

## **Writing sample**

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# Maternal sexual empowerment and sexual and reproductive outcomes among female adolescents: Evidence from a prevalence study in Ecuador

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## **Abstract**

This study uses data from the 2018 National Health and Nutrition Survey of Ecuador (Ensanut) to examine whether mothers' sexual empowerment—measured as a woman's autonomy in sexual relationships and her ability to turn down sex and demand contraception from her partner—is predictive of sexual and reproductive outcomes among female adolescent children. Results showed that having a mother who lacks sexual empowerment increases the odds of early sexual initiation. Girls who had a mother who had a teenage birth were more likely to experience teenage pregnancy themselves. This study uses various dimensions of sexual empowerment as a women's skills to avoid coercive sexual experiences and risky sexual behaviors. It contributes to the literature of sexual empowerment and risk factors of early sexual initiation, teenage pregnancy, and contraception used. Findings suggest mothers may influence daughters' attitudes towards sex through their own demonstration of sexual empowerment. More research is needed to confirm the robustness of these results and analyze other forms of sexual empowerment.

**Keywords**— maternal empowerment, sexual empowerment, early sexual initiation, teenage pregnancy, contraception

# 1 Introduction

2 Women’s empowerment is usually referred to as a woman’s ability to make decisions and control  
3 one’s own well-being. It includes women’s access to and control over family resources, freedom of  
4 movement, access to employment opportunities, and control over sexual relationships (Malhotra et  
5 al., 2002). Despite the detailed nature of studies on empowerment, the association between mothers’  
6 sexual empowerment and daughters’ sexual decision-making has barely been explored in empirical  
7 research.

8 Peterson (2010) defines sexual empowerment as a woman’s skill to influence the sexual behavior  
9 that occurs within her relationship and communicate her sexual desires. A large number of studies  
10 across several countries has found that mothers’ characteristics, including educational attainment,  
11 marital status, and mother-child relationship are related to the sexual and reproductive outcomes of  
12 female adolescent children (e.g., McNeely et al., 2002; Miller et al., 2001; Newcomer & Udry, 1987).  
13 Daughters may subconsciously learn their relative standing and value as women in comparison to  
14 men by looking at their mothers’ autonomy in sexual relationships. This implies that mothers may  
15 actually shape the sexual behavior of their daughters by serving as a role model through their own  
16 actions. Further exploration of this argument is important given the rapid changes in the value of  
17 women’s labor and status (Paxton et al., 2020), and how these relate to their children’s behavior.

18 Daughters of women who initiated sexual activity early and those who became teenage mothers  
19 have been found to be more likely to engage in early sexual activity and go through unintended  
20 pregnancy themselves (Kahn & Anderson, 1992; Johnson & Tyler, 2007). Aside from these findings,  
21 most recent research has focused on studying the connection between mothers’ empowerment and  
22 daughters’ risky sexual behavior. A study by Gipson & Upchurch (2017) in the Philippines, for  
23 instance, found that mothers who were considered to be “well-kept”—a locally defined measure  
24 of empowerment—were more likely to have daughters who had not engaged in sexual activity.  
25 These findings suggest that there are more dimensions of women’s empowerment that may impact  
26 intergenerational sexual and reproductive behaviors that are worth exploring.

27 Ecuador was chosen as the setting for the present study. It is a country that despite its consid-  
28 erable improvements over the past years regarding female educational attainment and labor partic-

ipation (The World Bank, 2012), has one of the highest teenage pregnancy rates in Latin America (UNICEF et al., 2016). Research has shown that access to schooling and labor opportunities influences women’s attitudes towards marriage and causes them to delay motherhood by increasing sexual agency and raising the opportunity cost of childbearing (Duflo et al., 2015; Jensen, 2012). Ecuador, however, has fallen behind neighbouring countries in reducing teenage pregnancy rates and has even undergone increments in the number of teenage mothers in some year periods (e.g., from 2013 to 2016) (Ministerio de Educacion del Ecuador, 2018; UNICEF et al., 2016). Goicolea et al. (2009) argue that women’s sexual agency in Ecuador is curtailed by social norms, such as associating condoms with promiscuity and infidelity, and a gender structure that encourages submissive, dependent, and obedient attitudes in women. These features make Ecuador an interesting setting that allows for the examination of novel dimensions of empowerment in a context where social norms potentially limit this power significantly.

