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Determinants of contraceptive use in Nicaraguan female teenagers: Evidence from the Demographic and Health Survey 2011/2012

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Abstract

Despite the decreasing fertility rates in Central America, teen pregnancies continue to be an issue in some countries of the region. Among those countries, Nicaragua has the highest occurrence of teen pregnancies in the region. Teen pregnancies are linked with higher maternal morbidity, social isolation and marginalization of teen mothers. In order to target pregnancies, contraceptive usage in teens must be researched and understood. This research studies the determinants of contraceptive usage among female Nicaraguan teens.

Literature suggests that in Nicaragua contraceptive use is related to background characteristics such as residence, religion, education, parity and exposure to violence (physical, psychological and sexual). Also, knowledge of contraception and sexual education can influence teen`s contraceptive usage. Moreover, Nicaragua has traditional gender norms that celebrates men having sex at an early age but expects women to remain virgin until marriage. Previous research links these opposing social norms to the use of contraception among female Nicaraguan teens. Perceived control over their health care and the age of partner were also found in literature as influencing variables over teen`s decision making process. The Reasoned Action Approach (RAA) was used as a framework to construct the conceptual model of this thesis since it relates background characteristics, attitudes, perceived norms and perceived behavioral control to the likelihood of a behavior being performed.

Quantitative methods were used to estimate the effects of background characteristics, attitudes, perceived social norms and perceived behavioral control on the odds of using contraception. The latest Nicaraguan Demographic and Health Survey was used as source of data to construct the model. Logistic regression was used as the estimation method.

The results show that some background characteristics account for differences in the use of contraception. Parity, education and previous exposure to violence have statistically significant effects on the odds of using contraception among female teens. However, knowledge of contraception, sexual education and the age of partner were not found to have an effect on the odds of using contraception for partnered female teens.

RAA is a useful tool to research sexual and reproductive behavior on teen, however male`s perceptions and beliefs have to be taken into account for further research. The results of this study and their policy implications should be taken into account for future research and programs targeting teenagers.

Keywords: Contraception, teenager, Nicaragua, sexual and reproductive behavior, Reasoned Action Approach.

Preface

When I had to choose a topic for my master thesis, many possibilities run through my mind (some crazier than other). However, all of them had a common thread: I wanted to research younger people in Nicaragua. I had previously worked with teens and young in Nicaragua, and I had witness the hardships that many had to deal with. Among the issues I had seen, teen pregnancies were a recurrent one. I met many teens that had been pregnant, and had to raise their child by themselves. They had to leave school and find any job that would allow them to survive. I would always think about the implications and consequences that pregnancies have on female teens in Nicaragua, and how not enough efforts were being done to understand and change it.

Being also Nicaraguan I was well aware of the perceptions and cultural constructs surrounding sexual and reproductive health and rights (SRHR). SRHR is not an easy topic in Nicaragua, which hinders any research or programs targeting teen pregnancies or contraceptive use.

SRHR is an overdue conversation in Nicaragua, and I hope teenagers participate of it because their perceptions and beliefs are truly important to the topic. I also hope this research contributes to discussion and improvement of SRHR for Nicaraguan teens.

Finally, I wanted to thank my supervisor, Billie de Hass for helping me research this topic. Her knowledge on SRHR was guiding insight for this research. Thanks to my classmates who cheered me up in the ups and downs; they are a true source of inspiration. Specially, thanks to my parents that have been my strongest foundation in this process.

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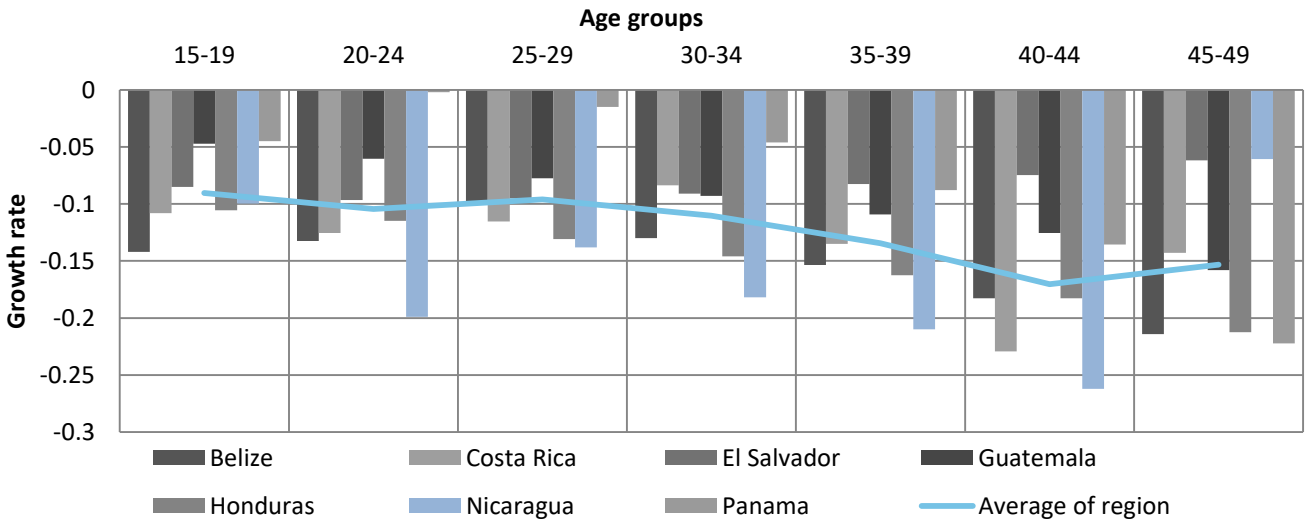
1.1 Background

In the past years, Central America has experienced a decrease in the overall fertility rates from 6.7 children per woman in 1960, to 3.3 in 2000 and 2.4 in 2014 (United Nations, 2016) . However, a comparison of age-specific fertility rates displays differences between age groups; Figure 1 shows that teenagers, aged 15-19 old, have experienced the smallest drop in fertility compared with other age groups in the region.

Figure 1: Evolution of age specific fertility rates in Central America from 1995 to 2005

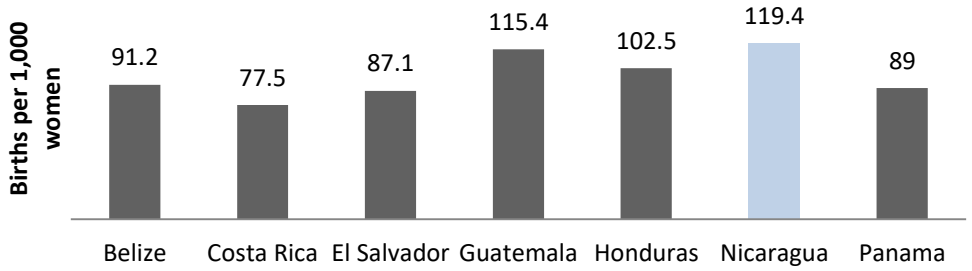


Source: (United Nations, 2008)

The age group 15-19 years old, or teen age years, is of critical importance since it marks the start of the reproductive age hence their experiences and decision-making process will affect their future sexual and reproductive life-course (Halpern, 2010). Furthermore, these decisions and experiences can have lifelong consequences on their sexual and reproductive health. Research has shown that teen pregnancy is linked with higher risk of maternal morbidity including ectopic pregnancy, pre-clampsia, eclampsia, pre-term labor, premature rupture of membranes and cesarean delivery (Rasheed, Abdelmonem, & Amin, 2011). In a large population cohort study, Chen et al. (2007) found teenage pregnancy to be linked with higher neonatal mortality. Likewise, others consequences documented consequences of teenage pregnancy are stigmatizations and isolation of the teen mother which can lead to depression (Wiemann, Rickert, Berenson, & Volk, 2005).

Figures 2 focuses on this crucial age group and displays the fertility rates by country for the period 2000-2005. In the Central American region, Nicaragua is the country with the highest fertility rate in teenagers. Moreover, Nicaragua has the highest occurrence of teen pregnancy of the region with 28% of 18 year old or less being pregnant or already give birth (Williamson, 2013).

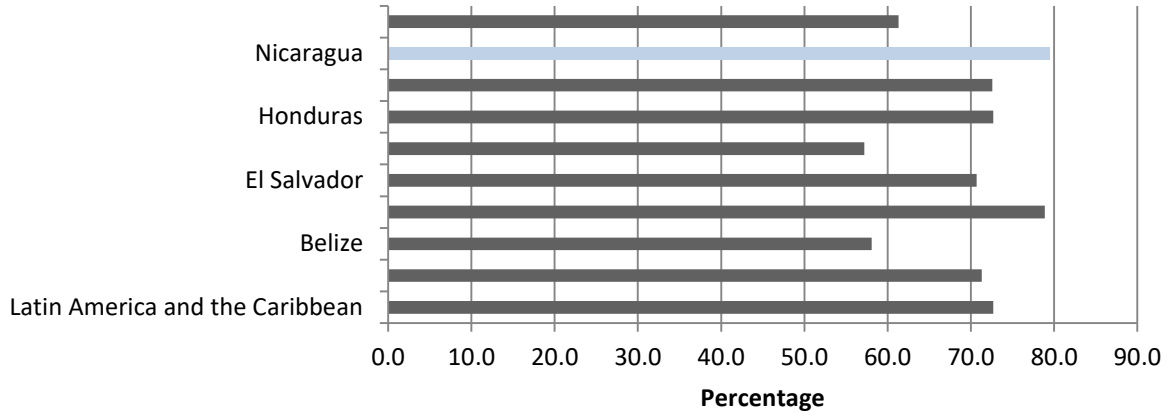
Figure 2: Teenager fertility rate



Source: (United Nations, 2008)

To understand teen pregnancy, is important to take both nuptiality and contraceptive prevalence into account (Hill, 1992). The prevalence of contraceptive is "the percentage of women who are currently using, or whose sexual partner is currently using, at least one method of contraception, regardless of the method used" (WHO, 2017). As shown in Figure 3, the contraceptive prevalence of Nicaragua for women aged 15 to 49 years old is actually higher than most countries in the region.

Figure 3: Contraceptive prevalence women aged 15-49 (any method)



Source: (WHO, 2015)

Nicaragua`s high contraceptive prevalence appears conflicting with the also high teen pregnancy rate however Rodriguez (2013) explains how both indicators can coexist; since the majority of teenagers who are currently using contraception started its use after pregnancy hence contraception does not prevent teen pregnancy but limits parity (Rodríguez Vignoli, 2013). Likewise, the non-usage of contraception in the first sexual intercourse was pointed as being a particularly important risk factor of teenage pregnancy (Jewkes, Vundule, Maforah, & Jordaan, 2001). In the case of Nicaragua this risk factor has proven right to such an extent, that the median age of first pregnancy is 9 months older than the median age of reported sexual debut (Lion, Prata, & Stewart, 2009).

