

GENDER DISPARITIES IN HIV RISK IN THE DOMINICAN REPUBLIC:
HOW DO GENDERED POWER INDICATORS EXPLAIN SEXUAL BEHAVIORS AND
HIV-RELATED ATTITUDES?

BY

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DISSERTATION

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ABSTRACT

Growing evidence in several professional fields supports that women's vulnerability to HIV is not only the result of socioeconomic factors, but also the outcome of a cumulative history of cultural influences that have shaped mutually exclusive, specific roles for both men and women. In heterosexual relationships, social normalization of gender roles explains the limited power that women perceive on communicating about sexuality with their partners, demanding fidelity, seeking self-protection in sexual intimate encounters, or negotiating condom use; and this is regardless of their level of education. In the Dominican Republic (DR), the HIV infection has been feminized due to the '*macho*' culture, which encourages men to be promiscuous and unfaithful, but discourages condom use. On the contrary, the culture encourages women to be faithful to their husbands, but discourage sexual communication. Consequently, Dominican women have limited access to means of protection and condom negotiation with their sexual partners. The mainly heterosexual nature of the HIV epidemic in the DR requires a deep understanding of the role of and the associations between social and cultural factors to define power imbalance and gender dynamics that result in women's and perhaps men's vulnerability to HIV. The purpose of the current study is to understand gender inequalities in HIV risk among adults 15 to 49 years old in the DR, and to understand women's vulnerability to the infection. Two main aims have been proposed. First, the study aims to examine and contrast the impact of several gendered power indicators on sexual behaviors among men and women. Second, the study intends to examine and contrast the impact of gendered power indicators on sexual behaviors and HIV-related attitudes among currently married and formerly married women. Cross-sectional population data from the Demographic and Health Survey [DHS] collected in the DR in 2007 was analyzed. Participants for this study included 51,018 men and women aged 15 to

49 years old who completed their gender-specific interviews. Measurements included demographics, gendered power indicators, and HIV indicators. Gendered power indicators included three main categories: gendered rights (socioeconomic factors), gendered responsibilities (power dynamic factors), and gendered expectations (social norms and gender roles). Sexual behaviors included condom use and premarital sex. HIV-related attitudes included condom acquisition. Descriptive survey analysis and nested logistic regression models were completed. Our results for goal 1 indicated that women were less likely to use a condom than men (OR=0.30, $p<0.001$). Among men, higher education, better wealth, and living in a female-headed household increased the likelihood to use a condom. In comparison with never married men, currently married and formerly married men were 97% and 33% less likely to use condoms. Among women, the odds of condom used increased for young adults 15-19 years old (OR=1.32, $p<0.001$), but decreased up to 64% as age groups grow older. Being in the richer quintile (OR=1.26), living in a female-headed household (OR=1.26), and having good access to media (OR=1.24) increased the likelihood of condom use. However, being currently married or formerly married and living in rural areas decreased such likelihood ($p<0.001$). Being a woman reduced the likelihood of premarital sex by 94% ($p<0.001$). Older age, higher education, and better wealth status increase the odds of condom use among men ($p<0.001$). Men who were younger, have rural residence, and agreed with traditional gendered expectations were less likely to have premarital sex. Among women, only higher education (OR=1.25, $p<0.001$) and agreeing with both men and women can have sex before marriage (OR=1.30, $p<0.001$) increased the likelihood of premarital sex; however, living in rural areas was found protective in comparison with women living in big cities ($p<0.001$). Results for goal 2 indicated that formerly married women were 6.7 times more likelihood to use condoms than currently married women ($p<0.001$).

Among currently married women, being 20 to 24 years old, working in sales, living in a female-headed household, and having good access to media increased the likelihood of condom use ($p < 0.001$). However, the odds of condom used decreased with older age and rural residence ($p < 0.001$). Among formerly married women, occupation (working in clerical, sales, domestic, and services) and good access to media increased the likelihood of condom use ($p < 0.001$); whereas, older age, living in the countryside, and accepting abstinence for both men and women decreased the odds of condom use ($p < 0.001$). The odds of premarital sex were 12% higher among formerly married women ($p < 0.001$). Among currently married women, only higher education and agreeing with abstinence until marriage just for men increase the odds of premarital sex by 25% and 36%, respectively ($p < 0.001$). Working in professional or technical jobs decreased such likelihood ($OR = 0.84$, $p < 0.001$). Among formerly married women, however, higher education and working on sales increased the likelihood of condom use by 73% and 23%, respectively ($p < 0.001$). The likelihood of condom acquisition was similar both currently married and formerly married women ($OR = 1.05$, $p > 0.005$). Among currently married women, however, the odds of condom acquisition increased with higher education, wealth, occupation, access to media, and acceptance of abstinence for both men and women ($p < 0.001$). Among formerly married women only higher education and occupation increased the likelihood of condom use. Older age was found to decrease condom for both currently and formerly married women in comparison with 30 to 34 years old currently married women. Our study has provided the evidence to support that gender differences of power and sexual behaviors among the Dominican population call for tailored, gender-specific interventions that accounts for the specific needs found among men and women; even within the female population, prevention strategies needs to

account for current marital status and identify the best ways to strength the sources of power for each group of women.

To Mis Amores... I love you with all my life

In honor of my Mother and in memory of my Father

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This accomplishment represents a great blessing to me! It is not only the result of intently hard work and perseverance to strive for excellence, but also the fulfillment of a promise: “Be strong and courageous. Do not be afraid; do not be discouraged, for the Lord your God will be with you wherever you go” [Joshua 1:9 (NIV)]. Thus, I should first acknowledge my Lord for keeping His promise and being faithful to give me wisdom and strength throughout this journey. Such blessing, however, is not exclusively my own. In instead, it has been the result of the teachings, appreciation, generosity, and patience of many wonderful people around me; to them I should show my appreciation. I wish to express my sincerely appreciation to Dr. Flavia Andrade for her unconditional support, not only as my academic advisor, but also as a teacher, coordinator, research mentor, and dissertation committee chair: I could not have asked for a better person to guide me in my doctorate studies. It has been a privilege to work with her! I am particularly grateful for the outstanding support and expert advice I received from my preliminary examination and dissertation committee members Dr. Marcela Raffaelli, Dr. David Buchner, Dr. Juliet Iwelunmor, and Dr. Angela Black: I highly appreciate the time and efforts they have invested in meeting me, reading my lengthy drafts, and listen to my even lengthier presentations. Also, I am so appreciative for the wonderful mentorship and friendship I received from Dr. Shondra Loggins during my exams preparation, and for the support of my friends and graduate fellows Debbie Linares and Hyun Kim. I wish to further recognize the generosity of those organizations and programs which provided me with financial support during my PhD: the American Association of University Women [AAUW], the Office of International Programs and Studies, the Graduate College, the Women’s Resources Center, the Department of Kinesiology and Community Health, and the Up Amigos project. In particularly, I would like to express my

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TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.....	1
CHAPTER 2: LITERATURE REVIEW.....	18
CHAPTER 3: MATERIALS AND METHODS.....	58
CHAPTER 4: RESULTS.....	70
CHAPTER 5: DISCUSSION AND CONCLUSIONS.....	82
REFERENCES.....	103
TABLES.....	119
APPENDIX A: RELATIONSHIP BETWEEN SEX, GENDER AND POPULATION/HEALTH/NUTRITION OUTCOMES AS INITIALLY CONCEIVED TO INTEGRATE SPECIFIC GENDER QUESTIONS IN THE DHS QUESTIONNAIRES.....	141
APPENDIX B: ADOPTED THEORETICAL FRAMEWORK: EXPLAINING WOMEN’S HIV RISK IN THE DR.....	142

CHAPTER I

INTRODUCTION

The Human Immunodeficiency Virus (HIV) and its related Acquired Immune Deficiency Syndrome (AIDS) continue to be one of the most serious public health pandemics facing humankind (USAID, 2010). Since 1981, when the disease was first recognized, AIDS has been responsible for more than 25 million deaths, 14 million orphaned children, and more than 34 million people living with the disease (De Cock, Jaffe, & Curran, 2012; USAID, 2010). Up to date, there are 35.3 million [32.2 to 38.8 million] people in the world living with HIV, but only 2.3 million new cases of HIV were reported in 2012 (UNAIDS, 2013a). However, epidemiological indicators suggest that the progress on the HIV epidemic control has improved in the last decade as a result of collaborative efforts from scientists, political partners, and community members (UNAIDS, 2013a).

By the end of 2012, such efforts had led to the accomplishment of three main advances in the prevention of HIV/AIDS: first, the annual HIV incidence has declined 33% between 2001 and 2013 as the number of new cases of HIV decreased in 33 countries in the world; second, the AIDS-related mortality rates has declined about 29% since 2005; and third, the number of people living with HIV has increased by 17% since 2001, which is mainly due to better survival rates (UNAIDS, 2013b, 2011b). The implementation of HIV prevention programs, as well as the expansion of access to antiretroviral therapy has greatly contributed to this success: in the last decade antiretroviral therapy coverage worldwide has increased by about 40-fold, including some low- and middle-income countries (UNAIDS, 2013a, 2011b).

In accordance with the progress in epidemic control, the Joint United Nations Programme on HIV/AIDS (UNAIDS, 2011) has the vision to achieve the point where the world has zero new HIV infections, zero HIV-related discrimination, and zero AIDS-related deaths. Although the fulfillment of these goals is potentially possible, it is necessary to recognize inequalities in the HIV epidemiological profile worldwide and be aware that some regions still remain more heavily affected than others (UNAIDS, 2011b). This is the case of Sub-Saharan Africa—which represents 2% of the worldwide population—where despite a dramatic reduction of 25% in the incidence of HIV in the last decade (2001-2011), continues to have the highest HIV rates among adults aged 15 to 49 in the world [16.60% - 18.10%] (UNAIDS, 2011b).

By 2011, Sub-Saharan Africa accounted for about 72% of all new HIV infections, 69% of all people living with HIV, and almost 50% all AIDS-related deaths (UNAIDS, 2011b). The epidemic is particularly severe among Southern African countries, where approximately 5.6 million people are estimated to live with the disease, standing as the highest concentration of cases worldwide (UNAIDS, 2011b). Heterosexual transmission remains the dominant mode of HIV transmission in sub-Saharan Africa and worldwide as most cases occur among heterosexual partners (De Cock et al., 2012). Fortunately, availability of free antiretroviral therapy has helped to decrease the total of AIDS-related deaths in this region (UNAIDS, 2011b).

The second area with the highest HIV epidemic in the world—and the highest in the Western Hemisphere—is in the Caribbean, which accounts for a 0.9% [0.8 - 1.0] rate of HIV seroprevalence (Barreto, Miranda, Figueroa, Schmidt, Munoz et al., 2012; Rojas, Malow, Ruffin, Rothe, & Rosenberg, 2011; UNAIDS, 2010). In the last decade, important progress has been achieved as the number of all new cases of HIV has declined by 42% overall between 2001 and 2011, including a 32% decrease in the number of new cases among children and a 35% decrease

among young adults ages 15 to 24 years (UNAIDS, 2011b). In addition, AIDS-related mortality rates have decreased about 50% since 2001 (18,000 deaths in 2001 vs. 9,000 deaths in 2010) and continued to be 48% during the period 2005-2011 (UNAIDS, 2011b). As a result, the number of people living with HIV has remained steady since the 1990's.

As at the global level, two main factors have been associated with the recent epidemiological HIV/AIDS profile in the Caribbean: prevention programming efforts and increased access to antiretroviral therapy (UNAIDS, 2011b). However, there is a wide variation in prevalence rates of HIV across Caribbean countries. Some Caribbean countries such as Cuba have an extremely low HIV prevalence (0.1%), whereas others such as the Bahamas present a much higher rate (3.1%) (UNAIDS, 2010). In the Dominican Republic (DR), for instance, HIV prevalence rate is about 1%, which is not as high, but still remains high when compared with Cuba. One of the factors that have been used to explain this variability in the difference across countries is the proportion of people eligible to antiretroviral therapy who is actually receiving treatment, care and support. In Cuba, for instance, more than 80% of eligible people living with HIV are receiving such treatment, whereas among other Caribbean countries such as Belize, Haiti, and Jamaica, just to mention few, this proportion is only between 40-59% (UNAIDS, 2010). In the DR, though, about 60-79% of all eligible HIV-positive individuals are receiving antiretroviral therapy, but the other 30% does not have access to treatment yet (UNAIDS, 2011b).

Similar to Sub-Saharan Africa, the main mode of HIV transmission in the Caribbean is heterosexual and it is mainly attributable to unprotected sex (UNAIDS, 2011b). Two key characteristics make the heterosexual HIV epidemic unique in the Caribbean. First, it is the only region where HIV-positive females outnumber HIV-positive males besides Sub-Saharan Africa

(Barreto et al., 2012; Rojas et al., 2011; UNAIDS, 2010, 2011b), suggesting gender inequalities in HIV risk. For instance, approximately 53% of people living with HIV in 2009 were females and HIV prevalence among young females is higher than among young males (0.5% vs. 0.3%, respectively) (UNAIDS, 2010). Second, a considerable part of the prevalence of HIV in some Caribbean countries is due to the legal sex industry, which defines high vulnerability among both female sex workers and men who have sex with men (Rojas et al., 2011; UNAIDS, 2010, 2011b). For instance, HIV prevalence among female sex workers was 27% in Guyana, 9% in Jamaica, and 4% in the DR (UNAIDS, 2010). Among men who have sex with men the HIV prevalence was 21% in Guyana, 20% in Trinidad and Tobago, and 11% in the DR (UNAIDS, 2010). Main factors that perpetuate high HIV rates among these groups are multiple sexual partners, limited condom use, and early sexual debut (UNAIDS, 2011b). In this sense, the UNAIDS Women Out Loud Report (p.13) reads: “There has been growing recognition of how sociocultural factors driving gender inequalities critically influence the risk of HIV infection. This is particularly true of the role of gender norms and how they impact on HIV acquisition in women and affect women’s access to services and social support. Women’s particular vulnerability to HIV makes a better understanding of gender barriers to HIV transmission paramount” (UNAIDS, 2012b). Thus, gender inequalities in the HIV epidemic are still a challenge to prevention efforts and need to be addressed.

In 2011, the UNAIDS proposed a new list of ten target goals in reducing the HIV epidemic in the world by reducing the number of new HIV cases to zero and by decreasing the numbers of HIV-related deaths (UNAIDS, 2011a). Goal 1 on the list targets the need of reducing sexual transmission of HIV by increasing awareness of self-protection measurements, including condom use, mainly among women and young people. This priority relates to goal 7 on the list,

which aims to eliminate gender inequalities in HIV infection, as women represent 49% of all people living with HIV in the world, and in some places, such as Asian countries, women are found to have great vulnerability to acquire the disease from their intimate partners (UNAIDS, 2012b).

In summary, the general situation of the HIV epidemic in the Caribbean has improved in the last decade. However, great variability exists across Caribbean countries as epidemic inequalities can be addressed between gender and age groups. As the main mode of HIV transmission among Caribbean countries is heterosexual and it is mainly due to unprotected sex, it becomes critical to understand the several factors that define such inequalities in HIV vulnerability between men and women as partners in a heterosexual relationship in order to better tailor effective public health interventions to reduce disparities in HIV risk. Giving this need, the current study aims to understand gender differences in HIV risk among adults in the DR, one of the islands located in the north Caribbean Sea, and further explore women's vulnerability to the disease.

1.1. The HIV/AIDS epidemiology in the DR: A case study

In similarity to the general pattern in the Caribbean region, indicators of the HIV epidemic in the DR suggest a fine progress on the disease. First, in the DR the number of new cases of HIV has decreased more than 50% in the last decade: from 5,200 [4,400 to 6,300] in 2001 to less than 500 [<200 to <1000] people in 2012, and consequently the overall prevalence rates of HIV among adults 15 years and older in the DR have decreased from 1.3% [1.1% to 1.5%] in 2001 to 0.7% [0.6% to 0.8%] in 2012 (UNAIDS, 2012a, 2013b). However, when age and gender are taken into consideration, young women (15 to 24 years old) continue to have

higher prevalence rates of HIV than young men (0.2% vs. 0.1%, respectively) (CESDEM, 2008; UNAIDS, 2012a). In addition, women in the DR reach the higher peak of HIV prevalence at an earlier age than men; this is, the highest HIV prevalence among women in the DR is reached at age 30 to 34 years (1.4%), while men reach this peak at age 35 to 39 years (1.6%) (CESDEM, 2008). Regardless of gender, however, prevalence rates of HIV in the DR tend to increase with age from 0.1% among individuals from 15 to 19 years old to 1.4% among those aged 30 to 34 years, and then they start to decrease across age groups. These facts not only suggest the existence of gender inequalities in the HIV epidemic in the DR, but also the importance of age as a non-modifiable risk factor for the disease.

The second indicator that shows a fine progress in the HIV epidemic in the DR is reduction in the number of deaths related to HIV, which has declined from an average of 4,600 [3,900 to 5,500] in 2001 to an estimate of 1,900 [1,400 to 2,600] cases in 2012. Such increase in survival rates has been the result of increased access to antiretroviral therapy (currently 78%), as well as prevention strategies to reduce HIV transmission among vulnerable groups such as pregnant women and female sexual workers (Kerrigan, Barrington, Sweat, Moreno, Rosario et al., 2006; Kerrigan, Ellen, Moreno, Rosario, Katz et al., 2003; Kerrigan, Moreno, Rosario, & Sweat, 2001; Lorenzo, Beck-Sague, Bautista-Soriano, Halpern, Roman-Poueriet et al., 2012; Perez-Then, Peña, Tavaréz-Rojas, Peña, Quiñonez et al., 2003). However, the number of people living with HIV that will be eligible for antiretroviral therapy is projected to be about 41,000 by 2015, therefore access to treatment needs yet to be expanded (UNAIDS, 2013b). In addition, efforts to continue preventing HIV vertical transmission and new born diagnosis need to be expanded. According to the 2013 UNAIDS report, a number of 1,300 living with HIV received antiretroviral therapy for preventing mother-to-child transmission, but there is limited data the

total number of women who actually needed such intervention. Also, only 44% of children born from women living with HIV in the DR received a virological test for HIV within two months of birth (UNAIDS, 2013b).

