Female Autonomy and Facility Delivery in Honduras
by
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Abstract

Honduras’ maternal mortality rate is estimated at 100 deaths per 100,000 live births, remaining higher than the Latin America and Caribbean regional average of approximately 85 deaths per 100,000 live births. Because the majority of maternal deaths arise suddenly during labor, delivery and the immediate post-partum period, childbirth in a health facility equipped to manage complications is a crucial strategy for reducing maternal mortality. While technological improvements are critical for improved maternal health outcomes, relative power between partners has also been shown to impact reproductive health decisions, including place of delivery, given that women are not likely to be autonomous agents within the household. This paper sought to explore whether greater female autonomy in Honduras, as measured by household decision-making power, is associated with childbirth in a health facility. Using data from the 2005-2006 Honduras Demographic and Health Survey, binary logistic regression examined the influence and associations of four independent decision-making variables on the outcome measure of facility delivery. Unadjusted ORs from the bivariate analyses were significantly (p<.05) and positively associated with a facility delivery for each of the four decision-making variables. A multivariate analysis was used to control for the influence of place of residence, relative to a woman’s final say on household purchases for daily needs, on her delivery location. Results of the multivariate analysis indicate that both rural/urban residence and autonomy are significantly associated (p<.05) with delivery location. The secondary data analysis suggests that women with high autonomy have higher odds of a facility delivery than women with low autonomy, relative to all four areas of household decision-making, while both urban/rural residence and autonomy are also significantly associated with delivery location. The paper highlights specific pathways by which female autonomy might improve maternal health outcomes in Honduras, while underscoring the need to prioritize gender in future interventions to expand access to facility delivery.
Introduction

The 1994 International Conference on Population and Development (ICPD) held in Cairo represented a landmark shift towards a holistic articulation of reproductive health. The ICPD delegates integrated the physical, mental and social well-being of individuals into a normative definition of reproductive health that includes family planning as only one key aspect in a broader portfolio of reproductive health services, highlighting the significance of a life-cycle perspective beyond the child-bearing years (Sadana, 2002). The Cairo conference is credited with initiating a paradigm change in population policy, a transformation which shifted emphasis away from macro concerns of rapid population growth to an individual-based approach to sexuality and reproductive rights (DeJong, 2000). In addition to family planning services (including infertility treatment), the World Health Organization (WHO) definition of reproductive health encompasses safe motherhood, including antenatal care, delivery care, post-partum, perinatal and newborn care; elimination of unsafe abortion; prevention and treatment of sexually transmitted infections (STIs), including human immunodeficiency virus (HIV), reproductive tract infections, cervical cancer and gynecological morbidities; and healthy sexuality. The Cairo Plan of Action also included specific provisions for empowering women and increasing male support for reproductive health stating that “...changes in both men's and women's knowledge, attitudes, and behavior are necessary conditions for achieving a harmonious partnership of men and women. This would open the door to gender equality in all spheres of life, including improving communication between men and women on issues of sexuality and reproductive health, and improving understanding of their joint responsibilities so that men and women are equal partners in public and private life (UNFPA, 2004, p.29).”

Despite an expanded definition of reproductive health, there are challenges to developing and testing practical indicators of reproductive health (DeJong, 2000). In the years since the Cairo conference, researchers have emphasized the need for improved methods to quantify and monitor reproductive health. Although
there is consensus around the need to monitor and evaluate reproductive health indicators, the actual selection of priorities and effective interventions is challenging given country-specific contexts, including factors such as the epidemiology of reproductive morbidity and the health care system (DeJong, 2000). Nevertheless, progress in implementing elements of the Cairo Plan of Action is evident in many countries with increased global attention focused on reproductive health in the developing world, particularly with respect to the United Nations Millennium Declaration.

Adopted at the 2000 Millennium Summit, the Declaration identifies improving maternal health as the fifth of its eight Millennium Development Goals (MDGs). Universal access to reproductive health was integrated as an MDG target for Goal 5 in October 2007 following the 2005 World Summit Review of MDGs. MGD 5 is now assessed by two targets for improving maternal health: a three quarters reduction of the maternal mortality ratio (MMR) between 1990 and 2015, and universal access to reproductive health by 2015. The first target (5A) is tracked by the following progress indicators: maternal mortality ratio and the proportion of births attended by skilled health personnel; the second target (5B) is tracked by the following indicators: contraceptive prevalence rate, adolescent birth rate, antenatal care coverage (at least one visit and at least four visits), and unmet need for family planning. Because the majority of maternal deaths arise suddenly during labor, delivery and the immediate post-partum period, childbirth attended by a skilled birth attendant in a health facility equipped to manage complications is crucial for reducing maternal mortality (Singh, Bloom, Haney, Olorunsaiye, & Brodish, 2012). The fact that skilled birth attendance was selected as a process indicator for monitoring progress towards MDG 5 underscores the paramount importance of professional care at birth (Fotso, Ezeh, & Essendi, 2009).

The international reproductive health community now also widely acknowledges that addressing gender disparities in sexual relations and reproductive health decision-making is a fundamental mechanism for improving the reproductive health outcomes of both men and women (Speizer, Whittle, & Carter, 2005). While biomedical improvements are critical for improved maternal health outcomes, relative power and
influence between partners has been shown to impact reproductive health decisions, given that women are not likely to be autonomous agents within the household. In low resource settings such as Honduras, one of the poorest countries in the Western Hemisphere, strategic decisions must be made regarding delivery in a health facility, “which is more expensive and less convenient than delivery in the home, and it is likely that these decisions are influenced by partners and other household members” (Danforth, Kruk, Rockers, Mbaruku, & Galea, 2009, p.696).

