Maternal sexual empowerment and early sexual onset among female adolescents: Evidence from a prevalence study in Ecuador

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This study uses data from the 2018 National Health and Nutrition Survey of Ecuador (Ensanut) to examine whether maternal sexual empowerment is predictive of early sexual onset among female adolescents. We used mothers' ability to turn down sex and demand contraception as a measure of sexual empowerment. We also considered mothers' age at first intercourse and whether they had experienced early childbearing. Several logistic regressions were employed to estimate the predicting value and significance of the variables of interest. Even after controlling for several sociodemographic and economic confounders, having a mother who lacked sexual empowerment was predictive of early sexual activity. However, mothers' age at first intercourse was included in the model, sexual empowerment was no longer significant, suggesting that maternal sexual empowerment was predictive of sexual debut through mothers' age at first intercourse. This study contributes to the literature of early sexual initiation by exploring new connections in which sexual values and behaviors may be transmitted from mother to daughter. More research is needed confirm the robustness of these results and analyze other forms of maternal empowerment.

INTRODUCTION

The age of puberty onset has decreased substantially over the past decades (Bellis et al., 2006). Reasons exist to be concerned about this fact as early sexual debut has been linked to several adverse outcomes. Early sexual initiators have been found to be more prone to having multiple sex partners, forcing partners to have sex, having frequent sexual intercourse, and being engaged in teenage pregnancy (O'Donnell et al., 2001). Studies performed on different populations have also shown an association between early initiation of sexual intercourse and HIV and other STDs risks (e.g. Kaestle et al., 2005; Stöckl et al., 2013). One major cause of the high prevalence of STDs and unwanted pregnancies among young males and females is that those who engage in early sexual activityare much less likely to use contraception (Finer and Philbin, 2013). Additionally, even for those who manage to avoid pregnancy at first intercourse despite not using contraception, chances of experiencing early childbearing remain high since those who fail to use contraception at first sex are more likely to continue engaging in risky sexual behavior in the future (Magnusson et al., 2012; St Lawrence and Scott, 1996).

Many studies have tested the relationship between precocious sexual initiation and household structure (e.g. Ellis et al., 2003; Newcomer and Udry, 1987) and parental involvement (e.g. Romer et al., 1999; Sieverding et al., 2005; Velez-Pastrana et al., 2005). However, few studies have explored the intergenerational transmission of behavioral patterns, such as how the timing of sexual debut may be replicated across generations (e.g. Johnson and Tyler, 2007). This paper aims to examine the predicting ability of maternal behavioral variables, including the mother's age at first intercourse, and other mechanisms in which the mother's control of her sexual decisions can be passed on to her daughter's own decision making. It is plausible to believe that those mothers with low bargaining power may directly or indirectly transmit their norms and beliefs to their daughters, who may as well then become unable to exercise decision-making over their sexuality. Parkes et al. (2011) found that talking about sex and contraception with children was negatively correlated with delayed sexual initiation, suggesting that parents may be able to shape their children's skills for negotiating sexual situations. The influence intra-household sexual bargaining has on children has yet been explored in experimental research. Therefore, this study opens up an opportunity to discuss more in depth how sexual values may be inherited and how they can relate to the sexual well-being of young women.

METHODS

Data and sample

We 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. 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. Measures of anthropometric, nutrition, economic status were collected for all the members of the household. Data about the sexual health of women was gathered for all those between 12 and 49 years old. Information about risk factors (e.g. smoking and drinking) was collected for only one random subject (male or female) between 5 and 18.

To perform the analysis, we selected the data of girls who were 16 years old at the time of the interview and their mothers. Because the we are interested on how mother-related variables such as sexual empowerment may relate to early sexual debut among young females, we filtered those girls who were currently living with their mothers and their mothers' partner (which in most cases was the father). As mentioned before, information regarding sexuality was only gathered for women at age 49 or younger. Therefore, we only considered those whose mother was under that age threshold. Finally, as data about smoking and drinking are not available for every subject, we decided to perform the analysis on two samples: one larger sample that does not include these additional confounders and a smaller one that includes them.

Measures

As in most studies that use secondary data, not all variables necessary to understand the sexual activity of young females were available in Ensanut. Nevertheless, we still were able to add several of the factors that have been previously associated with early sexual debut.

The dependent variable for the analysis was *early sexual activity*. The 16-year-old girls who reported having had sexual intercourse were coded as 1, whereas those who reported being virgin were coded as 0. The 16-year-old cutoff has been used in previous studies to demarcate early onset of sexual activity (e.g. Ellis et al., 2003; Paul et al., 2000).

