

# **Do Women with Higher Autonomy Seek More Maternal and Child Health-Care? Evidence from Ethiopia and Eritrea**

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# **Do Women with Higher Autonomy Seek More Maternal and Child Health-Care? Evidence from Ethiopia and Eritrea**

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**Abstract:** Even though reduction of maternal and child mortality is among the key UN Millennium Development Goals, very little empirical evidence on maternal and child health care-seeking behaviour is available in many east African countries, particularly in contemporary Ethiopia and Eritrea. Even if some researches on maternal and child health-care exist in these two countries they focus primarily on female education and employment, while giving little attention to women's decision-making autonomy. However, the role of women's decision-making in reproductive health cannot be overemphasized. In this paper, different dimensions of women's decision-making autonomy and their relationship to maternal and child health-care utilization are investigated using data from the Demographic and Health Surveys of Ethiopia and Eritrea. We simultaneously consider the role of socio-economic (indirect) indicators of women's status. The study shows that most autonomy indicators are important predictors of maternal and child health-care utilization although the strength and statistical significance vary by health-care utilization outcome and country, and in some cases significance is lost when socio-economic indicators are held constant. The strong positive effect of women's sole decision-making in visiting family or relatives on use of antenatal care and child immunization is particularly impressive. On the other hand, the loss of significance of other dimensions of women's decision-making when socio-economic factors are controlled for indicates that some health-care seeking behaviours are more dependent on socio-economic factors like education and employment. The results show that most socio-economic indicators have strong influence on both women's decision-making autonomy and on maternal and child health-care utilization. These findings suggest that both women's autonomy and socio-economic indicators should be analyzed in order to derive a complete understanding of the determinants of maternal and child health-care utilization.

## **Introduction**

Recently, women's autonomy and its association with reproductive health and behaviour have emerged as a focal point of investigations and interventions around the world. Particularly, since the Cairo International Conference on Population and

Development in 1994, ICPD (United Nations 1994), women's role has been a priority area not only for sustainable development, but also in reproductive health. At the ICPD, a general consensus was reached to ameliorate women's status, along with the related goals of improving women's reproductive health and securing their reproductive rights, which represents a paradigm shift that emphasizes the reproductive autonomy of individuals. Following the ICPD, there has been a number of recent studies that examine women's autonomy and its relationship with reproductive health and health outcomes (e.g., Kishor 2000, 2005; Bloom et al 2001; IUSSP 1997). Most of these studies found relationships between various aspects of autonomy and reproductive health and behaviour, but there are many complexities and contradictory findings among them, with different aspects of autonomy showing unexpected relationships with reproductive health and preferences in different settings and under different research designs. For example, lower fertility and fertility desire was observed among women with higher levels of autonomy in Bangladesh (Balk 1994) and in many regions of India (Jejeebhoy 1991), and lower fertility was found to be associated with women's greater autonomy in Malaysia, the Philippines, and Thailand (Tfaily 2004). These findings are attributed primarily to higher modern contraceptive use among women with higher autonomy (Schuler and Hashemi 1994; Dharmalingam and Morgan 1996; Morgan and Niraula 1995). On the other hand, in their study of autonomy of women and trends in fertility and contraceptive use in Egypt and Bangladesh Amin and Lloyd (1997) found that a low level of female autonomy was not a barrier to fertility change and contraceptive use in Egypt.

Very little empirical evidence is available about the relationship between women's status and maternal and child health utilization (Desai and Johnson 2005). A study in Uttar Pradesh in North India shows that women's autonomy is the major determinant of maternal health care utilization (Bloom et al 2001). These authors show that women with greater freedom of movement are more likely to receive antenatal care and to use delivery care and suggest that women's autonomy is equally important as educational and economic levels. Another study in India has shown that women who score greater autonomy are more likely to use antenatal and delivery care for their last birth than women with lower autonomy (Basu 1992). Women's reproductive health-seeking behaviour was found to be associated positively with freedom of movement and decision-making power in South India, but these effects were reduced when

confounding factors were taken into account (Bhatia and Cleland 1995b). Using data from Zimbabwe, Zambia and Malawi, Hindin (2005) showed that women with lower autonomy in household decision-making were at an increased risk of having chronic energy deficiency in Zambia and Malawi, but not in Zimbabwe. A study by Kishor (2000) found women's autonomy to be an important explanatory factor in child survival and child health in Egypt net of other bio-demographic and socio-economic influences. Using DHS data from Zimbabwe, Becker (1997) examined the relationship between women's role in household decision-making and the extent of prenatal care and contraceptive use and found a strong association with prenatal care, but not with contraceptive use.