This paper uses data from the 2005-2006 Honduras Demographic and Health Survey (DHS) to evaluate whether female autonomy - as measured by household decision-making power - is associated with childbirth in a health facility. Since 1984, the Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys (MEASURE DHS) project has provided technical assistance to more than 260 surveys in over 90 countries, advancing global understanding of health and population trends in developing countries. The DHS are nationally-representative household surveys that provide data for a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition. Standard surveys have large sample sizes (usually between 5,000 and 30,000 households) and typically are conducted about every 5 years, to allow comparisons over time. The MEASURE DHS project is primarily funded by the U.S. Agency for International Development (USAID).

The secondary data analysis will be supplemented by gender-related findings from qualitative research conducted during the summers of 2011 and 2012 in conjunction with the Honduran Health Alliance (HHA), an initiative of the UNC Schools of Medicine and Public Health. The author fulfilled her field work practicum by serving as one of two Public Health Leaders for the 2012 HHA program, which annually partners with a local Honduran collaborative to organize a series of community education workshops, followed by a week-long women’s health clinic staffed by 12-15 UNC medical students, under the supervision of UNC attending physicians. For a brief profile of the HHA project, see the Appendix.
Maternal mortality: global burden and regional trends

Maternal mortality is the leading cause of maternal death for women of reproductive age in the developing world, signaling an urgent global health priority. The International Statistical Classification of Diseases and Related Health Problems defines maternal death as the “death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes” (World Health Organization, 2010 Edition, p.156). As noted above, MGD 5A is designed to be assessed by a three quarters reduction of the maternal mortality ratio (MMR) between 1990 and 2015 (Estimates developed by WHO, UNICEF, UNFPA and The World Bank, 2010); the MMR is calculated as the number of maternal deaths during a given time period per 100,000 live births during the same time-period. Global estimates for 2008 approximate 358,000 maternal deaths in the world, or a MMR of 260 maternal deaths per 100,000 live births; this reduction represents only a 34 percent decline in the number of deaths, down from 546,000 in 1990 (Singh et al., 2012). Furthermore, for every maternal death, at least 20 women suffer injury, infection or disability (Guliani, Sepehri, & Serieux, 2012).

According to Trends in Maternal Mortality: 1990 to 2008, the MMR was dramatically higher in developing regions (290 deaths per 100,000 live births), compared to developed regions (14 deaths per 100,000 live births overall in developed regions; 12.7 per 100,000 in the United States). The estimates developed by WHO, UNICEF, UNFPA and the World Bank in 2010 approximate that sub-Saharan Africa (640 deaths per 100,000 live births) and South Asia (280 deaths per 100,000 live births) account for the largest rates of maternal deaths. The next highest rates are in Oceania (230 deaths per 100,000 live births), South- Eastern Asia (160 deaths per 100,000 live births), North Africa (92 deaths per 100,000 live births), followed by Latin America and the Caribbean (85 deaths per 100,000 live births), Western Asia (68 deaths per 100,000 live births), and Eastern Asia (41 deaths per 100,000 live births).
Although important strides have been made in the last two decades towards improving reproductive health, future improvements are needed for more substantial reductions in maternal mortality (Danforth et al., 2009). Within the region of Latin America and the Caribbean (LAC), Honduras’ recent decline in maternal mortality is cited as a rare success. Between 1990 and 1997 the country's MMR dropped 40 percent from 182 to 108 deaths per 100,000 live births, representing one of the largest and fastest reductions ever documented in the developing world (Shiffman, Stanton, & Salazar, 2004), “demonstrat[ing] how governments can successfully prioritize and establish an ongoing commitment to the reduction of maternal mortality and ... implement cost-effective, nationally appropriate solutions by following through with their political and financial commitments (Prata, Passano, Sreenivas, & Gerdts, 2010, p.317).” Despite dramatic progress in the 1990s, Honduras’ MMR remains higher than the LAC regional average at an estimated 100 deaths per 100,000 live births.

**Female autonomy and maternal health outcomes: a conceptual model for analysis**

The public health literature explores ways to quantify and analyze the impact of gender on maternal health. Beliefs and attitudes about gender roles, attitudes about or experience of gender-based violence, norms for gender relations in intimate relationships, and women’s autonomy have been shown to influence health outcomes include (Singh, Bloom, & Brodish, August 2011). The latter domain, female autonomy, is a complex social construct lacking a single definition, but is generally described “as the ability to make and execute decisions regarding personal matters of importance on the basis of the woman's power over others, access to information, control over material resources, and freedom from violence by her husband or other men (Fotso et al., 2009, p.2).”

A subset of the social science literature over recent decades has focused on female status and autonomy, indicating that low levels of autonomy in developing countries may serve as barriers to improving child survival and fertility reduction. In contrast, women who possess some decision-making power are better
positioned to meet their reproductive health goals (Speizer et al., 2005). Autonomy is often quantified using a combination of measures that may include levels of decision-making power, independent access to economic resources, freedom of movement and attitudes toward gender roles. Autonomy is particularly relevant at the household-level, given that this unit is central to the lives of many women, and this level appears to be most influential relative to behavior and outcomes (Singh et al., 2012). On balance, the literature has revealed positive associations between greater female autonomy and the use of health services.

According to Speizer et al. (2005), gender norms in Latin America - including the relative bargaining power between men and women - are transforming against the backdrop of other rapid social, economic and political changes emerging in the region over the last decades. In postcolonial Latin America, men of all social classes have firmly held the role of family patriarch, historically assuming control of their wives’ access to reproductive health services. However, civil wars, growing feminist movements, and rising unemployment, inflation and migration rates and are driving major social changes. Central American women are now staying in school longer, assuming more workforce participation, marrying later, using modern contraception and having smaller families; evidence supports the links between increased workforce participation and higher educational levels with increased contraception use in the region (Speizer et al., 2005).

