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Nicaraguan migration and the prevalence  
of adolescent childbearing in Costa Rica

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SINTONEN, HEIDI: NICARAGUAN MIGRATION AND THE PREVALENCE OF  
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Costa Rica has a large Nicaraguan minority, the health of which has not been actively studied. It is known that pregnancy rates of Nicaraguans are higher than those of the native population, but the reasons behind these differences are unknown. Because of the health and social implications early childbearing particularly can have on young mothers and their children, it is important to better understand the circumstances out of which these differences derive, and whether migration per se renders adolescents susceptible to early childbearing.

This study aims to determine the prevalence of adolescent childbearing among Nicaraguan migrants and Costa Ricans, to determine whether Nicaraguan origin was an independent predictor of giving birth in adolescence, and to examine the extent to which socio-demographic factors were associated with adolescent childbearing in the country. To reach these goals, we studied 14 675 Nicaraguan-born and 228 569 Costa Rican adolescents aged 12-19 years using the information of the 2000 Population and Housing Census. Multivariate logistic regression was used to analyze the association between the country of origin and the outcome measure, adolescent childbearing, while controlling for socio-demographic factors (age, educational attainment, marital status, level of urbanization and poverty).

The prevalence of adolescent childbearing was over two times higher among the Nicaraguan migrants compared to Costa Ricans (26% vs. 9.5%, respectively). The migrants' increased odds of having gone through a pregnancy during adolescence decreased from 3.34 (CI 3.21, 3.48) to 1.88 (CI 1.79, 1.97) when controlling for socio-economic factors. Age, low educational attainment, urban residence, poverty, and especially living in a 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 those associated with socio-economic indicators, contribute to the differing prevalence of adolescent childbearing in Costa Rica.

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## Abbreviations

CCP	Centro Centroamericano de Población
CDC	Centers for Disease Control and Prevention
CELADE	Centro Latinoamericano y Caribeño de Demografía (Latin American and the Caribbean Center of Demography)
CEPAL	Comisión Económica para América Latina y el Caribe (Economic Commission for Latin America and the Caribbean)
CIM	Comisión Interamericana de Mujeres (Inter-American Commission of Women)
ECLAC	Economic Commission for Latin America and the Caribbean
DHS	Demographic and Health Survey
FLACSO	Facultad Latinoamericana de Ciencias Sociales (Latin American Faculty of Social Sciences)
ILO	International Labour Organization
INEC	Instituto Nacional de Estadísticas y Censos
IOM	International Organization for Migration
OHCHR	Office of the High Commissioner for Human Rights
OIM	Organización Internacional para las Migraciones (International Organization for Migration)
OPS	Organización Panamericana de Salud (Pan American Health Organization)
PAHO	Pan American Health Organization
UCR	Universidad de Costa Rica
UNFPA	United Nations Population Fund
WHO	World Health Organization

## **1 Introduction**

Costa Rica has a significant immigrant population, the vast majority of which is comprised of Nicaraguans. According to the census of 2000, the country's population stood at approximately 3.8 million, out of which some 226 000 were born in Nicaragua (INEC, 2000). In other words, Nicaraguans made up 7.8% of Costa Rica's population. The growth in the number of Nicaraguan immigrants has been considerable, as at the time of the census of 1984 the number of inhabitants born in Nicaragua was less than 46 000 (CELADE, 2006).

The increasing stream of immigrants has also resulted in a high proportion of births corresponding to Nicaraguan mothers; from 3.7% of all births in 1992 to 12.3% in 1999, and 15.7% in 2007 (García et al., 2002, INEC, 2007a). Similarly, recent survey data show that the total fertility rate (TFR) of Nicaraguan immigrant women was 53% higher than that of the natives (4.0 and 2.6, respectively). The difference seems to be even larger when comparing the group of women aged 15 to 19 years, where the estimated fertility rate of Nicaraguan adolescents doubled the rate of the natives. (Rosero-Bixby et al., 2002).

Trends in Latin America show that the decline in adolescent pregnancy rate tends to lag behind when compared to total fertility rate (Gupta et al., 1999) This is also the case in Costa Rica, where the total fertility rate has seen a steep decline from the 1950's, coming down from almost 7 lifetime births per woman to 2.35 in year 2000. Between the years 1990 and 2000, the rate declined by 26%, while in the group of women aged 15 to 19 years the decline was only 7%. (CCP, 2006). Consequently, in 2007, 19.8% of all births in Costa Rica, altogether 14 481 births, occurred to women below the age of 20 (INEC, 2007b).

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 the inaccessibility of antenatal and obstetric care. (WHO, 2007). Early entering into motherhood can also have serious social implications for young women, as pregnancies complicate attending education, professional training and a normal working career (Blandón et al., 2006). Furthermore, in the context of international population movements, as in the case of Nicaraguans in Costa Rica, migration can further aggravate the situation by placing immigrant women in situations that negatively affect their access and use of reproductive health care services (Lane, 2008).

Adolescent pregnancy has not been extensively studied in the context of migration and minorities. 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 native population. (Brindis et al., 1995, Buescher, 2003, van Enk et al., 2000, Narring et al., 1996, Botting et al., 1998). Nevertheless, the factors behind these differences remain unclear. In Costa Rica, population-based studies reviewing the prevalence and patterns of adolescent pregnancy have not been carried out. Understandably so, public health interventions have not been implemented to tackle the issue.

This study examines the prevalence of teenage childbearing among the Nicaraguan immigrants and the local youth in Costa Rica and the determinants of adolescent pregnancies in the country. To do this, we explore the socio-demographic factors associated with the phenomenon in Costa Rica and measure the size of the contribution of the chosen predictor variables to the probability of occurrence of an adolescent pregnancy.

## **2 Literature review: Migration, women and reproductive health**

The topic of this study interconnects various aspects of women's health. On the one hand there are the possible pregnancy-related health problems and challenges that affect young adolescents, and on the other hand there are the health dynamics and the special vulnerabilities related to the migration process. Consequently, both of these aspects must be taken into consideration.

In this review, an introduction is first given of the global epidemiology of adolescent childbearing and the risk factors that have been found to be associated with the phenomenon. The possible health consequences of adolescent pregnancies for both the mother and the child are then discussed. A brief summary is also given of the scarce knowledge about adolescent childbearing in the context of migration. Secondly, the reproductive health implications and the special reproductive health challenges that population movements can pose are reviewed.

The health consequences of migration also depend largely on the context in which the population movement takes place, and therefore it is also important to examine the special migration dynamics and situation between the two Central American countries that make up the setting of this study, Nicaragua and Costa Rica.

Finally, the global human rights instruments that safeguard the right to health of women and migrants are listed and described to give an idea of the commitments that have been made (but often not fulfilled) by the global community in the area of health.

The literature review was based on a literature search that was made unsystematically, by using the PubMed search engine to find relevant articles that touched upon the issue of migration, adolescent childbearing and health. The found articles were used as reference in expanding the literature search. Relevant publications of the World Health Organization and other agencies of the United Nations were also used.

## **2.1 Adolescent pregnancy**

### **2.1.1 Global epidemiology**

The period in a person's development understood as adolescence has no unambiguous and universal definition. World Health Organization, the United Nations Population Fund and other UN organizations define adolescents as young people between the ages of 10 and 19 years (WHO, 2006, UNFPA, 2007). In spite of this broad age range, adolescent pregnancy is generally defined as a pregnancy occurring to a woman of 15 to 19 years of age (WHO, 2007), which, according to the above mentioned definition, corresponds to late adolescence. This age group is most frequently used for statistical purposes, as data concerning the pregnancies of younger girls is often not available (WHO, 2004a). Obviously, childbearing also takes place in girls who are in their early adolescence, that is, below the age of 15. Adolescent fertility rate is calculated as the annual number of births among girls aged 15-19 years divided by the number of girls in that age group, and is expressed per 1000 population (UNSTATS, 2009).

Adolescent pregnancy and childbearing take place in all kind of societies, but the levels of adolescent childbearing vary significantly from one country to another. It has been estimated that approximately 16 million adolescent girls give birth every year. The majority of adolescent mothers are found in low-income countries, where approximately one-third of all women give birth before the age of 20 (WHO, 2008b, World Bank, 2002). The highest rates are found in Africa, where the average rate of adolescent fertility is 115 births per 1000 women aged 15-19 years, ranging from 7 in Libya to 229 in Angola (United Nations, 2004a). Sub-Saharan Africa stands out as the region with the highest age-specific adolescent fertility rates (Rowbottom, 2007).

In the Asian and Pacific region in 2007, the adolescent fertility rate stood at 39 (ESCAP, 2007). In the region as a whole, both the total fertility rate and adolescent fertility have declined during the past decades, adolescent childbearing mainly due to rising age at marriage (United Nations, 2004a). In some countries, however, adolescent



pregnancies are still common, as is the case of Afghanistan, Nepal and Bangladesh, which all have rates higher than 100 births per 1000 women. The lowest rates are found in East and North-East Asia, in countries such as Japan and the Republic of Korea. (ESCAP, 2007).

In Latin America, the rates of adolescent fertility are far higher than the global average and are only exceeded by those of African countries. In addition, Latin America is the region of the world where the births of adolescent mothers make up the largest fraction of the total number of births. (CEPAL and UNICEF, 2007). This in spite the fact that the average total fertility rate of the region has declined considerably (United Nations, 2004). The countries of Central America have the highest rates that range between 102 to 119 births per 1000 women in Guatemala, Nicaragua, Honduras and El Salvador. The average rate of the region as a whole is 76. (Remez et al., 2008).

Canada, United States and the vast majority of European countries have adolescent fertility rates of 50 births or less per 1000 women aged 15-19 years (United Nations, 2004a). Very low rates (below 10) are found in countries such as Sweden, Italy and Slovenia (Singh and Darroch, 2000). Interestingly, United States has one of the highest rates of teenage fertility among the developed countries; 50 births per 1000 in 2004 (World Bank, 2006). According to various studies, this is at least partly due to lower use of contraceptives by sexually active teenagers in the country, compared to Europe (Darroch et al., 2001). Most European countries have rates below 20 births per 1000 and have experienced declines during the past decades (Singh and Darroch, 2000, United Nations, 2004a).

As a general rule, adolescent pregnancy is decreasing, but the trends between regions vary considerably. High rates persist in many regions of the world, especially in Sub-Saharan Africa, and are even on the increase in a few countries (Singh, 1998, WHO, 2006). North Africa and some parts of Asia have had the largest declines in adolescent childbearing, which reflects the increase of age at first marriage (Singh, 1998). Latin America has experienced slow declines and even increases in some countries,

regardless of the region's social development and falling overall fertility (Westoff, 2003, Singh, 1998).