It is clear from the literature that the relationship of different aspects of women's autonomy and reproductive behaviour has not always been consistent across or within populations. Several factors may account for inconsistent relationships between women's autonomy and health or fertility outcomes. One fundamental problem that underlies the study of women's status and reproductive behaviour is how to adequately conceptualize women's autonomy. Women's autonomy is a complex and general term with many connotations that is influenced both by women's personal attributes and by the cultural norms of different groups (Makinwa and Jensen 1995). Such problems raise concerns about the definition and measurement of autonomy and have led many researchers to use indirect women's status indicators, such as educational attainment, employment, spousal age-difference, family type, etc. for women's decision-making autonomy in the analysis of reproductive behaviour (Jejeebhoy 1991). For instance, Safilos-Rothschild (1990) uses women's income as a key indicator of women's status to examine fertility in rural Kenya. Still others (e.g., Balk 1994; Tfaily 2004) have used both socio-economic factors and decision-making autonomy indicators and suggest that socio-economic indicators have direct effects as well. Yet critiques of available literature argue that women's socio-economic indicators such as education and employment are often not sensitive enough to capture the nuances of gender power relations and the ways in which they influence women's and men's reproductive behaviour (Presser and Sen 2000). It is argued that simply looking at schooling is not sufficient, but that the content of education, which often reinforces gender ideology, must be incorporated as well (Mason 1994). Similarly, women's employment does not automatically translate into women's

control over their income. It is important to know who actually has access to and control over that income.

In this study, an attempt is made to move this research forward using data from two east African countries, Eritrea and Ethiopia. Unlike many other previous studies, we examine different dimensions of women's autonomy and their relationship to maternal health-care seeking behaviour in relation to socio-economic factors. An important issue that we address is the relative importance of women's autonomy versus the socio-economic indicators on utilization of maternal and child health care. Although several studies have provided empirical evidence for these propositions in Asian countries, maternal health-care seeking behaviour has not been studied in relation to women's autonomy measures in Ethiopia and Eritrea. Understanding this relationship is particularly critical for these countries, which have been affected severely by conflict, civil war, and economic crisis and where gender disparity still is large. The findings of this study will have implications for health policies and programs in both countries and in east Africa in general.

In order to place the study in a broader context, first a brief background of the socio-demographic aspects of Eritrea and Ethiopia is given. Then, issues relevant to the concept of autonomy, the levels of women's autonomy in both countries, and the relationship between the autonomy indicators and socio-economic status indicators are discussed in that order. Finally, the paper examines whether direct measures of women's autonomy are important predictors of maternal and child health-care utilization in Ethiopia and Eritrea.

## **Background to Ethiopia and Eritrea**

Eritrea and Ethiopia are among the least developed countries in the world with per capita income of US\$190 and US\$110, respectively, as of 2004. The health system in both countries is underdeveloped, where about 70% of the populations suffer from some type of communicable disease and malnutrition. Maternal mortality ratio is still high in both countries, with about 670 deaths per 100,000 live births. The majority of women (94% in Ethiopia and 73% in Eritrea) deliver at home (CSA & ORC Macro 2006; NSEO & ORC Macro 2003). About 40% of Eritrean children and 38% of

Ethiopian children under five suffer from underweight. More than 76% of Ethiopian households and 60% of Eritrean households have no access to safe drinking water and only one fourth and one third of households in Ethiopia and Eritrea, respectively, have access to flush or pit toilet latrines (CSA & ORC Macro 2006; NSEO & ORC Macro 2003). About 39% of males and 52% of females in Eritrea have never attended school. The corresponding figures for Ethiopia are 52% and 67%. The male-female gap in education is more evident at higher than at lower levels of education.

As for the demographic situation, the two countries are still characterized by high fertility and mortality levels. This picture is typical of the situation in many countries in the east African region, but certain differences exist across countries. For example, total fertility (TFR) and infant mortality are lower in Eritrea, 4.8 children per woman and 48 per 1000 live births, respectively (NSEO and ORC Macro 2003), than in Ethiopia, where TFR and infant mortality are 5.4 children per woman and 80 per 1000 live births, respectively (CSA and ORC Macro 2006). In addition, while Ethiopia is the second-most populous African nation with about 75 million population (<http://en.wikipedia.org/wiki/Ethiopia>), Eritrea has a population size of only about four million (Population Reference Bureau 2006).

Added to these situations, the two countries have been in a state of war with each other during the past three or more decades. The thirty-years war (1961-91) and the 1998-2000 border conflict between the two countries coupled with recurrent drought have had significant political and economic impacts on both countries. Even though some progress has been made in socio-economic aspects like education and other sectors of the economy, the conflict has seriously affected the gains achieved. For example, in Eritrea, the recent border conflict has resulted in a decline in real per capita GDP growth from about +11% per year during 1993-97 to +3% in 1999, and to -10% in 2000; inflation rose from 17% in 1998 to 27% in 2000 (GSE and UNICEF 2001). The recent war was also accompanied with displacement of nearly one-third of the total population and military mobilization of young adults (mostly males, aged 18-40 years). With most of the young and productive population mobilized for military service, the burden of family responsibilities is on women and children. The border conflict coupled with political unrest has affected Ethiopia's economy as well. For instance, inflation stood at 15% in 2002-2003, although it declined to 7% in 2004-

2005. Economic growth has been fairly high but unstable, annual real GDP growth rate averaged at about 5% over the period 1999 to 2004 (CSA and ORC Macro 2006). There has also been and still is civil strife and political instability in Ethiopia which is likely to have an impact on the socio-economic development of the country. It is likely that such hostilities and economic and political upheavals also have impacts on women's status and wellbeing in both countries.

