive health variables.

5.1 Do Women at the Nexus of Poverty and Violence Differ in Significant Ways from Other Women?

The purpose of this exercise is to describe the characteristics of women who have experienced spousal violence and are poor, and then compare them with three other groups of women: women who are poor but have never experienced spousal violence, women who have experienced spousal violence but are not poor, and women who are not poor and have not experienced spousal violence. For this exercise, women who live in households that belong to the first wealth quintile are designated as "poor"; women living in households belonging to any other wealth quintile except the first are designated as "not poor." As mentioned before, the lowest wealth quintile identifies households that both have the lowest absolute level of wealth and, by virtue of their location in the ranking of households on wealth, are also relatively the poorest. Restricting the concept of "poor" to the very poorest allows us to see more starkly the effect of being both poor and subject to violence.

Table 5.1 shows the mean values for the same characteristics that were discussed in Table 3.1. To determine whether means are different between the different categories of women, we evaluated statistical significance for two pairs of groups of women: women in each category of violence who are poor are compared with women in the same category of violence who are not poor (vertical pairs with gray shading in Table 5.1 are *not* significantly different), and women who have ever experienced spousal violence are compared with women who have never experienced spousal violence, holding constant the wealth group (in Table 5.1, italicized and underlined horizontal pairs *are* significantly different). Only differences significant with a probability of five percent or less are identified.

Table 5.1 Characteristics of ever-married women by experience of spousal violence and wealth status

Among ever-married women who are poor (first wealth quintile) and who are not poor (wealth quintiles two through five), percentage who have ever experienced spousal violence by background characteristics, DHS surveys in Cambodia (2000), Dominican Republic (2002), and Haiti (2000)

		Experience of spousal violence					
		Cambodia		Dominican Republic		Haiti	
Characteristics	Wealth status	Never	Ever	Never	Ever	Never	Ever
Household characteristics							
Percent in rural areas	Poor	95.6	92.9	***72.1***	***63.3***	98.1	98.0
	Not poor	80.9	81.7	***26.8***	***23.2***	51.4	51.6
Percent in nuclear family	Poor	72.4	79.9	68.7	64.0	***52.6***	***64.8***
	Not poor	58.4	63.9	58.1	56.2	***37.7***	***43.4***
Respondent's characteristics							
Mean age (years)	Poor	33.1	32.9	31.2	31.1	34.3	35.0
	Not poor	***34.4***	***35.8***	***33.0***	***32.0***	32.9	33.0
Percent currently married	Poor	81.0	78.9	***86.5***	***73.5***	***93.2***	***86.2***
	Not poor	***89.1***	***82.2***	***79.7***	***64.1***	***87.6***	***73.9***
Percent married more than once[1]	Poor	***6.5***	***12.2***	***35.6***	***56.0***	38.5	46.7
	Not poor	***6.5***	***15.2***	***32.1***	***48.5***	***34.6***	***47.3***
Mean age at first marriage	Poor	19.9	19.4	***16.9***	***16.0***	19.1	19.4
	Not poor	19.4	19.7	***19.0***	***17.4***	***20.0***	***19.2***
Mean number of children ever born	Poor	3.5	4.1	***3.6***	***4.0***	4.9	5.3
	Not poor	***3.8***	***4.4***	***2.6***	***2.8***	3.4	3.7
Mean number of years of education	Poor	1.7	1.5	4.4	4.2	0.7	0.9
	Not poor	***3.3***	***2.7***	***8.9***	***8.0***	***3.3***	***3.8***
Percent currently employed	Poor	87.1	81.7	***32.1***	***39.4***	***57.9***	***69.0***
	Not poor	84.4	84.3	***53.4***	***62.7***	***65.4***	***68.5***
Percent who know father beat mother	Poor	11.8	15.8	***10.5***	***19.9***	***9.4***	***19.4***
	Not poor	***8.7***	***19.8***	***10.6***	***21.2***	***11.6***	***15.1***
Marriage characteristics							
Mean spousal age difference[1]	Poor	2.5	2.2	***6.9***	***4.6***	***5.9***	***-0.3***
	Not poor	3.2	2.5	5.4	5.0	5.8	5.6
Mean difference in spousal education (years)[2]	Poor	1.6	1.2	6.2	5.7	0.8	1.2
	Not poor	2.0	1.8	***5.3***	***4.8***	***1.9***	***2.4***
Husband's characteristics							
Mean age[1]	Poor	34.3	34.8	***38.0***	***35.7***	***40.5***	***34.9***
	Not poor	37.2	37.4	***38.2***	***36.8***	***38.4***	***37.3***
Mean number of years of education[2]	Poor	3.3	2.8	10.5	10.0	***1.5***	***2.2***
	Not poor	***5.3***	***4.5***	***13.4***	***12.6***	***5.2***	***6.3***
Percent drunk frequently	Poor	***10.6***	***39.7***	***8.1***	***31.0***	***2.8***	***7.9***
	Not poor	***6.7***	***30.4***	***6.4***	***26.5***	***1.5***	***11.3***

[1]Refers to current husband's age only; not available for women not currently married.
[2] Refers only to education of current husband for currently married women and last husband for formerly married women.
Significance: a) Contrast between "poor" and "not poor" women within each category of violence: unshaded pairs are significant at p<.05; shaded pairs are not significant at p<.05; b) Contrast between women who have "ever experienced spousal violence" and who have "never experienced spousal violence" within each wealth category ("poor" and "not poor"): Pairs that are bold, underlined, and italicized are significant at p<.05; pairs that are not bold, underlined, and italicized are not significant at p>.05.

Many characteristics vary significantly between poor and not-poor women who have experienced spousal violence. Specifically, women who have ever experienced spousal violence and are poor are much more likely to live in rural areas, to live in nuclear families, to have on average much less education themselves, and to have husbands with less education in all three countries, compared with women who have also experienced spousal violence but are not poor. In the Dominican Republic and Haiti only, poor women who have ever experienced spousal violence are more likely to be currently married and of higher parity. In the Dominican Republic alone, they are more likely to be married more than once, to have been first married at a younger age, and to be

currently employed. In Haiti alone, they are on average older than their husbands than women who have also experienced spousal violence but are not poor. Notably, these women also differ significantly in terms of their mean age, the mean age of their husbands, and interspousal educational difference in some countries; however, the direction of variation is not the same across the countries. Importantly, however, with only one exception (namely, interspousal age difference in Haiti), in all other cases *the variation in the corresponding descriptors for poor and not-poor women is equally significant for women who have never experienced violence.* This suggests that the distinctions between poor and not-poor women who have experienced spousal violence are being driven not by the experience of violence but by overall differences between the characteristics of poor women and women who are not poor.

