

Nicaraguan Migration and the Prevalence of Adolescent Childbearing in Costa Rica

Heidi Sintonen · Roger Enrique Bonilla-Carrión · Per Ashorn

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Abstract This study describes the dynamics of adolescent childbearing of Nicaraguan-born and Costa Rican-born adolescents in Costa Rica and examines the association between socio-demographic factors and adolescent childbearing in the country. We studied Nicaraguan-born and Costa Rican adolescents using the data of the 2000 Census. Multivariate logistic regression was used to analyze the association between country of origin and adolescent childbearing, while controlling for socio-demographic factors (age, education, union, urbanization and poverty). 26% of Nicaraguan-born migrants and 9.5% of Costa Ricans had given birth during adolescence. The migrants' increased odds of pregnancy decreased from 3.34 (CI 3.21, 3.48) to 1.88 (CI 1.79, 1.97) when controlling for socio-demographic factors. Age, low educational attainment, urban residence, poverty and union were all significant predictors of adolescent pregnancy. Nicaraguan-born status is associated with adolescent childbearing in Costa Rica. Further research is needed to understand what factors, other than socio-demographic indicators, contribute to the differing prevalence of adolescent childbearing in Costa Rica.

Keywords Costa Rica/epidemiology · Nicaragua/epidemiology · Adolescent pregnancy · Adolescent childbearing · Immigration · Pregnancy · Migrant

Background

Costa Rica has a significant international immigrant population, the vast majority of which is comprised of Nicaraguans, who according to the census of 2000 made up approximately 6% of the population [1]. The flow of immigrants has resulted in a high proportion of births corresponding to Nicaraguan mothers; going up from 3.7% of all births in 1992 to 17.5% in 2009 [2, 3]. Similarly, a recent survey showed that the total fertility rate of Nicaraguan immigrant women was 53% higher than that of Costa Ricans (4.0 and 2.6, respectively). In the age group of 15–19 years the fertility rate of Nicaraguan adolescents was estimated to be double to that among the local adolescents [4].

Adolescent pregnancies are associated with more health risks than the pregnancies of older women. The risk of dying from pregnancy-related causes is twice as high for women aged 15–19 years and five times higher for girls aged 10–14 years than for women in their twenties. Most health problems arising from adolescent pregnancies are not associated with physiological conditions and the age of the mother, but are rather a consequence of various socio-economic factors, such as poverty, poor health and nutritional status of the mother and inaccessibility of antenatal and obstetric care [5].

Early motherhood can also have social implications for young women, as pregnancies complicate attending basic education, professional training and participating in the labor market, all of which are important tools to thrive

H. Sintonen · P. Ashorn
Department of International Health, University of Tampere
School of Medicine, Tampere, Finland

H. Sintonen (✉)
Hiitolantie 14, 02140 Espoo, Finland
e-mail: heidi.sintonen@gmail.com

R. E. Bonilla-Carrión
Central American Population Center, University of Costa Rica,
San José, Costa Rica

P. Ashorn
Department of Pediatrics, Tampere University Hospital,
Tampere, Finland

socially and economically, to create other life options apart from motherhood, and in order to break traditional gender roles [6]. Furthermore, in the context of international population movements, as in the case of Nicaraguans in Costa Rica, migration may further aggravate the situation by placing women in situations that negatively affect their access and use of reproductive health care services [7]. The legal status of migrants in their host country can determine their access to these and other services. Migrants in an irregular situation are most often affected by restrictions in the use of preventive health services, such as family planning and the availability of contraception, which can contribute to their vulnerability. Other types of barriers also exist, such as those related to linguistic, cultural and religious differences [8].

Adolescent childbearing has not been extensively studied in the context of migration. In studies carried out in the United States and Europe, migration status and belonging to an ethnic minority have been found to be associated with higher rates of adolescent pregnancy when compared to the local population [9–13]. Nevertheless, the factors behind these differences remain unclear. In Costa Rica, population-based studies reviewing the prevalence and patterns of adolescent childbearing have not been carried out. Consequently, targeted public health interventions have not been implemented to tackle the issue.

This study examines the prevalence of adolescent childbearing and its determinants among the Nicaraguan immigrants and the local youth in Costa Rica. To do this, we explore the socio-demographic and economic factors associated with the phenomenon and measure the size of the contribution of the chosen predictor variables to the probability of adolescent childbearing. Special attention is paid to Nicaraguan origin as a possible independent predictor.