Even though women in sub-Saharan African countries are often perceived to exercise little or no control over resources and to have little say on reproductive decisions (Makinwa and Jensen 1995), this should not be over-generalized since the amount of control men have over their wives and the disparity between men and women vary from place to place, change over time, and are influenced by several factors. In Eritrea, for instance, during the struggle for independence women fighters were allowed to participate fully and equally in all aspects of activities of the Eritrean Peoples Liberation Front, EPLF (now the government of Eritrea). They have enjoyed some autonomy in participating in administration, decision-making and other non-traditional activities. Although the number of women in the EPLF was small, it is likely that participation of women during the war could have some influence on the role of women in general, after independence. This was not, however, the case in Ethiopian, as the Ethiopian government recruited only men as soldiers to fight the EPLF. Further, the mobilization of young adults and productive population (mostly men), particularly in Eritrea for the most recent war efforts, might have rendered inadequate the ability of men to take care of household needs, which may facilitate the emergence of a new perception of the roles and rights of their wives. In this case married women as main supporters of the family and responsible for all activities of the household are likely to gain more access and control over resources than others. But, it is also likely that women's access to resources (health, education, and other social services) might have been negatively affected as resources of the country were diverted to defence purposes.

### **The concept of women's autonomy**

Although women's autonomy is widely referred to in many studies, notably on reproductive status and health, the concept remains ill-defined and its relationship to demographic processes has not been well articulated, either theoretically or

empirically (Presser and Sen 2000). There is no single accepted definition that represents it or that captures the multiple dimensions of women's position (Mason 1984). Alternative terms such as women's status, female position or role, closer ties to natal kin, control over resources and prestige are all frequently used in the literature interchangeably to define women's status (Mason 1986; Bloom et al. 2001). Balk (1994) argues that women's status or autonomy can not be represented by one direct measure nor by one indirect proxy alone, and that different aspects of women's autonomy influence reproductive behaviour differently, in terms of magnitude and direction. In most studies autonomy has been defined as the capacity to manipulate one's personal environment through control over resources and information in order to make decisions about one's own concerns or about close family members (Basu 1992, Dyson and Moore 1983). This involves an individual's capacity and freedom to act independently of the authority of others, for instance the ability to leave the house without asking anyone's permission, make personal decisions regarding contraceptive use or obtaining health care. Thus, women's autonomy can be conceptualized as the ability to make and execute independent decisions pertaining to personal matters of importance to their lives or their family, even though men and other people may be opposed to their wishes (Mason 1984). For the purpose of this study, we use the term autonomy as defined by the above authors and it is represented by selected direct measures of women's autonomy, namely freedom of movement to visit families or relatives, decision-making power on making large household and daily purchases, and women's attitude toward domestic violence (i.e., wife beating).

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## **Data and methods**

The data are from Demographic and Health Surveys (DHS) conducted in Eritrea and Ethiopia in 2002 and 2005, respectively. The Eritrea survey, which is the second national representative and comprehensive survey was conducted by the National Statistics and Evaluation Office (NSEO) under the auspices of the International Comparative Program of the Demographic and Health Surveys, USAID. A sample of 8,754 reproductive age women (15-49 years) was interviewed in the survey, of which 5,730 are currently married (NSEO and ORC Macro 2003). The Ethiopia survey is the second comprehensive survey conducted by the Central Statistical Agency (CSA) of



Ethiopia as part of the worldwide Demographic and Health Surveys project. It was a nationally representative sample survey of 14,070 women age 15-49, of which 9,060 are currently married (CSA and ORC Macro 2006). The analysis is focused on last births of married women occurred in the past five years prior to the surveys. DHS surveys collect information on antenatal care for women who has given their last birth within five years preceding the survey only.

These two data sets were chosen for the study for two main reasons: First, they contain information on reproductive health behaviours of married women. Second the two countries have similar socio-cultural and demographic situations. The populations of both countries are predominantly rural (about 80%) and depend on agriculture.

Logistic regression models are fitted to investigate factors predicting the likelihood of the involvement of women in decision-making on making large and daily household purchases, and on visiting relatives or families. We also fitted two logistic regression models for each of the outcome variables to investigate the effect of women's autonomy on use of mater health care seeking behaviour. The first model includes women's autonomy indicators, while the second model adds the socio-economic indicators.

## **Description of variables used in multivariate analyses of health-care seeking behaviour**

**Dependent variables:** Three dependent variables are used to investigate the relationship between women's autonomy and the use of maternal health care for the most recent recorded birth occurring to respondents of DHS surveys within the past five years of the survey. These include:

- 1) Antenatal care during pregnancy as measured by the frequency of visits,
- 2) Delivery care, and
- 3) Child immunization status.

Antenatal care seeking behaviour is measured by whether the mother has visited medical facility at least four times (recommended number of visits) during pregnancy

of her last child born in the last five years before the survey. We also used a binary variable to model delivery care, reflecting whether the last child was born at a medical facility (hospital or clinic) versus at home, regardless of the attendant (health professional or other person). To model immunization status of the last child, we used a binary variable reflecting whether the child has received all the necessary vaccinations (full immunization) or not. A child is considered to be fully vaccinated if the child has received a dose of BCG vaccine (a vaccine against tuberculosis), three doses of DPT (a vaccine to immunize against diphtheria, pertussis and tetanus) three doses of polio immunization (a vaccine given to prevent children from polio disease) and a measles vaccination by 12 months of age (NSEO and ORC Macro Inc.2003).