Using a unique, intergenerational, and nationally representative dataset, this study explores the relationship between mothers’ sexual empowerment and daughter’s propensity to engage in early sexual initiation, have a teenage pregnancy, and use contraception when she is 16 years old. It is hypothesized that daughters of mothers with higher sexual empowerment, as compared to their peers, will have a lesser likelihood of early sexual initiation, teenage pregnancy, and will be more likely to use contraception. In addition, to rule out any possible confounding variables, the models include daughter-related characteristics, as well as maternal and household features like mothers’ educational attainment and household structure.

## Methods

### Sample

This study used data from the 2018 National Health and Nutrition Survey of Ecuador (Ensanut), which is conducted every five years by the National Statistics Institute of Ecuador (INEC). Its goal is to assess the health and nutritional status of adults and children in Ecuador. In 2018, the survey gathered data from 43,311 households, totaling a number of 168,747 subjects. Data about the sexual health of women was gathered for all those between 12 and 49 years old.

The sample was restricted to girls who were 16 years old at the time of the survey. Even though the World Health Organization defines early sexual initiation as having sexual intercourse at age 14 or younger (as cited by Lee et al., 2018), studies on sexual and reproductive health use inconsistent age cutoffs to demarcate early sexual initiation (Stöckl et al., 2013). Thus, there is no clear benchmark on the exact age cutoff of early sexual initiation. In this study, early sexual initiation was defined as having intercourse at age 16 or younger. There are several benefits of using this cutoff. First, it allows for easy comparison of results among studies. According to a systematic review by Stöckl et al. (2013) on early sexual initiation and HIV infection among women in Sub-Saharan Africa, several studies use having intercourse at age 16 or younger as the cutoff of early sexual initiation. Second, it reduces risks of sexual desirability and recall bias as sexual activity before age 15 is frequently misreported by adolescents (Neal & Hosegood, 2015).

The initial sample contained data from 1636 16-year-old daughters. Because data from both mothers and daughters were required to conduct the analysis, 289 subjects were dropped because they did not live with their mothers. 117 additional subjects were dropped because they did not provide information about their sexual activity. Another 249 subjects were dropped because their mothers' sexual health data was not available, either because they were above the age threshold for which data was collected or because they chose not to answer the questions. The final sample was made up of 981 daughters and their mothers.

## Measures

*Dependent variables.* Three sexual outcomes were observed in the analysis: early sexual initiation, teenage pregnancy, and contraception use. Daughters were asked whether they had ever had sexual intercourse and whether they had ever been pregnant. Teenage pregnancy included any who had a history of pregnancy regardless of the outcome. Respondents who reported having had intercourse were then asked if they had used any contraception method during their first time having intercourse. For each question, girls who answered “no” were coded as 0, while those who answered “yes” were coded as 1.

*Main explanatory variables.* The main explanatory variables were mothers' sexual empowerment and whether the mothers had experienced teenage pregnancy.

*Mothers' sexual empowerment.* Three questions in the survey were used to measure sexual empowerment. 1) Can you say "no" to your partner whenever you do not want to have sexual intercourse. 2) Are you using any form of contraception? If not, what is the reason (e.g., partner opposes, religious beliefs, desiring pregnancy, etc.)? 3) If you requested your partner to use a condom, how do you think he would react? If mothers were either unable to turn down sex, did not use contraception because their partner opposed, or believed their partner would react angrily if requested to use condom, they were labeled as "lacking sexual empowerment". A similar measure of sexual empowerment has been previously used in a study by Crissman et al. (2012) on contraception use by married women in Ghana.

*Mothers had a teenage birth.* Mothers' age at first birth was dichotomized into having had a birth at or before age 19 versus having their first birth at age 20 or later. I included mothers' age at first birth to account for early sexual empowerment. Sexual empowerment is conceived as the ability to make safe and informed decisions to prevent and modify risky sexual behaviors such as teenage pregnancy (Peterson, 2010). It also involves the assertiveness to protect themselves from coercive sexual experiences (Lamb & Peterson, 2012). Jewkes et al. (2001) showed that young mothers are generally characterized for being involved in unequal power relations, being forced to engage in sexual activities, and being physically abused by their partners. Dickson et al. (1998), conversely, found that rates of coercion increase the younger the age at first intercourse. This evidence suggests that mothers who had intercourse at a young age and who experienced early childbearing may exhibit low sexual empowerment.