Previous research examining the associations between a woman’s status and various health outcomes helps informs the conceptual framework for this paper. Considering the literature - which will be discussed in greater detail below – along with the shifting gender norms taking place in Latin America, the author developed the conceptual model illustrated in Figure 1 to guide the quantitative analysis. The model is intended to capture the dimensions of female autonomy which have been shown in the literature to positively impact the decision to deliver in a health facility. The conceptual model quantifies female autonomy using four independent variable groups (noted in blue): the level of female decision-making power relative to household matters (low to high scale); the level of female decision-making power relative to financial matters (low to high scale); attitudes towards wife beating (acceptable versus not acceptable); and attitudes towards refusal
to have sex (not justified versus justified). The framework hypothesizes that greater autonomy - indicated by a positive sign - relative to each variable group is predictive of facility delivery. The model also predicts that covariates related to socio economic status [age, parity, residence (urban/rural), education level, wealth, and working status] can have a direct impact on facility delivery; health seeking behaviors such as the decision to seek antenatal care may also mediate the pathway between a woman’s demographic profile and delivery in a health facility. It is also important to note that model does not exhaustively capture additional distal and structural determinants, such as distance to a health facility, which may also be predictive of facility delivery. As highlighted in red, a quantitative analysis to follow will further explore the importance of household decision-making as related to place of delivery.

**Figure 1. Author’s Conceptual Model**

Female autonomy and facility delivery: a review of the literature

Recent analysis by Guliani et al. included DHS data for thirty-two low income countries in Asia, sub-Saharan Africa and Latin America to assess a variety of individual-, household- and community-level characteristics on a woman’s decision to give birth at a health facility or at home (Guliani et al., 2012). The analysis showed that prenatal attendance does significantly influence the use of facility delivery in all three geographical regions, with women who have had four prenatal visits being 7.3 times more likely than those
with no prenatal care to deliver at a health facility. The authors report geographic variations across the three regions related to the influence of the number of prenatal visits, maternal age and education, parity, and economic status of the mother; however, the results generally indicated that obstetric care is geographically and financially more accessible to both urban and rural women from non-poor households than those from poor households (Guliani et al., 2012).

To-date, much of the literature specifically examining the relationship between female autonomy and facility delivery has focused on Asia, particularly south Asia, where positive associations have been clearly observed (Beegle, Frankenberg, & Thomas, 2001; Bloom, Wypij, & Das Gupta, 2001). Research in Nepal found that spousal discussion of family planning, not household decision-making autonomy or financial control over earnings, was associated with a greater likelihood of receiving skilled antenatal care and delivery care. However, control over economic resources was shown to be influential in Indonesia where researchers observed that as a wife’s share of household assets increased up to 25%, so did her probability of obtaining prenatal care and institutional delivery in a hospital or in a private physician’s office (Beegle et al., 2001).

While previous research in India found that decision-making autonomy increased the likelihood of facility delivery by trained personnel, Bloom and colleagues reported that it did not (Bloom et al., 2001). Bloom et al. found that women with greater freedom of movement had a higher probability of obtaining higher levels of antenatal care and safe delivery, while control over finances and decision making were not predictive; researchers also found that after controlling for demographic variables (including age, education, household structure), women with closer ties to natal kin were more likely to have greater autonomy in each of these three areas (Bloom et al., 2001). Recent research in India supports the hypothesis that greater female autonomy (measured by decision-making autonomy, permission to go out, and financial autonomy) increased the probability of receiving prenatal, delivery and postnatal care; however, different aspects of autonomy were significantly associated with different aspects of pregnancy care (Mistry, Galal, & Lu, 2009b) (Mistry, Galal, & Lu, 2009a). Women’s autonomy was shown to be more important relative to postnatal care given that
all three aspects of autonomy were predictive, and less important for delivery by a trained person for which only financial autonomy was predictive. According to the findings, female decision-making power within the home does not appear to be as important for accessing safe delivery care as for obtaining other pregnancy services; in the analysis, financial autonomy was predictive for the receipt of delivery care by a trained person and institutional deliveries, and permission to go out was significantly associated with institutional deliveries (Mistry, Galal, & Lu, 2009a).

Although a clear positive relationship has been demonstrated between gender variables and a women’s ability to both seek and advocate for health services for herself in Asia, far less empirical evidence is available from sub-Saharan Africa “where the patterns of women’s status and social position have been shown to differ from those observed in Asia and other parts of the developing world (Fotso et al., 2009, p.2).” Recent research examines the associations between gender measures and health outcomes and service utilization by African women. Fotso et al. (2009) found weak associations between gender measures and facility delivery among poor and middle income women living in the slums of Nairobi, Kenya. Woldemicael (2010) used data from the 2002 and 2005 DHS surveys in Eritrea and Ethiopia, respectively, to examine the link between female autonomy and maternal health care relative to socioeconomic factors (Woldemicael, 2010). Woldemicael found that although some dimensions of women's autonomy are significantly associated with a greater likelihood of receiving health care, they do not appear to mediate the link between socioeconomic variables and the utilization of antenatal and delivery care. In a recent technical report, researchers explored associations between gender measures and facility delivery in eight African countries for which recent DHS data was published: Democratic Republic of the Congo (DRC), Egypt, Ghana, Liberia, Mali, Nigeria, Uganda, and Zambia (Singh et al., August 2011). Gender variables were significantly associated with facility delivery in Ghana, Uganda and Nigeria. In an article published in September 2012, Singh and colleagues analyze data from the 2008 Nigeria Demographic Health Survey (DHS) to examine ways in which measures of gender equality are associated with childbirth in a health facility (Singh et al., 2012). After controlling for socio-demographic
factors, two gender variables remained statistically significant: household decision-making and attitudes regarding a wife’s ability to refuse sex.