Women who are poor and have experienced violence can also be compared with women who are poor but have never experienced violence. This comparison also yields mixed results across countries. For example, in the Dominican Republic alone, rural residence distinguishes poor women who have never experienced violence from those who have ever experienced violence, and nuclear family structure is much more common among poor women in Haiti who have ever experienced violence than among those who have never done so. However, both of these distinctions also mark women who are not poor. In terms of other characteristics as well, women who are poor *and have experienced violence* are either no different from women who are poor *and have never experienced violence*, or if they are significantly different, then the difference is equally valid for women who are not poor. For example, a higher proportion of women who have experienced spousal violence have been married more than once in Cambodia and the Dominican Republic, compared with women who have never experienced spousal violence, but this is true irrespective of whether women are poor or not poor. The percentages of women whose fathers beat their mothers and whose husbands are frequently drunk are also higher among women who report spousal violence than among those who do not, but again, this is equally true for poor women as well as women who are not poor.

These comparisons suggest that women who are at the nexus of violence and poverty are not unique: if poverty marks them, it similarly marks women who have never experienced spousal violence, and if the experience of spousal violence distinguishes them, it similarly distinguishes those who are not poor. Of importance, however, is an often overlooked fact evident in Table 5.1. The experience of spousal violence distinguishes women who are not poor even *when it does not distinguish women who are poor*. For example, in all three countries, among women who are not poor, women who have ever experienced spousal violence differ significantly from women who have never experienced spousal violence, in terms of their education and the education of their husbands. This is so despite the fact that poor women who have experienced spousal violence do not significantly differ in these respects from poor women who have never experienced spousal violence. Additional significant variation by violence status only among not-poor women is observed for other variables in some, though not all, countries. For example, in Cambodia, even though the likelihood of the father beating the mother does not vary between poor women who have never experienced violence and those who have, it does vary significantly for women who are not poor. Similarly, the mean spousal educational difference is much higher in Haiti and much lower in the Dominican Republic for women who have experienced violence than for women who have not, but only for women who are not poor.

5.2 Do Women at the Nexus of Poverty and Violence Differ Significantly from Other Women in Terms of Selected Demographic and Reproductive Health Outcomes?

In this final phase of the investigation of the relative disadvantage, if any, of women at the nexus of poverty and violence, we examine whether women who are poor and have ever experienced spousal violence are at a significantly higher risk than other women of having each of the following direct outcomes (1 and 2) and indirect reproductive health outcomes (3 and 4):

1. **Ever having had a pregnancy that did not end in a live birth.** This outcome is defined only for women who have ever had a birth (alive or stillborn) or reported a terminated pregnancy. Women were asked whether they had ever had a pregnancy that did not end in a live birth (i.e., ended in miscarriage or abortion or was a stillbirth). In defining this variable, we do not differentiate between the three outcomes since it is not clear to what extent women themselves will have the language to correctly differentiate between these three outcomes and, more importantly, all three outcomes can be expected to be positively associated with domestic violence.

2. **Having had a sexually transmitted infection in the 12-month period preceding the survey.** This variable is based on all ever-married women in the sample and derives from self-reports. In all three countries, women were asked a similar combination of questions to determine whether they had an STI in the past year. In most countries, this combination included a direct question (In the past 12 months, have you had a sexually transmitted disease?) as well as questions on possible symptoms (Sometimes women can have a genital sore or ulcer. In the past 12 months have you had a genital sore or ulcer?). If women said "yes" to one or more of these questions, they are counted as having had an STI in the past 12 months.

3. **Having had an unwanted birth in the five years preceding the survey.** Women with a live birth in the five years preceding the survey were asked whether, at the time they became pregnant with their last birth, they had wanted a child then, later, or not at all. This variable includes women who did not want another child at all at the time they first became pregnant with their last live-born child. Only women who had a birth in the five years preceding the survey are included.

4. **Discontinuing the use of a modern contraceptive method.** Women were asked whether they had ever used a modern contraceptive method and whether they were currently using one. A woman is counted as having currently discontinued the use of a modern contraceptive method if she had ever used one, but was not currently using one. This variable compares women who have discontinued use of a modern contraceptive method with women who have never used a modern method and those who are currently using a modern method. While the variable has many limitations, it does provide a snapshot of whether use is sporadic or not. Notably, for all three countries, women's experience of violence did not significantly affect current use of contraception in bivariate analyses.

Table 5.2 shows how each of these dependent variables varies by women's experience of spousal violence. At the bivariate level, all outcomes are more likely to occur if women have ever experienced violence than if they have not, with the single exception of the "wantedness" of the last birth in Haiti.

Table 5.2 Spousal violence and selected health and demographic variables

Percentage of ever-married women who have experienced selected health and demographic variables by their experience with spousal violence (ever/never), DHS surveys in Cambodia (2000), Dominican Republic (2002), and Haiti (2000)

Women's experience with spousal violence	Percentage who ever had a pregnancy that did not end in a live birth[1]	Percentage who reported having had an STI in the last 12 months[3]	Percentage whose last birth was not wanted[2]	Percentage who discontinued use of a modern contraceptive method[3]
CAMBODIA				
Ever	26.9	6.9	32.0	20.3
Never	19.8	2.8	24.4	12.1
Total	21.1	3.5	25.9	13.5
Number of women	2,249	2,380	1,288	2,402
DOMINICAN REPUBLIC				
Ever	40.8	3.7	24.4	28.8
Never	24.8	1.0	13.0	22.6
Total	28.5	1.6	15.6	24.0
Number of women	6,354	6,803	2,900	6,807
HAITI				
Ever	24.5	18.2	31.3	33.0
Never	17.1	10.3	33.9	19.5
Total	19.3	12.6	33.2	23.4
Number of women	2,165	2,346	1,355	2,345

[1] Only women who have ever had a birth (live birth or still birth) or reported a terminated pregnancy
[2] Only women who have had a birth in the past five years
[3] All ever-married women except those with missing information on the dependent variable
Significance: Shaded pairs are not significant at p<.05.