*Mother-related controls.* These control variables included mothers' age, being employed or not, marital status, and educational attainment. Mothers were classified as married, cohabiting (domestic partnership), or non-partnered. Mothers' employment and marital status were used to control for household structure and stability. Father absence has been found to be associated with women's sexual outcomes (Ellis et al., 2003). Compared to being reared in a stable household with two biological parents, being raised in a single-mother household is strongly correlated with early sexual activity and teenage pregnancy (Newcomer & Udry, 1987). Regarding educational attainment, mothers were classified as having no formal education or having completed primary, secondary, or tertiary education. Evidence shows that children of more educated mothers are more likely to delay

sexual onset and pregnancy (Jordahl & Lohman, 2009; McNeely et al., 2002).

*Daughter-related controls.* These measures consisted of being enrolled in school or not, knowledge about period at first menstruation, and source of knowledge about sexuality. A systematic review by Pradhan et al. (2015) shows that having low levels of education or no education is one of the most common risk factors associated with early childbearing in developing countries, so this study considers a lack of school enrollment as a risk factor for teenage pregnancy. They also discussed the influence of specific knowledge about sexuality on reproductive health and avoiding unwanted pregnancies; and found that lack of sexual education was associated with higher risk of pregnancy. They found that girls commonly used peers as sources of information on sexual matters but that those peers were generally equally uninformed. Sampled girls were asked if they had ever received information about contraception methods. If they said “yes”, they had to report the source from which they had received the most information (family, school, and other sources such as peers and the internet). They were also asked if they were aware of what was happening to their body during their first period. This measure was included to account for early knowledge about sexuality.

*Household-related controls.* Daughters were classified according to their ethnicity (white and mestizo Ecuadorians vs. ethnic minority Ecuadorians), geographic area (urban vs. rural), and internet access (having no access vs. having access). Internet access and most recent (monthly) household income in US dollars were included to control for economic status and poverty level. Pradhan et al. (2015) shows that adolescents from low socioeconomic backgrounds are more likely to have experienced pregnancy than those from more advantaged backgrounds. Similarly, they proved that lack of employment opportunities increased the risk of pregnancy among girls. Evidence also suggests that differences in ethnicity and geographic area play an essential role in female adolescents’ sexual behavior. For instance, Benda & Corwyn (1998) found that compared to rural white Americans, rural black Americans brought up by single mothers were less likely to engage in sexual activity.

Table 1: Percentage and mean levels of explanatory variables by group

	Total	Daughters' sexual outcomes								
		Early sexual initiation			Teenage pregnancy			Contraception use		
		Yes	No	p value	Yes	No	p value	Yes	No	p value
<i>Daughters' sexual outcomes</i>										
Early sexual initiation	0.16									
Teenage pregnancy	0.07									
Contraception use	0.46									
<i>Main explanatory variables</i>										
Mother lacks sexual empowerment	0.10	0.14	0.09	0.086 *	0.13	0.10	0.469	0.12	0.15	0.782
Mother had a teenage birth	0.51	0.67	0.48	0.000 ***	0.70	0.50	0.003 ***	0.64	0.70	0.581
<i>Mother-related variables</i>										
Age	39.61	39.01	39.73	0.065 *	38.68	39.68	0.075 *	38.89	39.10	0.761
Employed	0.60	0.68	0.59	0.043 **	0.65	0.60	0.474	0.67	0.69	0.977
Non-partnered	0.21	0.25	0.20	0.143	0.20	0.21	1.000	0.29	0.22	0.434
Cohabiting	0.29	0.35	0.28	0.105	0.41	0.28	0.038 **	0.34	0.35	1.000
Married	0.51	0.40	0.53	0.006 ***	0.39	0.51	0.066 *	0.37	0.43	0.541
No education	0.03	0.07	0.02	0.007 ***	0.09	0.03	0.018 **	0.01	0.12	0.026 **
Primary education	0.44	0.43	0.44	1.000	0.48	0.43	0.550	0.37	0.49	0.180
Secondary education	0.38	0.39	0.38	0.810	0.33	0.38	0.502	0.41	0.37	0.736
Tertiary education	0.15	0.11	0.16	0.098 *	0.10	0.16	0.285	0.21	0.02	0.001 ***
<i>Daughter-related variables</i>										
Not enrolled in school	0.08	0.26	0.05	0.000 ***	0.36	0.06	0.000 ***	0.15	0.36	0.005 ***
No knowledge about period	0.21	0.29	0.19	0.006 ***	0.32	0.20	0.024 **	0.19	0.37	0.020 **
<i>Daughters' knowledge about contraception</i>										
No knowledge	0.11	0.08	0.12	0.229	0.10	0.11	0.918	0.03	0.13	0.044 **
Knows from family	0.07	0.09	0.06	0.308	0.09	0.06	0.647	0.12	0.06	0.244
Knows from school	0.75	0.65	0.77	0.004 ***	0.57	0.76	0.001 ***	0.68	0.63	0.558
Knows from other sources	0.07	0.18	0.05	0.000 ***	0.25	0.06	0.000 ***	0.16	0.19	0.882
<i>Household-related variables</i>										
Ethnic minority	0.21	0.30	0.20	0.009 ***	0.26	0.21	0.414	0.15	0.42	0.000 ***
Rural area	0.40	0.42	0.40	0.776	0.38	0.40	0.755	0.26	0.55	0.000 ***
Internet access	0.43	0.30	0.46	0.000 ***	0.26	0.44	0.005 ***	0.45	0.17	0.000 ***
Household income	601.64	724.23	577.84	0.722	532.07	606.92	0.900	996.21	493.36	0.054 *