Globally, adolescent childbearing is associated with rural residence, low educational attainment, poverty, gender inequality and early marriage (UNFPA, 2003, Rowbottom, 2007). As described by Mathur et al. (2003): "Early marriage means early sexual activity, and therefore early childbearing." This relationship is clearly seen in countries with high incidence of child marriages, as they tend to have high rates of adolescent fertility as well. Bangladesh, Niger, Chad, Nicaragua and Nigeria are all countries where girls are highly likely to be married before the age of 15, and they all have high rates of adolescent fertility (above 100 births per 1000 women aged 15-19 years) (World Vision, 2008, World Bank, 2006). This is the case in many parts of West, Central and East Africa, and South Asia (Mathur et al., 2003).

Adolescent mothers also tend to come from situations of socioeconomic disadvantage. Lack of or low educational attainment and low levels of income are associated with adolescent childbearing in both high- and low-income countries. Early marriage and childbearing can represent a form of social and economic security for women of poor and marginalized background (UNFPA, 2003). In a study of five developed countries<sup>1</sup> by Singh et al. (2001), a strong negative association was found between the level of educational attainment and economic status and having a child before the age of 20. Likewise, DHS data from 12 developing countries<sup>2</sup> shows that young women from the poorest households were more likely than those from richest households to have at least one child by the age of 18. They were also more likely to be married and less likely to use contraception and maternal health services. (Rani and Lule, 2004). In another international comparative analysis the same negative association has been found, implying that adolescent mothers are concentrated among the women with least education (Westoff, 2003).

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<sup>1</sup> The countries examined were: Canada, France, Great Britain, Sweden and the United States.

<sup>2</sup> The countries examined were: Bangladesh, India (Rajasthan), Nepal and Turkey in Asia; Chad, Guinea, Kenya, Niger, Nigeria and Tanzania in Africa and Bolivia and Nicaragua in Latin America.

The same international analysis of the DHS data also points out that most adolescent childbearing takes place in rural areas (Westoff, 2003), where circumstances are often the poorest and most precarious. According to estimates, some 24% of rural women in low-income countries begin childbearing during adolescence, compared to 16% of urban women (McDevitt, 1996). Overall, adolescent childbearing is most prevalent among young women who are rural, have low educational levels and are poor (Lloyd, 2005.)

### **2.1.2 Possible health consequences for the mother and the child**

In low-income countries, where most adolescent childbearing occurs, pregnancy and childbirth is risky for all women regardless of their age, but studies have shown that certain factors render pregnant adolescents more vulnerable to negative health consequences than older women (Rowbottom, 2007, WHO, 2007). Pregnancy-related health problems are thus experienced by both adolescents and older women, but are more common in adolescents due to age-related customs and vulnerability, such as early marriage, poverty and male domination (Zabin and Kiragu, 1998). In that sense, the health consequences of early pregnancy vary greatly depending on the age, marital status, social class, educational level, location and psychological factors of the mother (WHO, 2006).

Nowadays, the age of the mother per se is not considered as a decisive factor of poor reproductive outcomes, but it can in some circumstances play an important role. Pregnant girls under the age of 15 have excess risks due to their physical immaturity, which can cause prolonged and obstructed labor (WHO, 2006). Many underlying factors not directly associated with the age of the mother have been identified as the key determinants of reproductive problems that are more common in adolescent mothers and their children. The inadequate use of or lack of antenatal and postpartum care and emergency obstetric services, poor social condition and the disempowerment and lack of knowledge of young women have all been identified as factors that expose

adolescent childbearers and their offspring to poor health outcomes. (Zabin and Kirgalu, 1998, Rowbottom, 2007, Makinson, 1985).

Most studies carried out in low-income countries have shown that adolescent mothers have a higher risk of dying of maternal causes than women over the age of 19 (Lloyd, 2005, McDevitt, 1996). The risk of dying from pregnancy-related causes is twice as high for adolescent girls aged between 15–19 years and five times higher for girls below the age of 15 when compared to women in their twenties (UNICEF, 2000). The risk of death can be even 4-6 times higher in rural areas (Villarreal, 1998). The maternal deaths of adolescents are mainly due to malaria, pregnancy-induced hypertension, puerperal sepsis and septic abortion (WHO, 2007). Maternal mortality of young women have been linked to factors such as primiparity, socioeconomic disadvantage, the inaccessibility of health services and excess mortality risk due to anemia and malnourishment (WHO, 2006, Makinson, 1985, Bhatia, 1993, WHO, 2007, Villarreal, 1998, Bledsoe and Cohen, 1993).

Anemia during pregnancy is a risk factor for various complications from pregnancy, and severe anemia is an important indirect cause of maternal mortality (UNFPA, 2003, WHO, 2006, 2007). It has been estimated that half of adolescent girls in low-income countries are anemic, and the situation is aggravated by nutritional deficiencies and infectious diseases, mainly malaria (WHO, 2004a, 2006). Some studies have shown anemia to be more prevalent among pregnant adolescents than older pregnant women, possibly due to the adolescent's developing body, which has to compete for nourishment with the fetus, causing rapid consumption of iron and nutrient reserves of the young mother (WHO, 2006, 2007). Anemia can lead to excess occurrence of preterm delivery and low birth weight (Scholl et al., 1992), and even miscarriages and perinatal and maternal mortality (UNICEF, 2002).

Young adolescents experience increased risk of obstructed and prolonged labor, especially in low-income countries, because of the immaturity of their pelvic bones and the birth canal (WHO, 2004a, 2007, Zabin and Kiragu, 1998). First-time mothers

are at an even higher risk (UNFPA, 2007). The incompleteness of the physiological development can result in complications of cephalopelvic disproportion and obstructed labor (WHO, 2004a), which can have serious consequences if no emergency obstetric care is available. Vesico-vaginal and recto-vaginal fistulae are one such complication of delivery. At the moment, some 50 000 to 100 000 women are affected every year by this condition, which is common in adolescents (UNFPA, 2001). A retrospective study of 1210 cases of fistula at the Addis Ababa Fistula Hospital reported that half of the patients were below the age of 20, 55% were first-time mothers and in 93% of the cases the fetal outcome was stillbirth (Muleta, 1997).

Pregnancies of adolescent women are often mistimed (wanted later) or unwanted (not wanted at all). A review of surveys carried out in low-income countries shows that, among unmarried women aged 15-19 who had a birth in the preceding five years, 32-93% of births were mistimed or unwanted. Among the married the percentages were lower, but in many countries the proportion was between 20-40% (Singh, 1998). Consequently, many adolescent pregnancies end in unsafe abortion<sup>3</sup>. According to estimates, some 1 to 4.4 million women under the age of 20 obtain an abortion yearly in low-income countries. Unsafe abortions are risky and can lead to complications such as infection, hemorrhage, injuries such as cervical laceration and uterine perforation, and toxic reactions to drugs or chemicals. (Blum and Nelson-Mmari, 2004). Studies have shown that the care-seeking behavior of adolescents is different from adults, as they tend to seek abortion later during pregnancy, which leads to increased risk of complications and death, resort to unskilled providers and use dangerous methods such as inserting objects or herbal remedies into the vagina, and delay seeking care in the presence of complications (Olukoya et al., 2001). Globally, 13% of maternal deaths are due to unsafe abortions (WHO, 2004b).

Hypertension affects many adolescents during pregnancy because it is very common in first-time mothers (WHO, 2007). Increased risk of obstructed labor among adolescent

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<sup>3</sup> Unsafe abortion is defined as a procedure for terminating an unwanted pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards, or both (Olukoya et al., 2001).

mothers and the presence of deficient and unhygienic conditions during birth lead to higher risk of postpartum infections and puerperal sepsis (WHO, 2004a, 2007, Zabin and Kiragu, 1998), both of which are causes of maternal morbidity and mortality (Husseina and Fortneyb, 2004, Valley et al., 2005). In malaria endemic regions, evidence shows that pregnant women are more vulnerable to parasitemia than non-pregnant women (Brabin, 1983, WHO, 2004a). Studies also imply that infection is greatest in first-time mothers (Shulman et al., 1996, Lalloo et al., 2006). Malaria during pregnancy is associated with anemia, low birth weight and infant and maternal mortality (Steketee et al., 2001, WHO, 2007).

Adolescent childbearing is not only risky for the pregnant mother, but can also have implications for the child. Adolescent mothers of both low- and high-income countries, especially mothers below the age of 15, have a higher risk of giving birth to preterm (<37 weeks) and low birth weight (<2500 g) babies (WHO, 2004a, Fraser et al., 1995, Lao and Ho, 1997), which are both major causes of increased infant morbidity and mortality (Makinson, 1985, WHO 2004a, 2007). Perinatal and neonatal mortality are also higher among infants of adolescent mothers (WHO, 2006, Zabin and Kiragu, 1998), and the rates are highest in babies of very young girls (Lloyd, 2005). One explaining factor for this increased risk of mortality could be the high rate of preterm births (WHO, 2007).

### **2.1.3 Adolescent pregnancy in the context of migration**

Very little is known of the relationship between international migration movements and adolescent pregnancy. Various studies, mainly carried out in the United States, have come to the conclusion that migrant adolescents tend to have higher levels of fertility than the local youth, but the reasons that lead to this discrepancy in rates have not been thoroughly studied.

In an evaluation of U.S. vital records, foreign-born Mexicans had more adolescent pregnancies than white women (Madan et al., 2006). Another study analyzed the

relationship between migration and premarital childbearing among Puerto Rican women of reproductive age in the New York Metropolitan area, and found that first- and second-generation migrants to the United States had significantly higher risks of early pregnancies and premarital births than non-migrant Puerto Ricans (or the general US population). This was explained by factors mostly associated with earlier sexual debut among migrants compared to non-migrants and the increase in age at first marriage. (Landale and Hauan, 1996). Higher levels of unintended and adolescent childbearing among Latino-immigrants in the United States, compared to non-Hispanic whites, were also found in studies carried out in North Carolina and California (Brindis et al., 1995, Buescher, 2003).

Some comparisons have also been made in the European context, namely in Great Britain, Switzerland and the Netherlands, where higher rates of adolescent fertility have been observed among various immigrant groups (van Enk et al., 2000, Narring et al., 1996, Botting et al., 1998).

## **2.2 Migration and reproductive health**

Both voluntary and involuntary migration can have consequences on the reproductive health of women and can affect their access and use of reproductive health services (Carballo and Mboup, 2005). This is an important fact that needs to be taken into account in public health policies, considering that women have almost outnumbered men in international migration flows. In 2000, almost 49% of all international migrants were female (Zlotnik, 2003).

Needless to say, the reproductive health status of migrants is determined by a range of factors, many of which are related to conditions and events that took place before the migration process even started. The social, economic and physical conditions migrants face in the receiving country also play a role. Other aspects that can further compromise the reproductive health of migrants include sexual violence and abuse, harmful gender-based cultural practices, such as female genital mutilation, and the

special vulnerability that women can face in the event of human smuggling and trafficking<sup>45</sup> (Carballo, 2007, UNFPA, 2006). It is thus difficult to make generalizations regarding the group of migrant women as a whole.