The focus of this paper is not, however, on determining whether women who have experienced violence have worse health outcomes than women who have not experienced violence, important as this question is; it is on whether women at the nexus of violence and poverty are worse off than other women, particularly other women who have experienced violence but are not poor and those who have not experienced violence but are poor. Accordingly, in Tables 5.3-5.6, we present, for each dependent variable, the regression results for five different combinations of the wealth index and the ever-experience of spousal violence variable: Model 1 includes only the violence variable, Model 2 includes only the wealth index, and Model 3 includes both. These models tell us whether violence and wealth are independently associated with the dependent variable, both with and without the other variable of interest.

However, even if wealth and violence have independent net effects, these models do not isolate and inform about the situation of women who are at the nexus of poverty and violence. To do this, two additional models are run. The first (Model 4) includes a four-category variable that divides the sample of ever-married women into the following groups: women who have ever experienced spousal violence and are poor (in the first wealth quintile); women who have never experienced spousal and are not poor (in any wealth quintile except the first); women who have ever experienced spousal violence and are not poor; and women who have never experienced spousal violence and are not poor. The second model (Model 5) divides the sample into six groups: The first five are groups of women who have ever experienced spousal violence categorized separately by their wealth index value, and the last group includes all women who have never experienced spousal

violence. This last model goes further than Model 4 and asks whether there is reason to expect that the experience of spousal violence has a differing impact for women at different levels of the poverty-wealth spectrum.

All models include control variables gleaned as relevant from the literature for each dependent variable (the discussion of this literature is beyond the scope of this paper). Control variables common to the four reproductive outcomes are age of the respondent, number of years of education, whether she is regularly exposed to any media (television, radio, or newspapers/ magazines), whether she is currently employed, whether she lives in a nuclear or nonnuclear family, and whether she lives in a rural or urban area.

In addition, regression models for the likelihood of having a non-live birth also control for women's current marital status (currently married or not), their number of living children, and the number of children who have ever died. Regression models for the likelihood of having had an STI also include the number of children ever born; a categorical variable that groups women into those who are currently married to their first husband, currently married but not to their first husband, and not currently married; and a categorical variable that measures whether the woman's husband is frequently drunk. Regression models for having an unwanted birth also control for women's current marital status (currently married or not), total number of living children, and total number of children who have ever died. The regression models for contraceptive discontinuation also include controls for the number of children ever born and current marital status.

Tables 5.3 through 5.6 present the odds ratios estimated from logistic regressions of all control variables and the violence and poverty variables of interest, on the likelihood of women experiencing each of the four specified direct and indirect reproductive health outcomes. Only the odds ratios for the different violence and wealth combinations are shown, to keep the focus on the questions at hand. The direction of association and significance of all control variables included in the models is given in Appendix Table A.

5.2.1 Likelihood of Having Had a Pregnancy that Resulted in a Non-live Birth

In all three countries, women who have experienced spousal violence are significantly more likely to have experienced a non-live birth than are women who have never experienced spousal violence with and without a control for household wealth status (Table 5.3). The household wealth status does not have a significant independent effect on this outcome in any country (Models 1 through 3). Model 4 shows that with regard to the likelihood of experiencing a non-live birth, women who are poor and have experienced spousal violence (the reference group) are no different from women who are not poor and have also experienced spousal violence, but are significantly different from poor and not-poor women who have never experienced violence. In all countries, the odds of having a non-live birth for both poor and not-poor women who have not experienced spousal violence are only about 0.6 those for women who have experienced spousal violence. Thus, Model 4 suggests that it is not being at the nexus of poverty and violence that puts women at a greater risk of having a non-live birth in their reproductive years, but having ever experienced spousal violence. Exploring further the relationship of violence to the dependent variable controlling for wealth (Model 5), we see slightly differing patterns in the three countries. In Cambodia, among women who have ever experienced spousal violence, those in the first through fourth wealth quintiles do not have significantly different risks of experiencing a non-live birth, but women in the wealthiest quintile are significantly less likely than their poorer counterparts to experience a non-live birth. In

Table 5.3 Logistic regression for ever having had a live birth

Odds ratios of ever having had a pregnancy that did not result in a live birth among women who have ever had a live birth, a still birth, or a terminated pregnancy

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
CAMBODIA					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.54***	-	1.53***	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile	-	0.92	0.93	-	-
3rd quintile	-	0.89	0.92	-	-
4th quintile	-	0.92	0.95	-	-
Fifth quintile (Richest)		0.96	0.99	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.64*	-
Not poor and experienced spousal violence	-	-	-	0.92	-
Not poor and never experienced spousal violence	-	-	-	0.60**	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.02
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.38
Experienced spousal violence and in 4th quintile	-	-	-	-	0.89
Experienced spousal violence and in 5th quintile	-	-	-	-	0.43**
Never experienced spousal violence	-	-	-	-	0.61**
DOMINICAN REPUBLIC					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.91***	-	1.91***	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile		1.12	1.11	-	-
3rd quintile		1.03	1.04	-	-
4th quintile		1.05	1.06	-	-
Fifth quintile (Richest)		1.00	1.03	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.57***	-
Not poor and experienced spousal violence	-	-	-	1.17	-
Not poor and never experienced spousal violence	-	-	-	0.59***	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.38**
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.03
Experienced spousal violence and in 4th quintile	-	-	-	-	0.93
Experienced spousal violence and in 5th quintile	-	-	-	-	1.12
Never experienced spousal violence	-	-	-	-	0.58**
HAITI					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.27**	-	1.29**		
Wealth quintile: Ref. cat.: First quintile (Poor)				-	
2nd quintile		1.13	1.21		
3rd quintile	-	0.93	0.92	-	
4th quintile	-	1.05	1.07	-	
Fifth quintile (Richest)	-	1.58	1.63*	-	
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence					
Poor but never experienced spousal violence	-	-	-	0.60**	
Not poor and experienced spousal violence	-	-	-	0.82	
Not poor and never experienced spousal violence	-	-	-	0.70*	
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					**
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.04
Experienced spousal violence and in 3rd quintile	-	-	-	-	0.57*
Experienced spousal violence and in 4th quintile	-	-	-	-	0.71
Experienced spousal violence and in 5th quintile	-	-	-	-	1.09
Never experienced spousal violence	-	-	-	-	0.66**

Note: Models for all countries include a constant term and the following dummy variables: regular exposure to any media, currently married, living in a nuclear family, rural residence, and currently employed, and the following continuous variables: number of living children, number of children who have died, current age, and number of years of education.
* p<.10; **p<.05; ***p<.001

the Dominican Republic, by comparison, among women who have ever experienced spousal violence, the ones in the second quintile are significantly more likely than their counterparts in any other quintile to have experienced pregnancy loss. In Haiti, women in the third quintile are the exception among those who have ever experienced spousal violence: They are only about half as likely as their counterparts in other wealth quintiles to have a non-live birth. While the exceptions of Model 5 need investigation, they do suggest that at least in one country (the Dominican Republic), even among women who have ever experienced violence, women who are *not* the poorest are at higher risk than women who are the poorest.