*Note:* p values for comparison of percentages using chi-square. p values for comparison of means using t-test. N=978 for early sexual initiation and teenage pregnancy. N=159 for contraception use. \*p < .1; \*\*p < .05; \*\*\*p < .01



## Results

The final sample contained data from 978 16-year-old daughters and their mothers. 16% (N = 159) had had sexual intercourse and 7% (N = 69) had been pregnant. Among the 16% of those early sexual initiators, 46% (N = 73) used contraception during their first time having intercourse; 8% (N = 79) of daughters were not enrolled in school, and 21% (N = 201) did not know what was happening to their bodies during their first period. 75% (N = 731) of all daughters had received information about contraception from school; 7% (N = 65) from family; and 7% (N = 72) from other sources; 11% of them (N = 110) had never received information.

10% (N = 96) of mothers lacked sexual empowerment and 51% (N = 503) had a teenage birth. The average age of mothers was 39.61 (SD = 4.49). 60% (N = 591) of mothers were employed and 51% (N = 464) were married. 3% (N = 31) of mothers had no education, 44% (N = 427) had attended primary school, 38% (N = 370) had attended secondary school, and 15% (N = 150) had attended tertiary school. Regarding household characteristics, 21% (N = 210) of daughters identified as ethnic minority, 40% (N = 393) lived in a rural area, and 43% (N = 421) had internet access. The average last household income in US dollars was 601.64 (SD = 4746.46).

*Descriptive results.* Before conducting the primary analysis, the differences in the prevalence of early sexual initiation, teenage pregnancy, and contraception use by each explanatory variable and control were assessed. Table 1 shows the percentage and mean levels for all variables considered in the analysis. Differences across groups were tested using the chi-square and t-test for categorical and continuous variables, respectively.

Early sexual initiators were more likely to have mothers who reported lacking sexual empowerment ( $p < .1$ ), having had a teenage birth ( $p < .01$ ), being employed ( $p < .05$ ), and having no education ( $p < .01$ ) and were less likely to have mothers who were married ( $p < .01$ ). Early sexual initiators were also more likely to report not being enrolled in school ( $p < .01$ ), having no knowledge about period at first menstruation ( $p < .01$ ), knowing about contraception from other sources, including peers and the internet ( $p < .01$ ), belonging to an ethnic minority ( $p < .01$ ), and having no internet access ( $p < .01$ ). Girls with a history of pregnancy were more likely to have mothers who reported having become teenage mothers themselves ( $p < .01$ ), being unmarried ( $p$

< .1), and having no education ( $p < .05$ ). Similar to early sexual initiators, they were more likely to report not being enrolled in school ( $p < .01$ ), having no knowledge about their period at first menstruation ( $p < .05$ ), having no internet access ( $p < .01$ ), and knowing about contraception from other sources ( $p < .01$ ) as opposed to from school ( $p < .01$ ).

Regarding contraception use, girls who used contraception during their first time having intercourse were more likely to have mothers who reported having attended tertiary education ( $p < .01$ ). They were less likely to report not being enrolled in school ( $p < .01$ ) and more likely to report having knowledge about their period at first menstruation ( $p < .05$ ). On the other hand, girls who did not use contraception were more likely to report having never received information about contraception ( $p < .05$ ), to belong to an ethnic minority ( $p < .01$ ), to live in a rural area ( $p < .01$ ), have no internet access ( $p < .01$ ), and have a lower household income ( $p < .1$ ).