**Key explanatory variables:** The two groups of explanatory variables key to the discussion in this paper are the direct measures of women's autonomy and the traditional socio-economic indicators of women's status. The variables in each group are described below.

#### **Women's autonomy indicators**

The degree of women's autonomy is assessed in four different areas: women's decision-making power (via decisions on making large household purchases and daily household purchases), extent of freedom of movements (via decisions on visiting families or relatives), and women's attitude toward partner's violence (via opinion toward wife beating). The selection of these autonomy variables is based on the review of literature presented earlier, with some modifications and on the structure and limitation of the DHS data used.

Decisions about the two different kinds of purchases (i.e., large household and daily needs) were meant to tap into economic decision-making 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. Participation in decisions about visits to families, relatives or friends was expected to enhance women's ability to seek and gain knowledge which may influence their own and children's health and well-being. Women whose movement is restricted and where their interaction with relatives or friends is closely monitored by husbands and in-laws

are expected to be less knowledgeable about health utilization than other women who have freedom of movement to visit relatives or friends.

In order to obtain information on the above measures of women's autonomy, the DHS surveys asked the following questions. Who in your family usually has the final say on the following decisions:

Making large household purchases

Making household purchases for daily needs?

Visits to family or relatives?

Responses are coded as 1) respondent, 2) respondent and husband/partner jointly, 3) respondent and someone else, 4) husband/partner, and 5) someone else in the household. To gain larger data in each category, responses 2 and 3, and 4 and 5 were merged and three categories of each variable/question are created: Respondent alone, respondent and husband/others jointly, and husband/others.

In addition to women's decision-making autonomy in the areas indicated above, questions that reflect gender-role norms that justify men's control over women are also available in the DHS surveys. Of particular relevance to health programs and that was included in this study is the following question: In your opinion, is a husband justified in hitting or beating his wife in the following situations:

If she goes out without informing him?

If she argues with him?

If she neglects the children?

If she refuses to have sex with him?

If she burns the food?

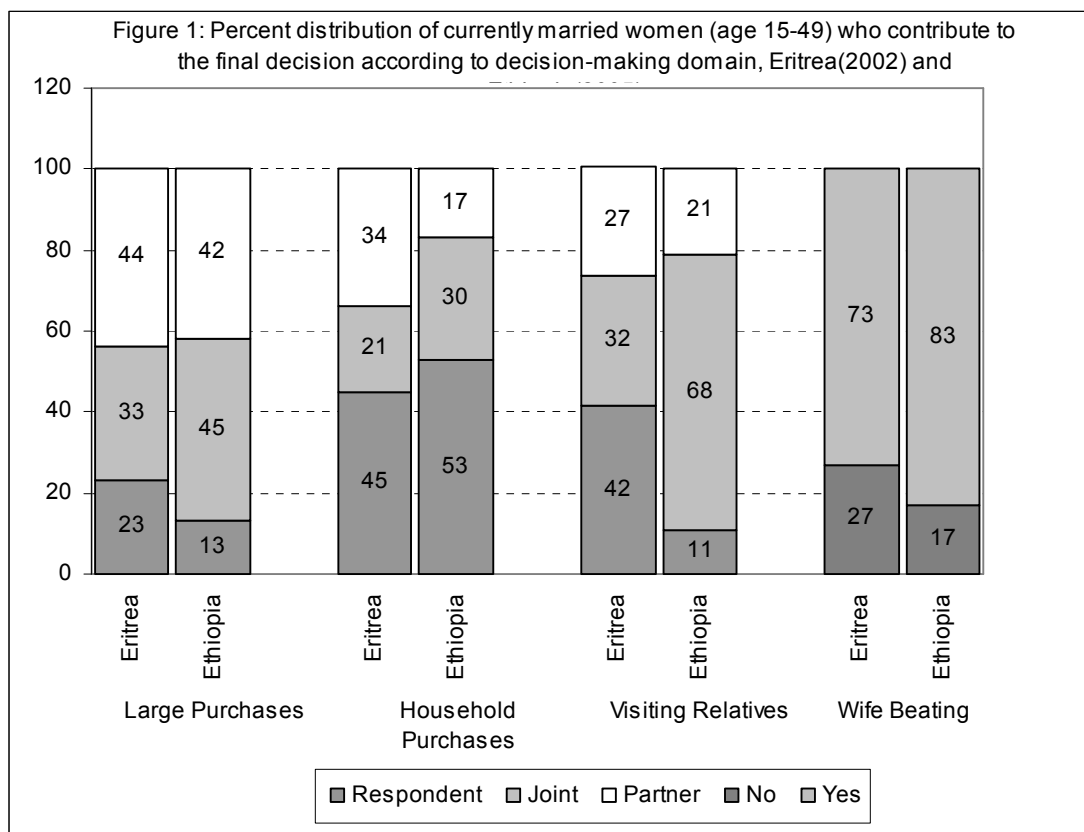
These are attitude questions, rather than questions that ask women about their own experience. The assumption with these questions is that women with high autonomy would not accept such obvious gender inequalities in power, such women would not agree with any justification for a husband beating his wife and would believe that a wife should have the right to decide when and whether she wants to have sex with her husband, or she argues with him. We define a variable with two categories from these questions: respondents who feel wife beating for any reason is justifiable and respondents who feel wife beating is not justifiable for any of the reasons.

