



Factors associated with pregnancy desire among adolescent women in five Latin American countries: a multilevel analysis

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Objective To explore demographic, socio-economic, and reproductive factors associated with pregnancy desire among adolescents in five Latin American countries.

Design Secondary analysis using nationally representative, cross-sectional data from UNICEF Multiple Indicator Cluster Surveys (MICS).

Setting Cuba, the Dominican Republic, El Salvador, Mexico, and Panama.

Population Adolescents 15–19 years old who were pregnant or mothers ($n = 4207$).

Methods Chi-square tests, simple linear regressions, and multilevel Poisson regression models were used to estimate associations between individual- and country-level factors associated with pregnancy desire among adolescents.

Main outcome measures Desire for pregnancy among adolescents who were pregnant or had given birth in the last 2 years.

Results The proportion of adolescents who reported they desired their last pregnancy ranged from 79.3% in Cuba to 37.6% in Panama; approximately half the adolescents in Mexico, El Salvador, and the Dominican Republic desired their last pregnancy. The multilevel analysis shows that pregnancy desire was more likely among adolescent women who were less educated

[prevalence ratio (PR) = 0.97, 95% confidence interval (CI) 0.96–0.98], older (PR = 1.39, 95% CI 1.04–1.09), married or cohabiting with a partner (PR = 0.70, 95% CI 0.53–0.93), and had low parity (PR = 0.67, 95% CI 0.58–0.76).

Conclusions Adolescents with less education, who are older, married or cohabiting, and with low parity were more likely to desire their pregnancy. These data constitute evidence that, in conjunction with qualitative and implementation research, can be used to better design services for adolescents so they can exercise their sexual and reproductive rights, and plan healthier and more satisfying futures.

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Keywords Adolescent pregnancy, Latin America, low- and middle-income countries, multilevel analysis, Multiple Indicator Cluster Surveys, Poisson, pregnancy desire.

Tweetable abstract Parity and marital status showed the strongest association with adolescent pregnancy desire in five Latin American countries.

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Introduction

The adolescent birth rate worldwide is 50 births per thousand women 15–19 years old (2010–2015) and 95% of births to adolescent mothers occur in middle- or lower income countries.¹ The Latin American and Caribbean region has the second highest adolescent birth rate, although this varies by country.^{2–4} According to the World Health Organization, 75% of adolescent pregnancies are

intended.⁵ Adolescent attitudes towards pregnancy are complex, and some adolescents report planning and/or desiring pregnancy.^{6,7} Researchers posit that maternity during adolescence can constitute an adaptive response to accumulated disadvantages.^{8,9} That is, becoming pregnant can be a rational decision directly associated with the limited options available, and adolescents may consider pregnancy and childbearing a good alternative when faced with a lack of other opportunities.^{10–12}

Different concepts and definitions have been used to measure whether a pregnancy was intended, wanted or desired, or not. Unintended pregnancies have most often been measured as the sum of births that are mistimed, unwanted or ended in a termination or miscarriage. Unwanted pregnancies are usually defined as occurring when the woman did not want a child or did not want any more, whereas mistimed pregnancies occurred before they were expected (but another child was desired).^{13–15} For example, Sekharan et al.¹⁶ measured pregnancy intention by asking whether the adolescent woman wanted to be pregnant immediately before she found out she was pregnant, and Sipsma et al.¹⁷ measured pregnancy desire in a longitudinal study by asking adolescents if they would like to get pregnant in the next year; adolescents who agreed or said maybe (were ambivalent) were classified as desiring pregnancy. However, pregnancy intentions are subject to social desirability bias and are multidimensional, which these measures do not generally take into account.^{15,17,18}

Studying adolescents' desire for pregnancy and positive or negative attitudes towards childbearing is important from a public health perspective.^{6,15,18} Identifying characteristics and life contexts of adolescents who desire pregnancy could provide scientific evidence useful for designing health promotion and care programmes adapted to their needs, to support them in deciding on, planning, and receiving care and support for a pregnancy, either during adolescence or later in life. More data are needed on desired pregnancy among adolescents in the Latin American and Caribbean region specifically. Therefore, our objective was to examine demographic, socio-economic, and reproductive characteristics among adolescent women who had either a desired or an undesired pregnancy in five Latin American countries.