Gaps and limitations in the literature

While research relating gender autonomy and place of delivery in the developing world has concentrated primarily on Asia, with a relatively narrow focus on Africa, Latin America represents a significant regional gap in the literature. Previous research in Latin America has focused on other predictors of delivery facility usage such as prenatal care. Honduras data was included in the aggregated Latin America data used in the Guliani et al. analysis noted above; in Latin America the likelihood of delivering in a health facility rose at an increasing rate after 3 visits. The authors reported an incremental influence of primary and secondary education, with post-secondary education increasing the odds of giving birth at health facility by 2.7 times (Guliani et al., 2012). The authors also found that in Latin America, women’s employment status had little effect on her choice of delivery location.

In a small study of 134 participants conducted by Becker et al. in Honduras’ remote highland community of Yamaranguila, researchers found that thirty-six percent of women’s most recent child births took place outside of a health facility; the study did not specifically measure female autonomy relative to place of delivery, but found that antenatal care was predictive of facility delivery, while age, education, perception of self-health and other demographic variables were not (Becker, Fonseca-Becker, & Schenck-Yglesias, 2006). Becker and colleagues found that the decision-making power in Guatemala (measured by whether or not to buy household items; what to do if a child becomes ill; whether or not to buy medicine for a family member who is ill; what to do if a pregnant women becomes very ill) was significantly associated with household planning for cases of emergency during the last pregnancy, delivery and postpartum, but was not predictive with place of delivery or having a postpartum checkup. This finding held true in both bivariate and multivariate
analysis, indicating that some factor other than decision-making autonomy is important for place of delivery and postpartum care (Becker et al., 2006).

Research conducted in Honduras has examined the impact of gender relations on reproductive decision-making (Speizer et al., 2005), inconsistent fertility motivations and contraceptive use (Speizer, Irani, Barden-O’Fallon, & Levy, 2009), and reasons for contraceptive discontinuation (Barden-O’Fallon, Speizer, Calix, & Rodriguez, 2011). The Speizer et al. (2005) study assessed the role of gender dynamics in reproductive decision-making in Honduras; the authors examined the relationship between male-centered attitudes (meaning the husband alone made the decisions) and actual family planning method use, and found that women who had ever used or were currently using modern contraceptive methods were significantly less likely to hold male-centered decision-making attitudes than those who relied on traditional methods or had never used a modern method. Overall, about 25 percent of women and 28 percent of men reported that men alone should make decisions regarding family size or family planning. Speizer et al. reported that women living in less urban areas, women with less than a secondary education, and women of medium or low socioeconomic status had greater odds of: 1. believing that men alone should make reproductive decisions, 2. living in a household in which the man made those decisions.

Qualitative data collected from the 2012 Honduran Health Alliance project are being prepared for publication, and male opposition to contraceptive use was frequently mentioned as a barrier to contraceptive uptake (Hall, Barrington, & Garrett, 2013). Female participants noted that while their own partners may support family planning use, other men in the community may oppose family planning and believe that they have the number of children that God gives them. Additional qualitative research in Choluteca found that men were more likely than women to express disapproval of family planning, primarily because of religious beliefs (Hinson & Dayton, 2012). Furthermore, the current study reports that some women covertly use contraceptives as a response to partner oppositions, putting them at risk of unintended consequences such as domestic violence.
Previous research in Latin America has focused on other predictors of delivery facility usage such as prenatal care and mother’s education level; however, there are few studies which specifically consider the impact of gender on place of delivery (Becker et al., 2006). This paper aims to add to the literature by specifically analyzing the impact of female autonomy on place of delivery in Honduras.

Secondary Data Analysis

Description of target population in Honduras

Located in the middle of Central America, Honduras has an estimated population of 7 million, according to the most recent housing survey conducted in 2005. In the last 53 years, the country experienced nearly a fivefold population increase, which has challenged the implementation of social policies to address the basic needs of the population. The country’s growth rate is generally declining, though the urban population growth, compounded by rural migration to the cities, has resulted in metropolitan areas that are overcrowded with limited access to water, electricity and basic sanitation services. The country is politically and administratively divided into 18 departments. The official language is Spanish, although there are some small indigenous groups located on the Atlantic seaboard who retain their native languages of Garifuna and Miskito.

Data and Sampling Methods

Data for this analysis came from 2005-2006 Honduras Demographic and Health Survey which was conducted by the National Institute of Statistics, in coordination with the Ministry of Health and Macro International (Secretaría de Salud [Honduras], Instituto Nacional de Estadística (INE) and Macro International, 2005-2006.). The dataset was obtained online by free download, which required the author to register online with MEASURE DHS; when submitting the Honduras dataset request, the author was required to include an abstract specifying that the data would be used solely for educational—not publication—purposes.

The survey used a probability sample, designed to be disaggregated by department, to represent the national female population. Within each department, census tracts were stratified into cluster areas (urban
and rural), with additional stratification within departmental municipalities. The total number of households selected was distributed by department, but not in direct proportion to population size; i.e., the final number of households was adjusted to ensure a minimum number of households in some priority departments. As a result, the sample is not self-weighting; the secondary analysis presented here did not apply sampling weights to account for the cluster approach of the DHS, making the results less generalizable at the national level.