Material and Methods

Data and Measures

The data come from the IX National Population and Housing Census (*IX Censo de Población y Vivienda*) carried out in year 2000 in Costa Rica (<http://censos.ccp.ucr.ac.cr/>). In the census, information was obtained by means of direct interviews with qualified informants in every household. The qualified informant is a member of the household who is present in the dwelling at the time of the census interview, and who ideally is over 15 years of age and capable of providing information about the rest of the members of the household [14]. The target population included all Costa Rican and Nicaraguan-born women, who at the time of the census were between 12 and 19 years of age ($N = 318,379$).

The dependent variable, adolescent childbearing, obtains a value of 1, if the respondent reported having gone through one or more live births and 0 otherwise (no children). Women who failed to answer the question concerning the number of live births were excluded (altogether 22.8% of target population), since the reasons for non-response are unknown.

Women were defined to be either Costa Rican or Nicaraguan immigrants based on the country in which their mothers lived at the time of their birth. The age of the adolescent varies between 12 and 19 years. The level of education was categorized into those who had completed primary school or less, and those who had proceeded to secondary school or further. The place of residence was defined as “urban”, if the woman lived in a district categorized by the census as “urban” or “urban periphery”, and “rural” otherwise. In the census, the categorization between areas defined as urban, urban periphery, clustered rural and scattered rural is based on their physical and functional characteristics, such as existing infrastructure and services, the number and dispersion of dwellings and the type of economic activity [14].

In this study the term “union” refers to both legal and common-law marriages as defined by the census methodology. In the census, individuals who live with a marital partner without having contracted legal marriage are considered “coupled” or “living in a union” and those who in turn have contracted legal marriage are considered “married” [14]. Separated, divorced, widowed, and single women were defined as not in a union.

The level of poverty was determined using the index of unmet basic needs (*necesidades básicas insatisfechas*, or NBI), originally created by CEPAL to measure and characterize poverty in Latin America. In this study the indicator of poverty takes into account the access to decent housing and a healthy life, following the methodology previously used by Collado [15], and embarks ten characteristics related to housing conditions, namely if the accommodation: is a shanty; has a dirt floor; has walls in poor condition; lacks sufficient bedrooms; obtains drinking water from a well, a river, a spring, a stream, rain or another similar system; has no private bathroom or has a latrine, a cesspit or another similar system; has no electricity; uses wood for cooking; has no color television, and; has no refrigerator. All these characteristics represent critical deficiencies that constitute the continuous variable of poverty (0 NBI-10 NBI).

Analysis

Based on Chi-square tests, the socio-demographic characteristics of the study population and the excluded adolescents were first compared to see whether significant

differences were present that could cause selection bias. A descriptive analysis was also made between the included Nicaraguan immigrants and the Costa Ricans in order to examine the background of the migrant and local adolescent women. To facilitate the comparison between groups, the continuous variables of age and the level of poverty were categorized to form smaller entities (see Table 2).

Next, logistic regression analyses were conducted with the occurrence or absence of adolescent childbearing as the dichotomous dependent variable and the socio-demographic factors, including national origin, were entered separately as dichotomous explanatory covariates to see how all the factors alone were associated with adolescent childbearing. Then, a multivariate logistic regression analysis was carried out, where all explanatory variables, apart from marital status, were entered simultaneously.

The strong relationship between union status and adolescent childbearing, as evident in the results of the bivariate analysis and cross-tabulation presented in the results section, points to the ubiquity of unions following childbearing. Because we cannot know whether pregnancies are preceded or followed by common law or legal marriage, we have omitted the variable of marital status from the multivariate model.

The results of the logistic regression analyses are presented as odds ratios and their confidence intervals (CI) and

P values. SPSS version 15.0 for Windows was used as the statistical software for all the analyses.

Results

After the exclusions, the study population included 14,675 Nicaraguan-born and 228,569 Costa Rican-born adolescent women. Concerning the characteristics of the included and the excluded women, a statistically significant difference was found in the degree of urbanization and marital status (Table 1). Furthermore, over half of those adolescents that were excluded from the study, i.e. adolescents of whom data concerning live births was not available, were young girls below the age of 15, compared to only 35% of the study population.