Methods

We carried out a secondary analysis using nationally representative, multistage, stratified, cluster samples from the fifth round of UNICEF's Multiple Indicator Cluster Surveys (MICS) for five Latin American countries: Cuba (2014), the Dominican Republic (2014), El Salvador (2014), Mexico (2015), and Panama (2013). For this analysis, the sample included 4207 women aged 15–19 years who completed the Questionnaire for Individual Women and who gave birth within the 2 years prior to the survey or were pregnant at the time of the survey. For detailed information about study samples, participant eligibility criteria, recruitment periods, and data collection for each country, see specific country reports (<http://mics.unicef.org/surveys>). There was no funding for this analysis; the MICS databases are made freely available by UNICEF for analysis.

Desire for last birth was measured by two questions: *When you got pregnant with (child's name), did you want to get pregnant at that time? Did you want to have a baby later on or did you not want any (more) children?* We classified the pregnancies as unwanted when a woman said she did not want more children, and as mistimed when a woman said she wanted a child at a later time; unintended is the sum of women with unwanted or mistimed pregnancies, and pregnancy desire (or wanted pregnancy) included those women who reported they had wanted the pregnancy when it happened. A sensitivity analysis between unwanted and mistimed pregnancies did not show differences (data not shown).

We performed Chi-square tests for categorical variables and simple linear regressions for continuous variables to determine differences among demographic, socio-economic, and maternal characteristics between countries. In addition, within each country, we explored differences by adolescents that desired their last pregnancy versus those who did not desire the pregnancy. We used multilevel Poisson regression to explore individual- and country-level factors associated with pregnancy desire among adolescents, and robust standard errors because binomial models for prevalence ratios generate confidence intervals that are narrower than they should be.¹⁹ As we used cross-sectional information, we reported prevalence ratios (PR) instead of risk ratios.

The outcome variable of interest was whether the last pregnancy was desired. The individual-level explanatory variables (all measured at the time of the survey) included the following: household socio-economic status (SES) (low = 1, middle = 2, high = 3); urban/rural residence (urban = 0, rural = 1); years of education; mother's age at birth; marital status (in a relationship = 0, not in a relationship = 1); parity. Household SES was constructed using wealth index quintiles with the standardised UNICEF methodology,²⁰ where low SES includes those in the poorest quintile, middle SES includes those in the second and middle quintiles, and high SES includes those in the fourth and the richest quintiles. Cuba did not collect data for this index, so for this country we set all cases as middle SES. The sample design was incorporated into the statistical analysis by taking into account the complex sample design to obtain correct estimates;²¹ STATA 15.0 (StataCorp, College Station, TX, USA) was used for the analysis using the *svy* suite.

Results

The demographic, socio-economic, and reproductive characteristics of adolescent women with at least one pregnancy within the 2 years preceding the survey (including those pregnant when the questionnaire was completed) in the five Latin American countries included in the analysis are very similar in terms of socio-economic status, mother's age at birth, and marital status (Table 1).

Table 1. Demographic, socio-economic, and maternal characteristics of adolescent women with at least one child born alive within the 2 years preceding the survey (or who were pregnant at the time of the survey) in five Latin American countries, 2013–2015^a

Characteristics	Cuba ^b (n = 290)	El Salvador (n = 719)	Mexico (n = 676)	Panama (n = 578)	Dominican Republic (n = 1944)	Total (n = 4207)
Socio-economic status						
Low	–	30.94	25.28	39.69	34.77	32.90
Middle	–	43.87	52.37	38.54	46.44	45.97
High	–	25.18	22.34	21.77	18.79	21.13
Place of residence						
Urban	63.17	54.23	73.88	46.76	71.83	65.27*
Rural	36.83	45.77	26.12	53.24	28.17	34.73
Years of education						
Mean (SE)	11.99 (0.41)	7.62 (0.14)	8.89 (0.16)	8.62 (0.20)	8.96 (0.12)	8.79* (0.08)
Mother's age at birth						
Mean (SE)	17.7 (0.14)	17.23 (0.07)	17.45 (0.08)	17.46 (0.12)	17.33 (0.06)	17.36 (0.04)
Marital status						
In relationship	72.76	72.44	69.67	69.79	64.84	68.13
Not in relationship	27.24	27.56	30.33	30.21	35.16	31.87
Parity						
Mean (SE)	1.04 (0.01)	1.15 (0.02)	1.24 (0.03)	1.23 (0.03)	1.30 (0.02)	1.24* (0.01)
Wanted her last pregnancy						
No	20.68	40.72	48.74	62.43	47.30	48.63
Yes	79.32	59.28	51.26	37.57	52.70	53.17

n, unweighted observations; SE, linearised standard errors of cell proportions.