Females aged 15-49 were eligible to participate in the survey. Field work was conducted between October 30, 2005 - May 11, 2006, and 19,092 households were visited; 18,683 homes were included for a household response rate of 98 percent, excluding vacant or unavailable dwellings. Of a total of 21,634 eligible women, 19,948 females were interviewed for an individual response rate of 92 percent; respondents were not offered incentives for participation. The survey report classifies this rate as satisfactory, particularly given challenges in accessing certain subsets of the population such as mining communities (Secretaría de Salud [Honduras], Instituto Nacional de Estadística (INE) and Macro International, 2005-2006.). Only women who had a birth in the five years preceding the survey were included in this analysis, for a final sample of 8,046.

**Decision-making variables**

The DHS survey includes questions related to household decision-making. Responses to the following specific questions were recoded to create four dichotomous independent variables:

1. Who has the final say on decisions about your own health care?
2. Who has the final say on making large household purchases?
3. Who has the final say on household purchases for daily needs?
4. Who has final say on visits to family or relatives?

Response categories included: respondent alone, respondent and husband/partner, respondent and other person, husband/partner alone, someone else, and other. A low–high classification was created for each question: women who were not involved in the decision (i.e., the decision was made by her husband/partner or someone else) were categorized as having low decision-making autonomy (assigned value of 0); women
who made each decision either alone or jointly with a husband/partner or another person were categorized as having high autonomy (assigned value of 1).

**Outcome measure**

Delivery location for the last birth in the last five years was recoded as non-facility (0) or facility (1) delivery to create a dichotomous dependent (outcome) variable. The response categories of respondent’s home or other’s home were categorized as non-facility; response categories of hospital (private and public), clinic (private, public, or non-governmental organization), or private doctor were categorized as facility.

**Statistical analysis methods**

A detailed descriptive analysis is presented first, and then supplemented by binary logistic regression analysis to examine the influence and associations of the independent variables (decision-making variables) on facility delivery; four separate models were analyzed – one for each decision-making variable (Forthofer, Lee, & Hernandez, 2006). Multivariate analysis was used to control for the influence of place of residence, relative to a women’s autonomy to make final say on household purchases for daily needs, on her delivery location. STATA Version 12 was used for all statistical analysis (Acock, 2008).

**Results**

**Table 1 and Table 2** present a description of the analysis sample. As noted in **Table 1**, the majority of the study sample (63 percent) was between 15-29 years of age, with limited education (80 percent had primary or no education). Over half (54 percent) of the women were in the lowest two wealth quintiles. **Table 2** presents a summative scale of autonomy [0=no involvement; 1=involved in 1 decision; 2= involved in 2 decisions; 3=involved in 3 decisions; 4= involved in all household decisions], illustrating that over 80 percent of the women surveyed are involved in two or more household decisions, with over 50 percent of women involved in all four household decisions.
Table 1. Description of Study Population (N=8046)

<table>
<thead>
<tr>
<th>Age</th>
<th>Honduras N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-29</td>
<td>5041 (62.65)</td>
</tr>
<tr>
<td>30-39</td>
<td>2369 (29.44)</td>
</tr>
<tr>
<td>40-49</td>
<td>636 (7.9)</td>
</tr>
<tr>
<td>Total</td>
<td>8,046 (100.00)</td>
</tr>
</tbody>
</table>

Highest education level

<table>
<thead>
<tr>
<th>Level</th>
<th>Honduras N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>750 (9.32)</td>
</tr>
<tr>
<td>Primary</td>
<td>5,663 (70.38)</td>
</tr>
<tr>
<td>Secondary</td>
<td>1,409 (17.51)</td>
</tr>
<tr>
<td>Higher</td>
<td>224 (2.78)</td>
</tr>
<tr>
<td>Total</td>
<td>8,046 (100.00)</td>
</tr>
</tbody>
</table>

Wealth index

<table>
<thead>
<tr>
<th>Index</th>
<th>Honduras N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poorest</td>
<td>2440 (30.33)</td>
</tr>
<tr>
<td>Poorer</td>
<td>1937 (24.07)</td>
</tr>
<tr>
<td>Middle</td>
<td>1425 (17.71)</td>
</tr>
<tr>
<td>Richer</td>
<td>1245 (15.47)</td>
</tr>
<tr>
<td>Richest</td>
<td>999 (12.42)</td>
</tr>
<tr>
<td>Total</td>
<td>8,046 (100.00)</td>
</tr>
</tbody>
</table>

Table 2. Female Autonomy Scale, N=8,046

| 4 DECISIONS     | 50.09          |
| 3 DECISIONS     | 17.47          |
| 2 DECISIONS     | 13.58          |
| 1 DECISIONS     | 9.84           |
| 0 DECISIONS     | 9.02           |

Table 3 shows the bivariate associations between place of residence (urban/rural) and place of delivery. The sample was split between 33.47 and 66.53 percent for urban and rural residence, respectively; overall, about 35 percent of women delivered at home, with approximately 65 percent giving birth at a facility. As shown in Table 3, approximately 91 percent of urban women delivered in a facility, compared to only about 52 percent among their rural counterparts.
Table 3. Cross Tabulation of Place of Residence (urban/rural) and Place of Delivery

<table>
<thead>
<tr>
<th>Place of residence</th>
<th>Non-facility delivery</th>
<th>Facility delivery</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>250</td>
<td>2443</td>
<td>2693</td>
</tr>
<tr>
<td>Rural</td>
<td>2591</td>
<td>2762</td>
<td>5353</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2841</strong></td>
<td><strong>5205</strong></td>
<td><strong>8046</strong></td>
</tr>
</tbody>
</table>

Table 4 shows the bivariate associations between educational level and place of delivery. As shown in Table 3, among women with no education, 37 percent delivered in a facility, compared to above 90 percent of women with at least a secondary education, indicating a clear trend of higher facility usage for child birth with higher education.

