

Information in schools, contraception, and young-age fertility in Costa Rica: Evidence from the National Youth Surveys of 2011 and 2018.

Long Abstract

Introduction

Costa Rica has been one of the leading countries in Latin America in increasing life expectancy; recently, it is also one of the leading countries in declining fertility. In 2001, Costa Rica crossed the replacement level threshold in its Total Fertility Rate (TFR). Since 2016, this indicator has continued to decline, reaching levels below 1.5 children per woman. The decrease in adolescent and young women's fertility rates has contributed to this trend. The absence of comparable National Fertility Surveys over time has made it difficult to analyze the characteristics associated with these low fertility levels; therefore, the National Youth Surveys of 2011 and 2018 are used to analyze this issue

The diffusion hypothesis as a mechanism for declining fertility highlights the importance of information from both formal and informal sources. In Costa Rica, educational authorities between 2006 and 2022 promoted educational programs to improve interpersonal relationships, which included topics on sexuality and the use of contraceptive methods: the National Sexuality Education Plan (“Plan Nacional de Educación Sexual”) in 2010 and the Comprehensive Education Program for Affectivity and Sexuality (“Programa Comprensivo de Educación para la Afectividad y la Sexualidad”) in 2012 (Fernández, 2022). The implementation and continuity of these programs preceded the marked decline in young fertility. One hypothesis of this work is to analyze the association between these educational policies and the use of contraceptive methods, leading to a lower level of fertility.

Data and methods

Data from the II and III National Youth Surveys (Encuestas Nacionales de Juventud ENJ) of 2011 and 2018 are used (Consejo Nacional de la Política Pública de la Persona Joven, 2018). The study population refers to individuals aged 15 to 35 residing in Costa Rica in private households. Questions about the number of children ever had, use of contraceptive methods, and information received are comparable between both periods, although in the Third Survey, all responses of 3 or more children are grouped into a single category for the number of children ever born. The main dependent variable is the number of children ever had, which is controlled for the respondent's age, in order to model general fertility rates. Nine family planning methods are inquired (including rhythm method), but for this analysis, only pills, injections, IUDs, and male condoms are selected, as they are among the most common. Regarding knowledge or information variables, the interviewee is asked whether they have received information on 13 topics in the past 12 months. For this analysis, a summative index was created about information from educational institutions and from family sources, on the following topics: prevention of sexually transmitted infections, contraceptive methods, responsibilities associated with fertility, the right to decide when to have sexual relations, pleasure and enjoyment of sexuality, and affection in the relationship. For 2011, the School Information Index and the Family Information Index had Cronbach's alphas of 0.90 and 0.86, respectively; in 2018, the alphas were 0.96 and 0.89. The statistical models control for a range of sociodemographic variables such as sex, age, education, asset index (as a proxy for wealth level), residence zone, and area of residence.

After a descriptive analysis, I model fertility levels with zero-inflated Poisson generalized linear models, using age minus 15 as an offset variable, to interpret exponentiated coefficients as changes in fertility rates. These models estimate two equations: one is to predict the number of children (in this case the fertility rate) with a count model (Poisson); the other is to predict the probability of childlessness at the end of the reproductive age.

Results

Using the survey data, I estimated general fertility rates for men and women for ages between 15 and 35 years. Among the female population, the rate decreased from 101.6 births per 1000

women aged 15 to 35 in 2011 to 97.7 births per 1000 in 2018; among men, the change was from 52.7 births per 1000 men aged 18 to 35 in 2011 to 47.2 per 1000 in 2018. The changes seem small, but it is important to clarify that the new declining fertility trend in Costa Rica began in 2016, so a 2018 survey may capture little of this trend.

The proportion of both men and women who did not use any contraceptive method during their first sexual encounter has decreased. Additionally, among those with children, there was a relevant increase from 2011 to 2018 in the proportion who used male condoms in their first sexual encounter: from 50% to 59% among men, and from 31% to 46% among women; among the childless female population, the prevalence of male condom utilization also increased from 28% to 36%. Furthermore, the partners of childless men were more likely to use the pill and hormonal injections in their last sexual intercourse. In contrast, no significant differences were observed between 2011 and 2018 in the prevalence of contraceptive methods among childless individuals. Notably, there is also an increase in the reported use of male condoms by women (especially in the first sexual encounter). Young people who received information about sexuality and affectivity at school were more likely to have used some contraceptive method in their first and last sexual encounters compared to those who did not receive such information; this pattern is seen in both 2011 and 2018, although, as previously mentioned, the proportion of people not using family planning methods decreased over the period.

According to the zero-inflated Poisson models for men, the index of information from educational institutions is not associated with fertility rate but is associated with childlessness in 2018: the more varied the information received, the odds of not having children triple (Table 1). Interestingly, also in 2018, the greater the variety of information received from the family, the higher the number of children ever had. Among women, the information index from educational institutions is significantly associated with the probability of not having children in 2011 and with the fertility rate in 2018. In other words, in the first survey, for each additional topic received at school by young people, the odds of not having children by the end of reproductive age increase by 60%; on the other hand, in the second survey, this odds ratio is not as high, but the fertility rate decreases by 5% for each additional topic received from the educational institution. Unlike the analysis for men, no significant relationship is found with the family

information index. In 2018, the use of the pill and male condom in the first coitus decreases the fertility rate by 24% and 12%, respectively

Conclusions and discussion

The analysis shows that there is a statistical relationship between the information on sexual and reproductive health that young people have received in their educational institutions and a higher prevalence of family planning methods, especially in 2011. The use of these methods— as expected— predicts a lower number of children. However, this proximal determinant of fertility (contraception) does not seem to mediate the relationship between receiving information and fertility.

Table 1. Costa Ricans ages 15 to 35 years old: Exponentiated coefficients of zero-inflated Poisson models for fertility rates, including information indexes and contraceptive methods, 2011 and 2018.

Covariates	Males		Females	
	2011	2018	2011	2018
Counts equation				
School information index	1.00	1.04	1.00	0.95 *
Family information index	1.06	1.17 *	0.98	1.00
Pill at first coitus (Base: No)			0.93	0.76 *
Condom at first coitus (Base=No)	0.93	0.74 *	0.90	0.88 *
Injection at first coitus (Base=No)			1.28 *	0.93
Childlessness probability equation				
School information index	1.01	2.88 *	1.60 *	1.19
Family information index	0.73	2.58	1.95	1.60
Condom at first coitus (Base=No)	1.98	2.69		
With couple (Base=Without couple)	0.02	0.07 *	1.40	0.00 *

Source: National Youth Surveys 2011 y 2018.

Note: *: $p < 0.05$

Coefficients for control variables not shown.