1.2 The Nicaraguan setting

To understand the important role of contraceptive use in the prevention of teenage pregnancy in Nicaragua is important to present the country`s setting. First, a general overview of the country`s demographic is presented, second socio-economic characteristics are explained and lastly some of the cultural context is described.

Nicaragua is located in the Central American isthmus, bordering north with Honduras and south with Costa Rica. The country currently counts 6.3 million inhabitants, with a life expectancy at birth of 75.7 years. As shown in Table 1, the majority of the population lives in urban areas with the capital city of Managua grouping 2.2 million of inhabitants (Central Bank of Nicaragua, 2015).

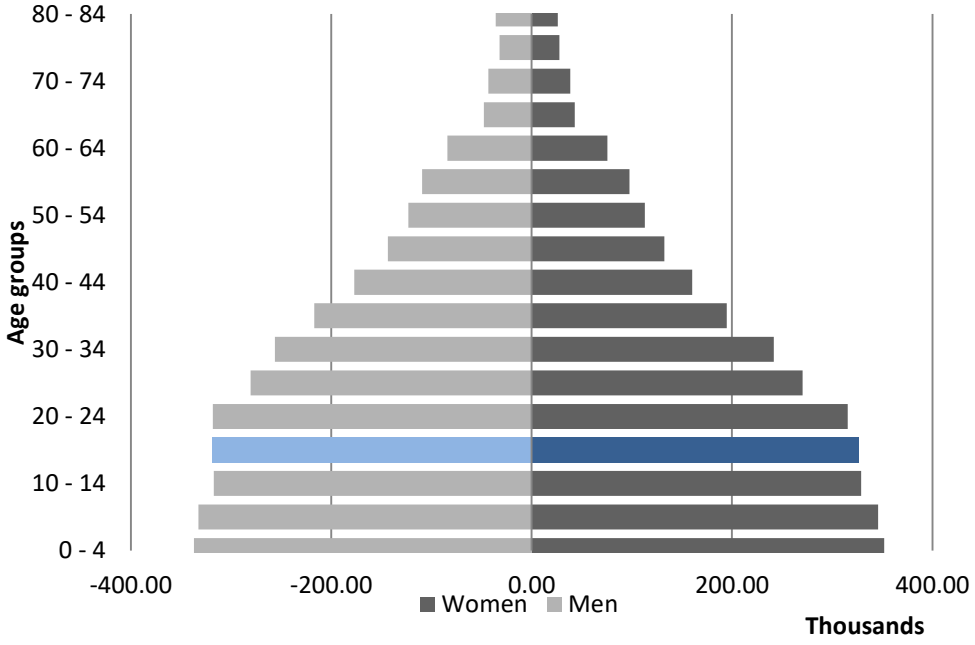
Table 1: Demographic indicators of Nicaragua

	2015
Total population (thousands)	6,262.70
Population living in urban areas (%)	57.6
Total Fertility Rate (child per women)	2.4
Life expectancy at birth (years)	75.7

Source: (Central Bank of Nicaragua, 2015)

As show in Figure 4, the Nicaraguan population is mostly young; 42% of the total population is under 19 years old (INIDE, 2014). Currently the country is undergoing a demographic bonus (Saad, Miller, Holz, & Martínez, 2012) which represents a window of opportunity and an improvement of the dependency ratio –the ratio between non-working age population and working age population. More people active in the labor force and less people dependent of those working can lead to an increase of income and wellbeing since the household earnings are divided by less members of the family. Teen pregnancy contributes to an increase of the dependency ratio, thus putting more pressure on the family income.

Figure 4: Population pyramid of Nicaragua



Source: INIDE (2014)

Besides its largely young population, Nicaragua also has high levels of poverty with 30% of its population living under the poverty line (INIDE, 2015). Previous research found the occurrence of teen pregnancy to be more frequent on households with lower income and that teen mother earn 28.1% less than women who postponed motherhood (FUNIDES, 2016). This means that teen mothers experience income loss in their life and are often pushed to the informal labor market, which can fuel poverty`s cycle. Teen pregnancy contributes to the "feminization of poverty"; term describing the situation of women and poverty in Nicaragua where "poor women are forced to sell everything from ice water to their bodies in the informal economy" (Wessel, 1991) in order to bring some income to the household. This phenomenon implies that poverty has harder consequences in women than in men, thus pregnancy aggravates those consequences in teen mothers.

Poverty is distributed unequally in Nicaragua, especially when comparing urban-rural population. Rural population is estimated to represent approximately 40% of the total; however 71% of the population living in poverty lives in the rural area (INIDE, 2014). Studies made by Cajina (2015) and Antillón (2012), have found a strong relationship between living in a rural area, and teenage pregnancy. Moreover, specific rural municipalities in Nicaragua have teen pregnancy rates five times higher than the national average; for example some cities have 6, 5, 4 and 4 times higher rates (Cajina, 2015). The author suggest that the differences in the occurrence of teen pregnancy can be linked with difficulty of access to education or health care in rural areas (Cajina, 2015)

Another characteristic of Nicaragua are the low levels of education in the population; in the 2013 Human Report, the mean years of schooling for the population were 5.8 years (UNDP, 2013). Difficult access to education combined with the strong hold that the Catholic Church has on policymaking limits the impact of comprehensive and scientific sex education. Comprehensive and scientific sexuality education is central to understand contraception, how to use it and the consequences of its non-usage. Besides, since abortion is illegal since 1990 and socially disregarded and penalized the gran majority of teen pregnancies result in teenage motherhood or in illegal and unsafe abortion. As stated by McNaughton et al. "therapeutic abortion has practically ceased to exist in Nicaragua since 1990" hence no form of legal abortion is possible leaving just the illegal and often unsafe option (McNaughton, Blandón, & Altamirano, 2002 p. 112).

Also in the Nicaraguan society machismo and marianismo are deeply present. These both unique cultural features refer to the exacerbation of the male characteristics and meaning of manhood as the strong gender and provider, and the opposite norm for women who are expected to be pure or maternal. As explained "The existence of a dual social norms, whereby society accepts and even encourages men`s expression of their sexuality but punishes the same behavior among women" (Rani, Figueroa, & Ainsle, 2003 p. 174). This means that the men are expected to have sexual relations often and with many women, whereas women are expected to remain virgin until marriage and motherhood. These opposite norms are especially relevant when studying pregnancy and contraception use because "Nicaraguan machismo promotes the view that men feel powerful when they have many children with different women" (Wessel, 1991 p. 538). Having sex without the use of contraception is then an expression of virility and becomes a symbol of the power of men. Moreover, because of *machismo* childbearing is a only the female problem; there is a "clear distinction between the act of

producing children, which constitutes the man`s badge of honor, and raising children, which is considered virtually the exclusive domain of women (Wessel, 1991; Zelaya et al., 1996).

1.3 Objective and research questions

In Nicaragua research on contraceptive use is central to comprehend and target teen pregnancies. The majority of contraception has to be taken by females whom also have to bear most of the consequences; hence what determinates their usage is extremely relevant in the overall study of the topic. This research aims to study the determinants of contraceptive use in Nicaraguan female teenagers since teen pregnancies have important consequences to the individual, the family and the country as described in the previous section. To accomplish that objective the following research questions are addressed:

1. What background factors are related with differences in contraceptive use amongst female Nicaraguan teenagers?
2. What attitudes are related with differences in contraceptive use amongst female Nicaraguan teenagers?
3. What perceived norms are related with differences in contraceptive use amongst female teenagers in Nicaragua?
4. What perceived behavioral controls are related with differences in contraceptive use amongst female teenagers in Nicaragua?

1.4 Academic and societal relevance

The academic relevance of this study is to contribute to extend the body of quantitative literature on teenager`s sexual and reproductive behavior research in Nicaragua. Some studies exist on the topic, but are mostly focus on qualitative evaluations of interventions and specific programs since most sexual and reproductive programs targeting teenagers are carried by non-governmental organizations. Moreover, these documents often lack academic standards and are not public. These give some insight into the problem; however few studies consider the influence of social norms and beliefs in teenage sexual and reproductive behavior which are important to understand since they heavily influence teen`s sexual and reproductive behavior. As explained by Berglund et al. (1997) “sexes, as they express themselves in certain kinds of males and female sexual behavior in Nicaragua are socially and culturally determined” (Berglund, Liljestrand, De María Marín, Salgado, & Zelaya, 1997). This means that in Nicaragua, social norms and beliefs are particularly important when studying sexual and reproductive behavior; therefore this research proposes a conceptual framework that takes both factors into account when studying teen`s usage of contraception.

The societal relevance of this study is the output information that can facilitate policy making and a better understanding of the issue. Zelaya et al (1997) found difference in patterns between teenagers and adults’ sexual and reproductive behavior (Zelaya et al., 1997); this implies that in general to construct any sort of intervention or policy targeting teen sexual and reproductive behavior, research must focus on this age group. Furthermore, in Nicaragua contraception is perceived by men as being “her problem” (Zelaya et al., 1996), which implies that policies that target teen sexual and reproductive behavior have to take into account the

importance of female`s beliefs and the particular influence of social norms on women. Hence in order to comprehend the determinants of contraceptive use is necessary to focus on female teenagers and their background, attitudes, perceived social norms and perceived behavioral control.

II. Theoretical framework

This chapter gives first an overview of the literature on contraceptive use of Nicaraguan teenagers, secondly proposes a theoretical framework as well as a conceptual model derived from it. Finally, the research`s hypotheses and definitions are presented in order to answer the research questions.

2.1 Related research

As explained in the Introduction, general contraceptive use in Nicaragua is a multi-layered issue, since sexual and reproductive health in the country is embedded in specific context and social norms that influence it. These layers can affect the attitude of teenagers towards he use of contraception, the social norms around the use of it and the control they have over their contraception. The following section outlines previous research on the determinants of contraceptive usage.

2.1.1. Contraceptive use

Overall, contraceptive use in Nicaragua has a limited body of literature, however some trends can be outlined; the preliminary report of the 2001 Demographic and Health Survey DHS shows an increase in the overall use of contraception from 49% in 1993 to 69% in 2001 (INEC, 2002). The report also states that the most used methods for women under 30 years are hormonal: with teenagers using more often the pill and 20-29 years old using more often injection (INEC, 2002). Comparable results were found in most studies, where it pointed out that female teenagers in Nicaragua prefer hormonal contraception over other kinds of methods such as condoms or IUDs (Ali & Cleland, 2005; Decat et al., 2015b; Meuwissen, Gorter, Segura, Kester, & Knottnerus, 2007).