5.2.2 Likelihood of Having Had an STI in the Past 12 Months

The results for the risk of having had an STI are very similar to those for having had a non-live birth (Table 5.4). The experience of violence makes it almost twice as likely in all three countries that women have had an STI, and this effect is not diminished in any way in any of the models. The wealth status of the household does not have an overall significant effect in any country on the likelihood that women have an STI, although, interestingly, in Cambodia, the data suggest that the risk increases with wealth, whereas in the Dominican Republic they suggest that it diminishes with wealth.

5.2.3 Likelihood of Having an Unwanted Birth

The risk of having an unwanted birth, and spousal violence and poverty, have different relationships with one another in the three countries (Table 5.5). In Cambodia and the Dominican Republic, the risk that the last birth a woman had was unwanted is higher if the woman has experienced spousal violence, with or without a control for wealth (Models 1 through 3). However, in Haiti, this risk varies by wealth but not by violence status. Women in the third and fourth wealth quintiles are more likely than other women, even controlling for violence, to have an unwanted pregnancy. In Cambodia, Model 4 suggests that women who are poor and experience spousal violence are, in fact, significantly more likely to have had an unwanted last birth than any other group of women. The more detailed view (Model 5) reveals that there is one other group of women who have a similar risk of an unwanted birth as the women at the nexus of poverty and violence: women who are in the fourth wealth quintile who have experienced violence. Thus, women in the poorest quintile who have experienced spousal violence are not unique in their higher risk of an unwanted birth. In Dominican Republic, by contrast, women who are poor and have experienced spousal violence are not different in terms of their risk of having had an unwanted pregnancy from those who are not poor and have experienced violence, but they do have a significantly higher risk than women who have never experienced violence, irrespective of whether these women are poor or not poor. Model 5 also bears out this result. In the Dominican Republic, wealth does not affect the much higher risk of having an unwanted birth that women who have experienced spousal violence have, compared with women who have never experienced spousal violence. The results of Models 4 and 5 for Haiti provide a contrast to those for Cambodia and the Dominican Republic. In Haiti, women who are not poor are more likely to have had an unwanted birth, particularly if they have also experienced violence. Among the not-poor women who have experienced spousal violence, it is women in the second, third, and fourth quintiles who have the greatest likelihood of having had an unwanted birth. Overall, however, in all three countries, the results suggest that the risk of having an unwanted birth is not uniquely high only for women who are at the nexus of poverty and violence.

Table 5.4 Logistic regression for having an STI in the past 12 months

Odds ratios of having a sexually transmitted infection (STI) or a symptom of an STI in the 12 months preceding the survey, all ever-married women

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
CAMBODIA					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.80**	-	1.78**	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile	-	1.25	0.81	-	-
3rd quintile	-	0.73	0.61	-	-
4th quintile	-	1.48	1.21	-	-
Fifth quintile (Richest)		2.24*	1.83	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence					
Poor but never experienced spousal violence	-	-	-	0.42*	-
Not poor and experienced spousal violence	-	-	-	0.72	-
Not poor and never experienced spousal violence	-	-	-	0.45*	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					
Experienced spousal violence and in 2nd quintile	-	-	-	-	0.58
Experienced spousal violence and in 3rd quintile	-	-	-	-	0.74
Experienced spousal violence and in 4th quintile	-	-	-	-	0.45
Experienced spousal violence and in 5th quintile	-	-	-	-	1.31
Never experienced spousal violence	-	-	-	-	0.45*
DOMINICAN REPUBLIC					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	2.59***	-	2.59***	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile	-	0.95	1.03	-	-
3rd quintile	-	0.67	0.69	-	-
4th quintile	-	0.59*	0.60	-	-
Fifth quintile (Richest)	-	0.67	0.72	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.54*	-
Not poor and experienced spousal violence	-	-	-	1.13	-
Not poor and never experienced spousal violence	-	-	-	0.38***	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.51
Experienced spousal violence and in 3rd quintile	-	-	-	-	0.77
Experienced spousal violence and in 4th quintile	-	-	-	-	1.14
Experienced spousal violence and in 5th quintile	-	-	-	-	1.07
Never experienced spousal violence	-	-	-	-	0.43***
HAITI					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.92***	-	1.92***	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile		0.83	1.17		-
3rd quintile	-	0.94	1.10	-	-
4th quintile	-	0.78	0.96	-	-
Fifth quintile (Richest)	-	1.06	1.35	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.59**	-
Not poor and experienced spousal violence	-	-	-	1.22	-
Not poor and never experienced spousal violence	-	-	-	0.62**	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.20
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.06
Experienced spousal violence and in 4th quintile	-	-	-	-	1.17
Experienced spousal violence and in 5th quintile	-	-	-	-	2.05**
Never experienced spousal violence	-	-	-	-	0.62**

Note: Models for all countries include a constant term and the following dummy variables: regular exposure to any media, living in a nuclear family, rural residence, and currently employed, the following categorical variables: current marital status by number of times married and whether the husband is frequently, occasionally or never drunk, and the following continuous variables: number of children ever born, current age, and number of years of education.
* p<.10; **p<.05; ***p<.001

Table 5.5 Logistic regression for the last live birth being unwanted

Odds ratios of a woman's last live birth being unwanted at the time she became pregnant, women who have had a birth in the five years preceding the survey