A very important determinant of migrant women's reproductive health is their access to health and social insurance and services, the availability of which is often defined by the migrant's legal status in the receiving country (Carballo and Mboup, 2005, Carballo, 2007). The use of health services is often restricted from undocumented and temporary migrants. In many countries, only emergency health services are offered to irregular migrants (UNFPA, 2006), and this of course affects their access to primary and preventive health care, such as family planning and contraception. Even if migrant women do have access to reproductive health services, many barriers can prevent women from being able to take full advantage of them. Such barriers include poor language skills, lack of interpreters and trans-cultural skills among the staff, differential health-seeking behaviors among migrants and the fear of deportation owing to denunciations made by the health service staff (Carballo, 2007, Stronks et al., 2001, UNFPA, 2006, Wolf et al., 2008). Many migrants are simply not aware of the existence of such services, if in their home country they were not available or they were inaccessible to them (Carballo, 2007).

Even though extensive knowledge about the overall reproductive well-being of migrant women is scarce, many individual studies considering this aspect of population mobility have been carried out, mainly in the United States and Europe. These studies give some idea of migrant women's use of reproductive health services, and their maternal health and pregnancy outcomes. The reviewed literature suggests

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<sup>4</sup> According to the United Nations Convention against Transnational Organized Crime and the Protocols Thereto (United Nations, 2004b), the trafficking of persons means "the recruitment, transportation, transfer, harbouring or receipt of persons, by means of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other similar forms of sexual exploitation, forced labour or services, slavery or practices similar to slavery, servitude or the removal of organs.

<sup>5</sup> Trafficking renders women vulnerable to sexually transmitted infections (including HIV/AIDS), unintended pregnancies, unsafe abortions, sexual violence, and lack of access to reproductive health care (CIM and PAHO, 2001).



that some aspects of the reproductive health of immigrant women are more unsatisfactory when compared to native women, mainly owing to their inferior use of preventive and follow-up services related to childbearing, while pregnancy outcomes, on average, tend to be better. Nevertheless, and as mentioned previously, no watertight theories can be made based on the available data.

Migrant women's use of contraception is influenced by their socio-economic background and experience in family planning (Carballo, 2007). Some studies indicate that migrant women tend to make lesser use of contraception, as is the case of Nicaraguan migrants in Costa Rica (Chen Mok et al., 2001). As mentioned previously, undocumented migrants face most difficulties in their access to contraceptives and other preventive reproductive health services, which is clearly observable in the findings of a prospective cohort study carried out at the University hospital of Geneva. The study showed that the use of preventive measures and pregnancy care was inferior among the undocumented migrants when compared to legal residents. The majority of the undocumented pregnant women were unaware of the existence of emergency contraception and 75% of their pregnancies were unintended (compared to 9% and 21% of the general population, respectively). Most women with unintended pregnancies did not use contraception or used unreliable methods. They were also more exposed to violence during pregnancy and 18% had not had a pap smear test during the last three years or never (compared to 2% of controls). (Wolf et al., 2008)

The undocumented migrant women of the study also had an 11-fold increased risk for delayed antenatal care (Wolf et al., 2008). The lower attendance to prenatal controls among migrants has been observed in other studies as well. Cervantes et al. (1999) discovered that U.S.-born Black, Mexican and Puerto Rican mothers were more likely to have received no prenatal care and to have started attending it late. The same was observed among undocumented migrant mothers in Colorado (Reed et al., 2005) and among Mexican-born mothers in the United States and North African-born mothers in France (Guendelman et al., 2005). According to the study made by Wolf et al. (2008), pregnant undocumented migrants are in a vulnerable situation because they do not

have health insurance, lack emotional and social support (mainly because of little or no support from the family or the prospective father) and have lower than mandatory wages.

The low use of contraception is also reflected in the rates of induced abortions that are often higher among migrant women (Carballo, 2007). In Switzerland, the abortion request rates for non-Swiss women were two to three times higher than those for Swiss women (Narring et al., 2002). In Norway, refugees and labor migrants both had significantly higher rates of termination of pregnancy than non-migrants (Vangen et al., 2008). According to the same study, the higher rates of pregnancy termination among immigrants could be interpreted as part of a transition from high to low fertility, and seem to be a result of lower levels of education and poor social status.

On the contrary, in the United States, various studies have reported that birth outcomes of immigrant women tend to be significantly better than that of their U.S.-born counterparts and local women. Immigrant Mexican women have been found to have lower risks of low birth weight and preterm births than non-Hispanic White women, regardless of their lower socio-economic background and educational attainment (Cervantes et al., 1999, Guendelman et al., 1999). In the study by Cervantes et al. (1999), however, Puerto Rican and Black immigrant women were at greater risk of adverse pregnancy outcomes than White women. In the analysis, immigrant women (born outside of the United States) were better off than their U.S.-born counterparts.

The same phenomenon has been observed in other studies as well. Singh and Yu (1996) found that U.S.-born women, as a group, had 24% and 8% higher risk of infant mortality and low birth weight compared to immigrant women. The same did not apply for preterm birth, where no difference in risk was perceived. Another study carried out in Colorado hospital showed that undocumented migrant mothers had a lower rate of low birth weight and preterm infants than the population as a whole (Reed et al., 2005). By contrast, they had higher rates of anemia, labor complications, and abnormal conditions of the newborn and were less likely to gain enough weight

during pregnancy. They were also younger, less educated and more likely to be unmarried, when compared to the general population.

North African mothers in France and Belgium also had lower or comparable adjusted odds rates for low birth weight and preterm births than nationals, in spite of their lower educational levels (Guendelman et al., 1999). In Verona, Italy, however, non-EU patients (from Central and Northern Africa, Middle East, Eastern Europe, Asia and Latin America) had more deliveries by caesarean section and gave birth to more preterm babies (although the difference was not statistically significant) and babies of very low birth weight compared to Italian mothers, possibly due to poorer socio-economic and health conditions (Diani et al., 2003).

A two-year study including all the maternity units in the Netherlands showed that non-Western immigrant women had a 1,3-fold increased risk of severe maternal morbidity (defined in the study as admission to an intensive care unit, uterine rupture, eclampsia and major obstetric hemorrhage) when compared with Western women, Sub-Saharan women having the highest risk (RR 3,5). According to preliminary results of an adjacent qualitative study, the increased risk could owe to the women's short stay in the Netherlands, their lack of social support and knowledge of the health system, communication problems with the care providers and health illiteracy. (Zwart et al., 2008).

However, in the University hospital of Geneva, there was no significant difference in the frequency of complications of pregnancy, delivery or post-partum between the undocumented migrants and the general population, even though the use of preventive measures and pregnancy care was less common among the undocumented mothers. (Wolf et al., 2008). An Irish retrospective analysis of obstetric profiles and pregnancy outcomes of refugee women showed that refugees had increased incidence of late booking, but had low rates of epidural analgesia, instrumental delivery and episiotomies when compared to the general hospital population. No differences were found in the gestational age at delivery, incidence of caesarean section and birth

weights. In contrast, the perinatal mortality of children born to refugees was almost three times that of the general hospital population. (Lalchandani et al., 2001). The authors of these and other studies have mentioned the “healthy migrant effect” and protective behavioral factors such as lower use of alcohol and tobacco as possible explanations for good pregnancy outcomes (Cervantes et al., 1999, Singh and Yu, 1996, Reed et al., 2005, Guendelman et al., 1999, Yoong et al., 2004, Wolf et al., 2008).

## **2.3 Migration in the context of Nicaragua and Costa Rica**

### **2.3.1 Migration dynamics between Nicaragua and Costa Rica**

Costa Rica is sometimes referred to as the Switzerland of Latin America because of its fairly functional social security system and political stability, whereas Nicaragua is the second poorest country of the region (United Nations System, 2007), just after Haiti, and continues to be dependent on development aid (Valtonen, 2001). The migration between these two countries is a complex and a highly dynamic phenomenon, which is influenced by the considerable differences that prevail between them in terms of political stability, economic development and the scope of the social sector, all of which have direct consequences on the well-being and living standards of the population.

The arrival of Nicaraguans to Costa Rica since the beginning of the 1950s has occurred in three waves. The first one commenced in the 1970s during the Somoza Dynasty as a consequence of the hazardous earthquake that shook Managua, the capital city of Nicaragua, in 1972. The dictatorship of the Somoza-dynasty that began already in 1927 and the flow of Nicaraguans to Costa Rica that owed to the government’s repressive politics continued until the year 1979, when power was seized by the Sandinistas. (Cortés Ramos, 2003). After the various administrations of the Somoza family, Nicaragua was left with no functional public sector, as the

economy had been in the hands of the governing family and other private empires (Valtonen, 2001).

The next wave of migrants towards Costa Rica emerged in the 1980s as a consequence of the so called counter-revolution or the Contra-war, which began as an anti-Sandinista movement. The conflict brought along growing political instability and was also associated with some unpopular reforms pushed through by the Sandinista government, such as compulsory military service and the establishment of a wartime-economy, during which 50% of the Nation's budget was spent on warfare and defense (Arce Sandí et al., 2001). The Nicaraguans that entered Costa Rica during the Contra-war were mostly refugees, and therefore had institutional support based on humanitarian aspects.

The Contra-war ended in 1988<sup>6</sup>, after which many Nicaraguans returned to their home country. This development was not long-lasting, however, because since 1993 Costa Rica has received a constant stream of labor migrants from Nicaragua (Cortés Ramos, 2003). During the decade of the 90s, Nicaragua has gone through many pronounced economic reforms, as the country has shifted from a state-run economy to a neo-liberal market economy in an attempt to relieve the country's economic standstill and high inflation rates. The poverty reduction programs led to the impoverishment of the population, an increase in prices, unemployment and the deterioration of working conditions. (Arce Sandí et al., 2001). The administration of the current president, Daniel Ortega of the Sandinista National Liberation Front (*Frente Sandinista de Liberación Nacional*, or FSLN), has not been able to improve the economic situation of the country.

At the same time the export sector of Costa Rica has grown and the demand for unskilled labor force alike, which has made possible the large flows of migrants from Nicaragua (Cortés Ramos, 2003). Furthermore, and adding to the relative attractiveness of Costa Rica, the southern neighbor of Nicaragua has avoided armed

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<sup>6</sup> The elections of the years 1990, 1996, 2001 and 1996 in Nicaragua have been free and transparent (United Nations System, 2007).

conflict since the Civil War of 1948, after which the standing army was abolished. Since then, Costa Rica has been a politically stable democracy (Seligson, 2001), which has enabled the development of the country's social and economic sectors. During the implementation of the Structural Adjustment Program in the aftermath of the debt crisis, Costa Rica was forced to run down some of its social services, but they remained rather functional when compared to Nicaragua and the other neighboring countries (Valtonen, 2001).