*Regression results.* Logistic regression was performed to test the association between mothers' sexual empowerment and their daughters' sexual outcomes (early sexual initiation, teenage pregnancy, and contraception use). Table 2 shows the odds ratio and 95% confidence interval of the main explanatory variables and controls included. Lacking sexual empowerment was predictive of early sexual initiation (odds ratio (OR): 1.72;  $p < .1$ ). Having a mother who had a teenage birth was associated with early sexual initiation (OR: 1.98;  $p < .01$ ) and teenage pregnancy (OR: 1.74;  $p < .1$ ). Mothers' sexual empowerment, however, was not significantly associated with contraception use in the model.

Having an employed mother increased the odds of early sexual activity (OR: 1.56;  $p < .05$ ) and having a mother who had attended primary school reduced the odds of early sexual activity (OR: 0.41;  $p < .1$ ). Not being enrolled at school and having no knowledge about period at first menstruation were highly predictive of early sexual intercourse (OR: 8.58;  $p < .01$ ; OR: 1.59;  $p < .05$ , respectively). Daughter's source of knowledge about contraception was strongly correlated with early sexual initiation. The odds of early sexual initiation increased significantly if daughters knew about contraception from family or other sources, including peers and the internet (OR: 4.88;  $p < .01$ ; OR: 9.66;  $p < .01$ , respectively). Belonging to an ethnic minority and having internet access were also predictive of early sexual activity (OR: 1.57;  $p < .01$ ; OR: 0.64;  $p < .1$ ).

Teenage pregnancy was associated with not being enrolled in school (OR: 8.05;  $p < .01$ ) and

Table 2: Odds ratio and 75% confidence interval from logistic regression models predicting daughters' sexual outcomes

	Daughters' sexual outcomes					
	Early sexual initiation		Teenage pregnancy		Contraception use	
	OR	95% CI	OR	95% CI	OR	95% CI
<i>Main explanatory variables</i>						
Mother lacks sexual empowerment	1.72 *	0.96 – 2.97	1.57	0.67 – 3.4	0.74	0.19 – 2.7
Mother had a teenage birth	1.98 ***	1.29 – 3.08	1.74 *	0.92 – 3.3	0.57	0.22 – 1.4
<i>Mother-related variables</i>						
Age	0.99	0.95 – 1.04	0.97	0.91 – 1.0	1.03	0.93 – 1.1
Employed	1.56 **	1.03 – 2.39	1.47	0.82 – 2.7	0.70	0.27 – 1.8
Cohabiting	0.81	0.47 – 1.38	1.25	0.58 – 2.8	0.74	0.21 – 2.5
Married	0.72	0.44 – 1.19	1.16	0.55 – 2.6	0.43	0.13 – 1.3
Primary education	0.41 *	0.16 – 1.13	0.49	0.15 – 1.8	8.09 *	0.95 – 186.7
Secondary education	0.60	0.23 – 1.70	0.51	0.15 – 1.9	8.40 *	0.99 – 190.5
Tertiary education	0.51	0.17 – 1.62	0.62	0.14 – 2.9	34.82 **	2.57 – 1102.0
<i>Daughter-related variables</i>						
Not enrolled in school	8.58 ***	4.85 – 15.45	8.05 ***	4.16 – 15.6	0.51	0.19 – 1.3
No knowledge about period	1.59 **	1.01 – 2.49	1.70 *	0.90 – 3.1	0.77	0.31 – 1.9
<i>Daughters' knowledge about contraception</i>						
Knows from family	4.88 ***	1.83 – 13.54	3.36 *	0.89 – 13.0	2.78	0.32 – 31.2
Knows from school	2.74 **	1.32 – 6.27	1.66	0.64 – 5.0	1.36	0.23 – 11.0
Knows from other sources	9.66 ***	4.02 – 24.89	8.06 ***	2.78 – 26.5	1.25	0.19 – 11.0
<i>Household-related variables</i>						
Ethnic minority	1.57 *	0.99 – 2.49	1.04	0.52 – 2.0	0.36 **	0.14 – 0.9
Rural area	0.81	0.52 – 1.25	0.56 *	0.29 – 1.0	0.58	0.25 – 1.4
Internet access	0.64 *	0.40 – 1.02	0.55 *	0.27 – 1.1	2.09	0.80 – 5.6
Household income	1.00	1.00 – 1.00	1.00	1.00 – NA	1.00	1.00 – 1.0

Note: N=981 for early sexual initiation and teenage pregnancy. N=159 for contraception use. \*p < .1; \*\*p < .05; \*\*\*p < .01

having no knowledge about their period at first menstruation (OR: 1.70; p < .1). Interestingly, knowing about contraception from family and other sources increased the odds of daughters having been pregnant (OR: 3.36; p < .1; OR: 8.06; p < .01, respectively), but knowing from school was not significant. The odds of teenage pregnancy were lower for girls who lived in a rural area (OR: 0.56; p < .1) and had internet access (OR: 0.55; p < .1).