### **Socio-economic status (indirect indicators of women's status)**

The socio-economic status indicators examined include women's and husband's education, women's current work and rural-urban residence. Education is here measured in terms of the highest level of education obtained. Three categories of education have been defined: no education, primary, and secondary or higher education. This categorization applies to both mother's and husband's education. Current work status of women is measured by whether the woman is currently working or not. Residence refers to whether the respondent was living in rural or urban areas at the time of the survey.

### **Autonomy Characteristics of Women in Eritrea and Ethiopia**

Figure 1 shows the percentage distribution of women's autonomy in household decision-making in Eritrea and Ethiopia and their attitudes towards partner's violence. The data in this figure are based on currently married women, aged 15-49 years at the interview of the 2002 Eritrea and 2005 Ethiopia DHS surveys. Overall, the results indicate that women's autonomy in most domains are similar in the two countries. Even though women's sole final say over large purchases and visiting relatives or families are slightly higher in Eritrea than in Ethiopia, the difference disappears when women who are not living with their husbands (due to mobilization for military service) are excluded from the analysis. In Ethiopia, the decisions concerning large household purchases and visiting families or relatives are primarily made jointly. In terms of women's attitude toward wife beating (partner's violence), 83% of women in Ethiopia and 73% in Eritrea believe that wife beating is justified in at least one of the five domains indicated in subsequent sections (the description of variables section).



## Results

### Determinants of women's autonomy

Before we examine the link between autonomy and utilization of maternal health care, it is instructive to look first at the relationship between socio-economic characteristics of women (or indirect indicators) and women's autonomy. Table 1 presents the results of the regression models estimated to examine this relationship in both countries. In general, the socio-economic indicators, as measured by women's and husband's education, women's current work (or employment), and rural-urban residence appear to be important determinants of women's autonomy in both countries, though the importance of some of them varies by country.

Maternal education is positively associated with all dimensions of women's autonomy, but did not reach statistical significance for making large household purchases in Eritrea. For this autonomy index, maternal education is weakly associated in Eritrea. In contrast, in Ethiopia, maternal education has a strong positive relationship with all dimensions of women's decision-making domains, where the more the woman is educated the more she is likely to be involved in decisions on

making large and daily household purchases and visiting her families or relatives. A higher level of husband's education significantly improves women's participation in all domains of women's autonomy in both countries, except in large purchases in Ethiopia. A higher level of husband's education in Ethiopia seems to restrict women's decision ability on making large household purchases. The factors that emerged as significant predictors of women's autonomy in both countries are current work of women and place of residence. Currently employed women are more likely to be positively and significantly associated with greater involvements in all dimensions of autonomy in both countries. Women who live in urban areas are also found to be more autonomous than their rural counterparts.

Table 1: Determinants of women's autonomy in three different dimensions (odds ratios from logistic regression models), Eritrea (2002) and Ethiopia(2005)

Socio-economic Determinants	Eritrea			Ethiopia		
	Women involved in decisions to			Women involved in decisions to		
	Purchase large items	Purchase daily items	Visit families	Purchase large items	Purchase daily items	Visit families
<b>Maternal education</b>						
No education	1	1	1	1	1	1
Primary	1.06	2.30***	1.81***	1.13*	1.07	1.01
Secondary+	1.20	2.35***	1.69***	2.43***	2.21***	2.26***
<b>Husband's education</b>						
No education	1	1	1	1	1	1
Primary	1.84***	1.25**	1.16*	0.94	1.25***	1.05
Secondary+	1.70***	1.35**	1.63***	1.04	1.33**	1.35***
<b>Currently working</b>						
No	1	1	1	1	1	1
Yes	2.11***	2.52***	1.66***	1.37***	1.76***	1.58***
<b>Place of residence</b>						
Urban	1	1	1	1	1	1
Rural	0.70***	0.59***	0.72***	0.48***	0.45***	0.54***

## **Relationship between women's autonomy and maternal health-care seeking behaviour**

The analysis in this study focuses on a set of outcome measures that contribute to both maternal and child health: utilization of antenatal care during pregnancy, delivery care at childbirth, and immunization after birth, all refer to the last child born five years preceding the surveys. Tables 2 through 4 show the results of multivariate logistic regressions with each of the three health care measures as outcomes and with women's autonomy indices and socio-economic indicators as independent variables for each country. Two separate models were run for each of the outcome measures. The first model in each table shows the effect of women's autonomy variables on the health outcomes, while the full model adds the socio-economic background variables of women to examine whether the effects of the autonomy variables are influenced by the socio-economic variables or they are independent from such influences.

### **Antenatal care**

Initially, we examined the relationship between the four areas of women's autonomy and antenatal care utilization by fitting a multivariate regression models that contains only the autonomy indices. Particularly, we look at whether women with a last birth in the five years preceding the survey made four or more antenatal care visits for that child. It is recommended that pregnant women should have at least four visits during her pregnancy (NSEO and ORC Macro Inc. 2003).