As stated before, Nicaragua has an overall contraceptive prevalence of 80% being this one of the highest in the region (WHO, 2015) however studies show that “women 15-19 old had the least odds for contraceptive use” (Rios-Zertuche et al., 2017 p. 5). These findings are confirmed by Ali and Cleland (2005) who estimate that usage of contraception in Nicaragua amongst teenagers is around 10-15% of sexually active exposure (Ali & Cleland, 2005).

2.1.2. Background

Research suggests a link between contraceptive uses and some background factors, such as demographics, socio-economic characteristics and previous life experiences.

As explain in the Introduction, demographic characteristics such as area of residence appear to have some effects on contraceptive use. In the latest report of the Nicaraguan DHS, called ENDESA, the contraceptive usage of females in union in the urban areas is 4% higher than those living in rural areas (INIDE, 2013b). Some studies link the area of residence with the availability of contraception; for example in the specific case of Hormonal Emergency Contraception (HEC) it was found that women living in rural areas of Nicaragua were less likely to use this method than those living in urban areas (Salazar & Öhman, 2014). The use of HEC decreases with age and is also related with the occurrence of unprotected sex, which indicates that differences in area of residence can be linked with teenage usage of HEC (Salazar &

Öhman, 2014). This means that younger women tend to have unprotected sex more often than older women.

Religion is another major background factor that influences sexual and reproductive behavior. In Nicaraguan society, community life plays an important role in everyday behavior. When explaining the importance of environment in any assessment of teenager`s sexual and reproductive health, Decat et al. (2014) concludes “the role of family and the community remain pivotal in the daily life of most Nicaraguans” (Decat et al., 2015a). At communal and family level, religion and its moral framework are tangible in everyday life.

The country is predominantly Christian with more than 50% of the population identifying themselves as Catholic and 34% as Protestant (INIDE, 2013a). Moreover, the church has an important role in everyday life, and in some topics, also in policy making. As assessed in a law review concludes: “the Church's opinion will always be relevant on Nicaraguan legislation concerning reproductive rights.” (Lord, 2008). For teenagers, the influence of the church in their contraceptive use becomes tangible in Ehrle and Sarker (2011) study on attitudes of pharmacy personnel in Managua. The researchers report that the reason why some pharmacies did not sell emergency contraception was “because of recent criticism from the Catholic Church” (Ehrle & Sarker, 2011 p. 69), thus the church`s judgments over contraception can impact the offer and access of contraception in the country.

Background factors are also lived experiences that can affect the perception of norms, control or attitudes towards contraception. As literature suggest violence is a lived experience that is link with differences in contraceptive use. Williams et al. (2008) found different patterns of contraceptive use when comparing females which had been exposed to violence and females that were not. In Nicaragua, HEC usage differs among partnered women who had experience intimate partner violence (IPV) and women who had not. The results suggest that higher exposure to IPV is related to higher use of emergency contraception and different kinds of violence, such as sexual or physical violence, have different effects on contraception (Salazar & Öhman, 2014). Furthermore into the relationship of violence and contraception, Nicaraguan women in situations of domestic violence have reported that one of the manifestation of their partner`s violence was control over their health care decision and contraception (Ellsberg, Peña, Herrera, Liljestrand, & Winkvist, 2000). This outcome reflects how background characteristics can distort the perceived control over contraception in Nicaragua.

2.1.3. Attitudes

Attitudes towards contraception in teenagers have been linked with their beliefs and their understanding of consequences of non-usage (Adler, Kegeles, Irwin, & Wibbelsman, 1990). Knowledge of contraception influences heavily the beliefs and general comprehension of consequences and side effects; studies have found negative relationship between the use of contraception and the negative perception of certain side effects. In the Mesoamerican region, a study found than “on average, women knew less than two modern methods” (Rios-Zertuche et al., 2017).The limited knowledge of the topic in the region fuels uninformed beliefs of contraception. Moore et al. (1996) study the relationship between contraceptive use and beliefs in teenagers from the US. The authors explain that when teenagers think the pill affects the

menstrual cycle; they tend not to take it. Also, the teenagers that comprehended how to take the pill, and thought it was easy where more likely to use it constantly (Moore, Adler, & Kegeles, 1996).

In Nicaragua, lack of knowledge around contraception fuels myths like “the pills causes infertility” or “condom is only used with prostitutes” (Garcia & Montano, 2014). In a study about knowledge and attitudes on pharmacy personal in Managua, 81% of the interviewee believed the pill cause abortion and “85% thought they could lower a women`s fertility” (Ehrle & Sarker, 2011 p. 71 & 70).

2.1.4. Perceived norms

Literature suggests that perceived norms around contraception are heavily influenced by gender norms. In Nicaragua gender norms are extremely present in everyday life, and permeate sexual and reproductive behavior. The country has a double standard based on gender; women are expected to be pure until marriage, while is normal for men to engage in sexual activities from a young age. As explained by Rani et al. (2003, p. 179) “male and female, gender-based double standards may be accepted as the norm, even if they appear blatantly contradictory or unjustified to the outside observer”.

Moreover, gender roles also act as an agency barrier the can prevent adolescents from seeking contraception and avoid unwanted pregnancies. Rani et al. (2003) studied the context of young adult sexual behavior for Nicaragua with a gender perspective and found a double standard when it comes to women: “Women may feel pressured to have sex to maintain their relationship, the threat of disclosure of their sexual relationship may prevent them from seeking contraceptive-and other reproductive health services-increasing their risk of unprotected sex and unwanted pregnancy” (Rani et al., 2003 p. 179). The link between gender and health care access in Nicaragua is also explored by Lion, Prata and Stewart (2009), who found that unmarried women or women whom are not yet mothers have to struggle with the stigma of premarital sex in a society that puts so much value in virginity. The authors highlight in their study the importance of social access on contraceptive use; the stigma of pre-marital sex combined with the lack of confidential services at pharmacies and clinics hindered access and use of contraception for unmarried women, and women whom are not mothers yet (Lion et al., 2009).

Perceived social norms permeate not only female teenagers, but their partners which can influence the teenager`s usage of contraception. Fekadu and Kraft (2007) link how the partner`s belief about contraception impacts the use of contraception in female teenagers. he authors explained “the largest differences (in contraceptive use) were observed for two beliefs related to, ‘partner refusal factor’ and having no choice but abstention’ (Fekadu & Kraft, 2001).

2.1.5. Perceived behavioral control

Besides the partner`s beliefs, research has linked the age of partner with the negotiation power of the female over the use of contraception. In situations where the partner is much older than the teenager, the female is in disadvantage. This is particularly important in context of traditional gender norms since contraception is perceived as a man`s choice and responsibility, as is the case of Nicaragua. Remez et al. (2008) shows how the age gap between partners can difficult

the negotiation of contraceptive use for teenagers: “For a high proportion of young women—ranging from one-third in Guatemala to one-half in Honduras—their first sexual partner was at least five years older than they were. Such age discrepancies often reinforce gendered power imbalances that make it difficult for young women to refuse unwanted sex and negotiate condom or contraceptive use” (Remez, Prada, Singh, Rosero-Bixby, & Bankole, 2008).

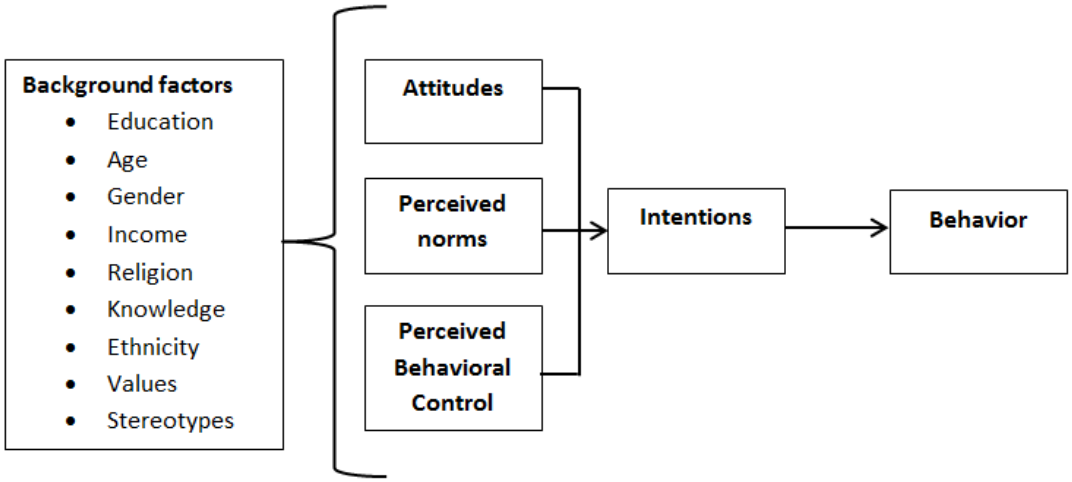
Furthermore in cases of violence the partner can block the perceived access to Sexual and Reproductive Health Services (SRHS). Likewise for teenagers, the sexual and reproductive services are even more limited. According to Meuwissen et al. (2007), teenagers have to deal with several specific barriers in order to access sexual and reproductive health care and contraception such as poor information about their bodies and issues related with sexual health or prevention of pregnancies, and social pressure with marked social imbalances (Meuwissen et al., 2007). The authors conclude that “The group most left out by current practices are younger adolescents, those who are single and those who are not yet mothers” (Meuwissen et al., 2007 p. 1866). Ehrle and Sarker (2011) further the analysis by uncovering the attitudes of pharmacy personnel towards selling emergency contraceptive to teenagers. The results suggest “unwillingness among 82% to sell the method to minors without parental consent indicates that adolescents could face problems obtaining emergency contraceptive pills from pharmacies” since the pills are in stock in most pharmacies

2.3 Theoretical framework

The literature described above highlights the importance of background characteristics on the study of contraceptive use. Background factors like exposure to violence or religious values influence attitudes towards the use of contraception. Also, these factors can affect how social norms are perceived, and what degree of perceived control teenagers have over contraception.

In social and psychology research, many theories link perceived social norms and perceived obstacles to perform behavior with the actual behavior. However, only the Reasoned Action Approach (RAA) tights background factor, with attitudes, social norms, and perceived control, as determinants of intentions and behavioral performance. This approach was first presented by Martin Fishbein and Icek Ajzen in *Predicting and changing behavior: The reasoned action approach* published in 2009. The framework followed the already established theory of planned behavior (Hennessy & Ajzen, 2012) which assumes that intentions are the best predictor of behavior. In the theory of planned behavior, intentions are composed of the attitudes towards the behavior, the perceived norm and the perceived behavioral control. However, unlike the theory of planed behavior, RAA also links the background characteristics of the individuals to the three main components of their intentions which are attitudes, perceived norms and perceived behavioral control (PBC).