The Nicaraguans and Costa Ricans that made up the study population somewhat differed in their socio-demographic characteristics (Table 2). A higher percentage of Nicaraguans were in their late adolescence (over the age of 17), while a larger proportion of Costa Ricans were found in the age group of 12–14 years. In spite of this disparity in age distributions, Costa Ricans had higher educational attainment with 70% participating in secondary education, compared to only a half of Nicaraguan immigrants. Nicaraguan adolescent women also lived under conditions of

Table 1 Socio-demographic characteristics of the included and the excluded women of 12–19 years of age, 2000

Socio-demographic variable	Included women (<i>n</i> = 243,244)		Excluded women (<i>n</i> = 71,876)		Difference between included and excluded women <i>P</i> value
	<i>n</i>	%	<i>n</i>	%	
Country of birth					
Costa Rican-born	228,569	(94.0)	68,077	(94.7)	0.9203
Nicaraguan-born	14,675	(6.0)	3,799	(5.3)	
Age (in years)					
12–14	83,229	(36.4)	3,702	(25.2)	0.1327
15–17	87,743	(38.4)	5,645	(38.5)	
18–19	57,597	(25.2)	5,328	(36.3)	
Education					
Primary school or less	125,752	(51.7)	38,799	(54.0)	0.8625
Secondary school or more	117,492	(48.3)	33,097	(46.0)	
Degree of urbanization					
Rural residence	102,464	(42.1)	29,204	(59.4)	0.0208
Urban residence	140,780	(57.9)	29,204	(40.6)	
Poverty					
0 unmet basic needs	146,335	(60.2)	44,939	(62.5)	0.9852
1–3 unmet basic needs	76,687	(31.5)	21,539	(30.0)	
4–6 unmet basic needs	16,007	(6.6)	4,304	(6.0)	
7–10 unmet basic needs	4,215	(1.7)	1,094	(1.5)	
Marital status					
Not in a union	215,717	(88.7)	69,783	(97.1)	0.0402
In a union	27,527	(11.3)	2,093	(2.9)	

poverty more often than local teenagers, as over two thirds of immigrants lived with critical deficiencies of housing, compared to less than half of Costa Ricans. Similarly, a higher proportion of Nicaraguans than Costa Ricans were living in a union. Both the Nicaraguan immigrants and the local population were evenly distributed between urban and rural areas.

Nicaraguan-born migrant women had nearly a threefold risk of adolescent childbearing when compared to Costa Ricans. In the examined age group, 26% of Nicaraguans had given birth at least once in contrast to 9.5% of Costa Ricans.

The results of the univariate logistic regressions indicated that being in a union was by far the strongest predictor of adolescent pregnancy, as the odds of having given birth were 37.50 (CI 36.31, 38.74) times higher for adolescents living in a union compared to those who did not (Table 3). The strong connection between union and childbearing can also be seen from a cross-tabulation of union status and childbearing, which shows that 64% of those living in a common-law marriage and 56% of those living in legal marriage had given birth during adolescence (altogether 61% of adolescents who lived in some kind of a

union had given birth), compared to only 4% of those who at the time of the census did not live in a union. Due to the impossibility to know whether childbearing occurs before or after union formation, marital status was not included in the multivariate analysis.

According to the results of the multivariate analysis, the odds of adolescent childbearing explained by Nicaraguan migration was 1.88 (CI 1.79, 1.97), when controlling for age, educational attainment, the level of urbanization and the level of poverty (Table 4). Those who had only received primary school education or less had significantly higher odds of pregnancy, 3.91 (CI 3.78, 4.05), than those who had proceeded to secondary school. Urban dwellers had significantly higher odds of pregnancy than their counterparts in rural settings, although by only some 10 per cent. A one unit change in the variable of poverty, i.e. every additional unmet basic need, increased the odds of adolescent childbearing by approximately 20%. For every 1 year increase in age, the odds of having gone through a pregnancy increased by a factor of 2.20 (CI 2.17, 2.22). This finding of increased odds of a child with age may partly pick up increased time of exposure to the risk of adolescent childbearing.

Table 2 Percentage of Costa Rican and Nicaraguan women aged 12–19 years according to socio-demographic characteristics, 2000

Socio-demographic variable	Costa Ricans (<i>n</i> = 228,569)		Nicaraguans (<i>n</i> = 14,675)	
	<i>n</i>	%	<i>n</i>	%
Adolescent childbearing				
Given birth	21,739	(9.5)	3,815	(26.0)
Never given birth	206,830	(90.5)	10,860	(74.0)
Age (in years)				
12–14	83,229	(36.4)	3,702	(25.2)
15–17	87,743	(38.4)	5,645	(38.5)
18–19	57,597	(25.2)	5,328	(36.3)
Education				
Primary school or less	115,479	(50.5)	10,273	(70.0)
Secondary school or more	113,090	(49.5)	4,402	(30.0)
Degree of urbanization				
Rural residence	95,810	(41.9)	6,654	(45.3)
Urban residence	132,759	(58.1)	8,021	(54.7)
Poverty				
0 unmet basic needs	141,942	(62.1)	4,393	(29.9)
1–3 unmet basic needs	69,897	(30.6)	6,790	(46.3)
4–6 unmet basic needs	13,215	(5.8)	2,792	(19.0)
7–9 unmet basic needs	3,385	(1.5)	678	(4.6)
10 unmet basic needs	130	(0.1)	22	(0.1)
Marital status				
Not in a union	205,453	(89.9)	10,264	(69.9)
In a union	23,116	(10.1)	4,411	(30.1)
(Legal marriage)	13,819	(6.0)	3,788	(25.8)
(Common-law marriage)	9,297	(4.1)	623	(4.2)