From the first models in Table 3, it is evident women's sole final say on all the autonomy indices, except on purchasing large household items in Eritrea, have a strong positive association with the level of antenatal care obtained. But, women's sole final say on large household purchases in Eritrea demonstrated no such relationship. More specifically, women who can make the final decision alone in making day-to-day household purchases, visiting families or relatives and those who disagree with wife beating are more likely to have received antenatal care in their last pregnancy than women who do not have a final say (Model 1, Table 2). On the other hand, the findings for the decision on making large household purchases indicate that its effect on use of antenatal care is more when it is done jointly than either by the woman or partner alone, this is particularly true among Eritrean women. In the full model (Model 2), although women's sole final say on visiting families or relatives in



both countries and on daily household purchases in Eritrea demonstrated a strong and positive association with use of antenatal care, women's final say on making large household purchases lost its significant effect after controlling for the socio-economic variables. Disagreement with wife beating in Ethiopia also retained its significant effect on utilization of antenatal care after the socio-economic variables are held constant. Urban residence, high maternal and husband's education all have a positive relationship to antenatal care utilization in both countries. Women's current work has a strong positive association with antenatal care in Ethiopia, but not in Eritrea.

Table 2: Determinants of antenatal care utilization (four or more antenatal care visits in last pregnancy), Eritrea (2002) and Ethiopia (2005)

Determinants	Eritrea		Ethiopia	
	Model with autonomy only (Model 1)	Full model (Model 2)	Model with autonomy only (Model 1)	Full model (Model 2)
<b>Autonomy indicators</b>				
<b>Decision on purchasing large items</b>				
Respondent alone	1	1	1	1
Jointly	1.59***	1.43***	1.08	1.49***
Partner or others	1.12	1.18	0.71***	1.51***
<b>Decision on purchasing daily items</b>				
Respondent alone	1	1	1	1
Jointly	0.49***	0.69***	0.63***	0.99
Partner or others	0.48***	0.84	0.68***	0.88
<b>Decision on visiting families/relatives</b>				
Respondent alone	1	1	1	1
Jointly	0.92	0.86	0.87	0.72**
Partner or others	0.79**	0.72**	0.49***	0.56***
<b>Wife beating justified</b>				
Yes	1	1	1	1
No	1.38***	0.95	3.02***	1.60***
<b>Socio-economic indicators</b>				
<b>Maternal education</b>				
No education	-	1	-	1
Primary	-	2.20***	-	1.70***
Secondary+	-	4.55***	-	3.45***
<b>Husband's education</b>				
No education	-	1	-	1
Primary	-	1.62***	-	1.64***
Secondary+	-	1.67***	-	2.79***
<b>Currently working</b>				
No	-	1	-	1
Yes	-	0.93	-	1.28**
<b>Place of residence</b>				
Urban	-	1	-	1
Rural	-	0.20***	-	0.15***

\* Factor level significant at <10%,

\*\*significant at <5%,

\*\*\* significant at <1%

### **Place of delivery**

We obtained almost similar results of the autonomy indices for analyses pertaining to care at delivery before we control for the socio-economic variables, but we obtained less effect after the later variables are held constant, except wife beating in Ethiopia. In the uncontrolled model (Model 1) which contains the four indices of women's autonomy, women's final say (either jointly or alone) in all autonomy indices, except in visiting families or relatives in Eritrea show a significant association with the likelihood of using a health facility at the birth of the last child. Women's final say in visiting relatives or families makes no difference in Eritrea, however. Joint decision on making large household purchases seems to be more important in Eritrea than in Ethiopia. In the full model, except decisions on making large household purchases in Eritrea and disagreement with wife beating in Ethiopia, all the autonomy indices have lost their significant effects on using safe delivery care. Joint decision-making on large household purchases in Eritrea and disagreement with wife beating in Ethiopia are the only autonomy indices showing significant positive associations with the likelihood of using delivery care. The full model also shows that both wife's and husband's education and women's current employment are associated positively and significantly with the likelihood of safe delivery care. Urban women are also significantly more likely to use safe delivery care than rural women.

### **Immunization status of last child**

Table 4 presents the odds ratios from two logistic regression models, in which the dichotomy of the child has received all the necessary immunizations versus no immunizations is the dependent variable. In the first model, except decisions on purchasing large household needs in Eritrea, women's final say in the other autonomy indices is positively associated with seeking child immunization. In other words children of women who have final say (either alone or jointly with their partner/others) in decisions on day-to-day household purchases and of visiting relatives or families in both countries and on large household purchases in Ethiopia are more likely to receive all the necessary vaccinations. In the full model, only decisions on visiting families or relatives still retained its significance in Eritrea. But, in Ethiopia, all household decision-making autonomy indices retained their significant effect on child immunization. Unlike with antenatal and delivery care seeking behaviour, no differential effect on child immunization is observed in Eritrea between

women who believe a husband is not justified in beating his wife for any reason and those who believe that a husband is justified. In Ethiopia, women who disagree with wife beating for any reason are more likely to have their last child received all vaccines, although the effect disappears when the other variables are taken into account.

Regarding the socio-economic indicators, except current work status in Eritrea, all are positively and significantly associated with child immunization. That is, the likelihood that the last child is getting the full regimen of immunization is significantly higher in households where women and husbands have some education, women are currently working, and if the woman is residing in an urban area.