Lower prevalence rates of HIV in the DR along with higher survival rates have resulted in the third indicators of progress: an increasing number of people living with HIV. According to the executive director of the AIDS Presidential Committee, the DR continues to be the second country in the Caribbean—after Haiti—with the highest number of HIV infected cases. In the beginning of 2012, the AIDS Presidential Committee (COPRESIDA) estimated that there were approximately 60,000 to 70,000 people living with HIV in the country out of a total population of about 10 million people. Yet, the gender distribution of such estimates was not reported. Although the estimated number of adults ages 15 to 49 years living with HIV in the DR reported by UNAIDS was 42,000 [37,000 to 49,000] in 2012, which is lower than the national estimates, it continues to be high and to affect women (52%) more than men (UNAIDS, 2011b).

As in other Caribbean countries, inequalities in HIV rates among adults in the DR are worsened by socioeconomic and cultural factors (CESDEM, 2008; Halperin, de Moya, Pérez-Then, Pappas, & Calleja, 2009; Rojas et al., 2011; USAID, 2010). Poverty, illiteracy levels, low-risk perception of HIV, and cultural barriers to preventive strategies are just a few of the factors that increase HIV risk in the DR (Rojas et al., 2011). Other driving factors of the HIV epidemic that also reflect the reality in the Caribbean are unprotected sex, multiple sexual partners, early sexual debut, and high rates of pregnancy among girls and young women (UNAIDS, 2010).

This reality may somehow explain why some of the most vulnerable groups to HIV in the DR are female sex workers, men who have sex with men, Haitians and Haitian-Dominican

residents who work and live in the sugar cane plantations (bateyes), and women who have fewer than four years of education (Rojas et al., 2011; UNAIDS, 2010). Consequently, it is possible to suggest that sexual workers symbolize high risk associated with occupation, lack of power to negotiate safe sex, and promiscuity. Residents in the bateyes exemplify high risk related to poverty, insolation, low education, and therefore, low risk perception and exposure to risky sexual behaviors. Finally, great vulnerability among women with low education embodies the high HIV risk related to gender, education, and lack of power, which come back to poverty issues. These suggestions may also support that HIV vulnerability among certain groups in the DR may be mainly due to socioeconomic inequalities, but it seems to be linked to high risk sexual behaviors and to power issues.

Out of those four vulnerable groups, the current study has focused on understanding the situation of women who have poor education, particularly among those who live in areas on extreme poverty as it has been reported that in fact there is no inequalities in educational attainment between men and women in the DR, but instead women achieved secondary and tertiary level of education in a higher proportion than men (Bekhouch, Hausmann, Tyson, & Zahidi, 2013; Hausmann, 2013). The Global Gender Gap Index Report has presented the gender gap index among several countries since 2006 in order to understand the trends of gender inequalities in education, political empowerment, health and survival, and economic opportunities. Scores for gender gap index can be from 0 (greatest inequality) to 1 (complete equity) based on the female to male ratios. In 2013, the DR received a gender gap score of 0.69, being ranked as 72nd out of 136 countries in the world. This score is compared with 0.87 in Iceland, which ranked number 1. For educational achievement the DR was found have a gender gap score of 0.98, which is not still perfect as some countries have achieved complete equity, but

shows improvement over time on women equity in education. However, when exploring other areas, women in the DR are found to have great inequalities in economic participation and opportunities (Score: 0.67; ranking: 63), and even greater inequalities in political empowerment (Score: 0.12; ranking: 84) (Hausmann, Tyson, & Zahidi, 2012).

Also according to the Global Gender Gap Index Report (2013, 2012), when further exploring indicators of economic empowerment and education, women in the DR have higher rates of enrollment in secondary and tertiary education than men, but they have higher rates of unemployment, less participation on the labor force, less administrative positions, and less income than their male counterparts. Also, women in the DR have limited participation in political activities, which may explain the few women in parliament and ministerial positions, and the complete absence of a female as head of state in the Dominican history (Hausmann et al., 2012).

The gender gap scores in the DR may suggest that women's educational attainment has not been sufficient to enable them to break down barriers or to have the same opportunities that men have in economic and political settings. This suggestion challenges the idea beneath the social gradient of health, where the more educated should have better SES, and therefore better job opportunities, better income, and ultimately better health (Marmot, 2005). Under these assumptions, it is possible to hypothesize that not always the more educated will have the better health, but the power of education as a protective factor may be overcome by societal and cultural influences under certain circumstances. If these assumptions are applied to HIV risk in the DR, it is reasonable to state that although socioeconomic indicators play a crucial role in defining health behaviors, higher education may be not enough to reverse social norms and

culturally-driven gender roles as definers of power imbalance and risk-taking behaviors. This may explain the discrepancies between what people know and what they do.

Several theories have attempted to describe the pathways for HIV risk; these behavioral theories have agreed that cultural factors play a noteworthy role in defining sexual behaviors among men and women and their willingness to accept behavioral changes (Mashinini & Pelton-Cooper, 2012; Neumann, O'Donnell, San Doval, Schillinger, Blank et al., 2011; Wingood & DiClemente, 2000). In fact, evidence supports that culturally-driven gender roles and their consequent gender dynamics impact sexual behaviors even among high-educated, economically independent women, and also may explain high incidence of infidelity and multiple sexual partners among wealthy, well-educated men and women (De Walque, 2009; Mashinini & Pelton-Cooper, 2012). In the DR, the HIV infection has been feminized due to the '*macho*' culture and culturally-driven gender roles (<http://www.acento.com.do/index.php/news/9733/56/>). The Dominican culture encourages men to be unfaithful to their wives or cohabitating partners and to have multiple sexual partners simultaneously, while discourages them to use condoms. On the contrary, the culture encourages women to be faithful and committed to their husbands, and discourage sexual communication (Aas, 2010; CESDEM, 2008; Rojas et al., 2011). Consequently, Dominican women, as women in South Africa, have limited access to the means of protection and condom negotiation with their sexual partners, which may explain very low rates of condom use among women in comparison with men regardless of woman's self-reported perception of acquiring HIV (Booyesen & Summerton, 2002b; CESDEM, 2008; Rojas et al., 2011).

In addition, previous studies have proposed marital status as a predictor of HIV risk and sexual behaviors (Bowleg, Belgrave, & Reisen, 2000; Magadi & Desta, 2011; Shisana, Zungu-

Dirwayi, Toefy, Simbayi, Malik et al., 2004); however, the evidence is not conclusive. The association between HIV risk and marital status has been proposed as a complex association as it depends on several demographic factors and sexual behaviors (Mkandawire-Valhmu, Wendland, Stevens, Kako, Dressel et al., 2013; Shisana et al., 2004).

In the DR, condom use also varies by marital status: the proportion of non-cohabitating and non-married women that had used condom during the last time they have sex has increased from 25% in 2002 to 40% in 2007; still, condom use among cohabitating or married partners remained extremely low—less than 3% (CESDEM, 2008). Evidence supports that married and committed women are found to perceive themselves at a low or no risk of HIV, so they are more likely to be involved in sexual risky behaviors such as lack of condom use; this is regardless of education or self-efficacy (Bowleg et al., 2000). However, other studies have suggested that never married women have a higher risk of HIV infection in comparison with married women, particularly at younger age groups and when sexual behaviors are controlled for in the model (Magadi & Desta, 2011; Shisana et al., 2004). In the DR, as in other countries, higher risk of being HIV-positive have been found among women who had reported early initiation of sexual activity, premarital sex, multiple sexual partners, and limited condom use (Guilamo-Ramos, Jaccard, Lushin, Martinez, Gonzalez et al., 2011). About 15% of women 15 to 24 years in the DR had initiated sexual activity before age 15, and most of the time these early encounters occurred with no condoms (Guilamo-Ramos et al., 2011; Rojas et al., 2011; UNAIDS, 2010); it is proposed that these younger ages are less likely to be married (Magadi, 2011). In contrast, other studies have found that it is previously married women who are at higher risk of HIV (Nalugoda, Guwatudde, Bwaninka, Makumbi, Lutalo et al., 2014; Oluoch, Mohammed, Bunnell, Kaiser,

Kim et al., 2011; Wanjiru Waruiru, Ibrahim Mohammed, Shahnaaz Sharrif, & De Cock, 2014), but little is known about this group in the DR.

Such gender inequalities in sexual behaviors and attitudes are worsened by poverty: women with limited access to certain resources and economically dependent are more likely to have non-regular sexual partners and less likely to use a condom (Booyesen & Summerton, 2002b; Rojas et al., 2011). Thus, gender inequalities in the DR that promote low rates of condom use, low ability of condom negotiation and concurrent sexual partnership, highly increase women's vulnerability to the HIV infection (Halperin et al., 2009; Quinn & Overbaugh, 2005; Rojas et al., 2011). Women's vulnerability to HIV infection in the DR needs to be understood under a perspective that includes all possible dimensions including the socioeconomic and the cultural perspectives. In order to do this, however, differences in determinants of HIV risk between men and women needs to be examined first.

1.2. Research statement and study justification

Growing evidence in several professional fields supports that women's vulnerability to HIV is not only the result of a social gradient in health—defined by socioeconomic factors such as socioeconomic status (SES), income, education, and availability of resources—but also the outcome of a cumulative history of cultural influences that have shaped mutually exclusive, specific roles for both men and women (Aas, 2010; Connell, 1987; Mashinini & Pelton-Cooper, 2012). Gender roles, as defined by culture and society, intercept with the actual SES indicators in shaping sexual behaviors that increase the risk of acquiring HIV among women in heterosexual relationships. For instance, social normalization of gender roles explains the limited power that women perceive on communicating about sexuality with their partners, demanding fidelity,

seeking self-protection in sexual intimate encounters, or negotiating condom use; and this is regardless of their level of education (Clark, Bruce, & Dude, 2006; Mashinini & Pelton-Cooper, 2012; Rosenthal & Levy, 2010).

The mainly heterosexual nature of the HIV epidemic in the DR requires a deep understanding of the role of and the associations between social and cultural factors to define power imbalance and gender dynamics that result in women's and perhaps men's vulnerability to HIV. Then, it will be possible to identify the gaps that need to be explored for future research and to guide the development of tailored, gender-specific prevention programs to reduce HIV risk in vulnerable populations.

1.3. Purpose and significance of the study

Building on the evidence about the HIV epidemic in the DR, as well as on the identified needs, the purpose of the current study is to understand gender inequalities in HIV risk in the DR, and also to understand women's vulnerability to the infection. Two main aims have been proposed. First, in order to understand gender inequalities, the study aims to examine and contrast the impact of several demographic, socioeconomic, and cultural factors on sexual behaviors among men and women ages 15 to 49 years in the DR. Second, in order to understand women's vulnerability, the study intends to examine and contrast the impact of demographic, socioeconomic, and cultural factors on sexual behaviors and HIV-related attitudes among currently married and formerly married women ages 15 to 49 years in the DR. It is important to note that never married women were not included on the study due to limited availability of the data to compare across groups. Details about this issue are discussed in chapter 3.

This dissertation research has its theoretical foundation in Connell's theory of gender and power (TGP, 1987), which focus on how social norms as explained through SES, power imbalance, and culture affect women's sexual health and increase their vulnerability to HIV infection. In addition, in order to facilitate the approach of gender inequalities, this study has included few of the constructs proposed in the conceptual framework used by the Demographic and Health Survey (DHS) to assess the impact of sex and gender on population and health outcomes (see Appendix A). By bringing together the structures of Connell's theory under the gender dimensions proposed by DHS, the study has defined three new categories of gendered power indicators to explain HIV risk in the population of study: gendered rights (including SES indicators), gender responsibilities (including power dynamics indicators), and gendered expectations (including social norms and culturally-driven gender roles) (see Appendix B).

Three main HIV risk indicators comprise HIV knowledge, HIV-related attitudes and sexual behaviors. Although the current study will mainly focus on behaviors and attitudes as outcomes, a review of the literature about HIV knowledge is included in the introductory chapter for informational purposes. Further details about the conceptual framework and measurements of such indicators are provided in chapter 2 and 3, respectively.

To our knowledge, this is the first study to assess gender disparities in HIV or women's vulnerability to the infection in the DR under a framework that integrates gendered power and HIV risk indicators. Few studies have explored the descriptive characteristics of HIV risk factors in the DR (Halperin et al., 2009; Rojas et al., 2011); however, information about predictive associations between sexual behaviors and HIV-related attitudes and socioeconomic and cultural factors is very limited. Also, this will be the first study to conduct a theory-based quantitative analysis to understand the impact of power and gender issues on HIV risk in the DR using a

multilevel statistical approach. Multilevel analysis has shown to be effective in simultaneously taking into account the effect of the main explanatory variables and other important covariates in order to establish the independent risk factors for the HIV infection, particularly when it is grounded in a well-defined conceptual framework (Magadi & Desta, 2011). Findings of this study intend to provide a comprehensive understanding of gender disparities and women's vulnerability to HIV risk in the country, to serve as a need assessment in the development of gender-specific HIV prevention strategies, and to propose future research directions on gender disparities in HIV risk in the DR.

1.4. **Goals and objectives**

This study has two main goals with specific objectives.

Goal 1: To explore differences in gendered power indicators between men and women aged 15 to 49 years in the DR. Three objectives are used in order to accomplish goal 1:

a) To describe and contrast gendered power indicators—gendered rights, gendered responsibilities, and gendered expectations—between men and women.

b) To describe and contrast sexual behaviors between men and women.

c) To assess and contrast the impact of gendered power indicators on sexual behaviors between men and women.

Goal 2: To explore differences in gendered power indicators between currently married and formerly married women aged 15 to 49 years in the DR. In order to accomplish goal 2, three objectives are used:

a) To describe and contrast gendered power indicators—gendered rights, gendered responsibilities, and gendered expectations—between currently married and formerly married women.

b) To describe and contrast sexual behaviors and HIV related-attitudes between currently married and formerly married women.

c) To assess and contrast the impact of gendered power indicators on sexual behaviors and HIV-related attitudes between currently married and formerly married women.

1.5. Organization of the dissertation

This dissertation manuscript encompasses five chapters. Chapter 1, which is this introductory chapter, provides an overview of HIV as a global public health concern and presents the current status of the HIV/AIDS epidemic in the Caribbean and particularly in the DR. Chapter 1 presents the research statement, justification, and the goals and objectives of the study.

Chapter 2 is comprised by the literature review for the dissertation research. The literature review includes the history of HIV/AIDS epidemic in the DR, a description of HIV exposures and HIV risk factors, socioeconomic and cultural factors relevant to HIV risk in the DR, and a revision of the role of education in HIV risk. In addition, the literature review explains and discusses the concept of gender disparities in HIV risk and the role of power in defining such risk. Further, theoretical approaches of HIV risk are presented and the proposed conceptual framework to guide this study is explained.

Chapter 3 comprises the materials and methods of the study. This chapter discusses the data source used in this study: Demographics and Health Survey (DHS), including the

specifications of the DHS questionnaires, strengths and limitations of such data sets, and a review of previous research and methodological approaches on HIV/AIDS using DHS data. Then, the chapter presents the study design, the selection of participants, study measurements, and the data analysis.

Chapter 4 describes the study results according to the study goals and objectives. First, results for goal 1 are displayed in two separate sections: a) descriptive statistics and b) sexual behaviors outcomes. Second, it displays the results for goal 2 in three separate sections: a) descriptive statistics, b) sexual behaviors outcomes, and c) HIV-related attitudes outcomes.

The final chapter 5, discussion and conclusions, reviews the research statement, the study objectives and expectations, and the main answers to our research questions. This section discusses the findings for each study goal; findings are compared to and contrasted with relevant existent literature on HIV/AIDS and HIV risk. Strengths and limitations of the study are also discussed. Finally, this chapter highlights some potential opportunities for future interventions under the light of the study findings and previous literature, and provides recommendations for policy change in the DR.

CHAPTER 2

LITERATURE REVIEW

2.1. Two first decades of HIV/AIDS in the DR

The first case of HIV in the DR was reported in January 1983. However, it was in 1987 when Koenig and colleagues published the first research article that presented the prevalence of antibodies of HIV in both Dominicans and Haitians in the DR based on data collected from 1983 to 1985. The authors studied a convenience sample of 1,500 Dominicans and 250 Haitians cane cutters who could be considered at risk for AIDS or at risk of transmitting the disease according to previous literature in other countries. The study found that at that time, the higher rates of HIV cases were among homosexual/bisexual men (10% to 19%) and blood donors (2.5 to 3%). Only one case out of 115 female prostitutes was found positive for HIV. The findings suggested that women in the DR were rarely infected by HIV (Koenig, Pittaluga, Bogart, Castro, Nunez et al., 1987). Such findings were the epidemiological reference for further HIV/AIDS research in the DR for about one decade. By 1986, 136 new cases of HIV were reported in the DR among homosexual/bisexual men, which continued to be the major group at risk of HIV in the country; prevalence rates among women were very small (Koenig et al., 1987).

In the meantime, HIV rates in the Caribbean started to rapidly increase, mainly due to heterosexual contact and prostitution (Garris, Rodriguez, De Moya, Guerrero, Peña et al., 1991; Koenig, 1989). By 1987, the World Health Organization (WHO) reported that the number of people with AIDS in the DR had increased to 200 cases, with 20% of the cases among women (Sabatier, 1987). Sabatier (1987) proposed that female and male prostitution were spreading factors. Also, Garris and colleagues (1991) reported a total of 1,202 cases of AIDS in the DR

between 1983 and 1989, and 53% of them were due to heterosexual contact. As a result the male-to-female AIDS rate had increased to 2.2:1 by this time, being the higher concentration of heterosexual cases in urbanized and tourist areas, and in sugar cane plantations (Garris et al., 1991).

As female prostitution in the DR was found to play a critical role in heterosexual HIV transmission, further research focused on this group. In 1989, one study found that 1 out of 5 men aged 18 to 25 in the DR reported to have his first sexual intercourse with a female sexual worker, and 6 out of 10 men, were unfaithful to their steady partner (Potts & Short, 1989). As 2% of female sexual workers in the DR were HIV positive, mainly women aged 20 to 32 years old who had been overseas (Koenig, 1989), female partners of men at risk due to paid sex were also vulnerable to be infected.

The situation of the epidemic in the DR at this time reflected the global picture of the disease in the developing world: HIV infection was a growing health problem not only for homosexual/bisexual men, but also for women. By the end of the 1980's the WHO identified three different patterns of HIV transmission in the world depending on the male-to-female ratio, with the HIV infection in the Caribbean being mainly heterosexual due to underdevelopment and prostitution (Schneider, 1989). This is when the first review about women and AIDS was published, raising specific issues of the epidemic for women worldwide, including the role of prostitution on AIDS dissemination in the developing world; for the first time issues such as poverty, social class, sexual mores, economic dependence, male-female power, and cultural gender system were posed as risk factors for HIV among women in the DR (Schneider, 1989).