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
CAMBODIA					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.44**	-	1.43**	-	
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile	-	0.87	0.88	-	
3rd quintile	-	0.78	0.81	-	
4th quintile	-	0.82	0.82	-	
Fifth quintile (Richest)		0.69	0.68	-	
Poverty/violence interaction1: Ref. cat.: Poor and has experienced spousal violence				**	
Poor but never experienced spousal violence	-	-	-	0.48**	
Not poor and experienced spousal violence	-	-	-	0.55**	
Not poor and never experienced spousal violence	-	-	-	0.46***	
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					**
Experienced spousal violence and in 2nd quintile	-	-	-	-	0.53*
Experienced spousal violence and in 3rd quintile	-	-	-	-	0.43*
Experienced spousal violence and in 4th quintile	-	-	-	-	0.96
Experienced spousal violence and in 5th quintile	-	-	-	-	0.28**
Never experienced spousal violence	-	-	-	-	0.47***
DOMINICAN REPUBLIC					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.71***	-	1.70***	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile		1.01	1.01	-	-
3rd quintile		0.93	0.95	-	-
4th quintile		0.79	0.80	-	-
Fifth quintile (Richest)		0.74	0.76	-	-
Poverty/violence interaction1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.53***	-
Not poor and experienced spousal violence	-	-	-	0.87	-
Not poor and never experienced spousal violence	-	-	-	0.54***	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	0.79
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.01
Experienced spousal violence and in 4th quintile	-	-	-	-	0.91
Experienced spousal violence and in 5th quintile	-	-	-	-	0.77
Never experienced spousal violence	-	-	-	-	0.54***
HAITI					
Ever experienced violence by husband: Ref. cat.: Never experienced spousal violence					
Ever experienced spousal violence	1.14	-	1.16		
Wealth quintile: Ref. cat.: First quintile (Poor)		*	*	-	-
2nd quintile		1.20	1.20		-
3rd quintile	-	1.39*	1.39*	-	-
4th quintile	-	1.92***	1.94***	-	-
Fifth quintile (Richest)	-	1.34	1.37	-	-
Poverty/violence interaction1: Ref. cat.: Poor and has experienced spousal violence				**	
Poor but never experienced spousal violence	-	-	-	1.48	-
Not poor and experienced spousal violence	-	-	-	2.23***	-
Not poor and never experienced spousal violence	-	-	-	1.61*	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					**
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.90**
Experienced spousal violence and in 3rd quintile	-	-	-	-	2.26**
Experienced spousal violence and in 4th quintile	-	-	-	-	3.07***
Experienced spousal violence and in 5th quintile	-	-	-	-	1.37
Never experienced spousal violence	-	-	-	-	1.57*

Note: Models for all countries include a constant term and the following dummy variables: regular exposure to any media, currently married, living in a nuclear family, rural residence, and currently employed, and the following continuous variables: number of living children, number of children who have died, current age, and number of years of education.
* p<.10; **p<.05; ***p<.001

Table 5.6 Logistic regression for discontinuing use of a modern contraceptive method

Odds ratios of having discontinued using a modern contraceptive method (ever used a modern contraceptive method but not currently using one), all ever-married women

Independent variables	Model 1	Model 2	Model 3	Model 4	Model 5
CAMBODIA					
Ever experienced violence by husband: Ref. cat.**:** Never experienced spousal violence					
Ever experienced spousal violence	1.69***	-	1.77***	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)		***	***		
2nd quintile	-	0.62**	1.65**	-	-
3rd quintile	-	1.01	1.75**	-	-
4th quintile	-	1.33	2.27***	-	-
Fifth quintile (Richest)		1.98***	3.38***	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.36***	-
Not poor and experienced spousal violence	-	-	-	1.36	-
Not poor and never experienced spousal violence	-	-	-	0.86	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	0.85
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.10
Experienced spousal violence and in 4th quintile	-	-	-	-	1.30
Experienced spousal violence and in 5th quintile	-	-	-	-	2.80***
Never experienced spousal violence	-	-	-	-	0.74
DOMINICAN REPUBLIC					
Ever experienced violence by husband: Ref. cat.**:** Never experienced spousal violence					
Ever experienced spousal violence	1.14*	-	1.14*	-	-
Wealth quintile: Ref. cat.: First quintile (Poor)					
2nd quintile	-	1.10	0.91	-	-
3rd quintile	-	1.01	0.93	-	-
4th quintile	-	1.15	1.05	-	-
Fifth quintile (Richest)	-	1.07	0.98	-	-
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	1.23	-
Not poor and experienced spousal violence	-	-	-	1.32**	-
Not poor and never experienced spousal violence	-	-	-	1.03	-
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					**
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.29
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.27
Experienced spousal violence and in 4th quintile	-	-	-	-	1.63***
Experienced spousal violence and in 5th quintile	-	-	-	-	1.51*
Never experienced spousal violence	-	-	-	-	1.11
HAITI					
Ever experienced violence by husband: Ref. cat.**:** Never experienced spousal violence					
Ever experienced spousal violence	1.38***	-	1.41***		
Wealth quintile: Ref. cat.: First quintile (Poor)		***	***	-	
2nd quintile		0.83	1.19		
3rd quintile	-	1.19	1.42**	-	
4th quintile	-	1.59**	1.96***	-	
Fifth quintile (Richest)	-	2.01***	2.51***	-	
Poverty/violence interaction 1: Ref. cat.: Poor and has experienced spousal violence				***	
Poor but never experienced spousal violence	-	-	-	0.99	
Not poor and experienced spousal violence	-	-	-	1.78**	
Not poor and never experienced spousal violence	-	-	-	1.22	
Poverty/violence interaction 2: Ref. cat.: Poor and has experienced spousal violence					***
Experienced spousal violence and in 2nd quintile	-	-	-	-	1.13
Experienced spousal violence and in 3rd quintile	-	-	-	-	1.95**
Experienced spousal violence and in 4th quintile	-	-	-	-	1.79**
Experienced spousal violence and in 5th quintile	-	-	-	-	3.16***
Never experienced spousal violence	-	-	-	-	1.19

Note: Models for all countries include a constant term and the following dummy variables: regular exposure to any media, living in a nuclear family, rural residence, and currently employed, a categorical variable that combines current marital status with the number of times married, and the following continuous variables: number of children ever born, current age, and number of years of education.
* p<.10; **p<.05; ***p<.001