Table 4. Cross Tabulation of Highest Educational Level and Place of Delivery

<table>
<thead>
<tr>
<th>Highest educational level</th>
<th>Non-facility delivery</th>
<th>Facility Delivery</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No education</td>
<td>469</td>
<td>281</td>
<td>750</td>
</tr>
<tr>
<td>Primary</td>
<td>2283</td>
<td>3380</td>
<td>5663</td>
</tr>
<tr>
<td>Secondary</td>
<td>88</td>
<td>1321</td>
<td>1409</td>
</tr>
<tr>
<td>Higher</td>
<td>1</td>
<td>223</td>
<td>224</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2841</strong></td>
<td><strong>5205</strong></td>
<td><strong>8046</strong></td>
</tr>
</tbody>
</table>

Table 4 presents frequencies for the household decision-making variables, along with the unadjusted odds ratios (OR) from each of the four bivariate logistic regression analyses to measure the association of each decision making variable with facility delivery. The statistical software excludes missing values from the regression, thus leading to varying sample sizes for each decision-making variable. In terms of final say for
health care decisions, nearly 80 percent of women have high autonomy. Sixty and 72 percent of the study sample have high autonomy in terms of decisions for large household and daily household purchases, respectively. With respect to final decisions on visits to family and friends, 80 percent of women have high autonomy. In Table 4, the unadjusted ORs and their respective 95% confidence intervals are presented; for all four questions these ORs were shown to be significantly (p<.05) and positively associated with a facility delivery. In this unadjusted analysis, women with high autonomy have higher odds of a facility delivery than women with low autonomy, relative to all four areas of household decision-making.

**Table 4. Frequency of Decision-Making Variables and Association with Facility Delivery (Unadjusted Odds Ratios)**

<table>
<thead>
<tr>
<th>Decision-Making Variables</th>
<th>Honduras N (%)</th>
<th>Association with Facility Delivery Unadjusted OR (p&lt;.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OR (Conf. Int.)</td>
</tr>
<tr>
<td>Final say own healthcare</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low autonomy</td>
<td>1,442 (22.08)</td>
<td></td>
</tr>
<tr>
<td>High autonomy</td>
<td>5,089 (77.92)</td>
<td>1.53 (1.35, 1.72)</td>
</tr>
<tr>
<td>Total</td>
<td>6,531 (100.00)</td>
<td></td>
</tr>
<tr>
<td>Final say on making large household purchases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low autonomy</td>
<td>2,584 (39.83)</td>
<td></td>
</tr>
<tr>
<td>High autonomy</td>
<td>3,904 (60.17)</td>
<td>1.71 (1.54, 1.89)</td>
</tr>
<tr>
<td>Total</td>
<td>6,488 (100.00)</td>
<td></td>
</tr>
<tr>
<td>Final say on making purchases for daily needs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low autonomy</td>
<td>1,840 (28.18)</td>
<td></td>
</tr>
<tr>
<td>High autonomy</td>
<td>4,690 (71.82)</td>
<td>1.94 (1.73, 2.16)</td>
</tr>
<tr>
<td>Total</td>
<td>6,530 (100.00)</td>
<td></td>
</tr>
<tr>
<td>Final say on visits to family or relatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low autonomy</td>
<td>Low autonomy</td>
<td></td>
</tr>
<tr>
<td>High autonomy</td>
<td>High autonomy</td>
<td>1.60 (1.42, 1.81)</td>
</tr>
<tr>
<td>Total</td>
<td>6,488 (100.00)</td>
<td></td>
</tr>
</tbody>
</table>
**Multivariate analysis**

Of particular interest (the largest odds ratio listed above), is the fact that women with a high level of household autonomy relative to final say on making household purchases for daily needs are nearly twice as likely to deliver in a facility as women with low autonomy (OR =1.94, p<0.05). Given that this was the highest observed odds ratio (1.94) a multivariate analysis was used to control for the effect of place of residence (urban vs. rural) - relative to final say on purchases for daily needs - on place of delivery. Place of residence was selected to determine whether or not autonomy would remain statistically significant even when controlling for urban or rural setting, given that urban centers have more available and easily accessible health facilities. **Table 6** presents the results of multivariate analysis: both rural/urban residence and autonomy are significantly associated (p<.05) with delivery location. Women with high autonomy relative to daily purchases are 40 percent more likely to deliver in a facility than women with low autonomy relative to daily purchases, adjusting for rural/urban residence. Rural women are about 90 percent less likely to deliver in a facility as are urban women, adjusting for autonomy. This indicates that autonomy impacts delivery location independent of urban/rural residence, and urban/rural residence is important for delivery location independent of autonomy.

**Table 6. Multivariate Analysis**

<table>
<thead>
<tr>
<th>Final say on making purchases for daily needs</th>
<th>Adjusted OR (p&lt;.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of residence (rural)</td>
<td>1.42 (1.26, 1.59)</td>
</tr>
</tbody>
</table>

**Discussion**

The statistical analysis sought to answer the following research question: is greater female autonomy in Honduras, as measured by household decision-making power, associated with childbirth in a health facility? The analysis results support the study’s conceptual framework which hypothesized that greater female
autonomy is positively associated with facility delivery. The analysis indicates that women with high autonomy do have higher odds of facility delivery than women with low autonomy relative to all four areas of household decision-making. Multivariate analysis to control for the impact of place of residence indicates that autonomy impacts delivery location independent of urban or rural residence, and residence is important for delivery location independent of autonomy.