Although by 1993, HIV rates among female sex workers in the DR were still low (2.6%) in comparison with Haiti, which had one of the highest rates in the Caribbean(32%) (Estebanez, Fitch, & Nájera, 1993), lack of power as a social group and sexual behaviors (e.g. multiple partners, anal intercourse, genital ulcers, extremely low condom use, and client refusal) were found to be two of the main reasons of HIV infection among females sexual workers (Estebanez et al., 1993).

In the late 1990's research on HIV in the DR mainly focused on groups at higher risk of acquiring the disease through heterosexual transmission: Dominican youth, Haitian women, men who have sex with men with bisexual practices, and commercial workers. For instance, one study found that high school students in the DR were at high risk of HIV due to early sexual initiation and inadequate condom use when compared with Hispanic youth in the US (Westhoff, McDermott, & Holcomb, 1996). Another study found that more than half of Haitian women were unemployed and uneducated, rarely used condom in their last sexual encounter, and were positive to HIV in 5.7% of the cases (Brewer, Hasbun, Ryan, Hawes, Martinez et al., 1998). Among these group of women, HIV infection was associated with being 35 years or younger, being single with children, having more than one sexual partner, and self-identifying as a prostitute (Brewer et al., 1998). Also, a study among men who have sex with men in the DR indicated that besides reporting frequent commercial sex and infrequent condom use, a considerably amount of participants also have sex with female partners (Tabet, de Moya, Holmes, Krone, de Quinones et al., 1996).

As heterosexual transmission continued to be the main mode of transmission in the DR, HIV research in the 2000's particularly focused on understanding HIV risk and prevention opportunities in women, especially among female sexual workers and pregnant women. Ortiz-

Torrez and colleagues (2000) analyzed the role of cultural norms and beliefs associated with sex negotiation and condom use among women in the DR and Puerto Rico. Dominican women were found at higher risk than Puerto Ricans perhaps due to their strong cultural beliefs and assumptions related to the disease. The authors concluded that sex-related social norms and beliefs needed to be subverted in order to overcome some challenges in HIV prevention among these women; prevention efforts needed to use a more complex, cultural-competent approach (Ortiz-Torres, Serrano-Garcia, & Torres-Burgos, 2000).

In 2001, a qualitative study assessed the acceptability and feasibility of a cultural-competent adaptation of the Thai 100% condom programme (see Rojanapithayakorn & Hanenberg, 1996 for details) to reduce HIV risk among women in the sex industry and their social networking in the DR—male paying clients and non-paying steady partners. Sex establishment owners and administrators and governmental and non-governmental public health workers and officials were also interviewed (Kerrigan et al., 2001). The Thai programme was found to be effective in increasing condom use in female sexual workers and reducing HIV and other sexually transmitted diseases (STDs) incidence among the women and some of their regular clients (Kerrigan et al., 2001). The study found that one of the main barriers for female sexual workers to use condoms was the need to develop trust and intimacy with their regular clients (Kerrigan et al., 2001).

A second study by Kerrigan and colleagues (2003) tested the association between environmental-structural factors and consistent condom use among female sexual workers and their regular paying clients in the DR. After controlling for socio-demographic characteristics, environmental-structural support for condom use was found to be a significant predictor for consistent condom use with regular paying clients in this population (Kerrigan et al., 2003).

Besides HIV research related to female sexual workers, special attention was given to mother-to-child HIV transmission. At this time, several interventions had been found effective in reducing mother-to-child HIV transmission in developed countries (Mofenson & McIntyre, 2000), but limited interventions had been implemented in developing countries to alleviate this problem. In May 15, 2000, The Ministry of Health of the DR initiated an integral set of interventions to identify HIV positive pregnant women and help to reduce HIV mother-to-child transmission.

First-year program evaluation of the mother-to-child HIV transmission intervention included a total of 8 maternity hospitals and more than 40,000 pregnant women; only 54% of all women agreed to be tested for HIV for a prevalence rate of 2.5% (Perez-Then et al., 2003). Although the two main barriers—low numbers of voluntary counseling sessions and inadequate number of HIV rapid tests—the intervention was found effective and feasible to prevent mother-to-child transmission in the DR. Several approaches were implemented: successful administration of antiretroviral treatment to mothers and children, performance of cesarean section, and dispensing of infant formula (Perez-Then et al., 2003).

In addition to the efforts to prevent HIV infection among female sexual workers and pregnant women, HIV research started to investigate the use of condoms to reduce women's risk of acquiring the disease from their partners. Although condom use had been found as a feasible, effective method to reduce such risk, self-reported condom use among women in reproductive age in the DR was 1.2% according to the last national survey at that time conducted in 1997 by CESDEM. Out of 14.5% of young women aged 15 to 24 years who were sexually active, 11.5% were unprotected for pregnancy or STDs and 2% reported to use any contraceptive method; only

15% of all contraceptive methods was due to condom use, one of the contraceptive methods that can protect against HIV infection (Onwuegbuzie & Leech, 2005).

Thus, by the end of this decade it was crucial to understand all possible factors that promoted or limited condom use among Dominican women in order to guide prevention strategies that might target women's needs appropriately. At the same time, the heterosexual nature of HIV transmission in the country also stressed the importance of defining sexual risk among both men and women and explaining gender disparities in HIV risk.

2.2. Defining HIV risk: Exposures and risk factors

In 2010, Wingood and DiClemente (2010) provided a new approach to HIV risk by defining exposures and risk factors. Exposures—acquired risk—include all economic, physical and social factors that increase the risk of developing a disease in the long term, while risk factors include all risk-taking behaviors that increase individual risk to develop a disease at any time.

Economic exposures that increase the risk of acquiring HIV are poverty, low educational attainment, unemployment or underemployment, demanding working environment, lack of housing, and lack of insurance (Wingood & DiClemente, 2000). Vulnerability shaped by such exposures is the result of economic dependence, lack of control, and limited access to educational and physical resources. Physical exposures include gender violence and abuse, high-risk sexual behaviors such as multiple sexual partners, condom use disapproval, injecting drug use, and sexually oriented media (Wingood & DiClemente, 2000). Physical exposures are mainly related to gender dynamics that creates an imbalance between a dominated man and a subordinated woman. Social exposures include family influences, older male-younger women

relationship, maternity desire, mistrust of the health system, and traditional, cultural beliefs; vulnerability shaped by social exposures is highly related to social and cultural norms (Wingood & DiClemente, 2000).

In addition to exposures, the authors identified several socioeconomic, behavioral and personal risk factors that increase HIV risk: being on a minority ethnic group, being young age, having a history of alcohol and drug abuse or depression, having limited self-efficacy in self-protection issues, and having limited HIV knowledge, negative beliefs about condom use, and low risk perception of acquiring HIV (Wingood & DiClemente, 2000). A complex interaction between exposures and risk factors determines somehow the high prevalence of HIV among certain countries, cultures, and individuals. The current study discusses both acquired risk and behavioral risk combined in two main sections according to their relevance to socioeconomic or cultural factors.

2.2.1. Socioeconomic factors relevant to HIV in the DR

According to 2007 national data, adults with low SES in the DR suffer from higher HIV rates than the rest of the population regardless of gender and age (Rojas et al., 2011). In the DR, poverty—as indicated by the wealth quintile and lower education—is associated with lower comprehensive HIV knowledge, higher misbeliefs about HIV transmission, negative attitudes towards condom use and condom negotiation, higher disapproval of sex education among the youth, and high rates of paid sex with lower protection rates (CESDEM, 2008; Rojas et al., 2011). Poverty is also associated with low-risk perception as individuals with lower education or in the lower wealth quintile perceived they are at low-risk of acquiring HIV, which also increases the likelihood to practice unsafe sexual behaviors (CESDEM, 2008).

These facts may suggest that education and poverty as economic exposures are positively associated with physical exposures and self-taking risk behaviors to increase the chances to be infected by HIV. However, wealth has been also found to increase the likelihood of multiple sexual partners under certain circumstances (Bingenheimer, 2010), which reverts the expectations of better SES as a protector from physical exposures. In the DR, for instance, the proportion of highly-educated, wealthy men and women who admitted to have an additional sexual partner in the last 12 months outnumbers the proportion among their low-educated, poorer counterparts (CESDEM, 2008). Although such findings may reverse the previous assumption that economic exposures may prevent physical exposures, education continues to be a protective factor for several health-related behaviors (Marmot, 2005), including sexual behaviors. Improving education is found to be effective in reducing HIV risk (Fylkesnes, Musonda, Kasumba, Ndhlovu, Mluanda et al., 1997; Jukes & Desai, 2005).

2.2.2. The role of education in HIV risk

Evidence from HIV research has shown that educated individuals are more likely to change their risky sexual behaviours and adopt safer sexual practices in response to information about HIV infection either through health promotion campaigns or other informational sources (Fylkesnes et al., 1997). The United Nations Educational, Scientific, and Cultural Organizations Report (UNESCO, 2005) reads: “education prepares individuals better to mount a response to the HIV/AIDS epidemic” (Jukes & Desai, 2006, p. 1).

Either as part of formal schooling or through media, education provides individuals with biological knowledge required to understand HIV modes of transmission and potential ways to prevent the disease. This knowledge equips educated individuals with higher ability to

understand and to assimilate HIV prevention messages, which is an essential component in the process of cognitive appraisal for behavioural change and the adoption of new, safer sexual behaviours (Bandura, 2004; Gregson, Zhuwau, Anderson, & Chandiwana, 1998). In addition, biological knowledge provides individuals with a critical view to resist myths about HIV transmission (Keselman, Kaufman, & Patel, 2004).

Education also provides individuals with a better sense of self-efficacy, which allows more educated people to believe in their own ability to control their behaviors; as a result, they are more likely to change their risky sexual behaviors for safer sexual practices (Glanz, Rimer, & Viswanath, 2008; Jukes & Desai, 2005). Moreover, as educational level increases, people are more likely to seek health counselling and treatment for other STDs, which may represent a risk factor for HIV (De Walque, 2009; Ortiz-Torres et al., 2000). Thus, education confers knowledge, critical thinking, and self-confidence for people to understand HIV infection, to reject misbeliefs, and to change their behavior to safer sexual practices.

In addition, education is associated with less risky sexual behaviors (De Walque, 2009). Educated people are less likely to have unprotected casual sex and paid sex or first-date casual sex, and more likely to self-report condom use in their last sexual encounter (Gregson, Waddell, & Chandiwana, 2001). Consequently, limited education is associated with lower HIV knowledge, lower risk perception, and higher misleading perceptions; therefore it increases vulnerability to acquire the HIV infection (Booyesen & Summerton, 2002b).

As previous studies have shown, comprehensive HIV knowledge has been positively associated with educational achievement in the DR (Booyesen & Summerton, 2002b; Rojas et al., 2011). Higher levels of education are associated with a lower prevalence of HIV among the

general population (Halperin et al., 2009). Comprehensive knowledge meant that the individuals a) have heard about the disease, b) know that condom use, fidelity and sexual abstinence were measurements to prevent HIV, c) know that witching and supernatural forces, sharing meals, and mosquitoes bites are not modes of transmission, and d) know that a person who looks healthy might have the disease (CESDEM, 2008).

In contrast, low educational level correlates with low HIV knowledge, and therefore higher vulnerability to acquire HIV infection (Booyesen & Summerton, 2002b). For instance, in comparison with the general population, individuals who live in extreme poverty conditions at the sugar cane plantation present higher HIV rates (Rojas et al., 2011). Differences by gender also exist. In the DR, women with low schooling have a greater prevalence of HIV than men, even with the same educational attainment. Women with limited education have been found ten times more likely to be infected than women with at least high school; they are among the most vulnerable groups to be infected for HIV in the country (CESDEM, 2008; UNAIDS, 2011b).

In addition, women with formal education are more likely to perceive themselves at greatest risk of acquiring HIV (CESDEM, 2008; Rojas et al., 2011). A greater perceived threat to HIV may reduce the chances of an individual to engage in risky sexual behaviors (Lin, Simoni, & Zemon, 2005). Also, evidence supports that individuals with low knowledge about HIV/AIDS, mainly men, are also more likely to perceive themselves with low risk to be infected (CESDEM, 2008; Rojas et al., 2011).

Low educational attainment can also lead to power imbalance and gender disparities (Wingood & DiClemente, 2000). This literature argues that education can improve HIV/AIDS knowledge, to increase self-efficacy, and to reduce risky sexual behaviors among women. Higher

education also provides women with better job opportunities and therefore financial independency; as a result it ameliorates gendered power inequalities and empowers women to challenge gendered roles and cultural scripts that increase their vulnerability to HIV infection (Clark et al., 2006; Rojas et al., 2011; Rosenthal & Levy, 2010).

Increasing women's access to education might be crucial for reducing HIV rates in this population. In the DR, as well, limited education represents a strong risk factor for HIV infection for women as population-based data have found that women who have fewer than four years of education are more likely to be HIV positive (Rojas et al., 2011; UNAIDS, 2010; USAID, 2010). Women in the DR with low schooling not only present a greater prevalence of HIV than men, but also are ten times more likely to be infected than women with at least high school education (CESDEM, 2008).

Higher levels of education have been associated with a lower prevalence of HIV among the general population in the DR (Halperin et al., 2009). However, education has not been found always to be protective for multiple sexual partners, practice of condom negotiation among women and consistent condom use (Rojas et al., 2011; UNAIDS, 2010; USAID, 2010). In contrast, limited education as a result of low schooling leads to lower comprehensive HIV knowledge higher misbeliefs about HIV transmission, negative attitudes towards condom use and condom negotiation, higher disapproval of sex education among the youth, high rates of paid sex with lower protection rates, high stigma towards people living with HIV, and lower perception of risk (CESDEM, 2008; Rojas et al., 2011).

2.2.2.1. **The controversy: Knowledge vs. behaviors**

Building on the previous discussion, education may be considered as a protective factor for risky sexual behaviors. Higher education is associated with better HIV knowledge, therefore it is expected that such knowledge may also create more awareness and protect individuals from taking sexual risks. However, the power of education as a protective factor for HIV risk seems to weaken under certain circumstances.

Some studies have found that awareness is not sufficient to translate knowledge into behavior change as risk-taking behaviors are also highly influenced by self-perception and cultural norms (Booyesen & Summerton, 2002b; Mashinini & Pelton-Cooper, 2012). Cultural influences such as traditional gender roles may overcome the power of education and knowledge by dismissing the power individuals believe to have on making decisions related to their sexual behaviors (Booyesen & Summerton, 2002b; Mashinini & Pelton-Cooper, 2012). The complex interaction between education, knowledge, and culture may explain the discrepancies between what people know and what they do. Therefore, cultural factors associated with HIV must be reviewed and discussed.

2.2.3. **Cultural factors relevant to HIV in the DR**

The main cultural issue related to HIV risk in the DR is represented by differences between traditional roles for men and women. Dominican culture has defined traditional gender roles that have been passed overtime from one generation to another despite the negative impact those roles may have in human health. As in other countries in Latin America, gender roles in the DR are in large extent shaped by the “macho culture”, which has its foundations in a husband-wife relationship where that the men is the person on charge while the women is the

submissive figure (Aas, 2010; DeSouza, Baldwin, Koller, & Narvaz, 2004). Literature related to gender roles in Latin American countries emphasizes that they are *machista* cultures; this is the culture characterizes due to traits that exaggerate manliness while depreciates female activity (Bull, 1998). As a result, men are expected to be authoritarian, aggressive, promiscuous and virile, to protect the household, and to provide financial support for their families (Bull, 1998; DeSouza et al., 2004). In contrast, women are expected to assume a traditional role of submissiveness, virginity, housekeeping and childcare (Bull, 1998; DeSouza et al., 2004). Consequently, culturally-driven gender roles discourage self-protective behaviors among women: as Latina women, women in the DR are less likely to talk with their partners about sexuality, to seek self-protective practices, to deny sex, to negotiate condom use, to get a condom or to seek health assistance related to sexual issues (Bowleg et al., 2000; Bull, 1998; Halperin et al., 2009). According to Bull (1998), the same cultural system promotes men's power, decision making and behavioral freedom, while perpetuates women's subservience to male dominance, financial and emotional dependence from men, and behavioral submissiveness.

Gender roles have been suggested to play a crucial role in understanding both risk-taking behaviors and power imbalance (Aas, 2010; Rosenthal & Levy, 2010; Saul, Norris, Bartholow, Dixon, Peters et al., 2000). Sexism in the DR follows the pattern in which women have difficulty or are unable to negotiate condom use with their sexual partners (Booyesen & Summerton, 2002b; Rosenthal & Levy, 2010). Even though condom use is lower among women than among men, women present a greater risk perception of being infected than men (CESDEM, 2008). In the DR, condom use among women in general has increased from 25% in 2002 to 40% in 2007, but it is particularly low among cohabitating or married partners (Rojas et al., 2011).

Gender roles define higher vulnerability among women in the DR. Dominican women are still influenced by cultural-driven sexism, stigma, poverty, and lack of awareness, as well as limited access to health care (Rojas et al., 2011). According to Rojas and colleagues (2011), these factors are associated with low educational levels, unhealthy relationships, domestic violence, and discrimination among women in the DR. Consequently, the likelihood of a woman to negotiate condom use with their partner's decreases as her vulnerability to acquire HIV increases, and this situation affects women despite the level of education (Halperin et al., 2009; Quinn & Overbaugh, 2005; Rojas et al., 2011).

In the DR, highly educated women admitted to use condoms in a lower percentage than those with a primary level of education (CESDEM, 2008). Despite that women have a higher HIV/AIDS comprehensive knowledge than men, misbeliefs about HIV transmission modes were higher among women who had limited education and low economic resources, particularly among the bateyes, where comprehensive HIV knowledge is approximately 2 times lower than in the general population (CESDEM, 2008). Gender disparities seem to make women more susceptible to HIV infection (Aas, 2010; Mashinini & Pelton-Cooper, 2012; Rosenthal & Levy, 2010; Wingood & DiClemente, 2000).