5.2.4 Risk of Having Discontinued Use of a Modern Contraceptive Method

In Cambodia, both experience of spousal violence and household wealth status affect the likelihood that women have discontinued use of a modern contraceptive method (Table 5.6). The risk of discontinuation is significantly higher for women who have experienced spousal violence and tends to increase with household wealth. Model 4 for Cambodia shows that the poor are more likely than the rich to discontinue contraceptive use, irrespective of whether they have experienced violence or not. Model 5 shows that the women most likely to discontinue use are, in fact, those who live in the wealthiest households and who have experienced violence. In the Dominican Republic, the experience of violence is significantly associated with a higher risk of discontinuation of modern methods (Models 1 through 3), and this is true even for women who are not poor (Model 4). Model 5 for the Dominican Republic shows that, in fact, the risk of discontinuation of contraception among women who have experienced spousal violence is higher the wealthier the household. In Haiti, both violence and wealth affect women's likelihood of discontinuing use of modern contraceptive methods: women in wealthier households and women who have experienced spousal violence are the ones most likely to have discontinued use. However, Model 4 shows that women who are not poor and have experienced violence are about twice as likely as other women, including women at the nexus of poverty and violence, to discontinue use of modern methods. This is borne out further by Model 5, which reveals that the likelihood of discontinuing increases steadily with increasing wealth among women who have experienced spousal violence. The effect of wealth here is somewhat counterintuitive. However, it should be remembered that these effects are being measured net of other factors that tend to be important for contraceptive use, namely, women's age, education, media exposure, and number of children. An argument could perhaps be made that the higher levels of discontinuation among wealthier abused women may relate to their being in a better position than poor women to access the resources needed to leave an abusive marriage. This argument would suggest that greater discontinuation of modern methods among wealthier abused women is due to the greater likelihood that they are no longer married and hence may not need contraception. However, this explanation, even if relevant, is already accounted for, given the control in the equations for current marital status. For Haiti at least, further research is needed to explain the effect of wealth. Nonetheless, it is important to note that even with respect to contraceptive discontinuation, it is largely the experience of violence, or the combination of violence and higher wealth status, rather than poverty that puts women at higher risk.

6 SUMMARY AND CONCLUSIONS

This paper used DHS data from three countries, namely, Cambodia, the Dominican Republic, and Haiti, to investigate whether women at the nexus of poverty and violence are unique in their disadvantage, both in terms of their life characteristics and situation, and in terms of selected reproductive health outcomes. We defined violence in terms of ever having experienced spousal violence and defined the wealth status of women by means of a robust, validated wealth index derived from the households in which the women live. This index divides all households into wealth quintiles so that those in the first wealth quintile belong to the poorest 20 percent of the population and those in the fifth quintile belong to the wealthiest 20 percent of the population. Women at the nexus of poverty and violence were identified as those who have ever experienced spousal violence and belong to the poorest population quintile.

In the first part of this paper, we compared women at the nexus of poverty and violence to women who were not poor but had experienced violence and to women who were poor but had

never experienced violence. Comparisons were made for several different household, individual, and marriage-level characteristics that are often argued to affect women's empowerment and risk of violence. In general, we found that women who are at the nexus of poverty and violence are in most respects not consistently different from other women who have experienced violence and other poor women. In fact, they share the disadvantages of poverty, such as low levels of education, with other women who are poor, and they share the disadvantages commonly associated with having experienced violence, such as having a husband who is frequently drunk and having a father who beat their mother, with wealthier women who have also experienced violence. In addition, in some cases, the experience of violence disadvantages women who are not poor even when it does not distinguish between women who are poor. For example, in Cambodia and the Dominican Republic, women's mean number of years of education and their husbands' mean number of years of education do not differ by the experience of spousal violence if they are poor; however, among women who are not poor in these countries, women who have experienced violence have significantly lower amounts of education and have husbands with significantly lower amounts of education than women who have not experienced violence.

In the second part of the paper, multivariate logistic regression analysis was used to determine whether women at the nexus of poverty and violence, even if not unique in their characteristics, were, nonetheless, more likely to experience selected adverse reproductive health outcomes. Four outcomes hypothesized to be related to the experience of violence were defined: ever having a non-live birth, having had an STI in the 12 months preceding the survey, having had an unwanted last birth, and having discontinued use of modern contraceptive methods. While the former are direct measures of two aspects of women's reproductive health, the latter two, by proxying women's ability to control fertility and have only the births they want, indirectly measure women's reproductive health. Regressions with all appropriate controls were run to examine 1) the independent effects of the experience of violence and the wealth status of the household on each of these dependent variables, and 2) the effect of being at the nexus of poverty and violence. The results for all three countries, though varying in some details, consistently showed that the experience of violence does make it more likely that women experience adverse health outcomes. By contrast, the effects of wealth status were not always significant, varying by outcome and country. Most important, however, the results show that there is little that is unique about women who are at the nexus of poverty and violence. For most outcomes, women at the nexus of poverty and violence were either no more disadvantaged than women who were not poor and had experienced violence, or were actually somewhat better off than women who were wealthy and had experienced violence.

Thus, despite the different ways in which the disadvantage of women at the nexus of poverty and violence was investigated in this paper, and despite the fact that this disadvantage was sought in the data for three very different countries, the most consistent findings of this paper can be summed as follows: It is the experience of violence per se that disadvantages women, whereas poverty does not uniquely disadvantage women who experience violence. In fact, for some types of reproductive health outcomes, violence negatively affects women who are "wealthy" more than it does women who are "poor." The importance of this finding—and the fact that the message is consistent across three countries—needs to be underscored. When the experience of violence adversely impacts a particular health outcome, it does so whether the woman is poor or not. For these health outcomes, the negative effect of having experienced violence extends across all economic backgrounds and is not limited to women at the nexus of poverty and violence.

REFERENCES

Augenbraun, M., T.E. Wilson, and L. Allister. 2001. Domestic violence reported by women attending a sexually transmitted disease clinic. *Sexually Transmitted Diseases* 28(3): 143-147.

Byrne, C.A., H.S. Resnick, D.G. Kilpatrick, C.L. Best, and B.E. Saunders. 1999. The socioeconomic impact of interpersonal violence on women. *Journal of Consulting and Clinical Psychology* 67(3): 362-366.

Caldwell, J.C. 1986. Routes to low mortality in poor countries. *Population and Development Review* 12: 171-220.