Research relating gender autonomy and place of delivery in the developing world has concentrated primarily on Asia, with a relatively narrow focus on Africa. Latin America represents a significant gap in the literature and previous research in the region has focused on other predictors of delivery facility such as prenatal care, with few studies specifically considering associations between female autonomy and place of delivery (Becker et al., 2006). The statistically significant findings from this analysis support the literature which generally underscores a positive association between female autonomy and place of delivery. Furthermore, to the extent that Honduras can serve as a regional illustration, the findings represent a new and specific example of this association from Latin America, serving as a key strength of the analysis.

Research limitations and strengths

This analysis considered female autonomy at the level of household decision-making, which is particularly relevant given that the household unit is central to the lives of many women. However, autonomy is a multidimensional, complex social construct that lacks a single operational definition, therefore limiting the generalizability of the results. Other key dimensions of female autonomy, including independent access to economic resources, freedom of movement, and attitudes toward gender roles (including attitudes towards wife beating and a wife’s refusal to have sex), should be considered relative to place of delivery. The analysis did not examine these additional spheres of female autonomy, nor did it control for the influence of other health-seeking behaviors such as prenatal care, which may increase the likelihood of a facility birth. Furthermore, it did not control for the impact of other socio demographics covariates such as age, parity and
employment status. Additionally, the analysis did not apply sampling weights to account for the cluster approach of the DHS.

While this does not invalidate the statistical significance reported here, it renders the results less generalizable; specifically it prevents estimates from being derived at the national level. The issue of generalizability to these patterns of association includes how representative this sample was of all women in Honduras, specifically, and Latin America, in general. Further analysis of country-wide characteristics would be required to address the former question; however given the scientific rigor used in choosing this probability sample it is unlikely that major differences exist between the sample and overall population characteristic women of child bearing age in Honduras. As discussed above, the application of proper sampling weightings was not carried out, thus limiting these projections from being applied nationally; however this may not limit the conclusions from being generalized nationally. Precise statements about generalizability beyond Honduras to other Latin American countries are beyond the scope of this paper, and may be a subject for future research.

Additional strengths of this study include the statistical techniques used to examine the unique associations between female autonomy and place of delivery. Bivariate analysis allowed each decision-making variable to be considered independently, revealing which particular dimensions of female autonomy within the household have greater odds of a facility birth. Although this paper does underscore important public health implications of these major demographic shifts, a more in-depth analysis of the broader societal context is required to fully assess the impact of female autonomy on place of delivery. However, the analysis represents a contribution using data from Latin America, and highlights the need to prioritize gender in future interventions to expand access to facility delivery, a crucial strategy for reducing maternal mortality in the developing world.
Conclusion

A subset of the social science literature over recent decades has focused on female status and autonomy, indicating that low levels of autonomy in developing countries may serve as barriers to improving reproductive and maternal health outcomes. In contrast, women who possess some decision-making power are better positioned to meet their reproductive health goals (Speizer et al., 2005). Autonomy is particularly relevant at the household-level, given that this unit is central to the lives of many women, and this level appears to be most influential relative to behavior and outcomes. The summative scale of autonomy presented in this paper shows that Honduran women are highly involved in household decisions. The analysis highlights specific pathways by which gender programs, such as those aimed at increasing female financial management within the household, might improve maternal health outcomes in other similar Latin American settings. As noted by Guliani and colleagues, policies designed to increase the use of obstetric care should be linked with social development programs to enhance the status of women, such as efforts to expand primary and secondary school enrollment rate among girls (Guliani et al., 2012).

Given that Central American women are now staying in school longer, assuming more workforce participation, marrying later, using modern contraception and having smaller families, Honduras represents a compelling landscape from which to examine the relationships between gender, female autonomy and maternal health outcomes. Future research should also examine the unique political context of Honduras in the early 1990s. Between 1990 and 1997, Honduran health officials successfully partnered with the international donor community to institutionalize safe motherhood as a political priority, resulting in a 40 percent drop in the MMR (Shiffman et al., 2004). The decline represents one of the largest and fastest reductions ever documented in the developing world, and lessons learned from Honduras’ tremendous maternal health achievement might serve to inform future public health interventions in Latin America and beyond. It is also important to assess whether or not these gains in maternal health are being sustained in Honduras, particularly in rural areas where almost half of deliveries still take place in the home. Additional
research should disaggregate rural data with the aim of improving access to health facilities in the most remote areas, including those inhabited by indigenous people. Although there are only a few small indigenous groups located on Honduras’ Atlantic seaboard, these populations have some of the worst health indicators compared to urban and non-indigenous people.

The DHS survey questions about household decision-making, access to healthcare, and attitudes about female control over sex, and acceptability of male violence were originally developed based upon literature focused on Asian cultures, where research had first indicated that women’s education and autonomy impacted fertility and other reproductive health outcomes (Schatz & Williams, 2012). Schatz and Williams emphasize the need to supplement DHS data with qualitative studies to both contextualize and validate current autonomy measures in other developing country settings, and inform the development of future DHS surveys. Given that research relating gender measures and health outcomes in the developing world has historically concentrated primarily on Asia, the need to supplement quantitative findings with smaller, context-specific qualitative findings is even more pronounced for Latin America.