Other behavior related to the culture has been early sexual debut, which also enhances the risk of HIV infection among women. According to UNAIDS (2010) and based on 2007 data from the DHS program, 15% of Dominican young women age 15 to 24 years had had sex before age 15 years, and about 30% of those were married or living together with a partner. Unfortunately, data on specific age of initiation or whether or not that first sexual intercourse was forced or related to violence were unavailable. The early debut of sexual activity might place young women with a higher risk of HIV infection and/or other sexually transmitted infections,

and to a higher risk of adolescent pregnancy (Guilamo-Ramos et al., 2011). Also, cultural barriers limit efforts to increase women's access to condoms, and when condoms are available, women may have a hard time to decide whether to get condoms or not (Rojas et al., 2011). Even though education and wealth are found to delay the sexual initiation among young women, the rates of condom use are very low despite the educational level (Guilamo-Ramos et al., 2011).

Further, cultural factors have led to limited HIV/AIDS information and prevention services for specific groups (Rojas et al., 2011). For instance, a controversial issue called the attention of the Dominican population on February 2013 as faith communities has opposed a new media campaign that promotes sexual and reproductive rights for men and women of all ages, particularly women and youth (PROFAMILIA: <http://www.profamilia.org.do/empoderate>).

2.2.4. Socioeconomic perspective vs. cultural perspectives

Previous sections about socioeconomic and cultural factors relevant to HIV in the DR (sections 2.2.1. and 2.2.2, respectively) raise the question of which perspective can better explain differences on power between men and women's risk of HIV. The following section discusses the socioeconomic perspective, the cultural perspective, and then reciprocity between the two.

From the socioeconomic perspective, poverty remains as a key factor in shaping women's vulnerability to HIV worldwide. Poverty not only leads to low educational attainment and poor knowledge about HIV infection and transmission, but also reduces the likelihood of women to challenge the roles of submissiveness and lack of power that the culture dictates. As a result, women assume high risk sexual behaviors regardless of the implication those can have on their health and wellness (Booyesen & Summerton, 2002b). Further, poverty leads to gendered power inequalities and gender violence that negatively affect women's health by increasing their

vulnerability to HIV/AIDS (Collins, von Unger, & Armbrister, 2008). Similarly, research in developing countries suggests that poverty increases women's likelihood of having non-regular sexual partners and decreases the likelihood of condom use (Booyesen & Summerton, 2002a; Rosenthal & Levy, 2010; Wingood & DiClemente, 2000).

Rosenthal and Levy (2010) summarized previous studies to show how poverty and economic dependence on male partners, low education, and low institutional influence increases women's risk to HIV due to the unequal access of women to economic, structural and professional resources. The study found that poverty leads women to utilize sex as an exchange value for economic resources, which increases men power over the relationship while decreasing women's ability to practice safe sex (Rosenthal & Levy, 2010). However, if using education as an indicator of poverty or SES, inconsistencies between education, knowledge and behaviors raise the question of whether poverty should be an independent risk factor for HIV risk among women.

According to the social gradient of health (Marmot, 2005), based on socioeconomic factors, higher educated individuals are expected to have better incomes and better SES, and therefore expected to be healthier and to live longer. Under this socioeconomic perspective, poverty is negatively proportional to education, thus low educated people will have limited knowledge about HIV/AIDS issues and thus engage in risky sexual behaviors easily, which increases their HIV risk. However, previous studies have found that awareness—knowledge—is not enough to translate knowledge into behavior change, and risk-taking behaviors may be highly influenced by self-perception and cultural norms (Booyesen & Summerton, 2002b; Mashinini & Pelton-Cooper, 2012). Hence, socioeconomic factors do not complete the puzzle that defines HIV risk among women. This is when cultural factors need to be considered.

Culture shapes gender dynamics and power imbalance in the heterosexual relationship mainly through social norms and cultural scripts (Mashinini & Pelton-Cooper, 2012). The social normalization of gender roles occurs as part of the culture and it explains the limited power that women perceive individually on communicating about sexuality with their partners, demanding fidelity, seeking self-protection in sexual intimate encounter, or negotiating condom use (Clark et al., 2006; Mashinini & Pelton-Cooper, 2012; Pulerwitz, Amaro, Jong, Gortmaker, & Rudd, 2002; Rosenthal & Levy, 2010). In addition, culture impacts the extent to which individuals will be able to attain high education, to obtain good jobs, to be economically independent, and to have the power of decision-making (Mashinini & Pelton-Cooper, 2012).

Culturally-driven gender roles may impact power strategies among several groups, as well as explain the discrepancies between what people know and what they do; education may be overcome by cultural influences under certain circumstances (Mashinini & Pelton-Cooper, 2012). For instance, a qualitative study among educated Black African women in South Africa found that their efforts to avoid HIV risk or communicate with their partners about sexuality were affected by gendered power dynamics in contrast to their level of understanding about the HIV transmission and their financial independence (Mashinini & Pelton-Cooper, 2012).

Similarly, Black women who had assumed less traditionally feminine gender roles because they needed to work outside the home to provide for their families, are still found to maintain traditional beliefs about the female role in a relationship despite their educational level (Bowleg et al., 2000). Education is found to predict gender roles and gender roles to predict sexual self-efficacy among Latina and Black women; however, educated married and committed women perceive themselves at a low or no risk of HIV, so they are more likely to involve in

sexual risky behaviors such as lack of condom use in spite of their gender roles orientation and sexual self-efficacy (Bowleg et al., 2000).

In addition, gender power differentials and challenging social norms have been identified among young minority women in college, despite their educational attainment (Alleyne & Gaston, 2010). Similar to women in Africa and African-American women in the U.S, HIV risk among Latina women is mainly due to cultural barriers that discourage sexual communication, condom negotiation and condom use, and as a result increase the likelihood of unsafe sexual encounters and their risk of being infected (Bowleg et al., 2000; Peragallo, DeForge, O'Campo, Lee, Kim et al., 2005). Fortunately, gender-specific interventions among Latinas have been effective in empowering women, decreasing perceived barriers and increasing safer sexual behaviors (Ehrhardt, Exner, Hoffman, Silberman, Yingling et al., 2002; Peragallo et al., 2005). Despite the challenge of culture, education continues to be a window of hope. Thus, this brings gender imbalance back to socioeconomic factors.

In summary, the socioeconomic perspective suggests that poverty is the key indicator of women's vulnerability as poverty is the bottom part of the social gradient of health. Within the social risk of HIV, poor women are more likely to have limited education and therefore, less likely to have a comprehensive HIV knowledge, which may lead to risky sexual behaviors and higher HIV risk. In contrast, the culture and gender perspectives propose that gendered social norms are the key indicators of women's vulnerability to the HIV infection as they create a power imbalance between men and women that promotes sexual submissiveness and high risk behaviors. It can be suggested that as the culture expects women to be faithful, committed, quiet and unknowledgeable; men are expected to be promiscuous, uncommitted, demanding and under control (Aas, 2010). However, cultural factors can be influential enough to overcome

education—as indicator of SES—and perpetuate unsafe sex among educated, economically independent women, while socioeconomic factors, such as education and access to resources, may be powerful enough to challenge social norms and assume safer sexual behaviors among women (Aas, 2010; Alleyne & Gaston, 2010).

Despite the independent argument these two perspectives provide to understand women’s vulnerability to HIV, a continuum perspective between the two can be used to better to explain the reciprocal association between socioeconomic and cultural factors on defining gendered power imbalance. This is the challenge of prevention efforts: to understand the interaction between socioeconomic and cultural factors and its role in defining gender inequalities and power imbalance. After all, evidence suggests that women’s vulnerability to HIV is a matter of power. Understanding power dynamics in the DR may help to better target HIV prevention efforts among women and other vulnerable populations. In order to understand the role of power, gendered disparities in HIV risk should be framed and conceptualized.

2.3. Framing gender disparities in HIV risk: The role of power

According to Bajos (1997), the level of HIV risk prevention among women will depend on the gendered power dynamics in social, sexual and confidential relationships, and such relationships are highly influenced by the culture. Power represents the capacity to influence others’ actions, as well as the ability to act or to change according to one’s desires; this power can reside at different levels of the society: individual, interpersonal, institutional and community levels (Wingood & DiClemente, 2000). The concept of power imbalance was introduced by Perkins Gilman in 1911 to explain the subordination of women as a result of an androcentric culture where a woman is defined not for herself but in relation to men. Subsequently, the

concept of “otherization” of women was introduced, explaining that in an androcentric culture women—the “other”—is defined in terms of their similarities, dissimilarities, and functional significance to men—the “real” (For more information see “The Second Sex” by de Beauvoir, 1949).

Power imbalance and gender inequalities as perceived by these authors were a crucial element to the feminist movement in the 1960’s and 1970’s (Wingood & DiClemente, 2000). During the following decade, African American and Latina women started to organize in order to improve their health-related quality of life, initiating the effort to understand how ethnicity interacts with gender and power. Later on, Robert Connell (1987) examined and redefined the existent theories related to gender and power until that time, providing an integrative theoretical model to explain women vulnerability in several aspects of life. Connell’s theory of gender and power has been used as a theoretical framework to explain women’s risk to develop lung cancer, abusive relationships, and women’s risk of HIV and other STDs (Alleyne & Gaston, 2010; Saponaro, 2003; Wingood & DiClemente, 2000).

The impact of power and gender on HIV risk has been shown in quantitative (Mashinini & Pelton-Cooper, 2012) and qualitative research (Arango, 2003; Bowleg et al., 2000; Bowleg, Lucas, & Tschann, 2004). Inequalities between gender roles for men and women maintain gendered power dynamics, which does not translate to equal rights and values between men and women, but instead perpetuate the concept that each gender needs to function according the scripts and expectations that culture and society have predetermined for men and women.

Gendered power dynamics explain, for instance, why well-educated, economically independent women continues to practice a risky sexual behaviors in their heterosexual

relationship as they assume that the man should be the one in control (Mashinini & Pelton-Cooper, 2012). Cultural norms perpetuate women's vulnerability to HIV by promoting male dominance and female subordination (Mashinini & Pelton-Cooper, 2012). Thus, gendered power dynamics in heterosexual relationships compromise women's self-efficacy and increase their vulnerability of acquiring HIV from their male partners (Bowleg et al., 2000; Rosenthal & Levy, 2010).

Some studies have supported the protective effect of power indicators for reducing HIV risk. Saul and colleagues (2000) analyzed the association between power and self-protective behaviors among Puerto Rican women who were at risk for heterosexual HIV transmission. They found that some power indicators such as higher education, current employment, HIV-related communication with their male-partners, and shorter length of the relationship predicted condom use (Saul et al., 2000).

Similarly, a study among Black and Latina women found that less traditionally feminine gender roles were not predictive factors for safer sex during the last sexual intercourse with their male-partners (Bowleg et al., 2000). Yet, evidence supports that gender power dynamics in heterosexual relationships compromise women's power and increases their vulnerability of acquiring HIV from their male partners (Bowleg et al., 2004; Rosenthal & Levy, 2010). This is why according to the UNAIDS, "protecting women and girls from HIV means protecting against gender-based violence and promoting economic independence from older men" (UNAIDS, 2010, p.10); in other words, it is with empowering women that we may overcome women's vulnerability to HIV.

2.3.1. Gender and culture: Cultural constructs of women's roles in Latin America and the Caribbean

Women's roles in Latin America and the Caribbean (LAC) are to large extend shaped by the "macho culture", which has its foundations in a husband-wife relationship in which men are the ones in charge, while women are the submissive figure (Aas, 2010; DeSouza et al., 2004; Halperin et al., 2009). Literature related to gender roles in LAC countries emphasizes that there are machista cultures: the culture characterizes due to traits that exaggerate manliness while depreciates female activity (Bull, 1998). Machismo concept assumes that man have power and dominance over women, as well as power over risky behaviors such as alcohol consumption, aggressiveness, and verbal detachment (Aas, 2010; Bull, 1998). Latino/Caribbean macho men are expected to be authoritarian, aggressive, promiscuous and virile; to protect the household, and to provide financial support for their families (Bull, 1998; DeSouza et al., 2004).

In contrast, Latina/Caribbean women are expected to assume a traditional role of submissiveness, virginity, housekeeping, and childcare (Bull, 1998; DeSouza et al., 2004). The incorporation of traditional female gender roles among Latina/Caribbean women is identified as "Marianismo", as referring to Mary the mother of Jesus Christ, which its embodies "the concepts of virginity, chastity, honor and shame, ability to suffer, and willingness to serve" (Bull, 1998, p.3). Gender roles related to "Marianismo" also expect women not to work outside the home, to serve their husbands and children, to tolerate their husband's infidelities and violent acts, and most of all to pass these lessons to their daughters. The interaction between machismo and "Marianismo" influences on Latino/Caribbean culture maintain a continuous and reciprocal relationship that stresses power imbalance and gender disparities. Based on this evidence, it may be suggested that if such imbalance would not exist on sexual behaviors, but instead the culture

will promote sexual exclusiveness and fidelity for both men and women, culture would be a protective factor for HIV risk due to the promotion of safer sex.

Consequently, culturally-driven gender roles discourage all kinds of self-protective behaviors among women: sexual communication, condom use negotiation, sexual denial, and condom acquisition (Bowleg et al., 2000; Bull, 1998; Halperin et al., 2009). According to Bull (1998), the same cultural system promotes men's power on decision making and risk-taking behaviors while perpetuates women's acceptance of male dominance, financial and emotional dependence, and behavioral submissiveness such as unwanted and unsafe sex. Thus, culturally-driven gender roles in Latin American and the Caribbean define gendered power imbalance, making women highly vulnerable to heterosexual HIV infection and other STDs. A more detailed explanation of the influence of culture constructs on gender roles in the Caribbean is presented later on this study as we discuss the case study of gender roles and HIV risk in the DR.

2.4. Culturally driven gender roles and HIV risk: Theoretical approaches

Several traditional health behavior theories have explained HIV risk through social-cognitive and motivational processes. Bandura's self-efficacy theory (1997)—social cognitive theory—applied to sexual risk behaviors explains that individuals develop a cognitive appraisal of their ability to use condoms according to their previous experiences, knowledge, social influences, and expectations related to this behavior; it is this self-consideration of efficacy what determines condom use (Wulfert & Wan, 1993). Similarly, the theory of reasoned action (Fishbein & Ajzen, 1975) explains that individual's intention to use condoms is influenced by its own attitudes toward using condoms and the social norms about condom use; thus individual's intentions to use a condom directly impact behavioral outcomes (Albarracin, Johnson, Fishbein,

& Muellerleile, 2001). Building on the theory of reasoned action, Ajzen's proposed a theory of planned behavior (1985) where individual's perceived control also affects intentions and behaviors, and therefore explain that one's perceived control to use a condom might also directly result in using it (Albarracin et al., 2001).

Both the social cognitive theory and the theory of reasoned action have been found to predict sexual risk behaviors when used as foundation for interventional efforts in both developed and developing countries (Rosenthal & Levy, 2010). However, these theoretical approaches have had no specific focus on gender differences (Rosenthal & Levy, 2010). Rosenthal and Levy (2010) have summarized several limitations of such traditional approaches in explaining HIV risk among women and other disadvantaged groups: first, these theories assume the same control for both men and women; second, they do not acknowledge the environmental and structural factors embedded in heterosexual relationships, and third, they do not account for gender, race, and class inequalities in a hierarchical society.

Thus, gender-specific, social class-targeted, culturally competent explanations need to be develop to better understand women's HIV risk in heterosexual relationships power imbalance define gender vulnerability (Jenkins, 2000) that leads to unprotected sex and higher risk of HIV infection for females partners (Crosby, DiClemente, Wingood, Salazar, Head et al., 2008; Jenkins, 2000; Kershaw, Small, Joseph, Theodore, Bateau et al., 2006; Rosenthal & Levy, 2010). This is when the theory of gender and power comes to be relevant, as it explains how societal and institutional inequalities between men and women within labor force, sexual relationships, social norms and expectations lead to limited power and lack of control among women worldwide (Connell, 1987; Rosenthal & Levy, 2010; Wingood & DiClemente, 2000). Therefore, as other theories has failed in considering gender imbalance of power within heterosexual

relationships as a major driven factor for risk sexual behaviors, we are confident that the TGP may effectively help to address issues of gender differences in HIV risk in the DR.

2.4.1. Theory of gender and power

In 1987, Connell proposed the TGP, which explains that women's access to power is limited not only structurally but also interpersonally, resulting in women's lack of ability to exercise control over their decisions and even their bodies. The TGP represents a social structural theoretical framework that stresses gender, sexual inequality and power imbalances among the social and institutional levels (Rosenthal & Levy, 2010). According to Connell (1987), characteristics of gender roles are defined by three main structures: first, the sexual division of labor which refers to economic disparities between men and women; second, the sexual division of power which refers to power imbalance within heterosexual relationships, and third, the structure of cathexis which relates to affective connections and social norms.

At the societal level, the highest one, the main structures of the TGP are defined by historical, sociopolitical forces that segregate power and prescribe social norms to men and women, leading to well-defined, predetermined gender roles that maintain consistent gender differences (Wingood & DiClemente, 2000). At the institutional level, the lower one, the structures of gender and power are determined by social mechanisms that maintain inequalities on payment rates, discrimination at school and work, control imbalance within relationships and at work places, and degrading images of women in the media (Connell, 1987; Wingood & DiClemente, 2000). Gender inequalities defined by society and institutions created a daily-basis constrain in women's lives through unequal economic potential, limited control of resources, and predetermine expected roles (Wingood & DiClemente, 2000).

The sexual division of labor defines an unequal distribution of resources between men and women; women's limited access to resources promotes economic dependence, and therefore little control over negotiating safe sex with the provider male-partner. Similarly, the sexual division of power also reduces women's power in a heterosexual relationship by assuming women's natural vulnerability, and thus their little control over condom negotiation and condom use. Likewise, the structure of cathexis assumes that condom negotiation might be an indicator of women's lack of thrust in their male partners, which is unacceptable by the social and cultural expectations. Thus, all three structures within the TGP independently explain economic, physical and social exposures to a higher risk of HIV infection among women, but all three structures also overlap in defining gender roles that disadvantage women in comparison to men (Rosenthal & Levy, 2010; Wingood & DiClemente, 2000).

The TGP has been applied to examine HIV-related risk and effective interventions for women and Wingood & DiClemente (2000) proposed an extension of the TGP in order to develop a public health model that examined women's exposures, risk factors and biological factors on its multiple domains: public health, socio-behavioral sciences, and medicine, respectively. According to Wingood & DiClemente's extended model, domains are necessary to shape interventional efforts according to the needs of the targeted group of women model.