Table 3 Univariate logistic regression model assessing the effect of socio-demographic variables on adolescent childbearing, 2000

Socio-demographic variable	Ever given birth during adolescence		P value
	Odds ratio	(95% CI)	
Country of birth			
Costa Rican-born	1.00		
Nicaraguan-born	3.34	(3.21, 3.48)	<0.001
Age	2.01	(1.99, 2.03)	<0.001
Education			
Secondary school or more	1.00		
Primary school or less	2.37	(2.30, 2.43)	<0.001
Degree of urbanization			
Urban residence	1.00		
Rural residence	1.43	(1.40, 1.47)	<0.001
Poverty	1.27	(1.27, 1.28)	<0.001
Marital status			
Not in a union	1.00		
In a union	37.50	(36.31, 38.74)	<0.001

Table 4 Multivariate logistic regression model assessing the effect of socio-demographic variables on adolescent childbearing, 2000

Socio-demographic variable	Ever given birth during adolescence		P value
	Odds Ratio	(95% CI)	
Country of birth			
Costa Rican-born	1.00		
Nicaraguan-born	1.88	(1.79, 1.97)	<0.001
Age	2.20	(2.17, 2.22)	<0.001
Education			
Secondary school or more	1.00		
Primary school or less	3.91	(3.78, 4.05)	<0.001
Degree of urbanization			
Rural residence	1.00		
Urban residence	1.11	(1.07, 1.15)	<0.001
Poverty	1.22	(1.21, 1.23)	<0.001

Discussion

The aim of this study was to determine the prevalence of adolescent childbearing among the migrants and the local population in Costa Rica and to measure the degree to which different socio-demographic characteristics, especially the country of birth, were associated with the phenomenon. The findings indicate that there indeed exists a difference in the prevalence of adolescent childbearing depending on the country of birth (9.5% of Costa Ricans compared to 26% of Nicaraguans had given birth at least once). Among Nicaraguan migrants, the odds of ever

having given birth during adolescence were, on average, 88% higher than that of Costa Ricans, even after controlling for socio-demographic variables. In other words, even though the poorer socio-economic status of immigrants explains some of the perceived difference in the prevalence of adolescent childbearing between Nicaraguan immigrants and Costa Ricans, the findings of the study indicate that Nicaraguan origin per se is an independent predictor of adolescent childbearing in Costa Rica.

The study also confirms that in Costa Rica the probability of adolescent childbearing is higher among adolescents of older age, of urban background and among young women having low socio-economic and educational levels. The results especially highlight the importance of union, which was very strongly associated with adolescent childbearing, either as the baseline characteristic or as a result of adolescent childbearing.

Due to the impossibility to construct the chronological order of different events and phenomena based on the census data, we are not able to firmly determine whether the strong relationship between union and childbearing owes to the fact that most pregnant adolescents enter in a union with the prospective father of their unborn child or if unions are formed first and shortly followed by pregnancies. The findings of an Argentine survey regarding adolescents suggest that unions are formed as an aftermath of pregnancies, which are often the result of less formal relationships [16]. If this is the case also in Costa Rica, which is probable considering the substantially high odds ratio related to union in the univariate analysis, including the variable in the final logistic regression analysis would have been problematic. The odds ratio would have shown a strong relationship between union and childbearing, like in the univariate analysis, even if most of the association was the result of unions that took place posterior to pregnancies. Further examination of the sequence of events would give more insight on the implications that adolescent childbearing has on the lives of young girls in Costa Rica.

The study population encompasses all the adolescent girls of Costa Rican and Nicaraguan origin who at the time of the census had a regular residence in Costa Rica [14]. However, about 23% of eligible adolescents had to be excluded because no information about their possible childbearing was available. A large proportion of the girls that were excluded was under the age of 15 and did not live in a union. There is thus a strong possibility that most of the excluded women had never given birth due to their young age, which in turn could overestimate the prevalence of adolescent childbearing in the target population as a whole. It is not likely though that the observed differences between the excluded and the included adolescents would jeopardize the credibility of the findings that reflect the influence of socio-demographic characteristics to adolescent childbearing in Costa Rica.