The most predictive variable for contraception use was mothers' educational attainment. Having a more educated mother increased the odds of contraception use. Particularly, the odds of using contraception increased significantly if the daughters had a mother who had attended tertiary school (OR: 34.82; p < .05). Belonging to an ethnic minority decreased the odds of contraception use (OR:

0.36;  $p < .05$ ).

## Discussion

One key contribution of this research is the exploration of a particular dimension of maternal empowerment that relates to daughters' sexual outcomes: mother's sexual empowerment. Mothers' sexual empowerment is a less conventional measure of empowerment used to predict daughters' timing of sexual initiation and risk of teenage pregnancy. Previous studies have focused on maternal empowerment as a mothers' control over household decision making, asset ownership, educational attainment, access to healthcare services, and attitudes towards domestic violence to predict daughters' educational, health, and sexual outcomes (e.g., Abreha et al., 2020; Gipson & Upchurch, 2017; Kiani & Behrman, 2013). They employ questions like who has the final say over purchasing or healthcare decisions as a measure of autonomy, but do not specifically speak to the degree of control in sexual acts. To account for this discrepancy, this study utilized a large set of questions from the National Health and Nutrition Survey of Ecuador (Ensanut) that asked mothers about their agency and autonomy in sexual relationships to predict their daughters' sexual decision-making. This research is a first attempt to explore mothers' sexual empowerment as a tool to understand the sexual behavior of female adolescents.

Logistic regression showed that girls who had mothers who were capable of turning down sex and able to demand contraception use from their partners were less likely to engage in sexual activity. Conversely, having mothers who had had a teenage birth increased the odds of early sexual initiation and teenage pregnancy. This evidence raises the question of the role of mothers' negotiation skills in sexual relationships on their daughters' sexual behavior. Evidence shows that women are more likely than men to be forced to have intercourse on the first occasion, and that coercion rates are much higher with younger individuals during the first time of intercourse (Dickson et al., 1998). Therefore, it is plausible that early sexual initiators are more likely to be forced or persuaded by their partners to initiate sexual activity if their mothers themselves cannot escape from sexual coercion, or if they are instructed that women should be submissive even during sexual encounters.

Mothers' age during their first time having intercourse was initially considered in the study as

an additional measure of sexual empowerment. It was hypothesized that girls whose mother had first had intercourse at a young age were more likely to have engaged in sexual activity. Several studies (e.g., Dickson et al., 1998; Moore et al., 2007) have shown that a large portion of women suffer sexual coercion during their first time having intercourse, and that rates of coercion increase the younger the age at first intercourse. Yet, early sexual initiation does not always reflect low sexual empowerment. A young girl could feel empowered by expressing a positive physical and emotional sexual desire to have intercourse and defying sexual scripts in which girls should be responsible for sexual restraint (Lamb & Peterson, 2012). Therefore, to use age during one's first time having intercourse as a measure of sexual empowerment, 'the means by which that first sexual experience occurred would need to be accounted for. However, since no more detail was available in the survey to differentiate low from high empowerment, and since mothers' age during their first time having intercourse would be collinear with having a teenage birth, age during one's first time having intercourse was dropped as an explanatory variable.

As expected, this study found that girls whose mothers were more educated were less likely to have sexual intercourse and more likely to use contraception. Having a mother who attended tertiary school was by far the most significant predictor of contraception use. These results are consistent with previous evidence that suggests that parental education inhibits the risk of early sexual initiation (e.g., Guo et al., 2012; Jordahl & Lohman, 2009; Santelli et al., 2000). Findings also showed that the source from which girls received information about contraception was a good predictor of their sexual activity. After controlling for school attendance, girls who knew about contraception from family and other sources, including peers and the internet, were more likely to engage in sexual activity than those who reported having learned from school. In Ecuador, parents have shown interest in addressing sexuality with their children in order to discourage them from having sexual relations. Yet, they face several constraints. These include a lack of knowledge and feelings of shame and anxiety when talking about sex, and the perceived idea that children already know everything and, therefore, may refuse to talk about the topic (Jerves et al., 2014). Further studies are needed to understand the influence of parent-child education on children's sexual behavior and health.

## Limitations

As in most studies that use secondary data, not all variables necessary to understand the sexual activity of young females were available in the survey. As the survey was mainly concerned with health and nutrition-related information, questions relevant to other dimensions of sexual empowerment like attitudes towards domestic violence were not added in the model. Nevertheless, direct measures of mothers' ability to turn down sex and demand contraception, and proxy measures of early sexual empowerment such as having a teenage birth were included.