In a recent country analysis carried out by the United Nations System in Nicaragua (2007), six factors that nurture the emigration of Nicaraguans were identified, namely: 1) the existence of a historical pattern of population mobility in the region; 2) demographic growth that exceeds economic growth; 3) the persistence of poverty and numerous social problems, e.g. in 2001, 69.4% of Nicaraguans lived in poverty, 42.4% in extreme poverty (CEPAL, 2008); 4) the inequality in access to health, education and employment, e.g. 40% of the population has no access to health services; 5) the insufficient ability to absorb young people that enter the labor force; and 6) a tradition of emigration which is supported by existing family networks that increase incentives to migrate (United Nations System, 2007). These factors reflect the current context in which migration from Nicaragua takes place. In view of the above-mentioned push- and pull-factors, it is fairly easy to understand why migration between these two countries takes place. Consequently, it has been estimated that 52.9% of Nicaraguan emigrants now reside in Costa Rica (United Nations System, 2007).

As for the contribution of women, and especially young women to the wave of migrants to Costa Rica, the census of the year 2000 registered 113 302 Nicaraguan women. Most had arrived to Costa Rica after the year 1990; the majority between the years 1995 and 2000. (INEC, 2002a). In other words, 50.1% of all Nicaraguan immigrants in Costa Rica were women. The Nicaraguan population in Costa Rica is characterized by its relatively young age-distribution, as 70% of Nicaraguan migrants are adults of 20 to 39 years (Marquette, 2006). Chen Mok et al. (2001) estimated that the total number of Nicaraguan women of reproductive age in 2000 was approximately 93 000, of which one fourth was between 20-24 years of age.

### 2.3.2 The situation of Nicaraguan immigrants in Costa Rica

As a general rule, the Nicaraguan migrants in Costa Rica are worse off by almost any indicator that describes socio-economic development. The differences between the local population and the migrants embark not only working conditions and the level of income, but are also detectable in the migrants' access to decent housing and sanitary conditions. Their vulnerability is made more acute due to the discriminatory and hostile attitudes that the majority of Costa Ricans have towards migrants, which of course hinders the migrants' adaptation process and their integration to the society. (Acuña González et al., 2003).

According to the housing census of 2000, some 15% of families that have a Nicaraguan head of the family live in slum-like conditions<sup>7</sup>, compared to less than 3% of Costa Rican-led families. Poverty, here defined as the insufficiency of income, is more common in households where the head of the family or his/her spouse is Nicaraguan than in Costa Rican households. Of the persons living in Nicaraguan-formed households 31.1% live in poverty compared do 23.1% of persons in Costa Rican households (Acuña González et al., 2003).

This is understandable considering the existing differences in the migrants' wage level, as Nicaraguan women, on average, earn only 66% of Costa Rican women's income and Nicaraguan men 72% of the wage level of Costa Rican men. In general terms, Nicaraguan women tend to work in the service sector, the majority as street vendors, domestic workers, nannies and waitresses, and Nicaraguan men in construction and agricultural activities. (García et al., 2002, Chen Mok et al., 2001). In fact, Nicaraguans make up a large fraction of the national labor force in the agricultural sector (10% of the national labor force), construction (20%) and domestic work (30%). Nicaraguan migrants also have lower levels of education than Costa Ricans, although the difference in years of schooling is, on average, only one year (Marquette, 2006).

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<sup>7</sup> In the original source that was cited, the quality of housing was divided into two categories that describe indecent housing conditions. In this paper, those two categories were put together as one group which comprises slum-like houses. The original Spanish words were *tugurio* (7.1% of families) and *precario* (7.9% of families).

As a consequence of the irregular situation of many migrants and the unwillingness of the employers to affiliate their employees to the social security system (Acuña González et al., 2003, Defensoría de los Habitantes, 2004), only 57.2% of Nicaraguans have health insurance either directly through the Costa Rican Social Security Fund (*Caja Costarricense de Seguro Social*, or CCSS) or indirectly through other family members (Mojica Mendieta, 2003). Undocumented migrants can not be insured even on a voluntary basis, because affiliating requires a valid residence or work permit (Acuña González et al., 2003). According to the Costa Rican ombudsman, the situation of pregnant migrant women is especially worrying, evidenced by the large number of appeals made by pregnant migrant women concerning the denial of care and treatment to them during pregnancy in the institutions of the CCSS, because of their migratory status (Defensoría de los Habitantes de la República, 2006).

#### **2.4 Migration and women's right to (reproductive) health**

Migrant women tend to face twofold discrimination in the receiving countries, on the basis of their sex and gender, and also on the basis of their migrant status, especially when it is irregular. Therefore, more attention should be paid to the protection of the basic human rights, including the right to health, of this group of women. The recognition of the special health needs of women due to their reproductive role is a necessity even in the context of migration. In spite of the appeals of numerous NGOs, United Nations Organizations and the civil society, temporal and undocumented migrants, trafficked women and refugees have difficulties accessing reproductive health services, even if their situation is known to render them more vulnerable to reproductive health problems, unplanned pregnancies and sexually transmitted diseases, including HIV/AIDS (Martine et al., 2001). Access to health of vulnerable migrant groups will ultimately contribute to better public health, increased productivity and social cohesion in the receiving society, as migrants integration process is facilitated (WHO, 2003).



The right to health is a universal human right and has been proclaimed as such in the article 25 of the Universal Declaration of Human Rights (1948), with special mention of the care and assistance needed during motherhood and childhood. This and other international human rights instruments recognize the right to health of migrants, both documented and undocumented, and require them to have access to at least some level of public health protection (WHO, 2003). When talking about the health of migrants, and especially that of migrant women, there exist various international instruments that take a stand on the matter, either generally speaking or more specifically. In the majority of cases, no gender-oriented approach is included in international laws, but the issue of gender is understood through the principle of non-discrimination (IOM, 2004).

Only one of the core international human rights treaties has been especially designed to address and protect the human rights of migrants. The International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families was adopted in 1990, but entered into force only in 2003. So far, the convention has 39 parties (OHCHR, 2008a), most of which are sending rather than receiving countries of migrants. The convention states that all migrant workers and their families are entitled to emergency medical services, regardless of their legal status, and obliges the ratified States to offer documented migrants and the members of their families equality of treatment with nationals of the State concerned in relation to access to social and health services. (International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, articles 28, 43 and 45, 1999). Costa Rica has not signed the Convention.

The International Covenant on Economic, Social and Cultural Rights is a widely signed United Nations treaty that dates back to 1976 (OHCHR, 2008b). The article 21 of the Covenant demands State parties to “recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health”. A special mention is made of the provision for the reduction of stillbirths and infant mortality and the healthy development of the child, which, according to the General Comment

No. 14 of the Committee on Economic, Social and Cultural Rights (2000) can be understood as “requiring measures to improve child and maternal health, sexual and reproductive health services, including access to family planning, pre- and post-natal care, emergency obstetric services and access to information, as well as resources necessary to act on that information”. States are also obliged to strive for equal access to preventive, palliative and curative health services for all persons, including irregular migrants and asylum seekers. The rights that are granted through the Covenant should be guaranteed to everyone without discrimination of any kind. (International Covenant on Economic, Social and Cultural Rights, articles 2 and 21, 1966).

Under the International Convention on the Elimination of All Forms of Racial Discrimination, States parties are obliged to guarantee the right to public health, medical care, social security and social services to everyone without distinction of race, color, or national or ethnic origin, but can make distinctions between nationals and non-nationals (International Convention on the Elimination of All Forms of Racial Discrimination, articles 1 and 5, 1965). The Convention has 173 parties and was entered into force in 1969 (OHCHR, 2008c).

The Convention on the Rights of the Child, which has gained almost universal coverage, was adopted in 1989. The Convention includes the right of the child, defined as a human being below the age of 18, to the highest attainable standard of health and the treaty draws special attention to the universality of this right, irrespective of the situation of the child or his or her parent or legal guardian<sup>8</sup> (Convention on the Rights of the Child, articles 2 and 24, 1989). Article 24 further establishes that State Parties should take the appropriate measures to implement the right to health by offering the necessary services to all children and by ensuring appropriate pre-natal and post-natal health care for their mothers.

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<sup>8</sup> Each child within the jurisdiction of the State is entitled to the rights included in the Convention, “irrespective of the child’s or his or her parent’s or legal guardian’s race, colour, sex, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status” (Convention on the Rights of the Child, 1989)

The Convention on the Elimination of all Forms of Discrimination against Women has 185 State parties and has been valid since 1981 (OCHCR, 2008d). The Convention bans discrimination against women in the context of health care and the State Parties are expected to ensure women's access to health care services. Under the Convention, access to reproductive health care is a universal right. A special mention is made of family planning and services covering pregnancy, confinement and the post-natal period, and the provision of free services if necessary. According to the treaty, women also have an equal right as men to decide on the number and spacing of their children and to have access to sufficient knowledge and means to exercise this right. (Convention on the Elimination of all Forms of Discrimination against Women, articles 12 and 16, 1979). Furthermore, a general recommendation made in 1999 states that special attention should be paid to the health needs of women that belong to vulnerable groups, such as migrants, refugees and internally displaced women, in accordance with the programs of action of the 1993 World Conference on Human Rights, the 1994 International Conference on Population and Development and the 1995 Fourth World Conference on Women. (Convention on the Elimination of all Forms of Discrimination against Women, General Recommendation No. 24, 1999).

### **3 Objectives**

The aim of this study is to examine the issue of adolescent childbearing in the context of international migration movements. The study specifically sets out to appraise the importance of immigration as a factor that could contribute to the reproductive behavior of young women in Costa Rica and to evaluate the socio-economic determinants of adolescent pregnancies in the country.

The specific objectives are as follows:

- To determine the prevalence of adolescent childbearing among Nicaraguan immigrants and Costa Ricans in Costa Rica.
- To explore and measure the effect of socio-demographic factors, which contribute to the phenomenon of adolescent childbearing in Costa Rica.
- To determine whether Nicaraguan origin is an independent predictor of giving birth in adolescence in Costa Rica.

## 4 Methods

### 4.1 Material

The present study is based on the data of the most recent Population and Housing Census (*IX Censo de Población y Vivienda*) carried out in year 2000 in Costa Rica. The information gathered at the time of the census is available on the Internet (<http://censos.ccp.ucr.ac.cr/>) through the database of the National Institute of Statistics and Censuses of Costa Rica (*Instituto Nacional de Estadísticas y Censos*, or INEC).

The census moment, according to which people were either included or excluded from the census, was fixed at midnight of the 27<sup>th</sup> of June. That is, all those persons who were born after the census moment or died before it were excluded. In the census, the information was obtained by means of direct interviews that were carried out in every household with a qualified informant. 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. (INEC, 2004).

The material was chosen because it contains the latest population-based data from the country and thus has the advantage of covering the entire population, including migrants. Surveys that concentrate solely on reproductive health (such as the National Survey on Reproductive Health and Migration (*La Encuesta Nacional de Salud Reproductiva y Migración de 1999-2000*, or ESR-99) conducted in Costa Rica in 1999<sup>9</sup>) can offer more detailed information on sexual behavior and the underlying factors that lead to pregnancies, but are limited as to the number, characteristics and the representativeness of participants included in the sample.

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<sup>9</sup> Costa Rica is the only country in the world that has carried out a national survey related to reproductive health and migration (Mora, 2006).