Basic sociodemographic and economic measures included ethnicity (whether the girl identified herself as an ethnic minority), geographic area (urban or rural), whether the girl was attending school, and household income in US dollars. We used income as a measure of poverty. However, evidence favors the use of consumption as a more effective tool to measure well-being in developing countries (Meyer and Sullivan, 2003). Since consumption was not available in the survey, we added other variables which may relate to the economic status of the household, including access to internet and the number of household members. The number of household members was the most predicting factor for impoverishment used in the Poverty Probability Index (Schreiner, 2015).

Individual-level measures consisted of knowledge about sexuality and risk behaviors. Sexuality knowledge was estimated through questions about menstruation, pregnancy, and AIDs. Girls were asked whether they knew what was happening to their body when they hay their first period, whether a woman could become pregnant at first intercourse, and whether HIV could spread through handshake. They were also asked whether they had ever learned about sexual relations, and if so, from whom they had learned about (school, family, and others). Risk factors included whether the girl had ever drunk alcohol or smoked in the past.

Mother-related variables included the mother's sexual bargaining ability, age at first intercourse, and whether she had a teenage birth. Mothers were asked if they could say no to their sexual partners whenever they did not want to have sexual intercourse. For those who were not using any form of contraception but would prefer to use one, they were asked whether they thought their partner would be willing to use it or not. Mothers who were unable to turn down sex or demand their partner to use contraception were classified as low sexual bargaining. We also considered variables such as occupation and education.

RESULTS

After cleaning up the data, the sample contained answers from 828 16-year-old girls and their respective mothers. Among those, 16.4% had ever had sexual intercourse, while 83.6% had not. Before performing the primary analysis, differences in the prevalence of early sexual onset and their relationship with the explanatory variables were assessed using the chi-square and t-test. The primary analysis was based on a series of logistic regression models examining the association between early sexual activity among young females and the characteristics of their mothers after adjustment for covariates.

Table 1 shows the percentage and mean levels of the explanatory variables by each group. Mean differences of the categorical and continuous variables were tested using the chi-square and t-test, respectively. Across the two groups, girls who were sexually active were more likely to belong to an ethnic minority ($p < .001$), live in a rural area ($p < .05$), lack internet access ($p < .001$), and miss school ($p < .001$). As for sexuality knowledge, they tended to incorrectly answer the question about AIDs ($p < .05$) and not know what was happening to their body when they had their first period ($p < .001$). Sexually active girls were more likely to learn about sexuality from family ($p < .05$) and other sources (e.g., internet) ($p < .001$). In contrast, non-sexually active girls were more prone to learning from school ($p < .001$).

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

		Daughters' sexual outcomes								
		Early sexual initiation			Teenage pregnancy			Contraception use		
	Total	Yes	No	p value	Yes	No	p value	Yes	No	p value
Daughters' sexual outcomes										
Early sexual initiation	0.17									
Teenage pregnancy	0.07									
Contraception use	0.46									
Explanatory variables										
Mother lacks sexual empowerment	0.10	0.14	0.09	0.102	0.13	0.10	0.463	0.12	0.15	0.782
Mother had a teenage birth	0.52	0.68	0.48	0.000 ***	0.70	0.50	0.003 ***	0.64	0.70	0.581
Mother's age at first intercourse	17.38	16.11	17.64	0.000 ***	16.07	17.48	0.000 ***	16.49	15.81	0.104
Mother-related variables										
Age	39.61	39.02	39.73	0.070 *	38.68	39.68	0.075 *	38.89	39.10	0.761
Employed	0.60	0.67	0.59	0.059 *	0.65	0.60	0.465	0.67	0.69	0.977
Non-partnered	0.20	0.25	0.20	0.179	0.20	0.21	1.000	0.29	0.22	0.434
Cohabiting	0.29	0.35	0.28	0.074 *	0.41	0.28	0.040 **	0.34	0.35	1.000
Married	0.50	0.40	0.53	0.005 ***	0.39	0.51	0.068 *	0.37	0.43	0.541
No education	0.03	0.07	0.02	0.008 ***	0.09	0.03	0.018 **	0.01	0.12	0.026 **
Primary education	0.44	0.44	0.44	0.932	0.48	0.44	0.570	0.37	0.49	0.180
Secondary education	0.38	0.38	0.38	0.944	0.33	0.38	0.515	0.41	0.37	0.736
Tertirary education	0.15	0.10	0.16	0.082 *	0.10	0.16	0.290	0.21	0.02	0.001 ***
Daughter-related variables										
Misses school	0.08	0.27	0.05	0.000 ***	0.36	0.06	0.000 ***	0.15	0.36	0.005 ***
No knowledge about period	0.20	0.28	0.19	0.009 ***	0.32	0.20	0.023 **	0.19	0.37	0.020 **
Daughters' knowledge about contraception										
No knowledge	0.06	0.05	0.06	0.653	0.06	0.06	1.000	0.01	0.08	0.114
Knows from family	0.11	0.14	0.11	0.314	0.13	0.11	0.718	0.19	0.08	0.070 *
Knows from school	0.80	0.75	0.80	0.167	0.75	0.80	0.451	0.74	0.78	0.694
Knows from other sources	0.03	0.06	0.03	0.053 *	0.06	0.03	0.414	0.05	0.06	1.000
Household-related variables										
Ethnic minority	0.22	0.30	0.20	0.008 ***	0.26	0.21	0.419	0.15	0.42	0.000 ***
Rural area	0.40	0.43	0.40	0.586	0.38	0.41	0.731	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	600.53	715.27	577.84	0.736	532.07	605.71	0.901	996.21	493.36	0.054 *