This study, like most research on sexual health, was not exempt of risk of bias. Social desirability bias and recall bias have been found to be a common problem in surveys on sexual initiation, childbearing, and marriage by adolescents. Neal & Hosegood (2015) found several inconsistencies in the reporting of sexual outcomes among women born in the same year cohort but interviewed at different ages. They found that women aged 15–19 were much less likely to report marriages and first births before age 15 than were women from the same birth cohort when asked five years later at ages 20–24. These findings on reporting biases are one of key reasons why I decided to restrict the cutoff of early sexual activity to 16 years.

## Conclusions

This research explored maternal sexual empowerment as a risk factor of early sexual initiation, teenage pregnancy, and lack of contraception use among female adolescents. It was found that a lack of mothers' sexual empowerment—measured as a women's ability to turn down sex and demand contraception from her partner—increases the odds of early sexual initiation of 16-year-old women. Having a mother who had a teenage birth was also related with early sexual initiation and teenage pregnancy. This measure was used to account for mothers' early sexual empowerment, which is also understood as a woman's ability to make safe and informed decisions to prevent and modify risky sexual behaviours.

Although the nature of this research does not allow for a causal relationship to be established, findings suggest that mothers' sexual empowerment may shape daughters' attitudes towards sexual abstinence and ability to prevent pregnancy. Parent-based interventions designed to delay sexual

onset and promote contraception use typically focus on improving parent-child communication about sexual health and parental monitoring (Santa Maria et al., 2015). Yet, the results of this study indicate that interventions aimed at strengthening mothers' agency and autonomy in sexual relationships can potentially be useful at delaying their children's first time having intercourse. So far, our understanding of the different dimensions within sexual empowerment and their role in the sexual well-being of female adolescents is very limited. Further research, including impact evaluations, is needed to assess the extent to which and how mothers' skills at managing sexual relationships are associated with and influence daughters' sexual outcomes.

## References

- Abreha, S. K., Walelign, S. Z., & Zereyesus, Y. A. (2020). Associations between women's empowerment and children's health status in ethiopia. *PloS one*, *15*(7), e0235825.
- Benda, B. B., & Corwyn, R. F. (1998). Race and gender differences in theories of sexual behavior among rural adolescents residing in afdc families. *Youth & Society*, *30*(1), 59–88.
- Crissman, H. P., Adanu, R. M., & Harlow, S. D. (2012). Women's sexual empowerment and contraceptive use in ghana. *Studies in family planning*, *43*(3), 201–212.
- Dickson, N., Paul, C., Herbison, P., & Silva, P. (1998). First sexual intercourse: age, coercion, and later regrets reported by a birth cohort. *Bmj*, *316*(7124), 29–33.
- Duflo, E., Dupas, P., & Kremer, M. (2015). Education, hiv, and early fertility: Experimental evidence from kenya. *American Economic Review*, *105*(9), 2757–97.
- Ellis, B. J., Bates, J. E., Dodge, K. A., Fergusson, D. M., John Horwood, L., Pettit, G. S., & Woodward, L. (2003). Does father absence place daughters at special risk for early sexual activity and teenage pregnancy? *Child development*, *74*(3), 801–821.

- Gipson, J. D., & Upchurch, D. M. (2017). Do the status and empowerment of mothers predict their daughters' reproductive outcomes? *BMC pregnancy and childbirth*, 17(2), 348.
- Goicolea, I., Marianne, W., Öhman, A., & San Sebastian, M. (2009). Risk factors for pregnancy among adolescent girls in ecuador's amazon basin: a case-control study. *Revista Panamericana de Salud Pública*, 26, 221–228.
- Guo, W., Wu, Z., Qiu, Y., Chen, G., & Zheng, X. (2012). The timing of sexual debut among chinese youth. *International perspectives on sexual and reproductive health*, 196–204.
- Jensen, R. (2012). Do labor market opportunities affect young women's work and family decisions? experimental evidence from india. *The Quarterly Journal of Economics*, 127(2), 753–792.
- Jerves, E., Lopez, S., Castro, C., Ortiz, W., Palacios, M., Rober, P., & Enzlin, P. (2014). Understanding parental views of adolescent sexuality and sex education in ecuador: a qualitative study. *Sex Education*, 14(1), 14–27.
- Jewkes, R., Vundule, C., Maforah, F., & Jordaan, E. (2001). Relationship dynamics and teenage pregnancy in south africa. *Social science & medicine*, 52(5), 733–744.
- Johnson, K. A., & Tyler, K. A. (2007). Adolescent sexual onset: An intergenerational analysis. *Journal of Youth and Adolescence*, 36(7), 939–949.
- Jordahl, T., & Lohman, B. J. (2009). A bioecological analysis of risk and protective factors associated with early sexual intercourse of young adolescents. *Children and Youth Services Review*, 31(12), 1272–1282.
- Kahn, J. R., & Anderson, K. E. (1992). Intergenerational patterns of teenage fertility. *Demography*, 29(1), 39–57.