^aDisplaying weighted proportions, means and SE accounting for complex survey design.

^bCuba did not collect data for the calculation of the wealth index; for this reason, we set all cases as middle SES.

*Significant differences between countries $P < 0.05$ (Chi-square for categorical variables and simple linear regression followed by adjusted Wald test for continuous variables).

We found differences between countries in terms of place of residence, years of education, parity, and whether the last pregnancy was wanted. More women live in urban areas in Mexico (73.9%) and the Dominican Republic (71.8%) compared with the other countries. More women in Panama resided in rural areas (53%). There were also differences in years of formal education, with a range from 7.6 years in El Salvador to 12.0 years in Cuba, and in parity, with extreme values in Cuba and the Dominican Republic (1.04 versus 1.30).

Whether the last pregnancy was desired showed great variability between countries. Cuba (79.3%) had the highest proportion of adolescent women who desired their last pregnancy, whereas Panama had the lowest (37.6%); about half of adolescent women in El Salvador, Mexico, and the Dominican Republic reported they wanted their last pregnancy (Table 1). Figure 1 shows the proportion of unwanted, mistimed, unintended (combining unwanted and mistimed), and wanted pregnancies in each country.

In all countries studied except for Cuba, adolescent women living in a relationship (married or cohabiting with a partner) were significantly more likely to desire their pregnancy than women who were not (Table 2). There are

significant differences between adolescents who desired and who did not desire their pregnancy according to parity in three countries (El Salvador, Mexico, and the Dominican Republic), according to socio-economic status in the Dominican Republic, and according to place of residence in Mexico.

The results of the multilevel Poisson models on adolescent pregnancy desire, based on the null model, showed evidence that between-country variance is different from zero (since the confidence interval at 95% does not include zero) (Table 3). After adjusting for individual-level covariates within each country and holding other factors constant, for each additional year of education attained, the likelihood of desiring the last pregnancy decreases by about 3% (PR = 0.971, 95% CI 0.96–0.98). Older adolescents are more likely to have desired their last pregnancy (PR = 1.07, 95% CI 1.04–1.09). Additionally, adolescents who were not married or cohabiting were less likely than their married/cohabiting counterparts to report wanting their last pregnancy (PR = 0.699, 95% CI 0.58–0.76). Finally, having had other children decreases the likelihood of desiring the last pregnancy by about 34% for each additional child (PR = 0.661, 95% CI 0.58–0.76).

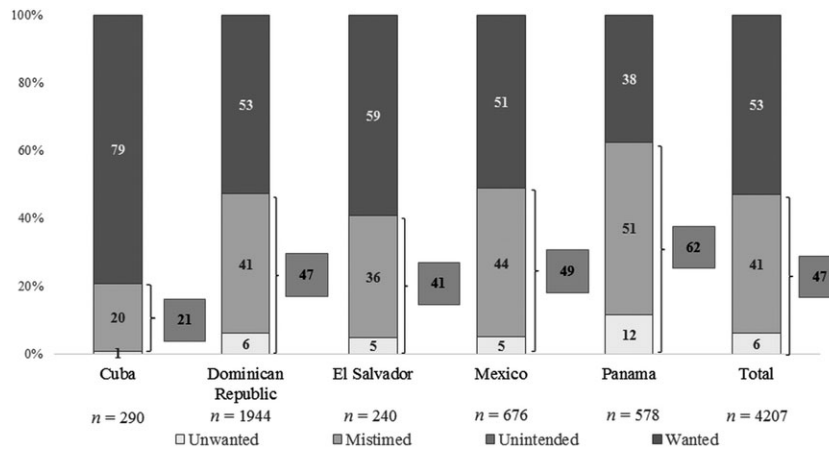


Figure 1. Pregnancy intentions of sampled adolescents (%), 2013–2015.