Note: p values for comparison of percentagges using chi-square. p values for comparison of means using t-test. Ns = 401–828. *p < .1; **p < .05; ***p < .01

Mother characteristics significantly differed across groups. Mothers of early sexual initiators were less likely to have finished primary school ($p < .01$) and more likely to have become a teenage parent ($p < .001$). As expected, early sexual initiators were more likely to have been reared by a mother who had herself had her first coitus at a very young age. Figure 1 illustrates the cumulative histogram of age at first coitus of the mothers. The figure clearly shows that mothers of early sexual initiators had their first coitus at a younger age than mothers of those who were not sexually active. The mean age at first coitus for each group was 16.11 (SD = 2.48) and 17.76 (SD = 2.79), respectively. The t-test showed that these differences were unlikely to have been due to chance ($p < .001$).

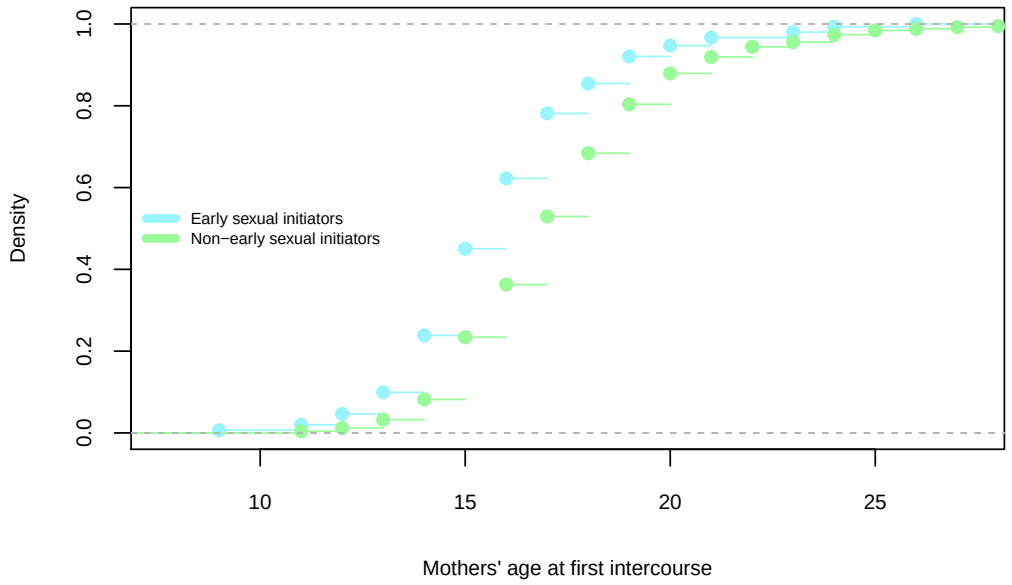

Figure 1: Cumulative histogram of age at first intercourse of mothers by group

Logistic regressions were used to assess the relationship between the early onset of sexual activity among girls and the mothers' sexual bargaining ability, as well as other behavioral traits such as the mothers' age at first intercourse and whether she had a teenage birth. Table 2 shows the coefficients (log odds ratio) of these regressions. To observe the predicting ability of the three mother-related variables (sexual bargaining, teenage birth, and age at first intercourse) alone and in interaction, we computed three logistic regressions. Thus, we can notice how the significance of the coefficient changes with each additional variable. Each regression is represented by a separate column in Table 2.