The work conducted over the last two years of the HHA project provides compelling support that smaller-scale qualitative work can indeed reveal more nuanced concepts of gender norms and priorities, such as the notion of “self-love” which emerged during qualitative data collection in 2011 (Garrett & Barrington, 2013). While women described nearly all other aspects of their lives as being externally focused by caring for children, satisfying their husbands, and supporting other women and families in the community, the motivation for cervical cancer screening was explicitly contrary to this paradigm: the motivation for – and benefit of—screening was for herself. Women displaying self-love in the HHA study were described as engaging in other health-seeking behaviors (i.e., visiting the doctor, eating healthy foods and watching their weight, and seeking care when sick). Future research could investigate this concept as a way to explore how male support could potentially foster greater self-love for their female partners and ultimately advance a
number of reproductive health outcomes, including greater uptake of cervical cancer screening and family planning services.

While technological improvements are critical for improved maternal health outcomes, relative power between partners has also been shown to impact reproductive health decisions, including place of delivery, given that women are not likely to be autonomous agents within the household. In low resource settings such as Honduras, couples must make strategic decisions regarding delivery in a health facility, given that it is more expensive and less convenient than home delivery. The analysis sought to explore whether greater female autonomy in Honduras, as measured by household decision-making power, is associated with childbirth in a health facility. The results support the conceptual framework which hypothesized that greater autonomy is predictive of facility delivery in the Honduran context. The paper highlights specific pathways by which female autonomy might improve maternal health outcomes in Honduras, while underscoring the need to prioritize gender in future interventions to expand access to facility delivery.
References


Secretaría de Salud [Honduras], Instituto Nacional de Estadística (INE) and Macro International. (2005-2006.). Encuesta nacional de salud y demografía.


Appendix

The Honduran Health Alliance - Project Profile

Cervical cancer is the leading cause of cancer death for women in Honduras, in contrast to the 15th leading cause of death in the United States; the age-standardized rate of incidence is 5.7 cases per 100,000 women versus 37.8 cases in the US. Incidence rates in the 1960s and 1970s in high-income countries were similar to current rates in the developing world, and the dramatic decline in incidence and mortality is largely attributed to effective screening programs. (Gakidou, Nordhagen, & Obermeyer, 2008) The dramatic disparities are most often explained by two key factors: behavior risk and sub-optimal screening practices. Given that there is no national screening program in Honduras, access to clinical services and appropriate follow-up care is difficult, particularly for populations living in remote rural areas.

The Honduran Health Alliance (HHA), a student-run organization that facilitates a healthcare alliance between University of North Carolina, Chapel Hill (UNC) and six rural communities in southwestern Honduras. The program, originally designed and implemented by students from UNC’s School of Medicine, has since grown to include public health students from UNC Gillings School of Global Public Health (SPH) and precepting physicians from UNC’s Department of Family Medicine. HHA works to expand women’s health services, including cervical cancer screening, in six remote villages in the southern state of Choluteca, one of the most isolated regions of the country. HHA partners with a local Honduran collaborative, the Comunidades Unidas (CU) or United Communities. HHA organizes an annual summer program which includes a series of community education workshops, followed by a week-long women’s health clinic staffed by 12-15 UNC medical students, under the supervision of UNC attending physicians.

Each spring, in preparation for the summer program, the student leadership team travels to meet with the CU’s lay health adviser (LHA) team to solicit input about community priorities for revising and creating new culturally appropriate reproductive health education materials. The annual revision of the workshops, known as charlas, helps ensure that the educational content remains relevant, and also empowers community leaders to assume a role in decision-making, project planning and long-term growth of the project. The charlas are designed are designed to highlight the risk factors for cervical cancer and emphasize the benefits of early detection through screening. Pairs of medical and public health students are sent to rural villages where they spend 3-4 days delivering the charlas, building rapport with community members and promoting
the annual health clinic. Barriers such as transportation and childcare are addressed collectively, using both community and project resources.

In addition to health education, the HHA program annually provides over 200 women with clinical health services, including cervical cancer screening using the Pap procedure. Following the Pap screen, the results are processed by a laboratory in the capital city; student pairs then return to the villages to provide test results and individually counsel women. Any woman with an abnormal test result is advised regarding the recommended follow-up regimen. As part of the program, HHA has established a fund which fully subsidizes the cost of follow-up treatment and transportation expenses. When follow-up services are required, an LHA from the respective community serves as the liaison to arrange logistics and accompanies the woman to all required appointments. In this role, the LHA functions as a patient advocate, providing the essential social support to navigate the healthcare system which can be unfamiliar and intimidating. By coordinating all ongoing treatment efforts following the summer program, the LHA not only helps to sustain the clinical benefits of screening, but also becomes a vital source of social capital for the rural women.

HHA is a well-structured program that exposes students to challenging international work, while improving reproductive health in underserved communities through effective outreach interventions. The project does use medical volunteers to conduct cytological screening, employing external resources and a screening technique that is difficult to locally implement and sustain in the developing world; however, HHA maintains a collaborative relationship which ensures that community stakeholders have a central role in decision-making and project planning efforts. Such partnerships promote the continuity of the project, making HHA not only a short-term medical service program, but an example of a successful community-based intervention with local investment and support. Although HHA’s small-scale medical outreach is currently effective, the program’s scope is indeed limited and does not represent a long-term solution for providing critical health services, including screening, to rural populations. However, HHA’s integration of education, clinical services and follow-up treatment is an example of a successful, multi-level intervention that provides a continuum of care that would otherwise be unavailable.

Cervical cancer is a preventable cancer. Screening promotes early detection, and is an effective strategy for decreasing cervical cancer morbidity and mortality. Although there are formidable challenges and barriers in low-resource settings like Honduras, cost-effective screening and treatment options are currently available, and donor commitment is growing to expand HPV vaccine access in the developing world. As more innovative technologies are developed for the screening, treatment and vaccination of cervical cancer, these resources must be allocated in culturally appropriate ways that meaningfully engage local communities and equitably expand access to life-saving options for preventing cervical cancer.