Table 2. Adolescent women who report desiring their last pregnancy according to selected demographic and socio-economic characteristics (percentages and means) in five Latin American countries, 2013–2015^a

Characteristics	Cuba ^b (n = 214)	El Salvador (n = 417)	Mexico (n = 366)	Panama (n = 236)	Dominican Republic (n = 1022)	Total (n = 2255)
Socio-economic status						
Low	–	63.2 (136)	55.5 (118)	37.4 (157)	53.7 (447)*	53.3 (858)
Middle	–	57.0 (185)	54.5 (187)	41.4 (59)	50.7 (415)	51.7 (1060)
High	–	58.5 (96)	38.8 (61)	31.1 (20)	56.0 (160)	50.1 (337)
Place of residence						
Rural	74.1 (75)	61.9 (219)	63.6 (144)*	41.1 (185)	52.4 (403)	55.3 (1026)
Urban	82.4 (139)	57.1 (198)	46.9 (222)	33.6 (51)	52.8 (619)	52.1 (1229)
Level of education						
Mean (SE)	11.86 (0.48)	7.49 (0.19)	8.84 (0.18)	8.47 (0.31)	8.84 (0.19)	8.73 (0.12)
Mother's age at birth						
Mean (SE)	17.81 (0.17)	17.22 (0.10)	17.55 (0.10)	17.64 (0.14)	17.35 (0.09)	17.41 (0.05)
Marital status						
In relationship	82.5 (169)	65.7 (334)*	60.1 (301)*	44.3 (198)*	56.0 (746)*	58.6 (1748)*
Not in relationship	70.9 (45)	42.4 (83)	30.9 (65)	22.1 (38)	46.6 (276)	41.5 (507)
Parity						
Mean (SE)	1.04 (0.01)	1.11* (0.02)	1.15* (0.02)	1.25 (0.05)	1.22* (0.02)	1.17* (0.01)

n, unweighted observations; SE, linearised standard errors of cell proportions.

^aDisplaying weighted proportions accounting for complex survey design. Unweighted observations displayed between parentheses.

^bCuba did not collect data for the calculation of the wealth index; for this reason, we set all cases as middle SES.

*Significant differences between adolescents who desired their last pregnancy versus those who did not, within and between countries $P < 0.05$ (Chi-squared for categorical variables and simple linear regression for continuous variables).

Discussion

Main findings

Using datasets for five Latin American countries, we investigated pregnancy desire among adolescent mothers in Cuba, the Dominican Republic, El Salvador, Mexico, and Panama. The proportion of adolescents who reported they desired their last pregnancy varied by country, with many more Cuban adolescents (79.3%) reporting this compared with approximately half the adolescents in Mexico, El

Salvador, and the Dominican Republic, and the lowest proportion in Panama (37.6%). In the multilevel analysis, after adjusting for individual-level effects within each country, we found that pregnancy desire was more likely among adolescent women who had lower education, were older, were married or cohabiting with a partner, and had low parity.

Strengths and limitations

An important strength of this analysis is the opportunity to compare data collected with the same questionnaire and

Table 3. Multilevel Poisson regression results: prevalence ratios (PR) and adjusted prevalence ratios, describing associations between pregnancy desire and country-level characteristics

Variables	Null model		General desire model	
	PR	95% CI	PR	95% CI
<i>n</i>	4207		4169	
Intercept	0.541*	0.40, 0.74	0.396*	0.22, 0.73
Individual level				
Socio-economic status			1.000	
Low			1.026	0.93, 1.14
Middle			1.000	0.84, 1.19
High				
Place of residence			1.000	
Urban			1.064	0.93, 1.21
Rural			0.971*	0.96, 0.98
Years of education attained			1.066**	1.04, 1.09
Mother's age at birth			1.000	
Marital status			0.699*	0.53, 0.93
Married or cohabiting			0.661**	0.58, 0.76
Single				
Parity				
Random-effects parameters	Estimate	95% CI	Estimate	95% CI
Constant	0.044	0.005, 0.393	0.045	0.005, 0.385

** $P < 0.005$, * $P < 0.05$.

survey methodology in five different countries. Also, the samples were nationally representative for each country included, and we performed multilevel analysis to study between-country variance while adjusting for individual-level covariates. To our knowledge, there is a lack of data on adolescent desire for pregnancy in Latin America, and this analysis seeks to begin to fill this gap.