As demonstrated in column 2 of Table 2, after adjustment for all covariates, having a mother who lacks sexual bargaining and a mother who had a teenage birth significantly increases the log odds of early sexual onset. These results support the hypothesis that the sexual attitudes and behavior may be in some mechanism inherited from mother to daughter. Similarly, column 3 of Table 2 shows that for each additional year that the mother delays her sexual debut, the log odds of her daughter being sexually active decrease. When the age at first intercourse of the mother is added to the model, however, lacking sexual bargaining and having a teenage birth become statistically insignificant due to the correlation of predictors. A plausible explanation is that the age at first intercourse explains whether the mother is sexually empowered and whether she was once a teenage mother.

Although not the main focus of the study, it is worth examining whether sexuality knowledge has a predictive value in the model. As shown in Table 2, while knowledge about period, pregnancy, and AIDs are not statistically significant in any of the regressions, from whom girls acquire information about sexual relations seems to matter. Even after controlling for school attendance and other covariates, girls who learn about sex from family have higher odds of engaging in early sexual activity than those who learn from school. It is also worth noting that the sociodemographic variables do not appear to explain the differences in early sexual onset. In contrast, missing school and having an employed mother significantly increases the logs odds of

early sexual debut.

As mentioned before, data about smoking and drinking were not gathered for all subjects in our sample. Therefore, a series of logistic regressions were performed on a smaller sample in order to add the two cofounders to the original model. These regressions are illustrated in Table 3. However, it is important to emphasize that the probability of falling into type 2 error increases as the sample becomes smaller. Thus, while having more cofounders improves the accuracy of the outcomes, reducing the sample size may as well affect the precision of the estimates.

As expected, smoking and drinking were high predictors for precocious sexual initiation. Table 3 shows that even after controlling for these two additional variables, the log odds of early sexual onset decrease for each additional year that the mother delays her sexual debut. Interestingly, when adding these cofounders, from whom girls learn about sexual relations and having an employed mother are no longer significant. As with the previous regressions, attending school and having a mother who finished primary school are associated with delayed sexual activity.

Table 2: Logistic Regression Results

	Dependent variable:		
	Early sexual initiation	Teenage pregnancy	Contraception use
	(1)	(2)	(3)
Mother lacks sexual empowerment	0.495*	0.354	0.089
	(0.288)	(0.410)	(0.607)
Mother had a teenage birth	0.760***	0.697**	−0.659
	(0.198)	(0.288)	(0.421)
Mother has a job	0.491**	0.377	−0.358
	(0.203)	(0.287)	(0.422)
Mother finished primary school	−0.801*	−0.901	2.128*
	(0.460)	(0.590)	(1.217)
Mother finished high school	−0.501	−0.975	2.090*
	(0.476)	(0.619)	(1.221)
Mother finished college	−0.563	−0.703	3.666**
	(0.546)	(0.736)	(1.468)
Misses school	2.155***	2.157***	−0.763
	(0.285)	(0.324)	(0.468)
Lacked knowledge about period	0.356	0.490	−0.341
	(0.222)	(0.305)	(0.450)
Knows about sexuality from family	1.647***	1.474*	0.765
	(0.574)	(0.791)	(1.324)
Knows about sexuality from school	1.320**	1.266*	−0.451
	(0.514)	(0.706)	(1.239)
Knows about sexuality from other sources	1.942***	1.541*	0.155
	(0.661)	(0.895)	(1.400)
Household-related controls?	*Yes*	*Yes*	*Yes*
Observations	981	981	159

Note: *p<0.1; **p<0.05; ***p<0.01

DISCUSSION

This study contributes to the literature on early initiation of sexual activity among female adolescents. It is not the time maternal empowerment has been studied as a predictor of sexual activity. Gipson and Upchurch (2017), for instance, found that some of characteristics and measures of maternal empowerment and status were predictive of their daughters' sexual initiation. Yet, few if any have explored maternal empowerment in the way it has been done in this study. In this research, we found that girls who had a mother that was unable to turn down sex or demand the use of contraception were more likely to be sexually active. This raises the question of whether women's sexual behavior or empowerment can be transmitted intergenerationally. It is worth noting that sexual coercion is still a major cause of sexual debut (Moore et al., 2007). In our sample, 34% of girls reported not having agreed or being convinced to engage in sexual activity at the time of their first sexual experience. Perhaps, young women are able to mimic the sexual conduct of their mothers. If submissive behavior is normalized within the family, girls may find it acceptable to receive and accept sexual advances against their will.