Figure 5: Reasoned Action Approach



Source: (Fishbein & Ajzen, 2009)

As can be observed in Figure 5, Fishbein and Ajzen (2009) assume that background factors are embedded in individual`s beliefs. RAA indicates that "The kinds of experiences people have are likely to vary as a function of personal characteristics (e.g., personality, temperament, intelligence, values), social and cultural factors (e.g., ethnicity, race, religion, education), and exposure to media and other sources of information" (Fishbein & Ajzen, 2009 p. 223). Since beliefs are a result of what one`s personal characteristics they are subjective probabilities that an *object* has a certain *attribute* (Ajzen & Fishbein, 1975). For example, an individual could belief that the use of condoms (object) diminishes the pleasure of sex (attribute).

Beliefs can also shape attitudes, since the subjective judgments bestow upon objects or behaviors can affect the degree of favorableness of individuals. As stated by Ajzen, attitudes can be defines as "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991 p. 188) For example, in Nicaragua until recently men would ask for a "proof of love" to women, which meant having their first sexual encounter with them, without contraception. The belief that, having sex without contraception (object) was a demonstration of love (attribute), influenced negatives attitudes from women towards contraception. At the same time, the attitude towards the behavior directly impact the individual`s intentions. Therefore if the person think the behavior is positive for them they will have a stronger intention towards the conduct.

Likewise, the perceived norm is the extent to which the behavior is perceived to be accepted, encouraged or permitted by the people important or close to the individual. In other

words, if a behavior is not aligned with the social norm an individual will feel burden to perform it, to comply with peer pressure or pressure from the family. For example, in Nicaragua a female teenager carrying a condom (behavior) can be perceived by her parents as promiscuous since is generally thought that women who carry contraception are having “lots of sex” (perceived norm). In RAA perceived norms are divided into two; *injunctive* norms are the perception of what others expect of the individual and *descriptive* norms are the perceived behavior of others (Fishbein & Ajzen, 2009).

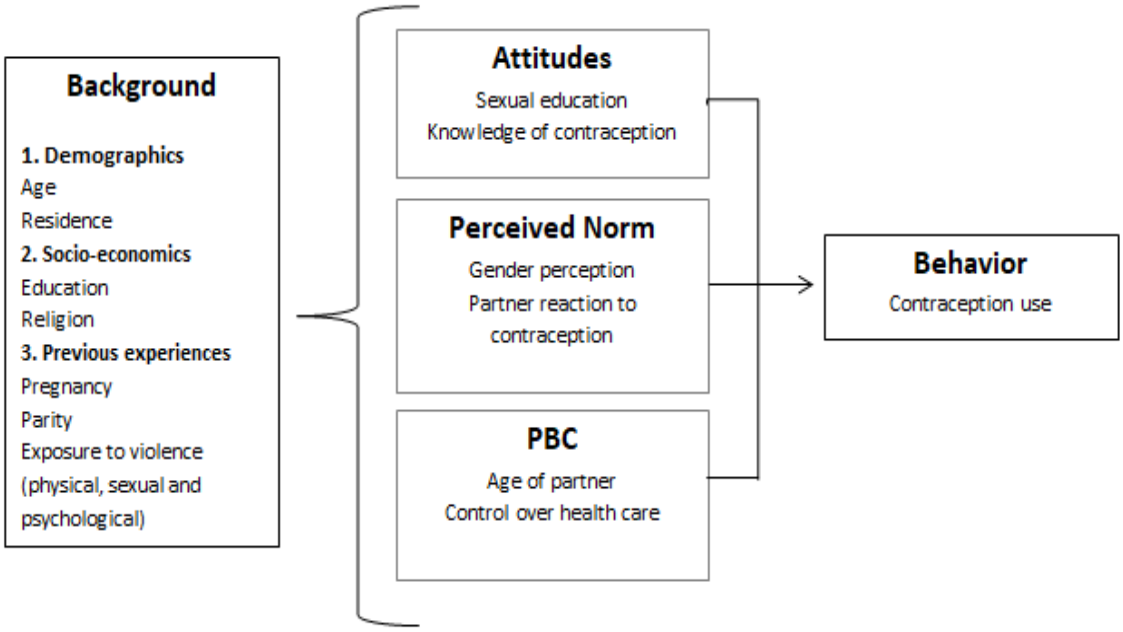
Moreover, RAA postulates the importance of perceived behavioral control. The later can be defined as the perceived degree of ease or difficulty a person has towards performing a behavior. As observed by Fishbein and Ajzen; “Perceived behavioral control is assumed to take into account the availability of information, skills, opportunities, and other resources required to perform the behavior as well as possible barriers or obstacles that may have to be overcome”(Fishbein & Ajzen, 2009 p. 158).

Consequently, RAA assumes that the more positive the attitude, the subjective norm and the greater the perceived behavioral control, the stronger should be an individual`s intention, and also the most likely is the behavior.

2.4 Conceptual model

In order to answer the research questions, a conceptual model is constructed following the RAA framework. Figure 6 presents the conceptual model that present research uses as framework.

Figure 6: Conceptual model



2.5 Hypotheses

Based on the theory and literature, four null and alternative hypotheses are tested in the present research.

Hypothesis 1:

H0: There is no significance difference in the contraception use between female Nicaraguan teenagers with different background characteristics.

H1: There is a significance difference in the contraception use between female Nicaraguan teenagers with different background characteristics

Hypothesis 2:

H0: There is no significant difference in contraceptive use between female Nicaraguan teenagers with different knowledge of contraception

H1: There is significant difference in contraceptive use between female Nicaragua teenagers with different knowledge of contraception

Hypothesis 3:

H0: There is no significant difference in contraceptive use between female Nicaraguan teenagers with different gender perceptions

H1: There is significant difference in contraceptive use between female Nicaraguan teenagers with different gender perceptions

Hypothesis 4:

H0: The age of the partner is not related with differences of contraceptive use amongst female Nicaraguan teenagers

H1: The age of the partner is related with the differences of contraceptive use amongst female Nicaraguan teenagers

2.6 Concepts and definitions

This study defines teen age as the period comprised between 15 and 19 years old. This definition is largely adopted in international sexual and reproductive behavioral literature since it marks the beginning of the reproductive age. However, is necessary to acknowledge two different existent definitions in the Nicaraguan context. First, the Children and Adolescent Code of Law describes teenager as every inhabitant aged 13 to 18 years old giving a different range on years to the definition (Republic of Nicaragua, 1999). Second the methodology of the National Statistics Institute (INIDE) groups teenagers with youth as any interviewed aged 15 to 24 years old (INIDE, 2013b). Since most of the literature on teenager`s sexual and reproductive behavior utilize the 15 to 19 age range, and in order to facilitate international comparison, the present study will also apply the 15 to 19 years old range.

III. Data and methods

The following chapter presents first a description of the data used in the research, secondly an explanation of the sampling method and size, third an overview of the analysis and operationalization and concludes with the pertinent ethical considerations.

3.1 Research design

The research uses quantitative methods, which are described by Flick (2015) as the use of operationalized concepts for hypothesis testing. These methods search for a relationship between a dependent variable and a group of independents variables that operationalize theories and concepts. The study uses the RAA framework (Figure 5) to research the determinants of contraceptive use in Nicaraguan female teenagers. RAA is operationalized using cross sectional secondary data.

3.2 Data source

In order to answer the research questions stated above, the study uses the latest Nicaraguan Health and Demographic Survey (DHS). DHS are country-representative household surveys that provide information about population, health, sexual and reproductive behavior and nutrition. They were created by the DHS program in 1984 with the aim "to collect data that are comparable across countries" (Rutstein & Rojas, 2006 p. 2). The surveys are based on standard questionnaires that allow international comparisons, however optional sections can be included to let countries gather information on specific issues such as malaria or human immunodeficiency virus (HIV) (Fabic, Choi, & Bird, 2012). In Nicaragua the DHS, called ENDESA for its Spanish name, has additional questions regarding: sterilization experience, home birth and domestic violence (INIDE, 2011 p. 16, 23 & 48). The National Institute of Information for Development (INIDE) has conducted four waves of ENDESA on the years 1998, 2001, 2006/2007 and 2011/2012. The survey is available to the public by the web page of INIDE. The institute does not demand any permission for its use, and can be directly downloaded on sav format by any user.

The ENDESA data collection took 12 months, and was done in two separate stages: the first stage was from June to December of 2011 where households from Managua, Chinandega, León, Rivas and Carazo were questioned. The second stage was carried out from July to November 2012 and grouped households from Masaya, Granada, Nueva Segovia, Madriz, Estelí, Jinotega, Matagalpa, Boaco, Chontales, Río San Juan, RAAS and RAAN had the survey (INIDE, 2013b).

The survey is the most complete source of information on sexual and reproductive behavior in Nicaragua, moreover is the only survey with nation-wide representative. Because of the national coverage, this survey is the best method to capture different background factors and nuances on attitudes, perceived norms and perceived behavioral control of the entire Nicaraguan population. However, the survey also has limitations; previous literature on teenager sexual and reproductive behavior states the occurrence of underreporting sexual activity on this survey because of social norms mentioned previously (Ali & Cleland, 2005; Lion et al., 2009). Moreover, variables such as violence exposure are sensitive to bias and underreporting giving the previously discussed context (Salazar & Öhman, 2014). Because of the nature of the data –

cross-sectional – any assessment on the determinants of contraceptive use is restricted overtime and the presence of recall bias cannot be denied.

3.2.2 Sampling of the ENDESA 2011/12

In order to understand the construction of the ENDESA 2011/2012, the following section describes the sampling process and size of the data base.

The sampling method of this national survey is a stratified, three-stage design, which randomly selects households from primary selected segments in order to reach a national representative probability. The details of the sampling are described on the preliminary report of the survey published by INIDE (INIDE, 2013b). The process is constructed on the bases of the segments of the census. A first random sampling over the segments of each municipality is conducted, taking into account the population of the territories and the target amount of households of the survey. A second random sampling of 30 household on every previously selected segment is calculated and finally a randomly selected women from each household is interviewed; the questionnaire is applied to this final sampling (INIDE, 2013b). Also, to test the questionnaire, a pilot was conducted from the 14 to 28 of December in three different locations: Mateare, Villa el Carmen and Ticuantepe.

The final sample of the 2011/2012 ENDESA are 21,960 households of urban and rural settings of the 15 municipalities and the two autonomous regions of the country. The sample size of the individual women data base is 15,266 individuals.