Campbell, J.C., L.C. Pugh, D. Campbell, and M. Visscher. 1995. The influence of abuse on pregnancy intention. *Women's Health Issues* 5(4): 214-223.

DeKeseredy, W.S. and M.D. Schwartz. 2002. Theorizing public housing woman abuse as a function of economic exclusion and male peer support. *Women's Health and Urban Life* 1(2): 26-45.

DeKeseredy, W.S. and M.D. Schwartz. 1998. Measuring the extent of woman abuse in intimate heterosexual relationships: A critique of the Conflict Tactics Scales. U.S. Department of Justice, Violence Against Women Online Resources. Available at http://vaw.umn.edu/documents/vawnet/ctscritique/ctscritique.html.

Diop-Sidibé, N. 2001. Domestic violence against women in Egypt: Risk factors and health outcomes of wife beating. Dissertation: Johns Hopkins University.

Ellsberg, M.C., R. Peña, A. Herrera, J. Liljestrand and A. Winkvist. 1999. Wife abuse among women of childbearing age in Nicaragua. *American Journal of Public Health* 89(2): 241-244.

Ellsberg, M.C., L. Heise, R. Peña, S. Agurto, and A. Winkvist. 2000. *Researching violence against women: Methodological considerations from three Nicaraguan studies.* (submitted for publication)

Fernandez, M. 1997. Domestic violence by extended family members in India. *Journal of Interpersonal Violence* 12(3): 433.

Filmer, D. and L. Pritchett. 2001. Estimating wealth effects without expenditure data–or Tears: An application to educational enrollments in states of India. *Demography* 38(1): 115-132.

Gazmararian, J.A., M.M. Adams, L.E. Saltzman, C.H. Johnson, F. C. Bruce, J. S. Marks, and S. C. Zahniser. 1995. The relationship between pregnancy intendedness and physical violence in mothers of newborns. *Obstetrics and Gynecology* 85(6): 1031-1038.

Gazmararian, J.A., M.M. Adams, and E.R. Pamuk. 1996. Associations between measures of socioeconomic status and maternal health behavior. *American Journal of Preventive Medicine* 12(2): 108-115.

Gazmararian, J.A., R. Petersen, A.M. Spitz, M.M. Goodwin, L.E. Saltzman, and J.S. Marks. 2000. Violence and reproductive health: Current knowledge and future research directions. *Maternal and Child Health Journal* 4(2): 79-84.

Goodwin, M.M., J.A. Gazmararian, C.H. Johnson, B.C. Gilbert, and L.E. Saltzman. The PRAMS Working Group. 2000. Pregnancy intendedness and physical abuse around the time of pregnancy: Findings from the Pregnancy Risk Assessment Monitoring System, 1996-1997. *Maternal and Child Health Journal* 4(2): 85-92.

Gordon, M. 2000. Definitional issues in violence against women. *Violence Against Women* 6(7): 747-783.

Gwatkin, D.R., S.O. Rutstein, K. Johnson, R.P. Pande, and A. Wagstaff. 2000. *Socio-economic differences in health, nutrition and poverty.* HNP/Poverty Thematic Group of The World Bank. Washington, D.C.

Heise, L.L. 1998. Violence against women: An integrated, ecological framework. *Violence Against Women* 4(3): 262.

Hoffman, K.L., D.H. Demo, and J.N. Edwards. 1994. Physical wife abuse in a non-Western society: An integrated theoretical approach. *Journal of Marriage and the Family* 56(February): 131-146.

Jewkes, R. 2002. Intimate partner violence: Causes and prevention. *Lancet* 359(9315): 1423-1429.

Johnson, K. 2003. Dialectics of power in society and violence in the home: A comparative analysis of women's experience of domestic violence in Hati and Nicaragua. Dissertation: University of Maryland.

Kalmuss, D. 1984. The intergenerational transfer of marital aggression. *Journal of Marriage and the Family* 46: 11-19.

Kim, K. and Y. Cho. 1992. Epidemiological survey of spousal abuse in Korea. In: Viano, Emilio C. (Ed.). 1992. *Intimate violence: Interdisciplinary perspectives*. New York: Hemisphere Publishing Corporation.

Kishor, S. 2000. Empowerment of women in Egypt and links to the survival and health of their infants. In G. Sen Presser and B. Harriet (Eds.) *Women's empowerment and demographic processes*. New York: Oxford University Press.

Leung, W.C., Y.Y.M. Wong, T.W. Leung, and P.C. Ho. 2001. Pregnancy outcome following domestic violence in a Chinese community. *International Journal of Gynecology and Obstetrics* 72: 79-80.

Malhotra, A. and M. Mather. 1997. Do schooling and work empower women in developing countries? The case of Sri Lanka. *Sociological Forum* 12(4): 599-630.

Maman, S., J. Mbwambo, M. Hogan, G. Kilonzo, M. Sweat, and E. Weiss. 2001. HIV and partner violence: Implications for HIV voluntary counseling and testing programs in Dar es Salaam, Tanzania. New York: The Population Council.

Martin, S.L., A.O. Tsui, K. Maitra and R. Marinshaw. 1999. Domestic violence in northern India. *American Journal of Epidemiology* 150(4): 417-426.

Mason, K.O. 1987. The impact of women's social position on fertility in developing countries. *Sociological Forum* 2(4): 718-745.

McCluskey, L. 2001. Here, our culture is hard: Stories of domestic violence from a Mayan community in Belize. Austin, Texas: University of Texas Press.

Menard, A. 2001. Domestic violence and housing. *Violence Against Women* 7(6): 707-720.

Miles-Doan, R. 1998. Violence between spouses and intimates: Does neighborhood context matter? *Social Forces* 77(2): 623.

Ministry of Women's Affairs and Project Against Violence (MWAPAV) [Cambodia]. 1996. *Household Survey on Domestic Violence in Cambodia.* Phnom Penh: Cambodia.

Moore, M. 1999. Reproductive health and intimate partner violence. *Family Planning Perspectives* 31(6): 302-312.

Newberger, E.H., S.E. Barkan, E.S. Lieberman, M.C. McCormick, K. Yllo, L.T. Gary and S. Schechter. 1992. Abuse of pregnant women and adverse birth outcome: Current knowledge and implications for practice. *Journal of the American Medical Association* 267(17): 2370-2372.