## **4.2 Study population**

The target population included all Costa Rican and Nicaraguan-born women who at the time of the census were between 12 to 19 years of age, in spite the fact that adolescent pregnancies are often defined as those corresponding to women aged 15 to 19 years. Nevertheless, as pregnancy also occurs in younger cohorts and is the riskiest in girls below the age of 15 (WHO, 2004a), it was reasonable to include the younger adolescents in the study as well. All other nationalities were excluded from the analysis.

For the analysis, the study population was grouped into two; those who reported having gone through one or more live births, and those who reported having no children. Women who had failed to answer the question concerning the number of live births were excluded from the analysis (altogether 22.8% of women), since there is no comprehensive understanding of the reasons why non-response takes place.

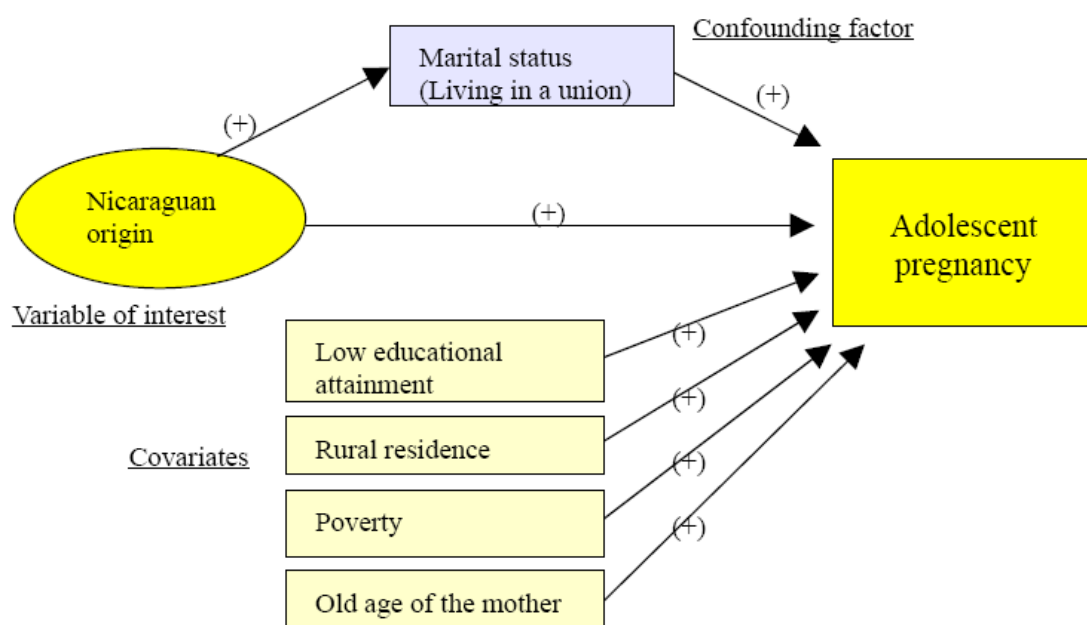
## **4.3 Covariates**

The covariates, besides country of birth, that were included in the analysis were age, educational attainment, marital status, level of urbanization of the place of residence and level of poverty. All these factors have been identified to be associated with the rate of adolescence pregnancy (Rowbottom, 2007, WHO, 2004a, Singh, 1998, Wulf and Singh, 1991). Figure 1, to be found on the following page, presents a hypothetical model which describes the presumed associations, based on the reviewed literature, between the chosen socio-demographic characteristics and the prevalence of adolescent childbearing.

In this study 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 (question no. 4 of the census). The age of the adolescent at the time of the census could take any value between 12 and 19 years, following the response to question number 3 of the

census sheet. The level of education was categorized into two groups, one composed of women who had completed primary school or less, and the other of women who had proceeded to secondary school or further (question no 11). When defining the level of urbanization of the place of residence, the term “urban” refers to districts that are categorized by the census as “urban” or “urban periphery”, and the term “rural” to districts categorized as “clustered rural” (*rural concentrado*) or “scattered rural” (*rural disperso*) (INEC, 2004).

**Figure 1** Hypothetical model of the interaction between socio-demographic factors and the prevalence of adolescent childbearing in Costa Rica.



Marital status was defined based on whether or not the adolescent women were living in a union according to question number 13 of the population census. In this study the term “union” refers to both legal marriages and consensual unions. Separated, divorced, widowed, and single women were defined as unmarried.

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. It is based on the information available in the censuses. (Feres and Mancero, 2001a). In Costa Rica, INEC has constructed the NBI index based on the Population and Housing Census of the year 2000. The index describes the lack of one to four basic material needs, which in Costa Rica were identified as access to decent housing, access to healthy life, access to knowledge, and access to other goods and services (Trejos Zolorzano, 2002).

In our study the indicator of poverty takes into account the dimensions of access to decent housing and a healthy life, following the methodology previously used by Collado (2000), 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). Because the indicator is based on the information obtainable from the census and on material belongings and the condition of housing, it obviously has some limitation as to its applicability (Feres and Mancero, 2001b). Nevertheless, it can be used to make rough distinctions between different socio-economic levels.



#### **4.4 Analysis**

First, an analysis was done to compare the socio-demographic characteristics of the study population and the excluded adolescents to see whether significant differences were present that could cause selection bias. A similar 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. Both comparisons were made using the earlier-mentioned socio-demographic variables. To facilitate the comparison between groups, the continuous variables of age and the level of poverty were here categorized to form smaller entities.

Secondly, we calculated how many per cent of the women in different socio-demographic groups had ever given birth during adolescence. This was done in order to gain knowledge of the prevalence of adolescent childbearing in Costa Rica, an especially to compare the prevalence of teenage pregnancies between the Nicaraguan immigrants and the Costa Rican youth. Again, comparisons were made using as a reference the country of birth and other covariates, of which age and the level of poverty were again categorized.

In the logistic regression analysis, the occurrence or absence of adolescent pregnancy was coded as the dichotomous dependent variable. In the first phase of the analysis, every socio-economic covariate was entered separately to see how all the factors alone were associated with adolescent pregnancy and what their contribution to the phenomenon of adolescent childbearing was. After the univariate analysis and based on its findings, a multivariate logistic regression analysis was conducted. At this stage, all the relevant covariates were entered at the same time to see how the odds ratios associated with the chosen socio-demographic characteristics differed when compared to the univariate model.

Lastly, an additional analysis was conducted to examine more closely the impact of marital status. The decision to make further investigations concerning this variable was

founded on existing knowledge of the strong relationship between marital status and adolescent childbearing, and the possible confounding that this might have caused. The confounding was controlled for by means of stratification, e.g., the effects of the main exposure (country of birth) and other socio-economic variables on the occurrence of adolescent childbearing were evaluated separately among the confounder categories; in other words the married and the unmarried adolescents. This additional stratified logistic regression analysis followed the same steps as the main analysis; first the exposure of interest was entered separately, and then at the same time with the other socio-demographic variables.

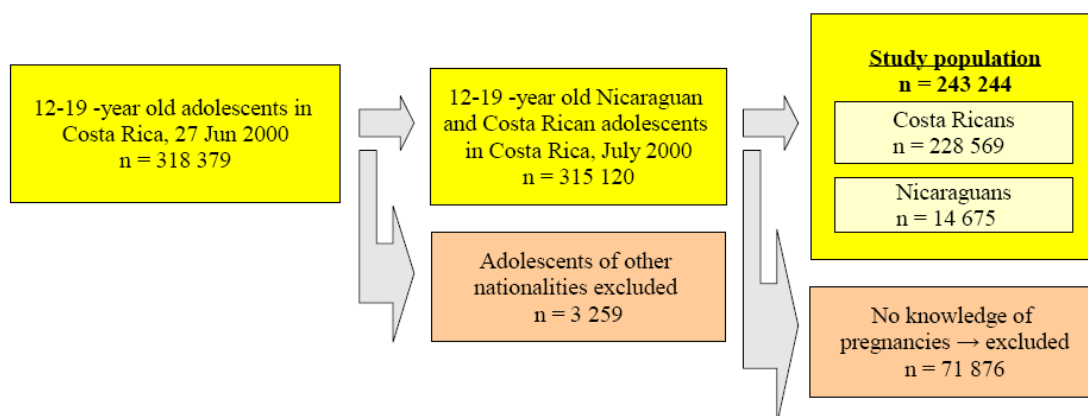
The results of the logistic regression analyses are presented as odds ratios and their confidence intervals (CI) and p-values. SPSS version 15.0 for Windows was used as the statistical software for all the analyses.

## 5 Results

### 5.1 Selection and characteristics of the included and the excluded adolescents

After all the exclusions, our study population included a total of 243 244 adolescent women, out of which 14 675 were Nicaraguan-born and 228 569 Costa Rican-born. Figure 2 shows the details and outcome of the inclusion process of the study participants.

**Figure 2** Outline of the inclusion process of study participants



The comparison of the characteristic of the study population and the excluded women reveals certain differences between the two groups of women, described in detail in table 1. As to the country of birth, there is no disparity, since the proportion of Nicaraguans among the excluded and the included shows practically no difference. The same goes for educational attainment and the number of unmet basic needs, as the distribution of both variables is fairly similar in both groups.

As was presupposed, over half of the excluded adolescents were young girls below the age of 15, compared to 35% of the study population. This reinforces the assumption made earlier, according to which very young girls might not be asked as eagerly about their reproductive history during the census interview in comparison to older

adolescents who seem more likely to have given birth than their younger counterparts.

**Table 1** Socio-demographic characteristics of the included and the excluded women of 12-19 years of age.

Socio-demographic variable	Included women ( <i>n</i> = 243 244)		Excluded women ( <i>n</i> = 71 876)	
	n	(%)	n	(%)
<b>Country of birth</b>				
Costa Rican-born	228 569	(94.0)	68 077	(94.7)
Nicaraguan-born	14 675	(6.0)	3 799	(5.3)
<b>Age (in years)</b>				
12-14	86 931	(35.7)	36 788	(51.2)
15-17	93 388	(38.4)	24 539	(34.1)
18-19	62 925	(25.9)	10 559	(14.7)
<b>Education</b>				
Primary school or less	125 752	(51.7)	38 799	(54.0)
Secondary school or more	117 492	(48.3)	33 097	(46.0)
<b>Degree of urbanization</b>				
Rural residence	102 464	(42.1)	29 204	(59.4)
Urban residence	140 780	(57.9)	29 204	(40.6)
<b>Poverty</b>				
0 unmet basic needs	146 335	(60.2)	44 939	(62.5)
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)
7-9 unmet basic needs	4 063	(1.7)	1 069	(1.5)
10 unmet basic needs	152	(0.0)	25	(0.0)
<b>Marital status</b>				
Unmarried	215 717	(88.7)	69 783	(97.1)
Married	27 527	(11.3)	2 093	(2.9)

A higher proportion of the excluded adolescents compared to the included were also unmarried, a finding that logically agrees with their young age. The excluded were also more likely to be from a rural setting than the adolescents that comprised the study population.