Public health interventions aim to reduce community's and population's risk by changing social norms, reducing barriers, influencing community resources, and impacting public policy. Social-behavioral interventions aim to change intrapersonal and interpersonal relationships by providing knowledge and skills, and therefore changing beliefs, attitudes, and behaviors. Medical interventions aim to improve individual's behavior by altering their body biochemistry or by treating their existing diseases. Thus, the extended version of the TGP might be a promising

theoretical framework for health educators and community workers who are interested in designing and implementing gendered-based inequalities related to HIV risk among women. Several programs have used the three structures of the TGP to change sexual behaviors among women. Some examples are highlighted below.

2.4.1.1. Interventions addressing the social division of labor

Several interventions have targeted the sexual division of labor on HIV risk. Increasing economic and physical resources, as well as changing the work site environment have been found to reduce rates of unwanted, paid sex, to increase STDs screening and follow-up, and to increase condom use (Warner, Gallo, & Macaluso, 2012; Wingood & DiClemente, 2000). For instance, the Thailand's 100% condom program is considered successful in reducing HIV risk among sexual workers (De Cock et al., 2012). This program aims to change the commercial sex workers environment, not only by requesting female sexual workers to use condoms with all their clients, but also by forcing brothel owners to support women's condom use; in addition, a policy component applied graduate sanctions to owners for non-compliance to maintain the safer sex working environment (Wingood & DiClemente, 2000). Hence, increasing women's access to economic, physical and environmental resources alleviates gendered-based inequalities defined by the structure of labor, and consequently reduces women's vulnerability to HIV.

2.4.1.2. Interventions addressing the structure of power

Women's empowerment with their own sexuality, policymaking that condemns violence and pornography, and social-marketing which promotes HIV prevention media campaigns are good examples to address the structure of power (Wingood & DiClemente, 2000). As an example, a media-based intervention in Zaire aimed to enhance women's status and promote safe

sex using a soap opera where, in contrast to the regular ones, the actors promoted fidelity and condom negotiation. In about a year, the campaign increased condom use by about 400% and duplicated the rates of self-reported fidelity (Ferrerros, Mivumbi, Kakera, & Price, 1990; Wingood & DiClemente, 2000).

In addition, interventions that promote the use of female condoms, provides information about HIV prevention, and/or models condom use and negotiation skills have been useful to increase women's control over their sexuality (Gallo, Kilbourne-Brook, & Coffey, 2012; Wingood & DiClemente, 2000). Hence, developing interventional efforts that help women to increase knowledge about HIV risk prevention and to develop skills to use and negotiate condoms might result in women's empowerment, thus defeating gendered power inequalities.

2.4.1.3. **Intervention addressing the structure of cathexis**

Few interventions have targeted the structure of social norms and emotional attachments on HIV prevention; however, HIV researchers have started to implement and evaluate the impact of family-based and faith-based interventions to reduce HIV risk (Wingood & DiClemente, 2000). The fact that men could play a role in reducing women's vulnerability to the disease by collaborating on changing the norms in the relationship represents a window of opportunity for future research, since the effectiveness of couple-based interventions have been already supported among sero-discordant couples (Rosenthal & Levy, 2010; Wingood & DiClemente, 2000). Future research need to focus on the role of the structure of cathexis to design and implement public health interventions to prevent HIV.

2.4.2. TGP and HIV risk assessment in women

The TGP has been used as theoretical framework to understand HIV risk vulnerability among women among several countries, social classes, and ethnic groups.

Alleyne and Gaston (2010) reviewed gender disparities and HIV risk among young black women in college using the TGP as a conceptual frame. Their findings suggested that gender inequalities among African Americans are attributable to a sex-ratio imbalance between marriageable men and marriageable women. Lack of education, unemployment, drug abuse and risky sexual behaviors among Black men leave Black women with few options to choose a partner, and therefore reduce women's power in their heterosexual relationships by increasing their tolerance to infidelity and reducing their likelihood to negotiate condom use (Alleyne & Gaston, 2010). In addition, sociocultural norms among African Americans encourage concurrent sexual partnerships and discourage long-term commitment to a unique sexual partner, which worsen women's ability to practice or negotiate safer sex (Alleyne & Gaston, 2010). Gender inequalities affect college students in despite of their level of education. Gender imbalance among African American college students promotes man sharing—when a woman decides to stay with a man although she is aware that he is dating multiple female partners—and inconsistent condom use (Alleyne & Gaston, 2010). The findings of this review highlight the overlapping influence of sexual power and cathexis on health behaviors even among advantage groups such as college students.

Furthermore, the TGP has been used as a grounded theory to design new scales to assess HIV risk among women. Pulerwitz and colleagues (2002) developed the Sexual Relationship Power Scale (SRPS) in order to explore the impact of power in sexual relationships on women's safer sex negotiations among urban women in Massachusetts, mostly Latinas. The authors

combined the concept of gender-based inequalities at the societal level proposed by the TGP and the concept of interpersonal dynamics on power proposed social exchange theory (Emerson, 1981) to explain the role of gender-based structural inequalities on individual relationships. Controlling for demographics, consistent condom use increased by 5 times among women with high levels of relationship power than women with low levels of power. The findings support a strong association between relationship power and safer sex decision making and suggested that future interventions to reduce HIV risk need to address the issue of power relationships on condom use and condom negotiation (Pulerwitz et al., 2002)

Thus, the TGP not only is a suitable framework to understand women's vulnerability to HIV regardless of their ethnicity, educational level, economic independence, or knowledge about the disease, but also has become a useful tool to develop new scales to assess the role of gendered power on HIV risk, as well as to design and evaluate preventive interventions to reduce HIV risk among women.

2.5. Power, gender and HIV risk: Women's vulnerability to HIV in the DR

Gendered power inequalities in the DR discourage safe sex while promoting high-risk sexual behaviors. Dominican men are expected to initiate sexual activity at early age, to have multiple sexual partners during their lifespan, to be promiscuous and unfaithful, to pay for sex and to be sexually satisfied by their female partners under their own conditions, mainly unsafe conditions (Aas, 2010; CESDEM, 2008). As a result of such high risk sexual behaviors, Dominican heterosexual men not only increase their own risk of acquiring HIV or other STDs, but also their sexual female partner's risk to be infected. In contrast, the culture expects Dominican women to initiate her sexual activity after marriage, to be monogamous, committed

and faithful, and to satisfied their male partners sexual desires without complains or requirements as, according to Dominican culture, women have sex only for reproduction purposes (Aas, 2010; Brendbekken, 2008).

According to the 2013 UNAIDS report, such gender roles are reflect in the daily life as the proportion on men in the DR who had more than one sexual partner in the last 12 months was almost 8 times higher than the proportion of their women counterparts (24.3% vs. 3.0%, respectively) (UNAIDS, 2013b). Also, a high frequency of currently married or cohabitating women in the DR using sterilization (47.4%) or hormonal pills or injections (17.6%) as their contraceptive method (CESDEM, 2008) may be associated with the concept of women having sex just for reproductive purposes: when the number of living children was 3 or more, more than 70% on women were sterilized whereas when the number of living children was 0 to 2, women used pills and other hormonal methods instead. In fact, 11% of women who were not using any method did not do so because they wanted another child (CESDEM, 2008). Although condom use was very limited, women who only had 1 or 2 children were the ones who used condoms as their contraceptive methods in 2.9% of the cases, perhaps because it would decreased the risk of pregnancy at that moment, but it could be easily discontinued when a new child was desired (CESDEM, 2008). Consequently, gender roles as defined by the Dominican culture dismiss women's power to decide over their own sexuality and practice self-protective behaviors as they promote women's inability to communicate with their partners about sexuality, negotiate condom use or even use a condom, which highly increase their vulnerability to HIV, mainly due to having unsafe sex with a high-risk sexual partner.

Culturally driven-gender roles maintain gender imbalance in heterosexual relationships that provides men with power to abuse of authority and control (Aas, 2010; Wingood &

DiClemente, 2000). Culture in the Dominican society gives men the authority to make decisions in the household and the right of discipline their female partners under circumstances like sexual denial or safer sex negotiation, because this is perceived as unfaithfulness insinuation or partners (Aas, 2010). As a result, domestic and gender violence had had a great burden for Dominican women for many years, but gender dynamics assume this as private relational matters that does not need to be solved by the society (Aas, 2010). Hence, culturally-driven power inequalities perpetuate women's exposure to unwanted sex and unsafe sex.

In addition, culturally-defined power differences in the DR limit women's control over economic resources. Dominican women are expected to stay at home to roles as housekeeper and caregiver, while their male partner provides the household with the basic need to survive (Aas, 2010; Rojas et al., 2011). This situation decreases women's power by promoting economic dependence and limiting the right of decision making, particularly among low educated and poor women (Aas, 2010; Rojas et al., 2011). Furthermore, culture also promotes gender inequalities in the labor force. The Dominican labor-force is mainly male-oriented; most of the high-hierarchical positions are also occupied by men. In contrast, women are more likely to have low-hierarchical positions and have part-time jobs, if any, which perpetuates economic dependence, traditional gender roles and unsafe sexual behaviors.

In sum, gender roles as defined by the Dominican culture contribute to high HIV rates among women by promoting men's power over sexual relationships, economic resources, decision-making, and labor force. Certainly, prevention efforts are needed to equip Dominican women with the knowledge tools and skills they need to challenge the culture and change the social norms in order to restore power equity and reduce HIV risk vulnerability.

2.6. Adopted theoretical framework: Explaining women's HIV risk in the DR

According to the sex, gender, and Population/Health/Nutrition (PHN) conceptualization proposed by DHS to initially include specific gender questions on the questionnaires, biologically determined differences—sex—define anatomical and physiological differences between men and women. Such differences are not considered inequalities as they are defined by nature. However, socially-constructed differences—gender—determine differences in roles, responsibilities, expectations, and behaviors between men and women, defining as well inequalities in power, access to resources, rights, values, and self-worth/entitlement: gender makes man and women unequally different (Kishor, 2005). The PHN concept is displayed in Appendix A. Socially-constructed differences are also contemplated by Connell's TGP from a different perspective: the use of constructs—structure of labor, structure of power, and cathexis.

In order to better address gendered power inequalities in the DR, the current study combines both models in a new conceptual framework to include gendered power indicators, HIV risk indicators, and associations between and within these indicators (see Appendix B). First, the study selected and grouped some of the socially-constructed differences (e.g. gender) out of the PHN framework as they might support one of the three structures of the TGP. As a result, under this combined conceptual framework, socially-constructed differences were grouped in three main categories: 1) gendered rights, which include indicators of the social structure of labor in the TGP (e.g. education, wealth, occupation, and residence), 2) gendered responsibilities, roles and exposures (called gender responsibilities throughout the study for short), which include indicators of the sexual structure of power in the TGP (e.g. head of the household, access to media, decision-making, sexual/domestic violence exposure), and 3) gendered expectations (mainly behavioral expectations), which represent the cathexis structure

of the TGP (e.g. abstinence before marriage, , sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness. Not all indicators proposed in the theoretical framework for each category were measured in the study due to limited availability of data, thus the literature review focused only on the ones the study assessed. However, all gendered indicators used for the data analyses are presented in chapter 3. In the proposed framework, access to media, which might have been considered a right (if considering media as a physical resource), has been categorized into the group of gendered responsibilities as evidence support that exposure to media communication, mainly to television, portrays sex-stereotypical roles of women's subordination, sexualized bodies, and lack of power (Collins, 2011; Wood, 1994). Accordingly, it may be suggested that access to media may also determine power imbalance within heterosexual relationships through the structure of power. Although age group and marital status have been added to the framework as demographics, as most of previous studies have done (De Walque, 2009; Magadi & Desta, 2011; Magadi, 2011), it is important to note that HIV risk varies by age and by marital status , thus these indicators could be considered as theoretical constructs themselves. For instance, age may be considered as an indicator of power within the heterosexual relationship (gender responsibility/role) as older women are less likely to use condoms (Exavery, Kanté, Jackson, Noronha, Sikustahili et al., 2012). Also, marital status may be categorized as a gendered expectation as women in the DR are expected to married/unite to have sex (Aas, 2010). Therefore, their role on sexual behaviors and attitudes is also assessed and discussed (Bowleg et al., 2000; Magadi & Desta, 2011; Rojas et al., 2011; Shisana et al., 2004).

In addition, the new framework contemplated all three gendered power indicators as explanatory variables for HIV risk, which has been approached through three different areas: 1) HIV knowledge (e.g. HIV awareness, HIV transmission, HIV risk prevention, and

comprehensive knowledge), 2) HIV-related attitudes/beliefs (e.g. risk perception, sexual refusal, sexual communication/negotiation, condom acquisition), and 3) sexual behaviors (e.g. early sexual debut, premarital sex, multiple sexual partners, condom use). As a result, the proposed framework displays the logical association between each category of gendered power indicators and HIV risk indicators, proposing as well some potential ways how power imbalance lead to women's vulnerability to HIV risk (see Appendix B). It can be appreciated that gendered indicators affects knowledge, attitudes, and behaviors related to HIV in different manners, both directly and indirectly. Such associations have been explained in the previous sections of the literature review. Regardless of the way, they may increase or reduce individual risk of acquiring HIV. The proposed associations are theory-based and literature-supported. Solid lines in the figure display the association between gendered power indicators and HIV risk indicators (gender-based differences vs. sexual behavior outcomes), while dashed lines show the association within gendered power indicators (e.g. how do gendered rights such as education may impact gendered expectations?) and within HIV risk indicators (e.g. how do HIV knowledge may associate with HIV-related attitudes?).

2.7. Methodological approaches in studying HIV risk and gender using DHS data

DHS data sets have been widely use to understand HIV risk among different populations in the world, to explore the trends of the disease within and between countries, and to explore the association between HIV/AIDS and a variety of risk factors. As a result, methodological approaches of DHS data vary according to the research questions and the underlining hypothesis of the studies. Therefore, it becomes appropriate to review previous methodological approaches to the DHS data sets to better understand what has been done in the field of inequalities on HIV

risk, particularly gender-based inequalities, and also to identify the research gaps that can be further explored.

A recent study by Ackerson and colleagues (2011) analyzed data drawn from the 2005-2006 Indian version of the DHS in order to explore whether access to and use of mass media (e.g. newspapers, radio, television, and movies) was a mechanism through which social inequalities in wealth and education lead to health inequalities in HIV/AIDS (Ackerson, Ramanadhan, Arya, & Viswanath, 2012). Three main categorical measurements were defined: mass media use, HIV/AIDS knowledge and attitudes, and socio-demographic variables (Ackerson et al., 2012). Ackerson's study used a gendered-stratified Poisson regression approach to analyze the data. According to the findings, education and wealth were strongly and positively associated with HIV/AIDS awareness and knowledge, but negatively associated with HIV/AIDS-related stigma; yet these associations attenuate when individuals have access to various mass media types (Ackerson et al., 2012).

An additional study analyzed DHS data from nine Sub-Saharan Africa countries collected between 2003 and 2005 to investigate the influence of educational attainment on condom use in 19,800 sexual-risky adults ages 15–59 that have reporting sexual activity with multiple partners as a single or in addition to a spouse in the 12 months before the survey (Baker, Leon, & Collins, 2011). The dependent variable of the study was condom use measured as a binary variable. Independent variables included educational attainment, basic facts about HIV transmission, attitudes about people living with HIV, and health reasoning about complex myths about HIV and sexual transmission. Control variables included gender, age, marital status, residence, index of economic resources, and country (Baker et al., 2011). Structural equation models (SEM) of measurement and structural components are estimated in stages, examining the influence of

formal education on condom use through the mediation of basic facts, attitudes, and health reasoning. The findings support that educational attainment increases the acquisition of information and improves positive attitudes about HIV/AIDS, yet these factors weakly impact condom use (Baker et al., 2011).

Another study analyzed the most recent DHS data from ten low- to middle-income countries, including the DR, in order to explore the relationship between ever-married women's self-reported experiences of intimate partner violence during their most recent relationship and their laboratory-confirmed HIV serostatus (Harling, Msisha, & Subramanian, 2010). The main outcome was HIV-serostatus, constructed as a binary variable. Independent variables included physical and sexual intimate partner violence. Control variables included age, marital status, education, occupation, religion, lifetime number of sexual partners, and household's wealth and urban/rural status (Harling et al., 2010). The findings did not support a consistent association between IPV and HIV among ever-married women in these lower income countries (Harling et al., 2010).

An additional study analyzed DHS data from five African countries in order to examine the socioeconomic determinants of HIV infection in the population (De Walque, 2009). The study aimed to explore the association between HIV status and certain demographic characteristics, particularly education and wealth, as well as to analyze the association between those socio-demographic characteristics and specific sexual behaviors and attitudes related to HIV/AIDS. The findings support that schooling is the most consistent predictor of knowledge about HIV/AIDS and behaviors such as condom use, use of counseling and testing, and AIDS communication with partner; yet, it predicts higher levels of infidelity and lower levels of

abstinence. Overall, the study concluded that education is not positively associated with HIV status (De Walque, 2009).

Moreover, Snelling and colleagues (2007) used DHS data from 23 low- and middle-income African and Latin American countries to examine the cross-national association between HIV/AIDS knowledge and HIV protective behaviors, to explore the moderating impact of women's education on this association, and to analyze the impact of epidemic severity in the cross-country variability in this association. Protective behaviors included condom use and restricted sex. Epidemic severity was defined according to the country-specific. Dependent variables, both binary, included condom used—ever using a condom to protect from STDs or HIV/AIDS—and restricted sex—ever having sex with only one partner to protect against AIDS. The main independent variable was HIV knowledge, calculated as a composite index derived of a set of six binary questions. The study revealed a positive association between education and protective sexual behavior, as well as interaction between HIV/AIDS knowledge; the relationship between knowledge and protective behaviors is weaker as the level of education increases (Snelling, Omariba, Hong, Georgiades, Racine et al., 2007). These findings suggest that the role of HIV/AIDS knowledge on protective sexual behaviors become limited after certain level of education. Further information is needed to better understand this interaction effect.