Table 3: Determinants of delivery care utilization (last-born child was delivered in medical facility), Eritrea (2002) and Ethiopia (2005)

Determinants	Eritrea		Ethiopia	
	Model with autonomy only (Model 1)	Full model (Model 2)	Model with autonomy only (Model 1)	Full model (Model 2)
<b>Autonomy indicators</b>				
<b>Decision on purchasing large items</b>				
Respondent alone	1	1	1	1
Jointly	1.58***	1.41**	0.79**	0.94
Partner or others	1.00	1.07	0.43***	0.83
<b>Decision on purchasing daily items</b>				
Respondent alone	1	1	1	1
Jointly	0.51***	0.91	0.57***	0.96
Partner or others	0.52***	1.22	0.80*	1.26
<b>Decision on visiting families/relatives</b>				
Respondent alone	1	1	1	1
Jointly	0.94	0.85	1.13	0.99
Partner or others	0.92	0.83	0.60***	0.80
<b>Wife beating justified</b>				
Yes	1	1	1	1
No	1.63***	0.97	3.42***	1.65***
<b>Socio-economic indicators</b>				
<b>Maternal education</b>				
No education	-	1	-	1
Primary	-	2.03***	-	1.56***
Secondary+	-	5.97***	-	3.14***
<b>Husband's education</b>				
No education	-	1	-	1
Primary	-	1.42***	-	1.47***
Secondary+	-	2.96***	-	3.11***
<b>Currently working</b>				
No	-	1	-	1
Yes	-	1.33**	-	1.46***
<b>Place of residence</b>				
Urban	-	1	-	1
Rural	-	0.13***	-	0.11***

\* Factor level significant at <10%,

\*\*significant at <5%,

\*\*\* significant at <1%

Table 4: Determinants of child immunization (last child received all the necessary vaccines), Eritrea (2002) and Ethiopia (2005)

Determinants	Eritrea		Ethiopia	
	Model with autonomy only (Model 1)	Full model (Model 2)	Model with autonomy only (Model 1)	Full model (Model 2)
<b>Autonomy indicators</b>				
<b>Decision on purchasing large items</b>				
Respondent alone	1	1	1	1
Jointly	1.25	1.08	1.40**	1.67***
Partner or others	0.90	0.86	0.88	1.42***
<b>Decision on purchasing daily items</b>				
Respondent alone	1	1	1	1
Jointly	0.74*	1.10	0.70***	0.97
Partner or others	0.61***	1.05	0.63***	0.73**
<b>Decision on visiting families/relatives</b>				
Respondent alone	1	1	1	1
Jointly	0.80	0.75*	1.08	1.09
Partner or others	0.58***	0.55***	0.52***	0.62**
<b>Wife beating justified</b>				
Yes	1	1	1	1
No	1.02	0.84	2.15***	1.12
<b>Socio-economic indicators</b>				
<b>Maternal education</b>				
No education	-	1	-	1
Primary	-	1.56**	-	1.86***
Secondary+	-	1.48**	-	2.85***
<b>Husband's education</b>				
No education	-	1	-	1
Primary	-	1.37**	-	1.49***
Secondary+	-	1.88***	-	1.72***
<b>Currently working</b>				
No	-	1	-	1
Yes	-	0.83	-	2.10***
<b>Place of residence</b>				
Urban	-	1	-	1
Rural	-	0.17***	-	0.20***

\* Factor level significant at <10%, \*\*significant at <5%, \*\*\* significant at <1%

## Discussions and conclusion

In this study, women's autonomy, as measured by the extent of women's sole final say in decisions on making large and daily household purchases and of visiting families or relatives as well as women's attitude toward wife beating and their association with maternal health care utilization are examined using data from the DHS surveys of Eritrea and Ethiopia. The primary aim is to determine whether there is a link between women's autonomy and utilization of maternal and child health care in these countries and if so how such relationships differ with some selected socio-economic factors such as educational attainment of women and husband, women's current work status and place of residence.

After describing the concept of autonomy and each of the autonomy indices indicated above, we explored the evidence regarding the level and extent to which women's autonomy differs in the two countries. We then looked at the relationship between autonomy and socio-economic variables. Finally, we examined our main hypothesis whether women's autonomy increases maternal care seeking behavior.

The findings indicate that although the levels of women's decision-making autonomy are generally low in both countries, women in Eritrea seem to have greater sole final say in household decisions than do women in Ethiopia. On the other hand, joint decisions with partner are more often made in Ethiopia than in Eritrea. More than four-fifths of women in Ethiopia and close to three-fourths of women in Eritrea believe that wife beating is justified for any of the reasons indicated above (see page 12). This surprising result may suggest how widely accepted is wife beating in the two countries and how it reflects gender norms that tolerate violence toward women. In the past one or two decades, these countries have experienced not only a devastating war between each other, but also the difficulties associated with economic downturn. In addition, women in these countries, particularly in the rural areas are restricted by patriarchal controls that limit their participation and ability to make independent decisions. Thus, given the various, social, economic and political problems in these countries, the observed low levels of women's autonomy in decision-making and their support for partner's violence (wife beating) is not surprising. Further, the results show that most of our specified socio-economic factors have significant influence on women's autonomy, with women's current employment and rural-urban residence being the most important predictor for each dimension of autonomy. These findings are consistent with those of recent studies focusing on the influence of women's socio-economic status on autonomy outcomes in Bolivia, Peru, and Nicaragua (Healton et al. 2005).