## 5.2 Characteristics of the included Costa Ricans and Nicaraguans

The Nicaraguans and Costa Ricans that made up the study population somewhat differed in their socio-demographic characteristics (described in table 2).

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

Socio-demographic variable	Costa Ricans ( <i>n</i> = 228 569)		Nicaraguans ( <i>n</i> = 14 675)	
	n	(%)	n	(%)
<b>Age (in years)</b>				
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)
<b>Education</b>				
Primary school or less	115 479	(50.5)	10 273	(70.0)
Secondary school or more	113 090	(49.5)	4 402	(30.0)
<b>Degree of urbanization</b>				
Rural residence	95 810	(41.9)	6 654	(45.3)
Urban residence	132 759	(58.1)	8 021	(54.7)
<b>Poverty</b>				
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)
<b>Marital status</b>				
Not in a union	205 453	(89.9)	10 264	(69.9)
In a union	23 116	(10.1)	4 411	(30.1)
<b>Health insurance</b>				
Insured	189 430	(82.9)	7 926	(54.0)
Uninsured	39 166	(17.1)	6 749	(46.0)

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 to 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 poverty more often than the local teenagers, as over two thirds of the 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.

Even though the health insurance status of the adolescent women was not included as a variable in the regression analysis, it is worth pointing out that only a bit over half of the Nicaraguan immigrants who entered the study were insured by some means, leaving the other half without insurance, and that almost one fifth of Costa Rican women did not have a health insurance.

### **5.3 Frequency of adolescent pregnancies**

Nicaraguan-born migrant women had nearly a threefold risk of having gone through an adolescent pregnancy when compared to Costa Ricans (for details see table 3). In the examined age group, 26% of Nicaraguans had gone through at least one pregnancy in contrast to 9.5% of Costa Ricans. When reviewing separately the group of adolescents who were not in a union, we could see that 3.8% of unmarried Costa Ricans were mothers, compared to 9.5% of unmarried Nicaraguan immigrants.

Predictably, pregnancies were concentrated among women who were in their late adolescence and were much fewer among the girls in younger age groups. Adolescents who had completed primary school or less were slightly more than two times more likely to have gone through a pregnancy, compared to the women who had proceeded to secondary school or further. The proportion of women who had given birth was slightly higher among women who resided in rural rather than urban areas.

As expected, the number of unmet basic needs was also positively associated with the adolescent pregnancy rate. The lowest prevalence was found in the group of women with no unmet basic needs. The proportion of girls that had gone through a pregnancy grew together with the number of unmet needs, reaching over 25% among the girls living with more than six critical deficiencies. Living in a union was also closely associated with adolescent pregnancy, as the percentage of adolescent mothers among the women living in a union was over 15 times higher than in the group of women defined as single.

**Table 3** Proportion of women who have ever given birth in the age group 12-19 years, according to socio-demographic characteristics in Costa Rica, 2000.

Socio-demographic variable	Total no. of women in group	Proportion of women ever given birth n	(%)
<b>Country of birth</b>			
Costa Rican-born	228 569	21 739	(9.5)
Nicaraguan-born	14 765	3 815	(26.0)
<b>Age (in years)</b>			
12-14	86 931	316	(0.4)
15-17	93 388	7 833	(8.4)
18-19	62 925	17 405	(27.7)
<b>Education</b>			
Primary school or less	125 752	17 867	(14.2)
Secondary school or more	117 492	7 687	(6.5)
<b>Degree of urbanization</b>			
Rural residence	102 464	12 804	(12.5)
Urban residence	140 780	12 750	(9.1)
<b>Poverty</b>			
0 unmet basic needs	146 335	9 700	(6.6)
1-3 unmet basic needs	76 687	11 317	(14.8)
4-6 unmet basic needs	16 007	3 478	(21.7)
7-9 unmet basic needs	4 063	1 020	(25.1)
10 unmet basic needs	152	39	(25.7)
<b>Marital status</b>			
Not in a union	215 717	8 707	(4.0)
In a union	27 527	16 847	(61.2)

#### 5.4 Logistic regression analyses: The odds of giving birth during adolescence

Table 4 presents the results of the univariate logistic regressions. They show that Nicaraguan immigrants had increased odds of adolescent pregnancy of 3.34 (CI 3.21, 3.48), compared to Costa Ricans. Higher age, low educational attainment, rural residence and poverty were also identified as significantly increasing the odds of having gone through an adolescent pregnancy. Again, being in a union was found to be the strongest predictor of adolescent pregnancy, as the odds of having given birth were 37.50 (CI 36.31, 38.74) times higher for married adolescent compared to unmarried girls.

**Table 4** Univariate results of the logistic regression

Socio-demographic variable	Ever given birth during adolescence		
	Odds Ratio	(95% CI)	P-value
Country of birth			
Costa Rican-born	1.00		
Nicaraguan-born	3.34	(3.21, 3.48)	.000
Age	2.01	(1.99, 2.03)	.000
Education			
Secondary school or more	1.00		
Primary school or less	2.37	(2.30, 2.43)	.000
Degree of urbanization			
Urban residence	1.00		
Rural residence	1.43	(1.40, 1.47)	.000
Poverty	1.27	(1.27, 1.28)	.000
Marital status			
Unmarried	1.00		
Married	37.50	(36.31, 38.74)	.000

Based on the available data, it is not possible to say whether the strong relationship between union and childbearing owes to the fact that most pregnant adolescents enter a union with the prospective father of their unborn child or if unions are formed first and



shortly followed by pregnancies. It is clear, though, that the connection between these two phenomena is very strong. On the grounds of this strong association between union and childbearing, marital status was not included in the adjusted model of the logistic regression analysis. Instead, all the other variables were included in the multivariate analysis.

In the multivariate logistic regression model, the odds of adolescent pregnancy explained by Nicaraguan migration decreased to 1.88 (CI 1.79, 1.97), when controlling for age, educational attainment, the level of urbanization and the level of poverty (see table 5). Age, low educational attainment, urban residence and poverty were also significant predictors of adolescent pregnancy.

**Table 5** Multivariate results of the logistic regression

Socio-demographic variable	Ever given birth during adolescence		
	Odds Ratio	(95% CI)	P-value
Country of birth			
Costa Rican-born	1.00		
Nicaraguan-born	1.88	(1.79, 1.97)	.000
Age	2.20	(2.17, 2.22)	.000
Education			
Secondary school or more	1.00		
Primary school or less	3.91	(3.78, 4.05)	.000
Degree of urbanization			
Rural residence	1.00		
Urban residence	1.11	(1.07, 1.15)	.000
Poverty	1.22	(1.21, 1.23)	.000

The odds of having gone through a pregnancy during adolescence were notably higher among those who had only received primary school education or less compared to those who had proceeded to secondary school, the odds ratio being 3.91 (CI 3.78, 4.05). When comparing the adolescents of urban and rural residence, 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 poverty increased

the odds of adolescent pregnancy by approximately 20%. For every one year increase in age, the odds of having gone through a pregnancy increased by a factor of 2.20 (CI 2.17, 2.22). Of all the variables included in the multivariate analysis, age thus plays the most significant role as a predictor of adolescent pregnancy, together with educational attainment.

When stratifying the logistic regression analysis to cover the married and the unmarried adolescents separately, the first finding was that the importance of Nicaraguan migration as a predictor of adolescent childbearing differed largely between the groups of women. Details of the stratified logistic regression for both the married and the unmarried adolescents are found in table 6. In the crude stratified regression model, unmarried Nicaraguan women had increased odds of 2.69 (CI 2.51, 2.88) of having given birth during adolescence when compared to Costa Ricans. This odds ratio was notably lower among married women, being only 1.17 (CI 1.10, 1.26).

When controlling for age, educational attainment, urbanization and the level of poverty, the odds of adolescent pregnancy explained by Nicaraguan migration decreased to 1.70 (CI 1.57, 1.84) among the unmarried adolescents and to only 1.10 (CI 1.02, 1.18) among the women who lived in a union. In both groups of women age, low educational attainment, urban residence and poverty were significant predictors of adolescent pregnancy. Nevertheless, the odds ratios associated with all of these variables were more accentuated among those who had not formed a union.

For every one year increase in age, the odds of having gone through a pregnancy more than doubled among the unmarried, and grew by a factor of 1.50 (CI 1.47, 1.53) among the married. Unmarried adolescents from urban areas were more likely to be mothers than their rural counterparts. The difference in likelihood was far smaller among married girls. The odds of adolescent pregnancy also grew together with increasing numbers of unmet basic needs among both the married and the unmarried. The unmarried adolescents who had only completed primary school or less had increased odds of 3.47 (CI 3.30, 3.65) of having given birth in adolescence, compared to those girls who had proceeded to secondary education. The same relationship was

found among the married adolescents.

**Table 6** Stratified logistic regression analysis, univariate and multivariate models for married and unmarried adolescent women in Costa Rica, 2000.

Socio-demographic variable	Model 1 <sup>1</sup>		Model 2 <sup>2</sup>	
	OR	(95% CI; p-value)	OR	(95% CI; p-value)
<b>Unmarried adolescents</b>				
Country of birth				
Costa Rican-born	1.00		1.00	
Nicaraguan-born	2.69	(2.51, 2.88; .000)	1.70	(1.57, 1.84; .000)
Age			2.10	(2.07, 2.13; .000)
Education				
Secondary school or more			1.00	
Primary school or less			3.47	(3.30, 3.65; .000)
Degree of urbanization				
Urban residence			1.00	
Rural residence			1.42	(1.35, 1.50; .000)
Poverty			1.19	(1.17, 1.20; .000)
<b>Married adolescents</b>				
Country of birth				
Costa Rican-born	1.00		1.00	
Nicaraguan-born	1.17	(1.10, 1.26; .000)	1.10	(1.02, 1.18; .012)
Age			1.50	(1.47, 1.53; .000)
Education				
Secondary school or more			1.00	
Primary school or less			1.74	(1.64, 1.84; .000)
Degree of urbanization				
Urban residence			1.00	
Rural residence			1.09	(1.03, 1.15; .002)
Poverty			1.06	(1.04, 1.07; .000)

<sup>1</sup> Adjusted for migration only

<sup>2</sup> Adjusted for migration, age, educational attainment, degree of urbanization and poverty

## 6 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 ultimate objective was to determine whether Nicaraguan origin per se was an independent predictor of adolescent pregnancy in Costa Rica.

The findings indicate that there indeed exists a difference in the prevalence of adolescent childbearing depending on the country of birth, and that being a Nicaraguan migrant increases the risk of giving birth during adolescence. 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 other socio-demographic variables that were included in the adjusted model. In the univariate analysis the odds ratio stood at 3.34, however, which suggests that a large proportion of the higher prevalence of pregnancy among the Nicaraguan immigrants can be explained by the poorer socio-economic situation of the migrants.

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 in Costa Rica, either as the baseline characteristic or as a result of adolescent pregnancies. Overall, most adolescent pregnancies are either preceded or followed by consensual union or marriage.