3.3 Study population

The data set was filtered in order to have only female teens (15-19 years old). Afterwards, a second filter was applied to select those teenagers that reported to be sexually active. The final study population is presented in table 2 where 1,248 female teenagers reported being sexually active.

Table 2: Study population

Age	Contraceptive use		
	No	Yes	Total
15	57	61	118
16	81	90	171
17	101	142	243
18	117	196	313
19	140	263	403
Total	**496**	**752**	**1248**

Source: Data from (INIDE, 2013a)

3.4 Methodology

The database of women in fertile ages is comprised of 685 variables that contain general information, fertility, contraception, gender and violence information. The data was analyzed using Stata statistical package, version 14.

The use of contraception is a dichotomous outcome with finite, exhaustive and mutually exclusive options; an individual either uses contraception or does not use. Giving the nature of the outcome variable, a binomial regression with contraceptive use as the dichotomous dependent variable is needed. Likewise, previous literature on the topic use logistic regression to analyze contraceptive use (Decat et al., 2015b; Njogu, 1991; Rios-Zertuche et al., 2017; Salazar & Öhman, 2014). The following logistic model is used:

$$Logit\,\{Prob\,(ConUse = 0\,|ConUse = 1)\} = \beta_0 + \Sigma\beta_{1k}Background_k + \Sigma\beta_{2k}Attitudes_k + \Sigma\beta_{3k}Perceived\,Norms_k + \Sigma\beta_{4k}PBC_k + \varepsilon$$

Where $Background_k$,$Attitudes_k$,$Perceived\,Norms_k$ and PBC_k represent a series of independent variables $(k = 1 \ldots K)$ that enable background characteristics, attitudes, perceived norms and PBC. $\beta 1$, $\beta 2$, $\beta 3$ are the estimations of the effects of the previously mentioned components of RAA on the contraceptive use of Nicaraguan female teenagers. Finally, ε is the error of outlined Logit model.

3.4 Operationalization

The independents variables are an operationalization of RAA. Based on the literature, area of residence, age, religion, education, exposure to violence, previous pregnancies and parity are the background characteristics that influence attitudes, perceived norms and PBC towards contraception. Previous research suggests that different types of violence can have different effects on the use of contraception (Williams et al., 2008); thus psychological, physical and sexual violence are considered.

Literature also suggests that knowledge of contraception and sex education shape the beliefs that female teenagers have on the usage of it; whereas the perception of side effects or failure can limit its use. The disadvantage is that the ENDESA does not include a specific question for attitudes towards contraception hence knowledge and sexual education were used as instrumental variables under the assumption that higher knowledge and information is translated to less misconceptions and myths around contraceptive use. No questions of the family or peers' perception about contraception are included in the latest ENDESA. This limits the scope of perceived social norms that can be included, since as explained in the literature overview, family and peers are important to teenagers however it was possible to capture the influence of the partner`s female teen. Perceived norms are operationalized under perceived gender norms and perceived reaction of the partner to the request of wearing a condom. Finally, as suggested by literature on the topic the model uses the age of partner and the perceived to access health care as markers for PBC.

Table 3: Operationalization

Variable	Operationalization in DHS 2011/2012	Measurement scale
	Behavior	
Use of contraception (Dependent)	Did you use any sort of contraception in your last sexual relation?	Dichotomous 0= Yes (Ref) 1= No
	Background	
Demographics		
Residence (Control)	Type of residence	Dichotomous 0=Urban (Ref) 1=Rural
Age (Control)	How old are you?	Continuous Values ranging from 15 to 19
Socio-economics		
Religion (Independent)	Do you belong to a religion?	Categorical 0=Catholic (Ref) 1=Protestant 2=None 3=Other
Education (Control)	How many years of education do you have?	Continuous Values ranging from 0 to 18
Life experiences		
Violence (Independent)	Have you ever experience..? -Sexual violence (force you to touched or be touched, rape) -Physical violence (been hit, kicked, pushed) -Psychological violence (insults, threats)	Dichotomous 0=No (Ref) 1=Yes
Pregnancy (independent)	Have you ever been pregnant?	Dichotomous 0=No (Ref) 1=Yes
Parity (Independent)	How many children do you have	Continuous Range from 0 to 3
	Attitudes	
Knowledge of contraception (Independent)	Number of known contraceptives	Continuous Values ranging from 0 to 13
Sex education (Independent)	Have you ever had sexual education?	Dichotomous 0= No (Ref) 1= Yes
	Perceived norm	
Gender perception	Do you agree with any of the	Dichotomous

(Independent)	following…? -A wife must always obey her husband -A man must show to her wife who is the boss -Is ok to hit a woman if she doesn`t do well the domestic chores -Is ok to hit a woman if she disobey her husband	0= Don`t agree with any of them (Ref) 1= Yes, agree with at least 1 of them
Partner`s reaction to contraception (Independent)	How would your partner react if you asked him to use a condom?	Categorical 0= He would agree/we wouldn`t mind (Ref) 1= He would get upset/He wouldn`t like it 2=I don`t know how he would react
	Perceived Behavioral Control	
Age of partner (Independent)	How old is your partner?	Continuous Values range from 15 to 40
Control over health care (Independent)	Do you need the approval/permission of your partner to go to a health care facility?	Dichotomous 0= No (Ref) 1= Yes

Based on previous literate, RAA framework and data availability on the ENDESA the variables shown in table 3 were chosen for the Logit model. Almost all variables were recorded to translate them from Spanish to English, and to code as missing the "N/A" values. Also, dispersion graphics and frequency tables were used to find outliers. Variables of exposure to violence and gender perceptions were generated. Exposure to violence was coded as "yes" if the teen had been exposed to any sort of psychological violence (insults, threat…), physical violence (kicks, pushed…) or sexual violence (rape, forced touch…). Gender perception compiled the evaluations on current gender stereotypes made by the female teens (see table 3 for more detail).

3.5 Ethical considerations

The research uses publically available secondary data, published by the National Statistics Institute of Nicaragua. Although the research makes use of delicate information about Nicaraguan teenagers, such as violence occurrence or sexual and reproductive behavior, the data base does not allow any personal identification or physical characteristics that may identify an individual. Also, the data base does not contain any personal information such as address, name or civil ID number; hence no personal identification is possible.

IV. Results

This chapter presents first some of the descriptive statistics of the RAA variables used in the analysis and then the results of the Logit model proposed in the previous chapter.

4.1 Descriptive statistics

The descriptive statistics of the RAA variables are presented in Table 4. The analysis was made with 1,248 sexually active female teenagers.

Table 4: Descriptive statistics of RAA variables

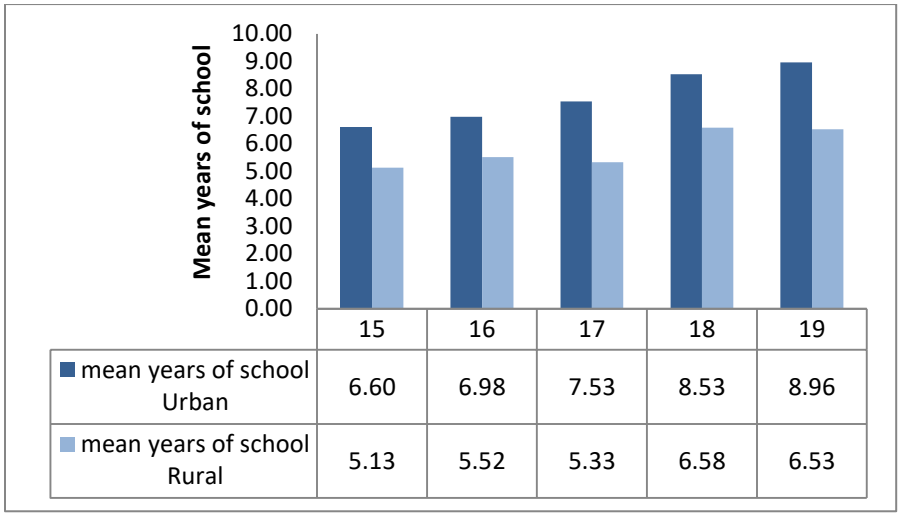
Variables	Observations	Mean	SD	Contraceptive usage	
				No	Yes
Background factors					
Demographics					
Residence	1248	1.58093	0.01397		
Urban	523			39.96%	60.04%
Rural	725			39.59%	60.41%
Age	1248	17.57051	0.03727		
15	118			48.31%	51.69%
16	171			47.37%	52.63%
17	243			41.56%	58.44%
18	313			37.38%	62.62%
19	403			34.74%	65.26%
Socioeconomics					
Religion	1241	0.79694	0.02379		
Catholic	553			41.23%	58.77%
Protestant	421			38.00%	62.00%
None	233			37.34%	62.66%
Other	34			55.88%	44.12%
Years of school	1248	6.70994	0.08814		
Life experience					
Exposure to psychological violence	1248	0.2003205	0.011334		
No	998			39.48%	60.52%
Yes	250			40.80%	59.20%
Exposure to physical violence	1248	0.1025641	0.008591		
No	1120			39.55%	60.45%
Yes	128			41.41%	58.59%
Exposure to sexual violence	1248	0.04808	0.00606		
No	1188			39.56%	60.44%
Yes	60			43.33%	56.67%
Pregnancy	1248	0.63542	0.01363		
No	455			44.62%	55.38%
Yes	793			36.95%	63.05%
Parity	1248	0.57452	0.01812		

0	628			56.53%	43.47%
1	529			23.82%	76.18%
2	85			17.65%	82.35%
3	6				100.00%
Attitudes					
Contraceptives known	1248	3.10176	0.05130		
0	79			64.56%	35.44%
1	134			33.58%	66.42%
2	258			44.19%	55.81%
3	315			37.14%	62.86%
4	253			33.60%	66.40%
5	104			38.46%	61.54%
6	45			42.22%	57.78%
7	33			30.30%	69.70%
8	11			54.55%	45.45%
9	9			55.56%	44.44%
10	3			66.67%	33.33%
11	4			50.00%	50.00%
Sexual education	1246	0.62761	0.01370		
No	464			39.22%	60.78%
Yes	782			39.90%	60.10%
Perceived social norms					
Gender	1130	0.559292	0.014776		
Does not agree	498			44.58%	55.42%
Agree	632			36.87%	63.13%
Partner reaction to contraception	993	0.68983	0.02110		
He would agree/He would not mind	421			33.02%	66.98%
would get upset/He would not like it	459			35.08%	64.92%
I don`t know how he would react	113			46.02%	53.98%
PBC					
Age of partner	792	23.39773	0.15553		
15-19	124			30.65%	69.35%
20-24	415			25.54%	74.46%
25-29	175			26.29%	73.71%
30-34	64			29.69%	70.31%
35-40	14			35.71%	64.29%
Control over health care	1248	0.10417	0.00865		
No	1118			39.53%	60.47%
Yes	130			41.54%	58.46%

Source: Data from ENDESA 2011/2012

Among the background factors used in the model, Table 4 shows that the mean age of the studied teenagers is 17 years old, with on average 6.4 years of schooling. Furthermore Figure 7 presents the average years of schooling by residence; on average rural teenagers have less years of schooling than their urban peers.