Another important outcome of this research was the relationship between the timing of sexual onset among mothers and daughters. Even after controlling for several cofounders, the mother's age at sexual debut was one of the most significant and independent predictors. The younger a mother was when she had her first intercourse, the higher the odds of her daughter being sexually active by the age of 16. This finding is parallel to the intergenerational tendency of early childbearing (Kahn and Anderson, 1992), in which teenage mothers are more likely to have been brought up by a single mother who had herself become a parent early in her life. Previous research on sexual initiation has found that adding drug use as a covariate largely impacts the significance of coefficients (e.g. Mandara et al., 2003). However, when smoking and drinking were added into our models, the mother's age at first intercourse remained statistically significant.

It is also worth discussing the interaction between sexual bargaining and sexual onset among mothers. The mothers' sexual bargaining was a good predictor of their daughters' sexual activity in the first models. Nevertheless, when combined with the mothers' age at first coitus, sexual bargaining was no longer significant, implying that sexual bargaining predicted sexual activity through age at first coitus. These findings strengthen the hypothesis of maternal empowerment as a potential determinant of the timing of sexual debut. How much control mothers have of their own sexual decision making may be mirrored in their daughters' behavior. Mothers who started their sexual life prematurely may have done so for reasons not necessarily attached to their choice. These assumptions, however, need to be corroborated with future research.

We found that girls whose mothers had completed primary school were less likely to have engaged in sexual intercourse. These results are consistent with previous evidence that has shown that maternal education inhibits the risk of early sexual debut (e.g. Brewster, 1994; Jordahl and Lohman, 2009; Santelli et al., 2000). One explanation that has been proposed is that better-educated parents have higher expectations for their children to finish school and establish a career, putting pressure on them to delay sexual onset (Guo et al., 2012). We also found that the source from which girls received information about sexuality was a good predictor of their sexual behavior. After controlling for school attendance, girls who learned about sexuality from family were more likely to have experienced sexual activity than their peers 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 a few constraints, including lack of knowledge and feelings of shame and anxiety (Jerves et al., 2014). These limitations may hinder these efforts and even produce unintended results. This may be one of the explanations why communication from parent to child about sex was predictive of early sexual activity.

To control for socioeconomic status, we also included measures such as household income, access to internet, and household members. For better-off households, we suspected that having a higher economic level would likely increase the opportunity of having sexual relations (e.g. pregnancy). Yet, none of these variables was strongly predictive of sexual debut. As for the mothers' employment, while we thought that having a job would reduce the odds of precocious sexual initiation, we found the opposite. Since the purpose of the survey was to gather data about health and nutrition, it did not collect information about parental monitoring. However, employed mothers may spend less time supervising or parenting their daughters. Research findings are most consistent that mother-child closeness and values towards sexual relations are associated with lower

risk of sexual activity (Sieving et al., 2000).

Studies have shown that smoking and substance use among adolescents are associated with early sexual activity (Bachanas et al., 2002; Mandara et al., 2003; Robinson et al., 1999). In this study, we conducted a series of separate models in which we included smoking and drinking as cofounders. We had to reduce the sample size as data about these specific risk factors were only obtained for a smaller group of subjects. Yet, after adding these variables, the computed estimates were large and significant. These findings corroborate previous research showing that substance use plays a critical role in adolescents' sexual decisions. Bachanas et al. (2002) explored the predictive ability of peer norms and substance use. They found that while both variables were significantly associated with risky sexual behavior, only substance use accounted for the variance in sexual behavior when combined in the same model. Similarly, when we added smoking and drinking to the regressions, communication about sexuality became no longer significant. These results suggest that communication about sexuality was predictive of sexual activity through substance use. Perhaps, parents who identify deviant behavior in their children also include conversation about sex when dealing with misconduct.

CONCLUSION

In this article, we discussed how maternal sexual empowerment was related to female adolescents' sexual behavior. After controlling for several confounders, we found that having a mother unable to turn down sex or demand contraception increased the odds of early sexual initiation. We also found that when adding mothers' age at first intercourse, sexual empowerment was no longer significant. This suggests that maternal sexual empowerment was predictive of sexual onset through mothers' age at first intercourse. Perhaps, mothers who reported low sexual empowerment did not have control of their sexual decisions at the time of their first sexual encounter. We believe that in some manner, these attitudes and values can be transmitted from mother to daughter.

Although the nature of this research does not allow for a causal relationship to be established, we believe that female adolescents' attitudes toward sex and the ability to refuse sexual intercourse may be shaped somehow through their mothers' bargaining power in sexual relationships. The traditional parental interventions designed to delay sexual onset and promote contraception use focuses on improving communication about sexuality. Yet, the results presented indicate that interventions towards mothers' sexual empowerment may help girls, especially at a very young age, to develop skills for managing sexual relationships. New mechanisms in which maternal empowerment influences daughters' outcomes yet need to be researched.

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