Another interesting finding is the result of the stratified analysis concerning unmarried adolescents. Those Nicaraguan adolescents who at the time of the census did not live in a union had higher odds of having given birth during adolescence than unmarried Costa Ricans, even after adjusting for socio-demographic variables. Unmarried

Nicaraguans therefore had a higher probability of being single parents than unmarried Costa Ricans.

### **6.1 Validity of the results**

The study population encompasses all the adolescent girls of Costa Rican and Nicaraguan origin who at the time of the census moment had a regular residence in Costa Rica (INEC, 2004). The definition of regular residence in Costa Rica therefore leaves out those migrants who enter the country on a temporary basis. Also, more than twenty per cent of eligible adolescents had to be excluded because no information about their possible childbearing was available.

According to Rodríguez Vignoli (2005), non-response is a common feature encountered in the use of census data. The most probable reason for non-response is the unpreparedness or obliviousness of the census interviewer or the qualified informant of the household answering the census interview. In other words, the interviewer simply does not receive reliable knowledge of the reproductive history of the women that form part of the household. Some other usual problems have been identified in the reporting of the number of children in censuses: namely, women tend to omit some of their children, the enumerators can erroneously classify women into groups they do not belong to and feel embarrassed about making questions concerning the reproduction of young girls (United Nations, 1983). Non-response could also be the result of stigma and shame that adolescent childbearing can cause for the young woman and her family, which can in turn make it tempting to conceal information about pregnancies.

In view of the differences that were found between the excluded and the included adolescents, the study population somewhat differs from the originally intended. The selection process which lead to the inclusion of only those women of whom information concerning previous pregnancies was available had as a consequence the exclusion of almost 23% of the target population. The comparison that was made

between the included and excluded showed that a large proportion of the girls that were left out of the analysis were under the age of 15 and only a small proportion was in their late adolescence. There is thus a strong possibility that most of the excluded women have never given birth due to their young age, which in turn could overestimate the rate of adolescent pregnancy in the study population as a whole. In other words, we are not able to conclude beyond any doubt that the proportion of women who have ever given birth during adolescence is exactly the same in the target population as observed in the study population.

However, it is not very likely that the observed differences between the excluded and the included adolescents would jeopardize the credibility of the finding according to which Nicaraguan origin is associated with a higher prevalence of adolescent pregnancy in Costa Rica. Nicaraguans comprise approximately five per cent of both the excluded women and the study population, whereupon it is not very likely that the exclusion of a part of the target population would cause much variation in the observed relative likelihood of adolescent pregnancy between the Nicaraguan-born and the Costa Rican-born adolescents.

The estimated omission rate of the Costa Rican census is 2.9%, which is considered to be very small (Proyecto Estado de la Nación, 2002). The rate was found to be somewhat higher among the foreign population and in the particular case of Nicaraguan-born women of reproductive age it was estimated to be 3.85% (CCP and INEC, 2002), which could be due to the mobility of the migrant population, their irregular situation and hard-to-reach living arrangements. In view of available information, it is safe to say that 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 of the study. Obviously, some aspects of the composition and characteristics of the population residing in Costa Rica have changed during the ten years following the census, but the overall setting related to migration remains fairly unchanged.

## **6.2 Limitations of the study**

Unfortunately, the present study has certain limitations that need to be acknowledged, mainly due to the restrictions imposed by the quality of the census data. The information gathered at the time of the population and housing census is not designed to answer extensively questions concerning adolescent pregnancy and fertility in general. Therefore, it does not support the comprehensive examination of all the factors that would ideally be included in the analysis and that could be associated with the rate of adolescent pregnancy, such as the already mentioned availability of sexual education and family planning services, family relations, substance use and previous history of sexual coercion and violence (see, for example, Lundberg et al., 1990, Berglund et al., 1997, Rome et al., 1998, Fergusson et al., 1997 and Boyer and Fine, 1992). It is also worth mentioning that unsafe abortions and miscarriages are areas beyond the scope of the census.

Another defect of the census data is that no chronological order can be constructed of different events and phenomena, which is a common problem in cross-sectional studies and could cause temporal bias. On that account, the causal relationship between adolescent pregnancy and the exposures is not known, e.g., we are not able to firmly determine whether early childbearing is the cause or the consequence of early union formation, or even poverty and low educational attainment. It is very likely that the association can and does work both ways, but further examination of the sequence of events would give more insight on the implications that adolescent childbearing can have on the lives of young girls in Costa Rica.

## **6.3 Relation with previous studies**

It has been mentioned previously that there is very little knowledge of the relationship between migration and adolescent childbearing, and that most studies have only concentrated on determining whether the rate of adolescent pregnancy differs between the different generations of immigrants and the native population. These types of

studies have mainly been conducted in the United States, which has a long tradition of receiving labor migrants. The 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 (Madan et al., 2006, Landale and Hauan, 1996, Brindis et al., 1995, Buescher, 2003, van Enk et al., 2000, Narring et al., 1996, Botting et al., 1998).

In relation to these studies the situation in Costa Rica is similar, as the prevalence of adolescent pregnancies was higher among the migrant population than the local adolescents. 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.

The findings of this research are also mostly in accordance with previous studies that have examined the underlying factors behind adolescent childbearing in Latin America and elsewhere in the world. In Latin America low educational attainment has been found to be associated with adolescent fertility for example in Nicaragua (Zelaya et al., 1997, Castillo, 2007), Brazil (Gupta and Leite, 1999) and Chile (Rodríguez Vignoli, 2005). Also, many multi-country analyses based on recent Demographic and Health Surveys show that low levels of school attendance, as well as socioeconomic deprivation, increase the risk of adolescent pregnancies all around the globe (Singh, 1998, Wulf and Singh, 1991, Rani and Lule, 2004). This study thus corroborates the findings of previous analyses and consolidates existing information of the reasons that expose young adolescent women to early childbearing.

Contrary to the findings of the reviewed multi-country analyses, 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. Globally, it has been found that rural residence exposes young girls to adolescent pregnancies (Singh, 1998, Castillo, 2007, Wulf and Singh, 1991). Generally, the urban setting is thought to



offer socio-economic advantages and lower levels of fertility, but the averages hide a great deal of disparity that is present within the cities. According to Montgomery et al. (2003), the urban poor often suffer from various disadvantages and live in conditions that rather resemble those of rural inhabitants.

In this study marital status and the obtained findings that relate to it pose an analytical dilemma. Being in a union can be called a confounder, as it is a factor that is related to both the exposure and the outcome, in this case Nicaraguan origin and the occurrence of adolescent pregnancy, and accounts for some of the observed relationship between the two. Marital status poses a problem for this study, and many other census or survey based analyses, because it is not possible to determine, on the basis of the data available, if the relationship is due to the fact that early unions tend to be followed shortly by pregnancies or because young women who become pregnant during adolescence often form unions with the prospective fathers.

Various studies carried out in different parts of Latin America have found that among young women, sexual initiation, early union formation and childbearing are very closely interlinked in Latin America (Wulf and Singh, 1991, Remez et al., 2008). According to this study, Costa Rica is no exception. The findings of an Argentine survey regarding adolescents suggests that unions are formed as an aftermath of pregnancies, which are often the result of less formal relationships (Gogna et al., 2008). If this is the case also in Costa Rica, which is probable considering the substantially high odds ratio related to married status 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 pregnancy, like in the univariate analysis, even if most of the association was the result of unions that took place posterior to pregnancies.

#### **6.4 Alternative explanations to the differing prevalence of adolescent childbearing**

The fact that the probability of adolescent pregnancy remains higher among the Nicaraguan adolescents, even after adjustments for other socio-demographic variables, requires further consideration. A number of factors that were not included in the analysis may concurrently render Nicaraguan immigrants more prone to early pregnancies than their local counterparts.

Cultural factors may influence the sexual and reproductive behavior of migrants, as migrant populations have been found to maintain the patterns of fertility of their countries of origin, at least until an adaptation process takes place (Andersson, 2004, Kulu, 2005, Abbasi-Shavazi and McDonald, 2000). If a comparison is made between the Nicaraguan adolescents in Nicaragua and the migrant adolescents in Costa Rica, we can see that the proportion of adolescent mothers in the age group of 15-19 years is even higher among the migrants in Costa Rica than among the adolescents living in Nicaragua (34.4% in Costa Rica versus 20,6% in Nicaragua) (INEC, 2002b). In view of this, it is highly likely that the increased odds of pregnancy present among the migrants in Costa Rica are not only a product of cultural diversity, but rather an expression of the complex interaction between health and migration, as described by Carballo and Mboup (2005), and discussed earlier in the review of the relevant literature.

Mora (2003) points out that children, adolescents and women are exposed to many challenges associated with their reproductive lives during all stages of the migration process, such as sexual coercion and violence, unwanted pregnancies, the impossibility to negotiate safe sex, the contagion of sexually transmitted diseases, prostitution and even death. The reproductive health status of migrants, in this case the levels of adolescent childbearing, can depend on a number of factors ranging from the use and access of reproductive health services to the level of social exclusion and marginalization migrants experience in the receiving country (Mora, 2006, UNFPA,

2006).

The legal status of migrants can determine their access to public health services (IOM et al., 2005). Migrants in an irregular situation are most often affected by restrictions in their access to these services, which can contribute to their vulnerability. In Costa Rica, only emergency health services are offered universally to all inhabitants (Ley de Migración y Extranjería, article 25, 2006). Problems arise when accessing preventive health services, such as those related to family planning and the availability of contraceptives, which are denied from uninsured persons, such as those without a residency permit (Patiño et al., 2008). A recent survey carried out in Costa Rica concerning accessibility of contraceptives among women of reproductive age confirmed that the principal barrier to access was not having insurance (Masís, 2004). Considering this, it is no wonder that the reported use of contraceptives among migrants in the country is lower than that of the local women (Chen Mok et al., 2001). For those who do not have a health insurance, the only option is to buy contraceptives in private pharmacies, which can be too expensive (Goldade, 2007).

Nevertheless, according to the Code of Childhood and Adolescence (*Código de la Niñez y la Adolescencia*) adopted in Costa Rica in February of 1998, all children and adolescents under the age of 18 have the right to benefit from free medical care on behalf of the State of Costa Rica, irrespective of the minor's race, gender, social condition or nationality. The same law states that children and adolescents have a right to social insurance on behalf of the Costa Rican Social Security Fund (*Caja Costarricense de Seguro Social*, or CCSS), if this is not offered by another regime (*Código de la Niñez y Adolescencia*, articles 41 and 42, 1997).

In other words, all adolescents under the age of 18 residing in Costa Rica should have access to health care through the insurance system of the State. However, the insurance coverage among the immigrants of the study was very low (approximately 50%). The results of the 2008 Youth Survey indicate the same, showing a coverage of 55.3% in the sample of 15-35-year-old Nicaraguan migrants (Consejo Nacional de la Política Pública de la Persona Joven, 2008). This could be due to a lack of information

among the migrants and/or the service providers regarding this right to insurance and health care. Many of the older adolescents (18 and 19 years of age) probably do not have health insurance, as they are likely to work in the informal sector (Goldade, 2007).