In addition, two recent studies analyzed 2003 and 2008 DHS data from twenty different Sub-Saharan African countries in order to provide an overall picture of the general patterns and risk factors of HIV status in this region (Magadi & Desta, 2011) and to provide the general patterns of gender disparities in HIV infection in this region (Magadi, 2011)

In the first study Magadi and Desta (2011) applied multilevel logistic regression models to explore the factors associated with HIV seropositivity at the individual, regional, and country levels. The main study outcome was HIV-positive status, while explanatory variables included socioeconomic and demographic risk factors, proximate HIV/AIDS factors, and sexual behavior factors (Magadi & Desta, 2011). The highest risk of HIV seropositivity was found among women who were in their early 30s, live in urban areas, have primary education, live in a women-headed household, are not circumcised, are a non-Muslims affiliated, live in wealthier households, or have low media exposure (Magadi & Desta, 2011). HIV/AIDS awareness had little association with HIV seropositivity; AIDS stigma was associated with lower risk to be HIV positive. As for sexual behaviors, women who were never-married or previously-married had higher risk of HIV seropositivity, as well as those who reported premarital sex, multiple sexual partner and risky sexual behaviors such as limited condom use (Magadi & Desta, 2011).

In the second study Magadi (2011) aimed to determine the extent of gender disparity in HIV infection across countries, to explore the role of HIV/AIDS awareness and sexual behaviors on gender disparities, and to establish cross-individual and cross-country variation factors that determine such disparity by using a multilevel approach. Findings suggested that controlling for sexual behaviors women still have 70% higher risk to be HIV positive than men, which suggest that gender disparity cannot be attributable to sexual behaviors. Such risk among was mainly found among women who were younger, lived in female-headed households, were in not stable unions or marital partnerships and had an earlier sexual debut (Magadi, 2011).

As a result of the literature review that revised methodological approaches in studying HIV risk and gender using DHS data in developing countries with high HIV prevalence and mainly heterosexual transmission, it is appropriate to discuss methodological opportunities, data

limitations, and research gaps if using DHS data sets to explore gender inequalities in HIV risk in the DR.

2.8. Methodological opportunities

Building on the methodological approaches of previous research studies using DHS data to explain HIV risk, the use of a multilevel regression model have been shown to provide a nuanced way to explore the research questions with regards to the association between HIV infection and explanatory factors (Ackerson et al., 2012; Baker et al., 2011; De Walque, 2009; Harling et al., 2010; Magadi & Desta, 2011; Magadi, 2011; Snelling et al., 2007). Also, this multivariate analysis has the benefit of simultaneously taking into account the effect of the main explanatory variables and other important covariates in order to establish the independent risk factors for the HIV infection (Magadi & Desta, 2011). However, studies that based their multilevel analysis on a well-defined conceptual framework seem to better succeed in answering the research questions, finding the separated and interactive effect of the independent variable in the model (Magadi & Desta, 2011). It may be suggested that this approach may enable the researcher to better understand how specific factors can strength or weak the association between the explanatory and dependent variables. Thus, we believe that a theory-based multilevel analysis may be a fine methodological opportunity to analyze recent DHS data in order to explore HIV infection patterns and associated factors in the DR, as it has worked appropriately in other developing countries.

CHAPTER 3

MATERIALS AND METHODS

3.1. Data sources

The Monitoring and Evaluation to Assess and Use Results Demographic and Health Surveys (MEASURE DHS) project has provided technical assistance to more than 260 surveys in over 90 countries, advancing global understanding of health and population trends in developing countries since 1984. This project is funded by the U.S. Agency for International Development (USAID), other external donors, and funds provided by participating countries. MEASURE DHS also supports the implementation of a variety of surveys. Further information about MEASURE DHS and the questionnaires can be read at <http://dhsprogram.com/data/data-collection.cfm#sthash.OsIugQvC.dpbs>.

3.1.1. The Demographic and Health Surveys (DHS)

The DHS are worldwide recognized surveys which are characterized by the accurate collection and dissemination of nationally representative data on fertility, family planning, maternal and child health, gender, HIV/AIDS, malaria, and nutrition in different countries in the world. Some of the topics include modular information about the household and respondent characteristics, education, family planning, gender/domestic violence, HIV/AIDS knowledge, attitudes, and behaviors, HIV prevalence, wealth status, and women's empowerment.

The DHS module of household and respondent characteristics provides information about household composition, wealth index, and respondent characteristics, which include basic demographic information such as age, marital status, region of residence, level of education,

religion, ethnicity, access to mass media, employment status, and occupation. In addition, the DHS surveys keep a particular focus on gender by using several modules that explore both women's status, domestic violence, and female genital cutting (in some countries).

3.1.2. The AIDS Indicator Survey (AIS)

The AIS represents a timely and costly feasible standardized tool to obtain indicators that allow an effective monitoring of national HIV/AIDS programs, as well as comparability of findings across countries. AIS provides information about HIV indicators and services, HIV/AIDS knowledge, attitudes, and behavior, and HIV prevalence by demographic and behavioral characteristics. AIS individual questionnaire is suitable to interview either women or men; it aims to obtain information about demographics, marital unions, age at sexual debut, sexual behaviors in the last 12 months, condom use, sexually transmitted infections, knowledge and attitudes related to HIV/AIDS, and HIV-testing.

3.2. Study design and selection of participants

Cross-sectional population data from the DHS collected in the DR in 2007 was used in this study. Interviews were implemented by the Center of Demographic Studies (CESDEM). Originally, the sampling frame used by DHS was based on data from the 2002 National Census of Population and Households, but for the capital, the 2007 updated census data were used. This sampling frame was divided into 1,428 geographical census-areas which consist of 35,700 households. Then, a fixed number of 25 households were randomly and systematically selected from each area. A total of 32,431 households were interviewed. All eligible women aged 15-49 years old and men aged 15-59 years old in the households who agreed to participate were interviewed. In 2007, the final sample included 27,195 women (response rate 93%) and 27,975

men (response rate 85%) (CESDEM, 2008). Participants for this study will include all men and women aged 15 to 49 years old who completed their gender-specific questionnaire. The study sample consists of 51,018 participants, which include 24,106 men and 26,912 women.

In order to account for the two-stage household sample design, and therefore to account for clustering data, survey analysis was completed. Survey data use weights in order to select a sample that may better represent the whole population even when not all units have the same probability to be selected. As most surveys deal with selection probability issues, weights account for the unequal sampling rates, and adjust for non-response and coverage issues (Kreuter & Valliant, 2007). In our data, stratification was done based on geographical areas in order to ensure that units from each group in the DR were selected in the final sample, resulting in a representative sample. Then, household-clustering was completed in order to facilitate data collection through in-person interviews (Kreuter & Valliant, 2007). Clustering is mainly used for financial and organizational purposes (Kreuter & Valliant, 2007). Finally, individuals were selected within households. Details about the use of survey analysis in the study are provided in section 3.6.

3.3. Measurements

3.3.1. Demographics.

Gender. A dichotomous variable is used to measure gender (0= men and 1= women).

Age. Age is measured by using 5-year age group categories provided by the DHS survey (15-19, 20-24, 25-29, 30-34, 35-39, 40-44 and 45-49 years old) according to participant's self-

reported age. Age group 30-34 years was used as reference group as this was the median age-group of the data.

Marital status. Marital status was categorized into three groups: never married, currently married (married and living together), and formerly married (widowed, divorced, and not living together).

3.3.2. Gendered rights: Socioeconomic indicators of power

Education. *Highest level of education* is measured by using the following ordered categories: none (reference group), primary, secondary, and higher education, according to the participant's self-reported highest educational achievement.

Wealth index. As previous literature, wealth is measured by using the wealth quintiles provided by DHS: poorest (reference group), poorer, middle, richer, and richest. The wealth index stands as a combined measure of a household's cumulative living standard and is calculated by using a set of data on a household's ownership of selected assets (e.g. car, television, etc.), materials for housing construction (e.g. wood, tiles, etc.), and services (e.g. water access, toilet facilities, etc.). The wealth index presents the distribution of individual households on a continuous scale of relative wealth using quintiles to represent the wealth differences between the poor and the wealthy; additional information about its meaning and calculation can be found at <http://dhsprogram.com/topics/Wealth-Index.cfm>.

Residence. A multinomial variable is used to measure place of residential location depending on the individual's place of residence: capital or big city (reference group), small city, town, and countryside.

Occupation. For goal 2, respondent's occupation is measured for all women using the default categories of the DHS questionnaire: not working (reference group), professional/technical/management, clerical, sales, agriculture/self-employed, household and domestic, services, skilled manual, unskilled manual, and unknown. There were no data available to measure occupation among men.

3.3.3. Gendered responsibilities: Relational indicators of power

Head of the household. A binary variable is used to indicate the sex of the household head (0=male head, 1=female head).

Access to media. The access to media is categorized as limited, fair and good according to the participant's frequency of watching television and reading newspaper/magazine. Access to media is considered limited (reference group) if the individual had watched television and/or read a newspaper/magazine not at all or less than once a week; fair if it had watched television and/or read a newspaper/magazine less than once a week, and good if had watched television and/or read a newspaper/magazine almost every day.

3.3.4. Gendered expectations: Cultural indicators of power

Abstinence until marriage. Four categories were defined to measure expectations on abstinence until marriage according to participant's opinion on whether young men and young women should wait until marriage to have sex: "not acceptable for men or women" if participants agreed that neither men nor women should wait until marriage to have sex", "acceptable for men, not for women" if participants agreed that only men should wait until marriage to have sex, "acceptable for women, not for men" (reference group as it favors

abstinence for women and premarital sex for men) if they agreed that only women should abstain before marriage, and “acceptable for both men and women” if they agreed that both men and women should wait until marriage to have sex.

Sexual exclusiveness. Four categories were defined to measure participant’s opinion on how unmarried sexually active men and women should have only one sexual partner at a time. Sexual exclusiveness was “no acceptable for men or women” if participants agreed that neither unmarried men nor women should have only one sexual partner, “acceptable for men, not for women” if they agreed that just unmarried men should have only one sexual partner, “acceptable for women, not for men” (reference group) if they agreed that just unmarried women should have only one sexual partner, and “ acceptable for both men and women” if they agreed that both unmarried men and women should have one sexual partner at a time.

Faithfulness to spouse. Four categories were defined to measure participant’s opinion on how married men and women should have sex only with their spouses. Faithfulness to spouse was “no acceptable for men or women” if participants agreed that neither married men nor women should have sex only with their spouses, “acceptable for men, not for women” if they agreed that just married men should have sex only with their spouses, “acceptable for women, not for men” (reference group) if they agreed that just married women should have sex only with their spouses, and “unacceptable for both men and women” if they agreed that both married men and women should have sex only with their spouses.

Women’s sexual submissiveness. A nominal variable is used to measure women’s submissiveness according to respondent’s answer to the question “is a wife justified to ask husband to use a condom if he have a sexually transmitted disease”. The participant is considered

to disagree with women's sexual submissiveness if he or she answered yes (reference group). If the answer to the question was no, the participant was considered to agree with women's sexual submissiveness. Few cases were considered as "do not know/ no response" category according to their answers.

3.3.5. Sexual behaviors

Condom use. A binary variable is used to measure whether or not the participants used a condom during the last intercourse (0= no, 1=yes). This variable is only assessed among participants who reported to be sexually active in the last 12 months (n=38,855), but excluded 33 (0.09%) participants who did not respond to the question.

Premarital sex. Only among participants who had had sexual intercourse, a binary variable to measure premarital sex by using participant's self-reported age at marriage and age at first intercourse. If age at first intercourse was less than age at marriage it was considered premarital sex. Sexual initiation after/at marriage (reference group) was considered when participant's age at first sexual intercourse was equal than or greater than age at marriage or he/she had first intercourse at union. This variable was only assessed among 42,919 participants, as we excluded 8,038 cases that had not had sexual intercourse and 61 cases that reported do not know or no response.

Number of sexual partners. Based on participant's self-reported total number of sexual partners including spouse in last 12 months, four categories were defined: none, which included those who had not initiated sexual intercourse yet or those who have been inactive in the last 12 months (reference group); just one sexual partner, two sexual partners, and three or more sexual partners (between 3 and 95+ sexual partners according to the data). The study recorded the

number of sexual partners into a categorical variable due the extremely skewed and over-dispersed distribution of the counts.

3.3.6. HIV-related attitudes

Condom acquisition. The participant's empowerment to get a condom is measured among all ever-married women through the question "if you wanted to, could you yourself get a condom?" This was coded as a binary variable (0=no, 1=yes). Women who responded I do not know or did not respond the question were excluded from the analysis (n=655, 2.74%). Questions used to collect these data are part of the women status and domestic violence modules in the DHS survey and was only assessed for goal 2.

3.4. Statistical Analysis

Data analysis was performed using STATA SE version 12.0. Descriptive statistics were examined according to the study goals by using survey statistics in STATA. Survey analysis accounts for weight, stratification, and clustering, which are feature characteristics of sample survey with significant consequences on estimation (Kreuter & Valliant, 2007). The use of weights is necessary to obtain estimates that represent the whole population, and not only the actual sample; weights reduce bias estimates of means, proportions, and totals (Kreuter & Valliant, 2007). However, when using weights, the standards errors (SE's) of the estimates may be inflated. This is why survey analysis also accounts for stratification, which in contrast reduces the variability from sample to sample, as each stratum contains individuals with very similar characteristics than the entire population (Kreuter & Valliant, 2007). Clustering, in the other hand, tend to also provide larger SE's as similarities within cluster observations may be compared to a reduced sample size and will increase the variances (Kreuter & Valliant, 2007).

Although cluster-similarity may violate the assumption of independent observations, which becomes a limitation, clusters need to be taken into account for to provide accurate SE's (Kreuter & Valliant, 2007). However, in order to take into consideration the complex DHS survey design features, and yet produce more accurate variance estimates, the current study used STATA survey package with linearization estimation as information on strata and clustering was provided by the data set (Kreuter & Valliant, 2007).

Frequencies and percentages were explored for categorical variables. Means and standard deviations were calculated for quantitative variables. As the study used survey analysis, Pearson's design-based adjusted chi squares were calculated to estimate gender differences (goal 1) or marital status differences (goal 2) between proportions across categories of gendered indicators or HIV indicators. Student's t-test and two-proportion test were used to estimate differences across two means or proportion of binary outcomes, respectively.

In a second phase, multilevel regression analyses were completed to assess the association between each group of power indicators as independent variables —gendered rights, gendered responsibilities, and gendered expectations—and the outcomes: sexual behaviors and HIV-related attitudes. Sexual behavior outcomes included condom use and premarital sex for goal 1 and goal 2. Condom acquisition was the main HIV-related attitude outcome and it was assessed only for goal 2. The study estimated the association between each group of gendered indicators on each separate behavioral/attitude outcome (see Figure 1).

Figure 1. List of explanatory variables and main outcomes in the multivariate models^a

Outcomes:	Explanatory variables: Gendered power indicators			
HIV risk indicators	<i>Demographics</i>	<i>Gendered rights</i>	<i>Gendered responsibilities</i>	<i>Gendered expectations</i>
<i>Sexual behaviors</i>	Age group	Education	Head of the household	Abstinence until marriage
Condom use	Current marital status	Wealth	Access to media	Sexual exclusiveness
Premarital sex		Residence		Faithfulness to spouse
		Occupation*		Women's sexual submissiveness
<i>Attitudes/beliefs</i>				
Condom acquisition**				

^a All models include age group and marital status as control variables.

*Variables available only among women.

**Outcomes only assessed for goal 2.

Logistic regression was used to estimate the predictive odds of each group of gendered power indicators on condom use, premarital sex, and condom acquisition as they were binary variables (yes/no). In order to account for potential associations between variables within the same group of gendered indicators, multicollinearity between categorical independent variables was assessed. The current study used one of the perturbation approaches proposed by Wissmann and colleagues to diagnose collinearity between categorical variables. These authors propose that statistical tools of linear regression models can be used for categorical variables as long as they are considered as a set of dummy variables; in doing so variance inflation factors (VIF) can be obtained to consider relevant collinearity issues as a VIF greater than 10 may require further investigation (Wissmann, Toutenburg, & Shalabh, 2007). In our data, the highest VIF's were between 2.03 and 2.42 for some categories of gendered expectations. Therefore, although association between variables were significant at time (e.g. abstinence until marriage vs. sexual exclusiveness, $p < 0.001$), no strong linear association was found based on the VIFs.

In addition, nested regression models were used to complete the analysis for each separate study outcome for both goal 1 and goal 2 as suggested by previous authors who had used DHS data to study HIV risk (Ackerson et al., 2012; Baker et al., 2011; De Walque, 2009; Harling et al., 2010; Magadi & Desta, 2011; Magadi, 2011; Snelling et al., 2007). Four models were used: model 1 included demographics: gender, age group and marital status. Model 2 added all gendered rights variables: education, wealth, residential location, and occupation (only for goal 2). Model 3 added all gendered responsibilities: head of the household and access to media. Model 4, the full model, added all gendered expectations: abstinence until marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness. For goal 1, data analyses were performed first for all men and women, and then separated by gender. Likewise, analyses corresponding to goal 2 were first performed for all ever-married women, and then disaggregated by currently and formerly married status. Segregation of the analysis was based both on previous literature where sexual behaviors and attitudes were found to be significant different between subgroups (Bowleg et al., 2000; Magadi & Desta, 2011; Shisana et al., 2004). By disaggregating the analysis by gender we account made sure that the individuals within each group were independent.

All hypotheses were tested assuming a level of significance of $\alpha = 0.05$. The study used the Bayesian Information Criterion (BIC) and the Akaike's information criterion (AIC) to estimate the best model to explain each sexual behavior and attitude. Both BIC and AIC are model selection statistics which calculate the differences between models as a maximized log-likelihood that favours complexity over fit (Burnham & Anderson, 2004). Penalization is applied as the number of parameters added to the model increase and so does complexity. Yet, differences exist between BIC and AIC. BIC aims to identify the model with the highest

probability of being the true model. AIC, however, aims to identify the model that would better predict the outcome when the true model is unknown (Burnham & Anderson, 2004). If both BIC and AIC agree on model selection, that model is reassured to be the best choice. When they differ, findings may not be conclusive, but BIC will favour the smallest acceptable model to predict the outcome, while AIC will favour the largest acceptable model of all (Burnham & Anderson, 2004).