Figure 7: Mean years of schooling by residence

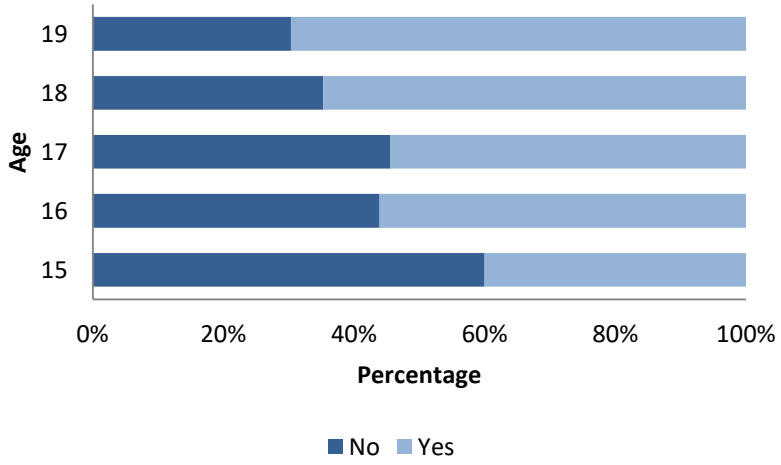


	15	16	17	18	19
mean years of school Urban	6.60	6.98	7.53	8.53	8.96
mean years of school Rural	5.13	5.52	5.33	6.58	6.53

Source: Data from ENDESA 2011/2012

Also, 44.56% reported to be Catholics, 33.92% Protestants, 2.74% have other religion and 18.78% do not identify with any religion. Moreover, the ENDESA counts with 63.54% of female Nicaraguan teenagers who already have been pregnant, or are pregnant at the moment of the survey. Figure 8 distributes the occurrence of pregnancy by age which indicates that the frequency of pregnancy increases with age.

Figure 8: Pregnancy by age



Source: Data from ENDESA 2011/2012

The statistics of the attitudes shows that on average female teenagers know 3 contraceptive methods and 63% report to have had sexual education in their schools. Moreover, there is no statistical difference between the mean of contraceptives known by female teenagers that use contraception with those that do not use it (see appendix).

The descriptive results of perceived social norms indicate that 44.07% of female teenagers do not agree with any of the gender norm related statements (see Table 3). No important differences were found between female teens from urban areas, compared to rural areas (see appendix). Moreover, 42.40% of the teenagers think their partner would agree to use a condom, whereas 46.42% think their partner would get upset over the request.

The variables of perceived behavioral control present an average partner age of 23.39 years old, which is 6 years older compared with the mean age of the female teenagers. The minimum age of partner is 15 years old, and the maximum 40 (see appendix for treatment of outliers). Also, 89.58% of the teenagers indicated they do not need to ask permission from their partners in order to search for health care.

4.2 Results

Table 5 presents the odds ratios of 5 models; the first model contains only the constant and presents a log likelihood of -838.60. The second model contains only the background factors, and the third presents the RAA variables for all teens. The fourth model presents the variables defined previously (see Table 3) for partnered teens, whereas the last model also shows interactions between pregnancy and parity and the different kinds of violence. The final model for partnered teens presents a log likelihood of -255.66. The fourth and fifth model were conducted only with partner teen in order to be able to measure the influence of the partner`s belief on the usage of contraception, however this implies that the number of observation decreased from 1123 in Model 3, to 663 in Model 4 and 658 in the last regression.

In model 3, the results for all teens show that pregnancy, parity and gender are statistically significant, meanwhile years of schooling has no statistical significance until the model is restricted to partnered teens. Furthermore, in Model 5 interactions are introduced in the model and they have statistically significant effects on contraceptive usage for partnered teens. In all models, parity and pregnancy have significant effects on contraceptive use; teenagers that have been pregnant have 0.038 times the odds of contraceptive usage compared with those teenagers that have not been pregnant. Moreover, the results suggest that teens that have their first child have 4 times the odds of using contraception than those that have never been pregnant or have a parity of 0. Also, the results show that the interactions between exposure to psychological violence and sexual violence have an effect on the odds of using contraception; partnered teens that have been exposed to sexual and psychological violence have 0.01 times the odds of using contraception compared to those that have not been exposed.

Table 5: Results of Logit

RAA variables	Model 1 Only constant		Model 2 Background factors		Model 3 RAA all teens		Model 4 RAA partner teens		Model 5 RAA interactions	
	Odds ratio	SE	Odds ratio	SE	Odds ratio	SE	Odds ratio	SE	Odds ratio	SE
Residence (Ref: Urban)										
Rural			0.943	0.133	0.910	0.139	0.700	0.194	0.674	0.192
Age			1.014	0.053	1.016	0.056	0.946	0.086	0.943	0.088
Religion (Ref: Catholic)										
Evangelic/Protestant			1.238	0.182	1.174	0.181	1.223	0.322	1.230	0.333
None			1.198	0.218	1.143	0.220	0.962	0.293	0.984	0.307
Other			0.554	0.219	0.714	0.311	0.261	0.204	0.337	0.264
Education			1.024	0.025	1.017	0.030	1.118*	0.056	1.122*	0.058
Psychological violence (Ref: No)										
Yes			0.763	0.152	0.811	0.170	0.943	0.322	1.097	0.420
Physical violence (Ref: No)										
Yes			0.882	0.152	0.920	0.264	0.769	0.364	0.840	0.833
Sexual violence (Ref: No)										
Yes			0.834	0.278	0.755	0.265	0.362	0.205	4.314	6.678
Pregnancy (Ref: No)										
Yes			0.182***	0.039	0.174***	0.039	0.047***	0.016	0.039***	0.014
Parity			11.894***	2.458	12.387***	2.756	71.764***	26.491	25.007***	11.500
Knowledge					1.051	0.042	1.098	0.071	1.097	0.072
Sex Education (Ref: No)										
Yes					1.172	0.205	1.082	0.308	1.071	0.311
Gender (Ref: Does not agree)										
Agree with at least one					1.491*	0.221	1.619	0.413	1.650	0.433
Partner reaction (Ref: He would not mind)										

He would get upset							0.832	0.205	0.777	0.197
I do not know how he would react							0.828	0.347	0.813	0.350
Partner age							0.978	0.025	0.974	0.026
Control over health care (Ref: No permission)										
Needs permission							1.491	0.561	1.418	0.549
Pregnancy*Parity										
No#1										
No#2										
No#3										
Yes#1									4.028*	1.903
Yes#2										
Yes#3										
Psychological* physical violence									0.780	0.898
Physical* Sexual violence									8.132	12.803
Sexual* psychological violence									0.011*	0.022
Constant	1.516***	0.088	0.811	0.711	0.524	0.493	4.038	6.448	4.676	7.681
N	1248		1241		1123		663		658	
Pseudo R	0		0.145		0.148		0.337		0.351	
Log likelihood	-838.604		-713.675		-644.913		-261.996		-255.659	

***p<0.001; **p<0.01; *p<0.05.

Source: Data from ENDESA 2011/2012

Table 5 shows that some background characteristics account for differences in contraception usage among female teens in Nicaragua. Background factors such as residence, age, religion and exposure to violence have coefficients that are not significantly different from 0 thus the variables don`t have an effect on the odds of using contraception for the sample under study. Variables such as parity and pregnancy do have significant effect on the usage of contraception with odds ratios below 0 for pregnancy and above one for parity. Also, the level of education of the female teens has an effect on the odds of using contraception, with the odds ratio of the variable being above one and statistically significant. Is possible to reject the first null hypothesis of this study, and state that some background factors account for differences in the odds of using contraception among female Nicaraguan teens.

The odds ratio of the knowledge of contraception is above one; nevertheless the coefficient is not significantly different from 0 which means that knowledge of contraception has no significant effect on the usage of contraception among female partnered teens in Nicaragua.

Also, gender perceptions have an odd ratio above one but the outcome is no statistically different from 0. This implies that with the current sample is impossible to reject the third hypotesis previously stated; different gender perceptions do not account for diffrences in contraceptive usage among female teen in Nicaragua.

The odds ratio of the age of partner was below one, but the effect on the use of contraception is not statistically significant. This suggests that the age of partner has no effect on the odds of using contraception in female Nicaraguan teens so the forth null hipothesis of this document cannot be rejected.

V. Discussion

This chapter discusses the results of the previous models and reflects on the findings compared with the hypothesis established in chapter two; first the outcomes on background factors, second attitudes, third perceived social norms and fourth perceived behavioral control. Finally the conclusions and recommendations are presented.

5.1 Background characteristics

The results suggest that some background characteristics account for significant differences of contraceptive usage amongst all teenagers. First, is noticeable that factors suggested in the literature such as religion or residence has no impact on the odds of using contraception for females' Nicaraguan teens. The lack of effect was constant in all models. However, RAA implies that background factors influence attitudes, perceived norms and perceived behavioral control hence the effects of some background variables may be captured in other RAA section.

For partnered teens, one more year of education multiplies the odds of using contraception by 1.12. This relationship can also have geographical implication since higher educational levels are more frequent in urban areas than rural areas (see Figure 7). Moreover, Zelaya et al. (1996) implies that in Nicaragua "education can also be seen as an indicator of access to social and economic resources which in turns influences the lifestyle of the people" (Zelaya et al., 1996 p. 363); hence the effect of education can also be displaying the effect of poverty on the usage of contraception. Further research is needed on the link between poverty, lifestyle and contraceptive use in Nicaragua.

The last model indicates that no type of exposure to violence affects the usage of contraception; nevertheless the interaction of exposure the psychological and sexual violence was significant. Partnered teens that have been exposed to the previously mentioned combination of violence have 0.01 times the odds of using contraception compared with their non-exposed peers. Salazar and Ohman (2014) found different effects of different kind of violence on the usage of HEC among partnered Nicaraguan women but no interaction of violence was used in their document (Salazar & Öhman, 2014). This output seem to suggest that the exposure of both kinds of violence have a different effect on contraception usage that each exposure by itself. Research has been made on the consequences and life experiences of women who suffered violence in Nicaragua (Ellsberg et al., 2000; Mendoza-Cardenal, 2016) but the link between exposure to violence and contraceptive use in teenagers still remains under researched.