A limitation of this analysis is that women were asked about marital status at the time of the survey (not at the time of conception or when women realised they were pregnant), which could have led to bias, as pregnancy can lead to marriage or cohabitation. In general, causal inference cannot be made between pregnancy desire and certain independent variables, such as marital status or cohabitation, given that the data are cross-sectional. In addition, a proportion of the population was retrospectively reporting pregnancy desire and this would be subject to recall bias, whereas others were currently pregnant and could be influenced by social desirability bias. Nevertheless, studies that compare

retrospective and prospective data about pregnancy desire have not found significant differences in terms of when the question was asked.^{10,22–24} Also, pregnancy desire was measured with only two questions, applied retrospectively. The need to use a more complex measure of pregnancy desire, and to measure related attitudes and perceptions has been emphasised by a number of authors.^{14,19,20}

Interpretation

In this study, as in others, pregnancy desire was associated with older age among adolescents.^{16,17,25} Our finding that married or cohabiting adolescents were more likely to report they desired their last pregnancy is also consistent with other studies.^{22,25–28} Older adolescents and those who are married or have a partner could have more resources for dealing with pregnancy and motherhood, and so it makes sense that they would be more likely to desire their pregnancy. In addition, in Latin America, 23% of women are married by age 18.² Young women may decide to marry or live with a partner once they discover they are pregnant. Adolescent women may also have few alternatives for personal development or in some cases limited personal choice as to whether to marry.^{6,7} The influence of the male partner's reproductive intentions should also be considered when exploring adolescents' desire for pregnancy, including the possibility of reproductive coercion.^{29,30}

In this analysis of Latin American adolescents, as parity increases, pregnancy desire decreases; this tendency has also been observed in adult women.^{28,31,32} Given the brevity of the reproductive period among adolescent women, parity is a variable which is difficult to observe; however, studies such as that of Ganchimeg et al.,³³ which includes young women, find that the association between diminishing pregnancy desire and increased parity occurs in both adolescent and adult women.

The results of this analysis suggest an association between education level and pregnancy desire; in other studies in the Latin American region, for each additional year of schooling, adolescent pregnancy rate decreases by 5–10%.³⁴ This could be related to a variety of aspects, such as increased opportunities for developing life skills, given the impact of education on multiple psycho-social aspects such as self-esteem, self-efficacy, and sexual negotiation efficacy.^{23,30,35,36} In addition, higher education levels are associated with the possibility of increased reflection and more responsible and autonomous behaviour among adolescents,³⁷ and could contribute to decision-making that is based on the adolescent's own desires and plans, instead of that of her partner.^{17,29} Likewise, a higher number of years of schooling appears to provide adolescents with greater perceived reproductive control and allows them to acquire greater knowledge about contraceptive methods and greater condom use efficacy, as well as increased perception of the

consequences of pregnancy and childbearing at earlier ages, e.g. given increased exposure to sexual education.^{30,38}

Conclusions

Using a multilevel Poisson analysis, we sought to assess pregnancy desire in adolescents in five Latin American countries in order to explore differences between and within countries, in a region that has the second highest adolescent pregnancy rates worldwide.^{2–4} We found that about half of adolescent mothers desired their pregnancies. Those who are less educated, older, married, or cohabiting, and with low parity were more likely to desire their pregnancy.

Women's desire for pregnancy and childbearing as well as the perceived benefits of these life events are nuanced, subtle, and can be ambiguous.¹⁸ Studies show women, including adolescents, perceive both problems and benefits of becoming pregnant and having a child. Perceived benefits of childbearing that have been identified in studies of adolescent and adult women include providing a purpose to life, giving self-confidence, strengthening ties with the baby's father, with family and community, and giving the mother someone to love.^{39,40}

This study could contribute to better design and improvement of clinical services based on adolescents' desires and needs in each country, so they can exercise their sexual and reproductive rights, and plan healthier and more satisfying futures.⁴¹ For instance, adolescents' desire for pregnancy, possible lack of opportunities, and the role of male partners' intentions should be considered by clinicians in the context of contraceptive counselling. Qualitative and prospective research is needed to move towards the design of regional or country-level public health strategies aimed at supporting adolescents in planning their lives, including educational and occupational opportunities, and having children when they desire them (as well as the number of children desired). In addition, implementation studies and other programme evaluations are needed to explain and resolve problems with existing services, as well as to understand issues in intervention design, implementation, and scaling-up.⁴² Finally, as with all reproductive health issues, when considering pregnancy desire, gender inequalities should be taken into account.^{43,44}

Disclosure of interests

None declared. Completed disclosure of interests form available to view online as supporting information.

Contribution to authorship

FE, LS-L, CH, and BA-L conceived the idea for the article. FE, LS-L, and CH did the data analysis. FE, LS-L, CH, BA-L, LC, and LC-J drafted and critically revised the manuscript for important intellectual content. All authors read and approved the final manuscript.

Details of ethics approval

Each survey abided by the laws of each country. When approval by an ethical review committee was required, it was obtained before fieldwork started.

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