CHAPTER 4

RESULTS

4.1. Goal 1

Goal 1 of the study aimed to explore differences in gendered power indicators between men and women aged 15 to 49 years in the DR. A total of 51,018 participants aged 15 to 49 years old—47.4% men and 52.5% women—were included in the data analysis. The mean age was 29.3 ± 0.9 for men and 29.7 ± 0.8 for women ($p < 0.001$; 95% CI: 0.43, -0.43). Most of the study sample was represented by young adults (38.0% were 15 to 24 years old). Approximately half of the sample were currently married or living together (51.4%), but this percentage was higher among women than men (58.3% vs. 45.4%; $p < 0.001$). The percentages for never married were 41.5% for men and 22.9% for women. Table 1 provides more information on demographics characteristics.

4.1.1. Gendered indicators

Table 2 displays all the gendered indicators among Dominican men and women: rights, responsibilities, and expectations. Most participants had primary education (40.3%), followed by secondary education (38.9%). A higher percentage of women achieved higher education than men (17.1% vs. 11.1%, respectively; $p < 0.001$). Also, a lower proportion of women was found to be in the poorest wealth quintile in comparison with men (15.4% vs. 20.9%; $p < 0.001$). About two thirds of the sample lived either in the capital of large city or in the countryside (31.0% and 29.1%, respectively). The distribution of men and women was very similar across residential location.

As for gender responsibilities, data from both men and women indicated that more than two thirds of households were male-headed households. Most of participants (72.1%) reported having good access to media. However, a higher proportion of women had limited access to media than their male counterparts (20.9% vs. 16.7%, respectively; $p < 0.001$).

With regards to gendered expectations, the majority of the participants agreed that both men and women should wait until marriage to have sex. However, the proportion of women who agreed was found to be higher than men ($p < 0.001$). Approximately a quarter of the participants agreed that young women, but not men, should wait until marriage to have sex and this proportion was higher among men than women ($p < 0.001$). Most participants—mainly women than men ($p < 0.001$)—agreed that unmarried sexually active men and women should have only one sexual partner at a time (86.5%), and married men and women should have sex only with their spouses (72.3%). Regardless of gender, almost all participants (97.4%) disagreed with women's sexual submissiveness.

4.1.2. Sexual behaviors

Table 3 displays sexual behaviors related to HIV. Approximately 70% of the participants—mainly men (92.2% men vs. 37.8% women; $p < 0.001$)—reported to have sex before marriage. Multiple sexual partners were mainly reported among men (23.7%) than among women (2.5%, $p < 0.001$). However, a higher percentage of women than men only had one sexual partner in the last 12 months (88.5% vs. 66.7%, respectively; $p < 0.001$). Among participants who were sexually active in the last 12 months, 77.7% reported not using a condom in their last sexual encounter. Women failed to use a condom in a greater proportion than men (90.3% vs. 67.3%, respectively; $p < 0.001$).

4.1.3. Condom use and gendered indicators

Results of nested analysis for the whole sample are displayed on Table 4. Women were less likely to use a condom than men (OR=0.22). Although the likelihood of women using a condom increases when adding demographics (model 1), it still remained 70% lower than men. In comparison with those age 30 to 34 years, the odds of condom used progressively decreased in older age groups when holding all variables in the model constant. Likewise, being currently married or formerly married decreased the likelihood of condom use by 96% and 41%, respectively ($p < 0.001$) when comparing with never married people. Although, few changes occurred in the odds of condom use by gender when the nested analysis was disaggregated by gender, the impact of marital status on condom use remained very similar across these analyses (Tables 5 and 6).

In Table 6, results from model 2 indicated that, when other variables in the model were held constant, women with a higher level of education were 38% more likely to use a condom than women with no education. In contrast, the odds of condom use significantly increased among men with primary (OR= 1.47) and higher education (OR= 1.60) (See Table 5.). Among both men and women, model 2 showed a significant increase in condom use across wealth quintiles in comparison with the poorest group, being the wealthier quintiles more likely to use a condom in their last sexual encounter (OR=1.28 for women and OR=1.28 for men). Compared to women who lived in the city (reference group), women in towns and in the countryside were less likely to use condoms, when holding the additional variables constant. In contrast, men who lived in towns were 17% more likely to use a condom during the last intercourse than those who lived in big cities.

In comparison with having a male head of the household, having a female head of the household increased the likelihood of condom use by 25% among women and 13% among men (model 3). Although the odds of condom use increased by 26% and 24% among women who had fair and good access to media, respectively, access to media was not found to have a significant effect on condom use among men (Table 5).

Model 4, indicated that in comparison with the reference group (acceptable for both men and women), acceptance of abstinence until marriage, sexual exclusiveness, and faithfulness to spouse were not significant predictors of condom use for neither men nor women (Tables 5 and 6). However, men and women who agreed with sexual submissiveness were 20% less likely to use condoms in comparison to those who did not accept this behavior. Among women, agreement with sexual submissiveness decreased the likelihood of using a condom by 44%. Among men, however, none of the gendered expectations indicators significantly impacted the odds of condom use.

The best model fit to estimate condom use varied. According to the BIC, model 2 had the higher probability of being the true model that explained condom use among the whole sample if in fact one model was true. However, when separating the analysis by gender, the BIC suggested that model 1 was the most probable and the smallest acceptable model to predict condom used among men and among women. In contrast, results from the AIC indicated that regardless of gender and given the large sample size, model 3 (which include demographics, gendered rights, and gendered responsibilities) may be the more adequate model to predict the odds of condom use on current and new data when the true model is unknown.

4.1.4. Premarital sex and gendered indicators

Table 7 displays the results of the multivariate and hierarchical analysis for premarital sex, respectively, among the entire sample. In comparison to men, women were less likely to have premarital sex (OR=0.07). Such small likelihood among women remains in spite of the variables added to the model. In comparison with women age 30-34, age was not found significant to predict premarital sex. When adding gendered rights, (model 2), education and wealth were positively associated with having premarital sex: participants with higher education were 34% more likely to have sex before marriage than those with no education and participants in the richest wealth quintile were 16% more likely to have premarital sex than those in the poorest quintile. Likewise, living in small cities (OR= 0.88), town (OR= 0.77), or in the countryside (OR= 0.72) decreased the odds of having sex before marriage in comparison with men and women who lived in large cities of the Capital. In contrast, when adding gendered responsibilities (model 3), neither living in a female-headed household nor having good access to media had a significant increase in the odds of premarital sex. However, model 4 indicated that, in comparison with the reference group (those who agree that women should wait until marriage to have sex), people who agreed that neither men nor women should wait, or that both should wait were actually less likely to have sex before marriage.

Tables 8 and 9 display the separate hierarchical models for men and women, respectively. For men, the full model indicated a positive association between premarital sex and: being aged 45-49 years (OR=1.21), having secondary or higher education (OR=1.35 and OR=1.41, respectively), being in the three richest wealth quintiles (OR=1.27, OR=1.41, and OR=1.65, respectively), were significant predictors of having sex before marriage when the rest of the variables in the model were held constant. On the other hand, being younger than 24 or living in

the countryside decreased the odds of premarital sex among men. In addition, the likelihood of premarital sex was lower for those who reported accepting that only women should wait until marriage to have sex or accepting that both men and women should wait.

Results from Table 9, which is restricted for women, showed no age differences on premarital sex. However, being formerly married increased the odds of premarital sex by 12%. Higher education also increased the odds of premarital sex (OR=1.26), and wealth had no effect at all.

According to the BIC, model 2 (demographics + gendered rights) had the higher probability to be the true model to explain premarital sex in both the combined and the separated analysis. Results from the AIC, however, indicated that the full model (demographics, gendered rights, gendered responsibilities, and gendered expectations) may be the more adequate model to predict the odds of premarital sex regardless of gender on the current sample. The AIC suggested that the full model may be used to predict premarital sex even when we have new data and the true model is unknown.

4.2. **Goal 2**

Goal 2 only focused on women who had been ever-married, a total of 20,710 women aged 15 to 49 years old—74.5% currently married and 25.5% formerly married women—were included in the data analysis. The mean current age was 32.9 ± 12.4 years for currently married women and 32.9 ± 18.3 years for formerly married ($p=0.334$). Within this sub-sample, the majority of women were between 30 and 34 years old (17.0%), and approximately 50% of all women were between 20 and 39 years. As for the distribution of current marital status, 55.0% of ever-married women were living together, 22.0% were divorced, 19.5% were married, 1.9% was

not living together and 1.5% was widowed. See Table 10 for more information on descriptive statistics.

4.2.1. Gendered indicators

Table 10 displays descriptive statistics for gendered rights indicators among currently married and formerly married women in the DR. Most ever-married women had primary education (43.0%), followed by secondary education (34.4%). The proportion of currently married women who had secondary education was higher than the proportion among formerly married (33.4% vs. 37.7%). Also, a lower proportion of currently married women was found to be in the poorest wealth quintile in comparison with formerly married women (17.9% vs. 15.2%), but a higher percentage of currently married women were in the richest wealth quintile (20.7% vs. 17.4%, respectively). The proportion of currently married women who had their residence in the countryside was significantly higher than formerly married women (31.3% vs. 24.9%). In terms of women's occupation, 45% of all ever-married women were not working, but there were differences by current or former status. Approximately half of all currently married women were not working (48.8%) in comparison with only 34% of formerly married women ($p < 0.001$). Among those who worked, currently married women mostly work at professional/technical jobs, sales, and household/domestic jobs. Formerly married women were working mainly on household/domestic jobs, sales, and at professional/technical jobs.

Table 11 displays descriptive statistics for gender responsibilities. The distribution of head of the household indicated that 77.4% of the households of formerly married women were headed by females in comparison with only 21.9% of their currently married women

counterparts ($p < 0.001$). Access to media was very similar between currently and formerly married women and about two thirds of them had good access to media.

Regardless of the ever-married status, women mostly agreed that both men and women should comply with abstinence until marriage (60.7%), sexual exclusiveness (90%), and faithfulness to spouse (82.2%). However, formerly married women were more likely to agree that neither men nor women should wait until marriage to have sex (14.2%) in comparison with currently married women (9.9%). Approximately a quarter of currently married women, but a third of formerly married women agreed that only young women, but not men, should wait until marriage to have sex ($p < 0.001$). Regardless of ever-married status, almost all women (97.7%) disagreed with women's sexual submissiveness.

4.2.2. Sexual behaviors and HIV-related attitudes

Sexual behaviors assessed for ever-married women are displayed in Table 12. Premarital sex was common as 68.1% of the sample reported to have sex before marriage. Most of the women (87.1%) had just one sexual partner in the last 12 months. However, the percentages varied by marital status (96.2% for currently married women vs. 60.6% for formerly married). Most of this sub-sample (91.4%) reported not using a condom in their last sexual encounter. However, about one third of formerly married women (27.3%) used a condom in contrast with only 4.2% of condom use among currently married women. As for condom acquisition, 86.6% of all women reported that they will get a condom if they wanted to, but this was more often reported by formerly married women than by currently married ones (88.7% vs. 85.9%).

4.2.3. Condom use and gendered indicators

Results of multivariate analysis are displayed on Table 13. Compared to currently married women, those formerly married had much higher likelihood of condom use. In comparison with those aged 30-34 years, women aged 40-44 and 45-49 years had a significant decreased on the odds of condom use, 44% and 53%, respectively. Results from model 2 indicated that neither education nor wealth had a significant association with condom use among women ever-married women. However, living in the countryside decreased the likelihood of condom use by about 40%. Women working in sales, household/domestic, services, and clerical positions were found to have higher condom use than women who were not working. Among married women, working in sales was the only occupation significantly associated with condom use (OR=1.79). Among formerly married women, however, the odds of condom were higher among those who worked in sales, household/domestic, and clerical jobs.

As for gender responsibilities, having a female head of the household increased the likelihood of condom use. Also, in comparison with having limited access to media, having more access to media increased the likelihood of using a condom. Results of model 4 indicated that acceptance of abstinence until marriage, sexual exclusiveness, and faithfulness to spouse were not significant predictors of condom use for neither currently married or formerly married women (Tables 14 and 15).

As for the best model fit to explain condom use among ever-married women, the BIC results indicated that model 1, just demographics, had the higher probability of being the true model that explained condom use for all ever-married women in the sample and for each ever-married category separately. According to the AIC, however, the full model is best to explain the

odds of condom use for all-sample and formerly married women. The AIC suggested that model 3 (demographics and gendered rights, and gender responsibilities) is a better fit to explain condom use among currently married women.

4.2.4. Premarital sex and gendered indicators

Results of the multivariate hierarchical models for premarital sex are displayed in Table 16. In comparison to currently married women, formerly married women were more likely to report having had premarital sex. In all models, age groups were not found significant in predicting premarital sex for neither currently married nor formerly married women.

In model 2, higher education was found to increase the odds of premarital sex (OR=1.35) in comparison with no education. When compared with women living in the city, ever-married women who lived in small cities, towns, or in the countryside were less likely to have premarital sex. This likelihood remained the same for currently married women, but became no significant for just formerly married women in the disaggregated analysis (Tables 17 and 18). As for occupation, having a professional/technical job was found to decrease the likelihood of premarital sex for all women (OR= 0.84), but this was mainly driven by currently married women.

When adding gendered responsibilities (model 3), neither living in a female-headed household nor access to media had a significant association with premarital sex. However, domestic violence exposure increased the odds of premarital sex, but only among currently married women. Model 4 indicated that gendered expectations did not have a significant association with premarital sex among ever-married women.

Model 1 (just demographics) was found to be the best fit according to BIC to explain premarital sex among ever-married women. However, results from the AIC indicated that the full model (demographics, gendered rights, gendered responsibilities, and gendered expectations) may better explain premarital sex for the all-sample analysis and for currently married women. Model 2 was a best fit in the case of formerly married women.

4.2.5. Condom acquisition and gendered indicators

Table 19 displays the results of the multivariate hierarchical analysis for condom acquisition among the all ever-married women. Ever-married status was not statistically significant in predicting condom acquisition in model 4. In comparison with women aged 30-34 years, older women (40-44 and 45-49 years old) were less likely to acquire a condom. Higher education positively impacted condom acquisition. The predictive value of education remained when the analysis was separated by current or former status (Tables 20 and 21). In general, wealth was found to increase the odds of condom acquisition, but this association was mostly for among married women. In general, having a job tended to increase the odds of condom acquisition.

When adding gendered responsibilities (model 3), women who had good access to media were more likely to get a condom if they wanted than women with limited access. Regardless of ever-married status, no associations were found between condom acquisition and living in a female-headed household or domestic violence exposure or sexual violence exposure (Tables 20 and 21).

When gendered expectations were added to the model (model 4), ever-married women who agreed that both men and women should be sexually exclusive were 29% more likely to get

a condom. However, this association was only found among formerly married women. In this group of formerly married women, those who agreed with sexual exclusiveness for both men and women were almost 2-fold more likely to acquire a condom if they wanted (OR= 1.97). Among currently married women, those who agreed with women's sexual submissiveness were 45% less likely to get a condom than the ones who disagreed with this gendered expectation.

Broad variability was found on the best model fit for condom acquisition. According to the BIC, model 3 was the best fit to explain condom acquisition for all-women analysis; however, model 1 and model 2 had the higher probability of being the true model that explained this outcome for formerly married and currently married women, respectively, if in fact one model was true. In contrast, results from the AIC indicated that the full model (demographics, gendered rights, gendered responsibilities, and gendered expectations) may better explain condom acquisition for all women and for currently married women, while model 3 was a best fit in the case of formerly married women.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

The impact of power and gender on HIV risk has been shown in quantitative (Mashinini & Pelton-Cooper, 2012) and qualitative research (Arango, 2003; Bowleg et al., 2004). This study applied both Connell's TGP (1987) and the DHS's population and health conceptual framework to redefine a group of gendered indicators that may determine differences in HIV risk by gender. This dissertation research had two main aims. First, to examine and contrast gender differences on gendered power indicators—rights, responsibilities, and expectations—between men and women aged 15 to 49 years old in the DR, and their on condom use and premarital sex. Second, to examine and contrast differences on power indicators between currently married and formerly married women aged 15 to 49 years old in the DR, and their impact on condom use, premarital sex, and condom acquisition.

5.1. Goal 1: Differences on power indicators and sexual behaviors between men and women

5.1.1. Gendered power indicators

Our findings indicate that, in general, Dominican women were more educated than men. In this sense, the two last Gender Gap Index Reports (2012, 2013) reported that women in the DR achieved secondary and tertiary education in higher rates than men. However, the last report found higher levels of unemployment and lower income among women than men (Bekhouch et al., 2013). Nevertheless, our findings are consistent with previous studies where higher education is found to provide women with better job opportunities and financial independence (Clark et al., 2006; Rojas et al., 2011; Rosenthal & Levy, 2010). In our data, women 67.1% of women with no

education was not working, while 66.1% of women with higher education were currently working. In addition, our data showed that most women with higher education had professional/technical/management (47.5%) and clerical (13.9%) jobs, while women with no education mostly report household/domestic (12.1%) and unskilled (6.9%) jobs. As for economic independence—based on the question “who decides to spend the money”, data in our study were only available for married women who worked and earned cash money (n= 7,015). Within this subsample, about 50% of women decide how to spend their money themselves regardless of their educational level. Unfortunately, no data were available to explore these associations among men.

As in other countries in Latin America, most of the participants lived in a male-headed household (DeSouza et al., 2004). In a further analysis of our data (not shown) we also found that female-headed households were mainly reported by formerly married women: 77.4% of formerly married women lived in a household headed by a woman. This is consistent with the 2012 World Bank Economic Report where up to 80% of households in Latin American and the Caribbean were headed by a man, while 17% of households were headed by a single female. In addition, our results indicated that, in general, access to media is good in most cases for both men and women, but when comparing between gender groups, men had better access to media in a greater proportion than women. Previous studies have found that women’s access to media continues to be limited in several developing countries, and interventions that promote increasing such access need to be developed (Magadi & Desta, 2011; Zuo, Lou, Gao, Cheng, Niu et al., 2012).

Gendered expectations seemed very similar between men and women in our study; however, when comparing specific answers, a greater proportion of women agreed with

statements related to abstinence until marriage, sexual exclusiveness, and faithfulness to spouse than men. This is consistent with previous findings in Latin American cultures where men are expected to be promiscuous and virile and engage in risky behaviors, while women are expected to wait until marriage to initiate sex while being faithful to only one sexual partner (Aas, 2010; Bull, 1998).