Another interesting result can be found in the effect of parity and its interaction with pregnancy. Parity by itself has a significant effect on the odds of using contraception; with an increase of one child per teen the odds of using contraception increase 25 times in comparison with those teens that do not have any children. Moreover, the interaction terms suggest that partnered teens have higher odds of using contraception after their first pregnancy and birth than if they have never been pregnant and have a parity of 0. Literature on the relationship of parity and contraception for teens concludes that in Nicaragua contraception is used for parity control and not for postponement (Rodríguez Vignoli, 2013; Rodríguez Wong & Perpétuo, 2011) since the occurrence of pregnancy and childbirth enables access to sexual and reproductive

health services that are limited for teens that have not experience motherhood. This outcome is certainly interesting when comparing it with the coefficient of control over health care because the latter variable doesn`t have statistically significant results on the odds of using contraception this means that access to health care can be playing an important role, no because of it being control by their partners but because of contextual factors. Berglund et al. (1997) present another hypothesis indicating that motherhood is not perceived as a misfortune but as a meaningful experience or a blessing that female teens search in order to reach a sort of social recognition (Berglund et al., 1997) hence teens are not interested in postponing motherhood but in controlling the amount of children they give birth. In depth research on the link between parity and contraception, and how teens perceived motherhood is needed to reach a more conclusive argument.

5.2 Attitudes

Attitudes are an important component of RAA, however the results of this research seem to suggest that for female Nicaraguan teens, the level of knowledge and exposure to sexual education has no effect on their contraceptive usage. Similar results were found in the Guatemalan and Nicaraguan context, where more knowledge about contraception is not necessarily translated in more or better use of it (Berganza, Peyré, & Aguilar, 1989; Berglund et al., 1997). Other studies on the effects of information and knowledge on contraceptive use arrive to interesting results; in a randomized controlled trial in Nicaraguan motels researchers found that when informative material about STD was placed with condoms, the usage of it decrease compared to when only the condom was placed (Egger et al., 2000). The authors explained that a possible reason for this is the kind of informative material and the importance on how the information is conveyed to the potentials contraceptive users.

In chapter three, an important limitation of the present study was pointed out: there is no specific variable that measures the attitudes towards contraception in the ENDESA 2011/2012. Hence, knowledge and sex education were taken as instrumental variables under the assumption that higher knowledge is translated into more accurate beliefs. However, nuances are necessary since the type and quality of the sexual education in Nicaragua cannot be measure from the ENDESA. Pozo et al. (2015) discussed the state of sexual education in Latin America since it tends to be moral based and focus on negative messages and risk reduction (Pozo et al., 2015). From the ENDESA is possible to estimate that over 90% of all teens say their sexual education covered the topic of contraception (INIDE, 2013a) but no questions evaluating the way contraception was taught is included in the data base. A government approved manual of sexual education is the main instrument used in public schools all over the country; however such document cannot be found publicly so no further evaluation was possible.

5.3 Perceived norms

The results of the model show that the variables that operationalized perceived norms do not have any significant effect on the odds of contraceptive use hence we cannot reject our third hull hypothesis. However, is interesting to note that more than 55% of the female teenagers questioned by the survey agree with at least one of the statements on gender perceptions (see Appendix 1).

These results have to be considered with precaution, since the ENDESA does not ask for the perceptions of family and peers of contraception, only those from the partner. Decat et al. (2015) found that for Nicaraguan teenagers “Feeling confortable to talk about sexuality with friends is positively associated with condom use” (Decat et al., 2015b). The effects of perceived norms from friends can greatly contribute to peer pressure and affect the use of contraception. Rani, Figueroa & Ainsle (2003) use a teenager focused survey to investigates the effects previously mentioned and found that perceived behaviors of peers and siblings influenced the sexual and reproductive behavior of Nicaraguan teens (Rani et al., 2003)

5.4 Perceived Behavioral Control

The operationalized variables of PBC were not significant for the odds of contraceptive use on partnered Nicaraguan female teens. The descriptive statistics found that on average, female teens are 6 years younger than their partners, however incongruent with other studies no statistically significant effect was found. Intuitively other characteristics of the partners must also be taken into account, such as their level of education or their perceptions of social norms.

5.5 Male involvement

Overall, research on teenager’s contraceptive use tends to focus on female decision making, and less often on the male`s. As stated before, in Nicaragua contraception is often seen as “her problem”, separating the decision making process of females and males as if it was independent. Future research needs to overcome this one-side problem in order to fully understand teenager sexual and reproductive behavior. RAA indicates that perceived social norms, attitudes and PBC of the teenager affect the behavior however how the partner perceived all those factors is also an important piece of the research. Female teenagers do not go through the decision making process isolated from their partner`s perceptions.

Male involvement in the decision-making process of contraception is an overdue topic in Nicaragua. The discourse of most programs promoting sexual and reproductive rights for teenagers focus on female knowledge and agency without tackling most of men`s beliefs and perception on the topic. An interesting point is made by Sternberg, White and Hubley (2008) when analyzing the interaction of sexual and reproductive programs and Nicaraguan masculinities; the authors found that men are stuck between new values of female empowerment and old gender traditions in Nicaragua. The authors affirm that “The question is not whether men should accept these new values, but rather how they will react to them, particularly if they think they are left outside the process that throws them up and if they perceive that the new values are configured in opposition” (Sternberg, White, & Hubley, 2008) this means that because men are being left out of the sexual and reproductive programs and research in Nicaragua, they perceived that the new set of rights and values that are being promoted are in direct opposition of their masculinity. Men also have attitudes and perceived social norms that influence their intentions and behaviors, and further research on its influence on contraceptive use is strongly recommended.

5.6 Limitations

After discussing the outcomes, two main limitations have to be outlined. First is the shortcoming of specific RAA variables in the ENDESA dataset. This is especially noticeable in the lack of measurement for attitudes towards contraception, since no specific question about it is included in the dataset. Because of this instrumental variables, such as knowledge and sexual education have to be used to capture female teen`s beliefs about contraception. The assumption that more knowledge and sexual education is equal to less misinformation and myths around contraception stands on the bases that sexual education in Nicaragua is homogenous and covers in a comprehensive way contraception. Both assumptions can be heavily criticized since no evaluation process in done after sexual education class in schools there is no way to determine how effective and comprehensive the course was. Is possible to evaluate the quantity of students that had sexual education, but no the quality of it.

The other major limitation rises from the nature of working sexual and reproductive behavior with secondary data. Some questions such as the exposure to violence are very delicate topics that tend to be under reported as explain in Chapter three. Nicaragua has very traditional gender norms (see Chapter two and three) which mean that female teens tend to not sexual relations until they have partners or get pregnant. This situations hinders any research of sexual and reproductive behavior that uses the ENDESA.

5.7 Conclusion and recommendations

The outcomes of the research suggest that pregnancy, parity and education have significant effects on the odds of using contraception for Nicaraguan female teens. Also, exposure to violence had a significant effect on the odds of using contraception for partnered teens. These results highlight two mean problematic: First, since higher education is linked with higher odds of using contraception, lower educated teens are more at risk of teen pregnancy. Lower educated teens in Nicaragua are usually from lower income quintiles hence the relationship between poverty and teen pregnancy explained in Chapter two is reinforced.

Second, higher parity is linked with higher odds of using contraception, so contraceptives are not used as methods to avoid pregnancy but to postpone future childbearing. Taking into account the possible consequences of teen pregnancy that were explained in Chapter 1, the usage of contraception for parity control instead of pregnancy avoidance needs to be further research. Moreover, this outcome needs to be considered for future strategies that target teen pregnancy. Further research on the meaning and purpose that teens give to contraception needs to be conducted in order to create comprehensible sexual education and better policies on the topic.

Finally, an important point needs to be made about male involvement in sexual and reproductive research and programs in Nicaragua; men`s beliefs and perceived social norms are fundamental when studying and targeting teen contraceptive usage and pregnancy. In a country like Nicaragua, where women are expected to do the childbearing and child rearing by themselves not enough attention is being put into male`s perception of contraception, gender or pregnancy as it needs.

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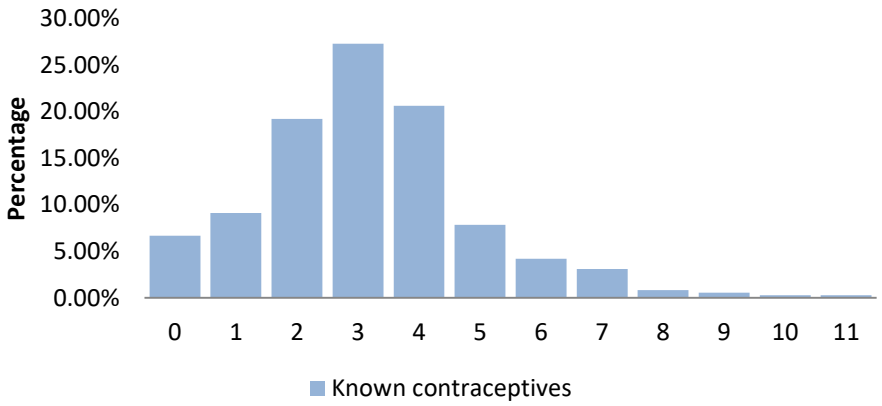
Appendix 1: Tables and Figures

Table 6: Known contraceptives by contraceptive use

		Number of known contraceptives			
		Mean	Std. Err.	[95% Conf.	Interval]
Contraceptive use	No	2.990	0.088	2.818	3.162
	Yes	3.176	0.062	3.053	3.298

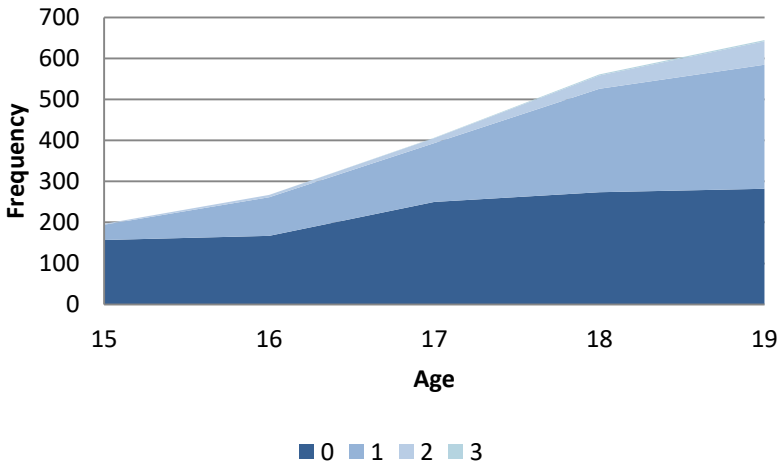
Source: (INIDE, 2013a)