Pebley, A.R., N. Goldman, and G. Rodriguez. 1996. Prenatal and delivery care and childhood immunization in Guatemala: Do family and community matter? *Demography* 33(2): 231-247.

Plichta, S.B. and C. Abraham. 1996. Violence and gynecological health in women < 50 years old. *American Journal of Obstetric Gynecology* 174(3): 903-907.

Raphael, J. 2001. Public housing and domestic violence. *Violence Against Women* 7(6): 699-706.

Rodgers, K. 1994. Wife assault: The findings of a national survey. *Juristat Service Bulletin* 14(9): 1-22.

Runge, R.R., M.E. Hearn, and S. R. Cama. 2001. Domestic violence as a barrier to employment. *Clearinghouse Review Journal of Poverty Law and Policy* 34(9-10): 552-562.

Rutstein, S.O. 1999. Wealth versus expenditure: Comparison between the DHS wealth index and household expenditures in four department of Guatemala. Unpublished.

Schei, B. 1991. Physically abusive spouse—A risk factor of pelvic inflammatory disease? *Scandinavian Journal of Primary Health Care* (9): 41-45.

Seltzer, J. A. and D. Kalmuss. 1988. Socialization and stress explanations for spousal abuse. *Social Forces* 67(2): 473-491.

Stark, E. and A. Flitcraft. 1996. *Women at risk: Domestic violence and women's health*. Thousand Oaks, California: Sage Publications, Inc.

Straus, M.A. 1990. Measuring intrafamily conflict and violence: The Conflict Tactic (CT) Scales. In: M.A. Straus and R.J. Gelles (Eds.) *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families*. New Brunswick, New Jersey: Transaction Publishers. 29-47.

Taggart, L. and S. Mattson. 1995. Delay in prenatal care as a result of battering in pregnancy: Cross-cultural implications. *Health Care for Women International* 17: 25-34.

United Nations Development Programme (UNDP). 2001. *Human development report 2001: Making new technologies work for human development.* New York: Oxford University Press.

Wingood, G.M. and R.J. DiClemente. 1997. The effects of an abusive partner on the condom use and sexual negotiation practices of African-American women. *American Journal of Public Health* 87(6): 1016-1018.

World Bank. 2001. *World development report 2000/2001: Attacking poverty*. New York: Oxford University Press.

World Health Organization (WHO). 2001. Putting women first: Ethical and safety recommendations for research on domestic violence against women. Geneva: Department of Gender and Women's Health.

Zierler, S., B. Witbeck, and K. Mayer. 1996. Sexual violence against women living with or at risk for HIV infection. *American Journal of Preventive Medicine* 12: 304-310.

APPENDIX A

Appendix Table A Significance and direction of the logistic coefficients of control variables included in the models in Tables 5.3-5.6

Control variables in logistic regression models	Cambodia	Dominican Republic	Haiti
Table 5.3 Likelihood of ever having had a pregnancy that did not result in a live birth			
Individual characteristics			
Age	s(+)	s(+)	s(+)
Number of years of education	ns(-)	s(-)	ns(-)
Number of living children	ns(+)	s(-)	ns(-)
Number of children dead	ns(+)	ns(+)	ns(+)
Dummy variables			
Regularly exposed to media	s(+)	ns(+)	ns(+)
Employed	ns(+)	s(+)	ns(-)
Currently married	s(+)	ns(+)	ns(+)
Household characteristics			
Rural	s(-)	ns(-)	ns(+)
Nuclear	ns(+)	ns(+)	ns(+)
Constant	s(-)	s(-)	s(-)
Table 5.4 Likelihood of having a sexually transmitted infection (STI) or a symptom of an STI			
Individual characteristics			
Age	ns(-)	ns(-)	ns(-)
Number of years of education	ns(+)/-	ns(-)	s/ns(-)
Number of children ever born	ns(-)	ns(-)	s(-)
Marital status: *Ref: Never married*			
Married once	ns(+)	ns(+)	ns(-)
Married more than once	ns(+)	ns(+)	ns(-)/(+)
Husband's drinking: *Ref: Never drunk*			
Sometimes drunk	ns(-)	s(+)/s(-)	ns(+)/(-)
Frequently drunk	ns(-)	ns(+)/s(-)	ns(+)/(-)
Dummy variables			
Regularly exposed to media	ns(+)	ns(+)	s(+)
Employed	ns(-)	s(+)	s(+)
Household characteristics			
Urban	ns(+)/(-)	ns(+)	ns(-)/(+)
Nuclear	ns(+)	ns(-)	ns(+)
Constant	s(-)	s(-)	s(-)
Table 5.5 Likelihood of a woman's last live birth being unwanted at the time the woman became pregnant			
Individual characteristics			
Age	ns(-)	s(+)	ns(+)
Number of years of education	ns(+)	s(-)	ns(-)
Number of living children	s(+)	s(+)	s(+)
Number of children dead	s(+)	s(+)	s(+)
Dummy variables			
Regularly exposed to media	s(+)	ns(+)	ns(+)/(-)
Employed	ns(+)	ns(-)	ns(-)
Currently married	ns(-)	s(-)	ns(-)
Household characteristics			
Rural	ns(+)	ns(+)/(-)	ns(+)/(-)
Nuclear	s(+)	ns(-)	ns(+)
Constant	s(-)	s(-)	s(-)
Table 5.6 Likelihood of of having discontinued using a modern contraceptive method			
Individual characteristics			
Age	s(-)	s(-)	s(-)
Number of years of education	s/ns(+)	s(+)	s(+)
Number of children ever born	s(+)	s(-)	s(+)
Marital status: *Ref: Never married*			
Married once	ns/s(+)	s(-)	ns(-)
Married more than once	s(+)	s(-)	ns(-)
Dummy variables			
Regularly exposed to media	s(+)	ns(+)	ns(+)
Employed	ns(+)	ns(-)	ns(+)
Household characteristics			
Urban	ns(+)/(-)	ns(+)	s/ns(-)
Nuclear	s(+)	s(-)	ns(-)
Constant	s(-)	s(+)	s(-)

s: Coefficient is significant at p<0.10; ns: Coefficient is not significant at p<0.10
s/ns: Coefficient is significant in some models but not others; +/-: Coefficient is positive in some models but not in others