Overall, studies have shown that migrants tend to make lower use of health services than the local population. In Costa Rica, the results of the reproductive health survey carried out in 1999 (ESR-99) demonstrate this tendency among adult immigrant women. According to the survey (Chen Mok et al., 2001), 66% of Nicaraguans used services during the previous year of the study, compared to 83% of Costa Ricans. In interview studies completed in the country, some irregular migrants have reported fear of deportation to be a reason not to approach the services, which they do only in cases of emergency, such as childbirth (Díaz Fernández, 2004, Goldade, 2007). Also, some migrants do not consult services in fear of being denied attention, and the fear of discrimination and unfriendliness towards them from part of the staff of health facilities. Sadly, these fears are based on real experiences that are reported by women in interviews. (Goldade, 2007, Acuña González, 2003).

The provision of sexual education as a part of the educational curriculum has been a debated theme in Costa Rica, like in most Roman-Catholic countries. The country has seen the appearance of various legislations, documents and proposals in the area of sexual education (Araya Umaña, 2003). Most, if not all of them, have faced opposition of the Episcopal Conference, and have thus misfired in their mission to reduce the number of adolescent pregnancies in the country. On top of this it seems that both teachers and parents have difficulties in addressing these issues, leaving the children and adolescents with lack of true and accurate information (Proyecto Estado de la Nación, 1998). Considering the lower levels of educational enrollment of Nicaraguan migrant children compared to Costa Rican children in both primary (79% versus 95%)

and secondary level (45% versus 70%)<sup>10</sup> (Marquette, 2006), there is a strong possibility that the level of knowledge regarding sexual matters and the prevention of pregnancy is even poorer among migrant youth, compared to local adolescents.

Experiences related to the migration process itself may also influence the reproductive behavior of migrant adolescents. According to Martine et al. (2001), separation from one's family and culture can increase the risk of unprotected sexual relations, which may then lead to unwanted pregnancies. An interview-based study carried out in different migrant populations in Asia discovered that emotions such as loneliness, homesickness and the need to belong to a community can influence the decision-making process of migrants when dealing with their sexual needs. Furthermore, these decisions are often made in a context of dependence on others, which can make migrants susceptible to unsafe sex and unable to negotiate the terms of their sexual relationships. (Wolffers et al., 2002).

Migrant women may also feel that they lack other opportunities in life besides that of motherhood. For young women from disadvantaged situations, teenage childbearing does not seem to make a big difference in the future expectations of young women (Furstenberg, 1998). It is noteworthy though that, according to this and other studies, Nicaraguan adolescents form unions more frequently than Costa Rican youth, which could point to selective migration of adolescents who already live in unions (Rosero-Bixby, 2001). This pattern of higher levels of union (especially consensual union) persists in older ages as well (Rosero-Bixby et al., 2002).

Another aspect worth mentioning, although most likely not a defining factor when explaining the differing prevalence of adolescent childbearing between the two study populations is the possibility of easier regularization through having a child in Costa Rica. All children born in the country are automatically registered as Costa Rican

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<sup>10</sup> Official enrollment estimates only take into account Nicaraguan born children of Nicaraguan migrants. This is due to the fact that children born to Nicaraguans in Costa Rica are registered as Costa Ricans.

citizens and this can be used as a guarantee of no deportation by women in irregular situations, as it is very unlikely for a mother of a national to be deported (Goldade, 2007). Obviously this is a poorly studied phenomenon, but some observations have been made (Díaz Fernández, 2004).

As can be observed, there is no one truth to the relationship between adolescent childbearing and migration. The circumstances that migrants face in their countries of origin and destination before, during and after the migration process can all have an impact on the health outcomes of these mobile populations.

### **6.5 Public health implications**

In Costa Rica, there has been a general lack of information about the migration phenomenon and its implications to the country, which has contributed to the emergence of various myths, most of them based on negative images, associated with the movement of Nicaraguans to Costa Rica. For long the migration process was viewed by the general public and the public administrators as a phenomenon that was crippling the country's welfare system, and especially the health services, rather than contributing to the economic development of the nation. This and other myths have been described and broken down repeatedly by various researchers (for more details, see for example Sandoval García, 2003, 2007, Cortés Ramos, 2003). In spite of these efforts, the antagonism towards Nicaraguan migrants keeps on hindering the public response to their specific reproductive health challenges.

The general lack of information about migration and the negative attitudes towards Nicaraguan migrants in Costa Rica make it important to generate truthful information about the immigrants that enter the country. On account of this, the identification and recognition of the determinants that lead to adolescent pregnancies is necessary in order to have a more coherent picture of the phenomenon of early childbearing in Costa Rica and to act upon it. The findings of this study have shed light to this

question and made it clear that more attention needs to be paid to the circumstances that young immigrants face in relation to educational possibilities and their access to social security and health services.

Even though the vast majority of adolescent childbearing in Costa Rica takes place in unions, the implications of pregnancies that happen outside marriage (34% of all adolescent pregnancies in Costa Rica) can be more problematic than those of married mothers. The social context of Latin America, which generally does not approve of sexual encounters and pregnancies outside marriage, can generate social discrimination towards young single mothers (Singh, 1998). The economic situation of single 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 (Rodríguez Vignoli, 2005). The most hazardous cases of single motherhood are those corresponding to very young girls, in most cases a result of incest or sexual abuse, that by default have serious consequences for these young mothers' psychological, social and medical wellbeing.

Also, pregnancies that occur to adolescent girls are often unplanned or unwanted and can lead to them being voluntarily ended by means of induced abortions, and even more so in the case of unmarried adolescents. Current legislation in Costa Rica bans the procedure except in cases where the mother's life or health is at risk (Código Penal, article 121, 1970), but only a few legal terminations of pregnancy are actually carried out. According to recent estimations of the incidence of induced abortions in Costa Rica, the women who in their majority resort to this procedure 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 the total number of induced abortions in the country stood at roughly 27 000 and that some 30% of those women who chose this option suffered from medical complications. (Gómez Ramírez, 2008). Luckily, this is not reflected in the rate of maternal mortality, which means that illegal abortion in Costa Rica is, by and large, a safe procedure.

In Costa Rica, interviewed unmarried adolescent mothers say to have postponed prenatal controls in order to hide their pregnancies, and admit to having feelings of guilt and rejection towards their condition (Rodríguez Rojas et al., 2000, Rojas Barquero and Hidalgo Vargas, 2000). These feelings of shame, denial and confusion, hiding the signs of pregnancy and the possible controversies that adolescents can experience with 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 (Makinson, 1985).

The findings of this study indicate that among the unmarried adolescents, Nicaraguan migrants were more likely to have given birth than Costa Ricans and were thus more in risk of single motherhood than their local counterparts. In light of the remarks made above about the possibly fragile situation of unmarried mothers in Latin America, and taking into account the vulnerability that immigrants face because of their status and the hostile environment they often encounter in Costa Rica, it would be recommendable to draw more serious attention to the sexual education and to the accessibility of preventive reproductive health services of young and single Nicaraguans in Costa Rica. Intensified instruction and easily available contraceptive measures could go a long way in preventing unplanned and unprotected motherhood among the immigrant population.

Overall, it is clear that no one intervention can alter the prevalence of adolescent pregnancy among the Nicaraguan migrant population in Costa Rica. The issue of adolescent childbearing should rather be addressed using a comprehensive approach, which would take into consideration the human rights, such as the right to health, and the special needs of this population. In light of the findings of this study, more attention should be paid to reinforcing the participation of migrants in the educational and insurance systems to strengthen their capacity and possibilities to make conscious decisions about their reproductive lives.



## 6.6 Further research proposals

The unanswered questions of adolescent fertility and sexual behavior that this study was not able to address could be further investigated with the data of the Youth Survey (*1era Encuesta Nacional de Juventud Costa Rica 2008*) carried out in Costa Rica in 2008, the results of which have not yet been thoroughly explored. The survey includes a sample of migrants and information on matters such as pregnancies, the use of contraceptives and services, relationships and sexual and reproductive knowledge, and could be of great use in better understanding the reproductive behavior of the youth in Costa Rica.

It would be interesting to further investigate the phenomenon of adolescent pregnancy in Costa Rica using qualitative methods. It is important to explore the perceptions of adolescent women about the reasons that lead to the occurrence of adolescent pregnancies and the challenges young women face when taking decisions about their sexual and reproductive lives, especially during and after migration. In order to better understand the differences in the prevalence of adolescent childbearing in the context of migration movements, it would be useful to examine how young women of both Nicaraguan and Costa Rican origin perceive and experience the accessibility (or the inaccessibility) and the attractiveness of the health services offered by the State.

Similarly, at this point of time, there is no real knowledge of the repercussions that childbearing at a young age has on these young girls in terms of health, social relationships and finances. This is a subject that has not been systematically studied in Costa Rica, and would be informative as to whether and what kind of public health approached would be necessary to improve the situation of those young women that are faced with early childbearing either with or without intent.

## **7 Conclusions and recommendations**

The findings of this study give insight to the phenomenon of adolescent childbearing in Costa Rica and show that the rate of teenage pregnancy among young women in Costa Rica is not merely a question of country of birth, but a result of various socio-demographic and cultural factors and, presumably, some particular conditions of vulnerability associated with the migration process. As a consequence, the proportion of adolescent mothers is particularly high among the Nicaraguan migrants, as approximately one quarter of all immigrants adolescents of the study had given birth to at least one child.

The data of the population and housing census has some drawbacks and creates certain limits to the exploration of the study subject, mainly because of the limited scope of the available information and the impossibility to establish temporal sequences between events. Nevertheless, it is the only available source of data concerning adolescent childbearing in Costa Rica and has advantage of covering the entire population-base, contrary to surveys. Of course, if the phenomenon was to be examined more elaborately, which is recommendable considering the associated social and health implications, there would be a clear need to create more suitable instruments for the collection of the relevant data.

Owing to the observed limitations of the census data, further research is thus needed to understand what factors, other than those associated with socio-demographic determinants, such as the accessibility of health services, the psycho-social implications of the migration process and the specific working conditions of young immigrants, contribute to the differing prevalence of adolescent childbearing in Costa Rica. It would also be recommendable to repeat the present study after the next population and housing census has taken place to keep track of the possible changes in the prevalence of adolescent childbearing and the socio-economic conditions of the local and immigrant adolescents in Costa Rica.

In review of the results of this study, more attention should be paid to the educational and working possibilities of young immigrants in Costa Rica in order to improve their socio-economic wellbeing and thereby reduce this group's rate of adolescent childbearing. After all, poverty has been identified as the most important determinant of poor health (Lindstrand et al., 2006), which makes the reduction of poverty an essential component of any public health strategy. Other targeted public health interventions could include voluntary insurance quotations for irregular migrants and the universal provision of free family planning services to everyone, regardless of insurance status.

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