The analyses on health-seeking behaviour during pregnancy, childbirth and post childbirth suggest that not all dimensions of women's autonomy are important predictors of these health outcomes. The effects varied by the health outcomes and country and some of them lost their significance after the socio-economic indicators are controlled. For example, women who have the sole final say in decisions on visiting family or relatives has a strong positive effect on use of antenatal care and

child immunization net of all the socio-economic influences in both countries. Women who have sole final decisions on making day-to-day purchases are more likely to seek antenatal care during pregnancy in Eritrea and child immunization in Ethiopia than other women and this relationship is significant even after the socio-economic factors are controlled. On the other hand, joint decision on large household purchases is more important predictor of maternal health-care seeking behavior, particularly during antenatal care in both countries, during delivery care in Eritrea and child immunization in Ethiopia. The effect of attitude on wife beating is statistically significant, but in most cases, the statistical significance is attenuated or becomes weaker when the socio-economic indicators are controlled.

The reduction of some of the effects of the autonomy indices when the variables that reflect the socio-economic factors are controlled may suggest that health-care seeking behaviors are more functions of the socio-economic factors - like women's employment and education - that have direct effects as well, at least in these two countries. But, the effects of some of women's autonomy indices should not be underestimated as well. For instance, the strong effects of women's autonomy in visiting relatives or families and joint decision-making on large household purchases, which retained their significant effects even after controlling for the socio-economic factors, are clear evidences to testify that autonomy variables are also important in explaining utilization of maternal and child health care. We also find that maternal and child health care seeking behavior is strongly related to the socio-economic factors. Thus, an analysis that integrates both the socio-economic factors and women's autonomy is more appropriate in the study of maternal and child health care utilization than one that includes only the socio-economic or autonomy indices. For instance, if geographical distance is a problem, which is often the case with maternity hospitals in both Eritrea and Ethiopia, then financial input or awareness on health care utilization can be barriers to uptake the services. This indicates that transportation costs or lack of information can be problems in access to maternal care (Okojie 1994). On the other hand, even if a woman has adequate financial resources and education, her low level of autonomy due to lack of authority and restriction by her husband can lead to low uptake of maternal health services. In this case, as a result of compromised decision-making autonomy, maternal care seeking behavior could be influenced.

While the analysis supports our study hypothesis, it is important that work of this type be replicated and extended to other east African countries, which have similar socio-cultural systems as Eritrea and Ethiopia. To our knowledge, there are no published contributions on this relationship from most of east African countries particularly Somalia and the Sudan. Most of the available literature on women's autonomy and reproductive health and behavior comes from Asia, particularly from southeast of the continent and from some countries of west and south Africa. In addition, attention needs to be given to developing better measures of women's autonomy at the household level and using those refined measures to look at variations in the determinants of maternal and child health outcomes and care seeking behavior. The measures of autonomy used in our analysis could be improved by incorporating information on other issues, such as whether that woman can use resources of the household for obtaining health care for her own and her children without any permission of the husband, whether she can stay with her relatives or families for a week or more without her husband's permission because the timing of stay in relatives home is more informative than asking her whether she can visit or not.

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Annex

Table 5: Percent of pregnancies/deliveries of last child and last live births that occurred within five years preceding the surveys according to health outcomes and autonomy and socio-economic indicators, Eritrea (2002) and Ethiopia (2005)

Indicators	Eritrea			Ethiopia		
	Antenatal care	Place of delivery	Immunization	Antenatal care	Place of delivery	Immunization
<b>Autonomy Indicators</b>						
<b>Decisions on purchasing large household items</b>						
Respondent alone	21.5	21.5	21.3	15.5	15.5	17.1
Jointly	32.3	32.3	32.5	41.5	41.5	38.6
Partner or others	46.2	46.2	46.2	43.0	43.0	44.3
<b>Decisions on purchasing daily household items</b>						
Respondent alone	40.5	46.6	40.5	54.2	54.2	53.0
Jointly	22.4	22.4	22.5	27.7	27.7	26.7
Partner or others	37.1	37.0	37.0	18.1	18.1	20.3
<b>Decisions on visiting families or relatives</b>						
Respondent alone	38.9	38.8	39.6	11.1	11.1	11.0
Jointly	32.1	32.2	32.1	66.4	66.4	65.0
Partner or others	29.0	29.0	28.3	22.5	22.5	24.0
<b>Wife beating justifiable</b>						
yes	72.2	72.3	71.8	81.3	81.3	81.8
No	27.8	27.7	28.2	18.7	18.7	18.2
<b>Socio-economic Indicators</b>						
<b>Maternal education</b>						
No education	70.7	70.8	68.9	76.2	76.1	77.9
Primary	20.5	20.4	21.8	15.7	15.6	14.2
Secondary+	8.8	8.8	9.3	8.1	8.3	7.9
<b>Husband's education</b>						
No education	58.9	58.9	57.8	58.2	58.2	61.4
Primary	26.6	26.6	26.5	26.3	26.2	23.8
Secondary+	14.5	14.5	15.7	15.5	15.6	14.8