The estimated omission rate of the Costa Rican census is 2.9% and 3.85% among Nicaraguan-born women of reproductive age [17, 18]. In this respect the census database is of good quality and rather representative of the population of Costa Rica, and therefore does not pose major threats to the validity of the results. The examination of the study population thus indicates that Nicaraguan immigrants indeed had higher prevalence of adolescent childbearing compared to Costa Rican adolescents at the time of the 2000 Census.

It is also important to point out that pregnancy is not synonymous with childbearing, even in places where abortion is illegal. In other words, in addition to those adolescents who indeed give birth, there are others who choose to terminate their pregnancies voluntarily by means of induced abortions. Current legislation in Costa Rica bans the procedure except in cases where the mother's life or health is at risk [19], but only a few legal terminations of pregnancy are carried out. According to recent estimations of the incidence of induced abortions in Costa Rica, the majority of women who have abortions are young (15–24 years of age), single, first time mothers of urban residence, and thus fit the profile of adolescent childbearers. The same study calculated that in 2007, the total number of induced abortions in the country stood at roughly 27,000. [20].

Earlier findings have demonstrated that migrants tend to have higher rates of adolescent childbearing than non-migrants in the receiving countries in both the United States and Europe [9–13, 21, 22]. The situation in Costa Rica seems to be similar. Additionally, we are able to conclude that much of the difference can be explained by the poorer social and economic conditions that migrants face in Costa Rica, even though the country of origin also played an important role as an independent predictor of pregnancy.

Our findings are also mostly in accordance with previous studies that have examined the underlying factors such as low educational attainment and socioeconomic deprivation behind adolescent childbearing in Latin America and elsewhere in the world [23–29]. Contrary to some earlier findings [24, 27, 28], our results show that in Costa Rica, urban rather than rural residence increases the risk of adolescent childbearing, even though the difference in odds ratios is very small. According to Montgomery et al. [30], the urban poor often suffer from various disadvantages and live in conditions that rather resemble those of rural inhabitants.

There may be factors that contribute to the higher probability of adolescent pregnancy among the Nicaraguan adolescents, but cannot be adequately reflected in the socio-demographic variables used for adjustment. The circumstances that migrants face in their countries of origin and destination before, during and after the migration process, such as fertility patterns and cultural factors [31–33], sexual coercion and abuse [34], legal and insurance status and access to sexual education, health care and

family planning services [8, 35–37], psychological factors related to the migration process [38, 39] and future expectations [40], can and most likely have an impact on the health outcomes of these mobile populations. It is likely that the increased odds of childbearing present among migrants in Costa Rica and elsewhere is not only a product of cultural diversity or socio-demographic factors, but rather an expression of the complex interaction between health and migration, as described by Carballo and Mboup [41]. It remains to future research to find out what role the aforementioned variables play in the phenomenon under study. It is also recommendable to repeat the present study following the census of 2011 to keep track of possible changes in the prevalence of adolescent childbearing and the socio-economic conditions of the local and immigrant adolescents in Costa Rica.

The social context of Latin America, which generally does not approve of sexual encounters and pregnancies before and outside marriage, can generate social discrimination towards young mothers [27]. The economic situation of adolescent mothers can often be difficult as well, as pregnancy and childbirth during school years effectively interrupts the educational and working trajectory of these girls [26]. Currently, Nicaraguan migrant children in Costa Rica have lower levels of educational enrollment than Costa Rican children in both primary (79% versus 95%) and secondary level (45% versus 70%) [42]. In this context, early childbearing could be a factor that compromises the possibility of immigrant adolescents to attend school and finish basic education.

In Costa Rica, interviewed adolescent mothers, and especially those without a partner, expressed to have postponed prenatal controls in order to hide their pregnancies, and admit to having feelings of guilt and rejection towards their condition [43, 44]. These feelings of shame, denial and confusion, hiding the signs of pregnancy and the possible controversies that adolescents can experience within their social relationships and surroundings may compromise the girls' use of antenatal services and care during gestation, which has been identified as a determinant of worse health outcomes for both the mother and the child [45].

Considering the social implications that adolescent childbearing can have on young women and the vulnerability that immigrants may face because of their legal status and the hostile environment they often encounter in the country of destination, more serious attention should be drawn to the educational (including sexual education) and job opportunities and the accessibility of preventive reproductive health services of young Nicaraguans in Costa Rica in order to strengthen their capacity and possibilities to make conscious decisions about their reproductive lives. The social and economic determinants of reproductive and sexual health are numerous and interrelated, which means

that the issue of adolescent childbearing among the Nicaraguan migrant population in Costa Rica should be addressed using a comprehensive approach, taking into consideration the human rights, such as the right to health, and the special needs of this population.

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