Figure 9: Known contraceptives



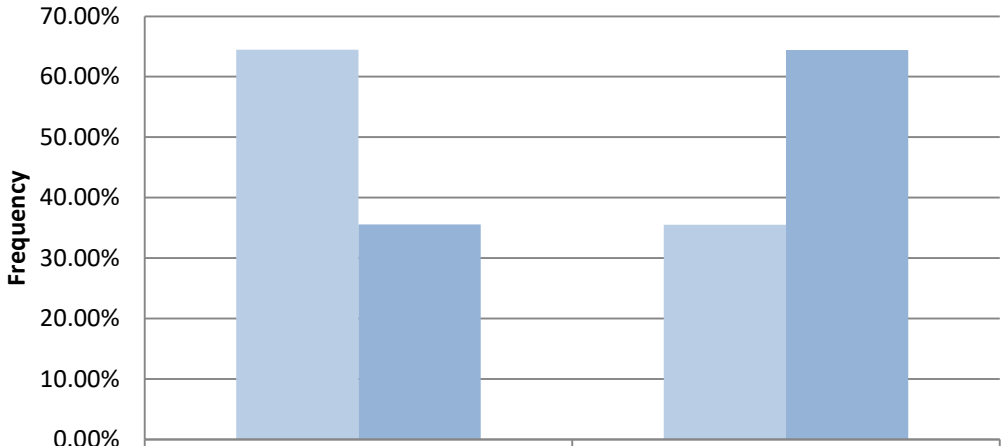
Source: (INIDE, 2013a)

Figure 10: Parity



Source: (INIDE, 2013a)

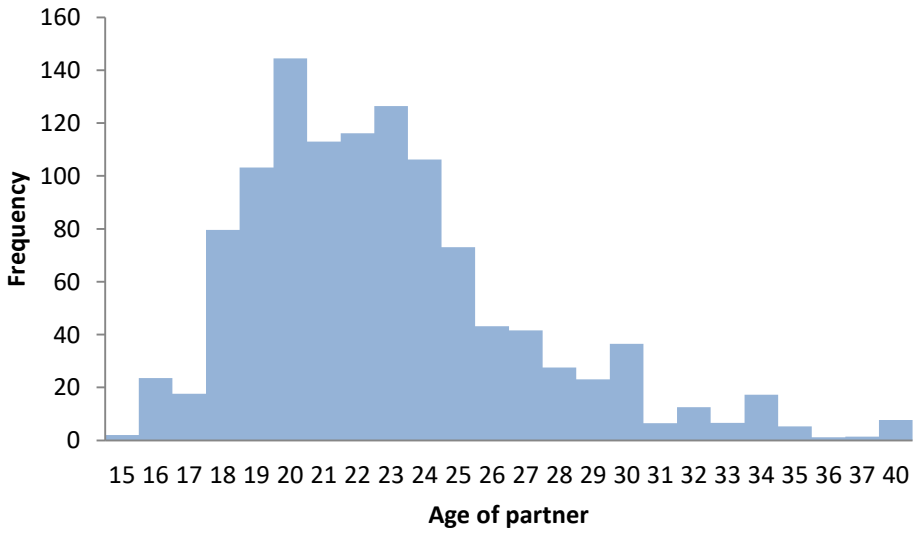
Table 7: Gender perception by area of residence



	Does not agree	Does agree
Urban	64.49%	35.51%
Rural	35.57%	64.43%

Source: (INIDE, 2013a)

Figure 11: Age of partner



Source: (INIDE, 2013a)

Appendix 2: Syntax

```
*RENAME EDAD
rename QW102 edad
tab2 QW303 QW303 Area
tab2 QW303 REGION
*rename var
rename REGION region
rename Area area
table QW305, by (QW304)
tab QW305
tabstat QW307, by ( QW306) stat (mean)
table QW313, by (QW314)
tab QW317
*Gen religion
codebook QW115
gen religion=0 if QW115==2
replace religion=1 if QW115==3
replace religion=2 if QW115==1
replace religion=3 if QW115==4 | QW115==5 | QW115==6 | QW115==7 | QW115==99
label var religion "Religion"
label define religion 0 "Catholic" 1 "Evangelic/Protestant" 2 "None" 3 "Other"
label values religion religion
*Gen sex
codebook QW510M
tab QW510M
gen sex=1
replace sex=0 if QW510M==22
label var sex "Ever had sex"
label define sex 1 "Yes" 0 "No"
label values sex sex
replace sex=. if QW510M==99
codebook sex
tab sex
*gen gender
gen gender=0 if QW804==2 & QW806==2 & QW809A==2 & QW809B==2
replace gender=1 if QW804==1 | QW804==1 | QW809A==1 | QW809B==1
label var gender "Gender perception"
label define gender 0 "Don`t agree" 1 "Agree with at least one"
label values gender gender
*gen sex edu
gen sexedu=.
replace sexedu=1 if QW501==1
replace sexedu=0 if QW501==2
label var sexedu "Have you ever had sex education at school"
```

```
label values sexedu sex
*gen pregnant
gen pregnant=.
replace pregnant=0 if QW524F==2
replace pregnant=1 if QW524F==1
label var pregnant "Have you ever been pregnant"
label values pregnant sex
*gen control over health care
gen cohc=0
replace cohc=1 if QW815F==1
label var cohc "control over health care"
label values cohc sex
*gen violence
gen violence1=0
replace violence1=1 if QW817A1==1 | QW817A2==1 | QW817A3==1 | QW817A4==1
label var violence1 "Psychological violence"
label values violence1 sex
gen violence2=0
replace violence2=1 if QW818A1==1 | QW818A2==1 | QW818A3==1 | QW818A4==1 |
QW818A5==1 | QW818A6==1
label var violence2 "Physical violence"
label values violence2 sex
gen violence3=0
replace violence3=1 if QW819A1==1 | QW819A2==1
label var violence3 "Sexual violence"
label values violence3 sex
*gen partner reaction
codebook QW614
gen preaction=.
replace preaction=0 if QW614==1
replace preaction=1 if QW614==2 | QW614==3
replace preaction=2 if QW614==98
label var preaction "Partner reaction to condom"
label define preaction 0 "He would agree/He would not mind" 1 "He would get upset/He would
not like it" 2 "I don`t know how he would react"
label values preaction preaction
codebook preaction
tab preaction
*Knowledge
*Gen a variable for each type of contraception
gen k1=0
replace k1=1 if QW300_01==1
gen k2=0
replace k2=1 if QW300_02==1
```

```
gen k3=0
replace k3=1 if QW300_03==1
gen k4=0
replace k4=1 if QW300_04==1
gen k5=0
replace k5=1 if QW300_05==1
gen k6=0
replace k6=1 if QW300_06==1
gen k7=0
replace k7=1 if QW300_07==1
gen k8=0
replace k8=1 if QW300_08==1
gen k9=0
replace k9=1 if QW300_09==1
gen k10=0
replace k10=1 if QW300_10==1
gen k11=0
replace k11=1 if QW300_11==1
gen k12=0
replace k12=1 if QW300_12==1
gen k13=0
replace k13=1 if QW300_13==1
gen know= k1 + k2 + k3 + k4 + k5 + k6 + k7 + k8 + k9 + k10 + k11 + k12 + k13
label var know "Knowledge of contraception"
drop k1 k2 k3 k4 k5 k6 k7 k8 k9 k10 k11 k12 k13
*gen conuse2
gen conuse2=0
replace conuse2=1 if QW303==1
logit conuse area region TotgradoMEF EstaCony gender sexedu pregnant violence1 violence2
violence3 know QW217D [pw=peso]
logit conuse2 area region TotgradoMEF EstaCony gender sexedu pregnant violence1 violence2
violence3 know QW217D [pw=peso]
keep if sex==1
*D
table area conuse2 if sex==1 [pw=peso]
table area conuse2 [pw=peso]
table area conuse2
table area conuse2
table age conuse2
table religion conuse2
mean TotgradoMEF
table violence1 conuse2
mean violence1
table violence2 conuse2
```

```
table violence3 conuse2
table pregnant conuse2
table parity conuse2
mean area
table conuse2, c(mean know)
corr conuse2 age are religion TotgradoMEF violence1 violence2 violence3 pregnant QW217D
pcon know sexedu gender preaction page cohc
table age, by (conuse2)
codebook conuse2
table conuse2
table conuse [pw=peso]
table age, by (area)
table conuse2 if sex==1 [pw=peso], by (area)
table religion
table age, c(mean TotgradoMEF min TotgradoMEF max TotgradoMEF)
pwmean TotgradoMEF , over(conuse2)
mean age, over(conuse2)
mean TotgradoMEF, over(conuse2)
table violence1,  by (area) c(mean TotgradoMEF)
mean TotgradoMEF, over(violence1)
mean TotgradoMEF, over(violence2)
mean TotgradoMEF, over(violence3)
table violence1 conuse2
table violence2 conuse2
table violence3 conuse2
table violence1 violence3
table violence1 violence2 violence3
table violence3 violence2 violence1
table area, c(mean QW217D)
table age, c(mean QW217D min QW217D max QW217D)
table age if sex==1 [pw=peso], c(mean QW217D median QW217D)
table know
table age know
table area, c(mean know)
table area, by (sexedu)
table age gender
table area gender
table area preaction
table age preaction
table page
table age, c(mean page)
table area, c(mean page)
mean page, over(conuse2)
table area, c(mean page min page max page median page sd page)
```

```
table age, c(mean page min page max page median page sd page)
tabstat page, stat (mean min max sd median)
table cohc
table age cohc
table conuse cohc
mean age
mean religion
mean TotgradoMEF
mean violence1
mean violence2
mean violence3
mean pregnant
mean parity
mean know
mean sexedu
table know conuse2
table sexedu conuse2
table gende conuse2
table preaction conuse2
mean gender
mean preaction
table page conuse2
mean page
table cohc conuse2
mean cohc
mean preaction
logistic conuse2
logistic conuse2 i.area age i.religion TotgradoMEF i.violence1 i.violence2 i.violence3 i.pregnant
parity
logistic conuse2 i.area age i.religion TotgradoMEF i.violence1 i.violence2 i.violence3 i.pregnant
parity know i.sexedu gender
logistic conuse2 i.area age i.religion TotgradoMEF i.violence1 i.violence2 i.violence3 i.pregnant
parity know i.sexedu gender i.preaction page i.cohc
logistic conuse2 i.area age i.religion TotgradoMEF i.violence1 i.violence2 i.violence3 i.pregnant
parity know i.sexedu gender i.preaction page i.cohc pregnant#parity violence1#violence2
violence2#violence3 violence3#violence1
```