- Kiani, A. K., & Behrman, J. R. (2013). Mothers' empowerment, children's inoculations and schooling in pakistan: Urban vs rural areas, daughters vs sons and 1998-99 vs 2007-08. *Grand Challenges Canada Economic Returns to Mitigating Early Life Risks Project Working Paper Series*.
- Lamb, S., & Peterson, Z. D. (2012). Adolescent girls' sexual empowerment: Two feminists explore the concept. *Sex Roles*, 66(11-12), 703–712.
- Lee, R. L. T., Yuen Loke, A., Hung, T. T. M., & Sobel, H. (2018). A systematic review on identifying risk factors associated with early sexual debut and coerced sex among adolescents and young people in communities. *Journal of Clinical Nursing*, 27(3-4), 478–501.
- Malhotra, A., Schuler, S. R., & Boender, C. (2002). Measuring women's empowerment as a variable in international development. In *background paper prepared for the world bank workshop on poverty and gender: New perspectives* (Vol. 28).
- McNeely, C., Shew, M. L., Beuhring, T., Sieving, R., Miller, B. C., & Blum, R. W. (2002). Mothers' influence on the timing of first sex among 14-and 15-year-olds. *Journal of adolescent health*, 31(3), 256–265.
- Miller, B. C., Benson, B., & Galbraith, K. A. (2001). Family relationships and adolescent pregnancy risk: A research synthesis. *Developmental review*, 21(1), 1–38.
- Ministerio de Educacion del Ecuador. (2018). *Política intersectorial de prevención del embarazo en niñas y adolescentes*. Retrieved from Ministerio de Educacion.
- Moore, A. M., Awusabo-Asare, K., Madise, N., John-Langba, J., & Kumi-Kyereme, A. (2007). Coerced first sex among adolescent girls in sub-saharan africa: prevalence and context. *African journal of reproductive health*, 11(3), 62.
- Neal, S. E., & Hosegood, V. (2015). How reliable are reports of early adolescent reproductive and sexual health events in demographic and health surveys? *International perspectives on sexual and reproductive health*, 41(4), 210–217.

- Newcomer, S., & Udry, J. R. (1987). Parental marital status effects on adolescent sexual behavior. *Journal of Marriage and the Family*, 235–240.
- Paxton, P. M., Hughes, M. M., & Barnes, T. (2020). *Women, politics, and power: A global perspective*. Rowman & Littlefield Publishers.
- Peterson, Z. D. (2010). What is sexual empowerment? a multidimensional and process-oriented approach to adolescent girls' sexual empowerment. *Sex Roles*, 62(5-6), 307–313.
- Pradhan, R., Wynter, K., & Fisher, J. (2015). Factors associated with pregnancy among adolescents in low-income and lower middle-income countries: a systematic review. *J Epidemiol Community Health*, 69(9), 918–924.
- Santa Maria, D., Markham, C., Bluethmann, S., & Mullen, P. D. (2015). Parent-based adolescent sexual health interventions and effect on communication outcomes: a systematic review and meta-analyses. *Perspectives on sexual and reproductive health*, 47(1), 37–50.
- Santelli, J. S., Lowry, R., Brener, N. D., & Robin, L. (2000). The association of sexual behaviors with socioeconomic status, family structure, and race/ethnicity among us adolescents. *American journal of public health*, 90(10), 1582.
- Stöckl, H., Kalra, N., Jacobi, J., & Watts, C. (2013). Is early sexual debut a risk factor for hiv infection among women in sub-saharan africa? a systematic review. *American Journal of Reproductive Immunology*, 69, 27–40.
- The World Bank. (2012). *Latin america and the caribbean poverty and labor brief, august 2012: The effect of women's economic power in latin america and the caribbean*. World Bank.
- UNICEF, et al. (2016). *Accelerating progress toward the reduction of adolescent pregnancy in latin america and the caribbean*. Retrieved from Washington DC.