Moreover, most men and women in our study disagree with women's sexual submissiveness, which in our study was only assessed from one sexual empowerment perspective through the question "is a wife's justified to ask her husband to use a condom if she knows he has a sexually transmitted disease"? Although this question has been also used on previous studies using DHS data to assess women's sexual empowerment on family planning, sexual authority, and sexual arousal (Do & Kurimoto, 2012; Kinfu & Sawhney, 2011; Sanchez, Kiefer, & Ybarra, 2006), it is the first time it is used as an indicator of gendered expectations, thus no direct comparisons have been found. Yet, Sanchez and colleagues suggested that gender roles prescribe submissive sexual behaviors which associates with passive roles during sexual activities and unlikeliness of sexual negotiation. In contrast, our findings may suggest that women may perceive some power over her sexuality under extreme circumstances, such as partners having a sexually transmitted disease. It would be helpful to explore further measurements to assess women's submissiveness in this population from a broader perspective.

5.1.2. Sexual behaviors

As expected, more men reported premarital sex and more than one sexual partner than women in the DR. This is consistent with a previous study in Nigeria where men were found to

often initiate sexual intercourse at an early age than women, mostly before marriage, and most likely with multiple sexual partners (Bukar, Audu, Kawuwa, Ibrahim, & Ali, 2014).

In addition, this study indicates important gender differences in rates of condom use during the last intercourse. Although condom use was in general low, fewer women reported using a condom in the last sexual encounter. The small likelihood of women using a condom has been associated with their lower likelihood to negotiate condom use with their partner's (Halperin et al., 2009; Quinn & Overbaugh, 2005; Rojas et al., 2011).

5.1.3. Association between condom use and gendered indicators

Being a man was found to be a protective factor for condom use. This finding is consistent with previous literature in which men were more likely to use condoms and to be more consistent users than women (Baidoobonso, Bauer, Speechley, & Lawson, 2014; Peltzer, Matseke, Mzolo, & Majaja, 2009). As previous studies have found, our results indicate that the likelihood of condom use decreases with age, particularly among women. A previous study among Caribbean and Black people found that increases in age were associated with lower likelihood of condom use (Baidoobonso et al., 2014). Also, another study in the U.S. indicated that age was negatively associated with condom use (Crosby et al., 2008). However, a new study did not find any gender difference on age as a predictor of condom use among laborers in Thailand (Ford, Chamrathirong, Apipornchaisakul, Panichapak, & Pinyosinwat, 2014). An occupation-specific analysis should be completed to test the last hypothesis, but data on occupation was not available for men.

As previous studies have shown, being currently married significantly decreased the likelihood of condom use, particularly among women. Evidence supports that married and

committed women are found to perceive low or no risk of acquiring HIV, and thus being more likely to engage in risky sexual behaviors such as lack of condom use; this is regardless of education or self-efficacy (Bowleg et al., 2000). However, other studies have suggested that never married women have a higher risk of HIV infection in comparison with married women, particularly at younger age groups and when sexual behaviors are taken into consideration (Magadi & Desta, 2011; Shisana et al., 2004). The association between condom use and marital status is complex and contradictory results have been found. Therefore, the role of marital status on condom use was further analyzed just among ever-married women (see section 5.2.3).

Education and wealth were protective factors for condom use for both men and women. Several studies have found that education ameliorates women's risk to HIV infection in Latin America and Africa and prepares women to challenge gender roles and cultural scripts that shape HIV vulnerability among them (Clark et al., 2006; Rojas et al., 2011; Rosenthal & Levy, 2010). In addition, regardless of gender, schooling has been found to be the most consistent predictor of knowledge about HIV/AIDS and behaviors, including condom use (De Walque, 2009). According to the evidence, equal access to education might alleviate some aspects of the gender-based power inequalities (Jukes & Desai, 2005).

In agreement with a previous research (Magadi & Desta, 2011), our results indicated that having a female head of the household decreases the likelihood of condom use, mainly among women. Female-headed households in Latin American and the Caribbean are considered vulnerable environments for health status as they tend to be extremely poor and to have a higher dependence rate than men-headed households, but the literature in regard to this association is limited (The_World_Bank, 2012). In further analysis of our data, however, when all ever-married women are included, the poorest wealth quintile was mostly comprised by women living

in male-headed households, while a smaller proportion of those were women who lived in female-headed households (68.2% vs. 21.8%, respectively). In contrast, when only formerly married women were included in the two-way table analysis, women in female-headed households represented the higher proportion of cases among those who were extremely poor (81.3% vs. 18.8% for those in male-headed households), which is inconsistent with the World Bank findings. More studies are needed to further understand how living in a household with a female head may associate with greater vulnerability and consequently impact specific sexual behaviors such as condom use, particularly for formerly married women.

Good access to media was a protective factor for condom use, particularly among women. Our results also indicated that when adding access to media to the model, the protective prediction of education and wealth on condom use declined. These findings are consistent with a recent study which also used DHS data to examine the association between HIV risk, SES, and access to media in 13 Sub-Saharan countries (Jung, Arya, & Viswanath, 2013). However, as DHS data only provide information about traditional media such as radio and newspaper; it would be interesting to examine the role of more modern media technology, such as television and internet, on condom use in the DR. Our results suggested that it is necessary to identify potential ways to utilize media to reduce HIV risk among women in the country by promoting behavioral change. Access to television programs which model safer sex have been found to increase condom use and self-reported fidelity (Ferreros et al., 1990; Wingood & DiClemente, 2000).

In contrast to our expectations, attitudes toward abstinence before marriage, sexual exclusiveness, and faithfulness to spouse were not found to predict condom use among men or women. Only women's sexual submissiveness was found to decrease the likelihood of condom

use among women. We anticipated that gendered expectations would have a significant effect on reducing condom use among women who agreed that there should be any differences in accepting these behaviors between men and women. According to the evidence, it is expected that committed women within a heterosexual relationship tend to feel the obligation to fulfil their male partner's needs and desires despite of the male's unfaithfulness or HIV status (Kershaw et al., 2006; Rosenthal & Levy, 2010). Growing evidence also support that social obligations might explain the high number of women that have been infected by their long-term partners, the inconsistent condom use among married women, the challenge of negotiating condom use and refusing unprotected sex among women in a formal relationship (Clark et al., 2006; Pettifor, Measham, Rees, & Padian, 2004; Rosenthal & Levy, 2010). Further analyses are needed to better understand the role of HIV-related attitudes on condom use in the DR.

5.1.4. Premarital sex and gendered indicators

Women were less likely to report having had premarital sex. However, older age and formerly marital status were found to increase the odds of premarital sex for both men and women. This is consistent with a previous study among Latina women in the U.S. where women were found to report premarital sex in a lower percent than men (Dillon, De La Rosa, Schwartz, Rojas, Duan et al., 2010). Yet, those women who had initiated premarital sex did it mostly at an early age and therefore were more likely to have multiple sexual partners (Dillon et al., 2010). A recent review on women's early sexual debut and HIV risk among women in Sub-Saharan Africa discussed that premarital sex is one of the resulting risky sexual behaviors that women who initiated sex early in life engaged in, along with others such as multiple sexual partners, casual sex, and low rates of condom use (Stöckl, Kalra, Jacobi, & Watts, 2013).

Although men are more exposed to premarital sex than women, special attention needs to be given to young women who practice premarital sex, as evidence supports that poor young women are more likely to initiate sexual intercourse earlier than their educated counterparts, but less likely to use any kind of protection (Speizer, Fotso, Davis, Saad, & Otai, 2013). Also, issues of forced sexual debut should be taken into consideration when premarital sex is assessed. In a further analysis using our sample for ever-married women we found that 1,784 women had their sexual initiation at age 13 or younger, and 46.2% on those were reported before age at marriage. Further, out of those cases, 46 women had their first sexual encounter between 8 and 10 years old and 74.9% of them were before marriage, which may suggest sexual abuse. We were also able to obtain information about age of first sexual partner among 639 of these cases which initiated sex at or before 13 years, and we found that in 95.3% of the cases the first sexual partner was at least 10 years older than the girl. Our exploratory findings strongly suggest the presence of forced sex/coercion within this population; further research should be done in the DR to better analyze issues related to sexual abuse among girls and young women, as well as the opportunities to address this abuse of male power to decrease girls vulnerability to sexual transmitted diseases, including HIV.

Our findings indicate that higher education increased the likelihood of having premarital sex for both men and women (Yip, Zhang, Lam, Lam, Lee et al., 2013), whereas wealth was positively associated with premarital sex among men, but not women. This is partially inconsistent with UNAIDS previous reports in which education and wealth were found protective factors for early sexual debut and premarital sex. However, a recent meta-analysis of high-risk behaviors among sexually active men from different parts of the world using DHS data found that wealthier, better educated men are more likely to be involved in high-risk sexual

behaviors including unprotected premarital sex and extramarital intercourse (Berhan, Berhan, & Berhan, 2013). Based on previous studies, wealth confers men with a better status on the dating and marriage market, as they have the resources to provide women with financial security through money or gifts; in addition, evidence suggest than wealthy men not only have the economic resources to pay for transactional sex, but also the access to media that can connect them, thought internet for instance, with women who are struggling with economic crises or unemployment (Baba-Djara, Brennan, Corneliess, Agyarko-Poku, Akuoko et al., 2013; Honwana, 2013; Wei, 2013).

As for other studies on wealth, another meta-analysis found that wealthy and educated women from 28 different countries are more likely to practice premarital sex, mostly with multiple sexual partners, and with no protection (Asres & Yifru, 2012). In the DR, according to our findings, being wealthy does not necessarily increase the likelihood of premarital sex. Although these economic indicators may confer the same kind of power to both men and women, we can argue that perhaps Dominican women use such power to avoid risky behaviors. However, in our data, a higher proportion of wealthier women (middle to richest quintile) reported premarital sex in comparison with their poorest counterparts. Evidence in regards of the role of education and wealth on premarital sex is still controversial and needs to be further explored, particularly in the DR where premarital sex in mostly unprotected, and as a result having sex before marriage becomes a high-risk behavior.

In addition, as it is proposed that the delay in age of married in some developed countries such as the U.S. may also increase the likelihood of premarital sexual exposure (Hymowitz, Carroll, Wilcox, & Kaye, 2013; Wei, 2013), we may argue that perhaps more educated and wealthier adults in the DR are having a higher likelihood of premarital sex due to their delay in

marriage. In a further analysis of our data, we found that mean age at marriage increases as level of education increases: while Dominican adults with no education got married at 18.9 ± 0.18 years old, the average age of marriage was 22.8 ± 0.11 years those with higher education. Data also showed that in general, women married at an earlier age than men in the DR, being women with no education the groups that married the earliest (16.2 ± 3.8) years old). Further, a regression analysis was completed to estimate the impact of education and wealth on age at marriage controlling by gender. Findings suggest that higher education increased age at marriage by 3.7 years in comparison with those with no education and being in the wealthier quintile increased it by about 1 year. This model explained 26.4% of the variability on age at marriage in our population.

In agreement with previous research, living in rural areas (e.g. towns and in the countryside) was found to be a protective factor for premarital sex when comparing to the big city residents, particularly for women (Alo & Akinde, 2010; Yip et al., 2013). It can be argued that women in rural areas married at a younger age than their counterparts who live in the cities, and therefore premarital sex is less frequent among this group. In our data, the proportion of women who live in the countryside or towns combined who had sex at marriage or afterwards was higher than the proportion of women in these settings who had premarital sex (52.7% vs. 46.6%). Also, as higher education was found to be positively associated with premarital sex, women in the rural areas, mostly with primary level of education, may be protected in this sense.

Our findings suggest that women who agreed that abstinence should be accepted for women, not for men were less likely to practice premarital sex. Such results are consistent with a study among Asian young adults, where women were more permissive than men in accepting premarital sexual behaviors (Zuo et al., 2012). However, in our study both men and women who

agreed that abstinence should be acceptable for both men and women had a decreased likelihood of premarital sex; suggesting than more traditional attitudes toward premarital sex may be a protective factor for having sex before marriage. In agreement, Yip and colleagues (2013) found that liberal attitudes towards premarital sex increased the likelihood of engaging in premarital sex and other high-risk sex behaviors.

5.2. Goal 2: Differences on power indicators and sexual behaviors between currently married and formerly married women

5.2.1. Gendered power indicators

Findings of our study suggested that currently married women had a more power than formerly married women as represented by higher levels of education and wealth. This is consistent with a previous study about marriage and HIV risk where married women was found to achieve higher education than previously married women, however in this study wealth was not assessed (Nalugoda et al., 2014). Currently married women were found to live more often in the countryside—as previously reported (Nalugoda et al., 2014)—and being not working in higher proportions than formerly married women. We may suggest that such findings are due to the responsibilities of these formerly married women, as they are more likely to be female-heads of the household, and therefore providing income for their families (The_World_Bank, 2012). This may also explain why the majority of formerly married women work in household/domestic and sales jobs according to the study data. In contrast, it may be that currently married women do not need to work as much because their spouses/partners take care of the household needs, as the culture proposes (Aas, 2010).

5.2.2. Sexual behaviors

Frequency of premarital sex was not found to be different between currently and formerly married women. As expected, having just one sexual partner was the norm among Dominican women, especially among married women. Although formerly married women reported none sexual partners in the last 12 months in a higher proportion than currently married women, they were also the ones who more often had 2 or more partners. These findings may suggest that the being married in the DR is associated with sexual exclusiveness; however, many formerly married women seem to choose abstinence. According to a previous study, Dominican women are not expected to have occasional sex with a man she is not married to or in a relationship with (Aas, 2010). Further research may explore the specifics and factors associated with multiple sexual partners among formerly married women in the DR as previously married women have been found at a higher risk of HIV (Nalugoda et al., 2014; Oluoch et al., 2011; Wanjiru Waruiru et al., 2014).

5.2.3. Association between sexual behaviors and gendered indicators

5.2.3.1. Condom use

Findings indicated that currently married women are at a higher risk of not using a condom than formerly married ones, and this is mainly among older women. This is consistent with previous studies in which married and committed women were more likely to be involved in sexual risky behaviors such as lack of condom use because they perceive themselves at a low or no risk of HIV (Bowleg et al., 2000). Also, being previously married has been found to increase the odds for condom use and frequency among some vulnerable groups, including Caribbean women (Baidoo-Boonso et al., 2014). Another study also found that previously married

women used condoms consistently in a higher percentage than currently married women, but these results were only descriptive (Nalugoda et al., 2014; Smith, Nyamukapa, Gregson, Lewis, Magutshwa et al., 2014).

Although in our data we do not have information about the frequency or consistency of condom use for formerly married women, we explored two-table associations between condom use and number of sexual partners and found that formerly women with multiple sexual partners (2 or more) used condoms in higher proportion than the ones with only one partner (40% vs. 26.1%, respectively). In order to explain these findings, we can hypothesize that formerly married women are likely to have sex with men who are already committed or married, and therefore they are open to the option of using condom, not necessarily to prevent HIV or sexually transmitted disease, but to prevent undesirable pregnancy. A previous study among married and previously married people in rural areas of Mozambique found that 90.3% of previously married women had married male partners (Noden, Gomes, & Ferreira, 2009). As we have previously discussed, the fact that a higher proportion of formerly married women in our population may have financial need—based on the wealth information—may have justified the sexual activity with married men, who may provide economic resources to them in the form of money or gifts. This is also supported by Noden and colleagues (2009) who found that in comparison with none married women being awarded for a sexual encounter, 78.1% of formerly married women reported to receive money or gifts from their partners after their sexual encounters. As for the pregnancy part of our argument, in our data 33.8% and 26.2% of formerly married women who used a condom in the last sexual encounter reported not wanting more children or wanting children after 2 years, respectively. Interestingly, another 23.2% of these women who were already sterilized were found to use a condom in their last sexual encounter, which may suggest

protection from sexually transmitted disease instead. Motives of formerly married women that empower them to use condoms needs to be further explored.

Education and wealth were not found to be predictive factors for condom use among either currently married or formerly married women. These findings are partially consistent with previous research on married women that were found to engage in unsafe sexual behaviors regardless of their educational level or sexual self-efficacy (Bowleg et al., 2000). However, research has shown that education is a protective factor for risky sexual behaviors such as unprotected sex (Clark et al., 2006; Rojas et al., 2011; Rosenthal & Levy, 2010). Also, as poverty has been consistently found as a risk factor for risky sexual behaviors (Rosenthal & Levy, 2010; Wingood & DiClemente, 2000), we expected that having a better wealth status would increase the odds of using condoms. Wealth has been found to be positively and independently associated with condom use (Baidooobonso et al., 2014).

Residence, however, was found to decrease condom use: women living in cities were more likely to use condoms. Such findings are consistent with previous studies where residence in peri-urban and urban settings was positively associated with condom use in comparison with living in rural areas (Tumwesigye, Ingham, & Holmes, 2013). In a previous study among women in rural Ghana, occupation was found to increase condom use: civil servant/students were 4.1 more likely to use a condom than petty trades in the bivariate analysis; however, when demographic variables were included in the model, occupation become no significant associated with condom use (Abdulai, 2012).

Living in a female-headed household increased the likelihood of condom use among currently married women. Accordingly, a previous study suggested that women who lived in a house lead by a women may have less conservative attitudes about sexuality and be more prompt

to exercise protective behaviors than those who lived in a male-headed household (Chacham, Maia, & Camargo, 2012). Further research need to be done in the DR to explore more in depth opportunities to empower women in female-headed households to practice safer sex, especially to those women who are the household heads themselves, who may be formerly married.

5.2.3.2. **Premarital sex**

Being formerly married was positively associated with premarital sex when controlling for demographics and other gendered factors. Although not many studies have explored the predictive association of being previously married and condom use, we can argue that these findings are due to reverse causality (De Walque, 2009), which means that it perhaps being formerly married is a consequence having premarital sex earlier in life.

In consistency with the last argument, a study explored the association between on tempo of sexual intimacy and further relationship quality among married and cohabiting adults; its findings suggested that initiating sexual activity too early in the relationship (before marrying or living together) was negatively associated with marital quality later in life among women (Sassler, Addo, & Lichter, 2012). Based on this outcome, we suggest that one of the reasons why premarital sex and formerly married status are related is because women who started sexual activity before marriage have less quality relationships after marriage/union, and therefore they end up getting divorced (which is the main group of formerly married women: 86.5%).

In a further regression analysis of our data we found that age at marriage decreased by about 3 years ($b=2.86$, $p<0.001$) for currently divorced women in comparison with married women after controlling by premarital sex ($R^2=0.195$). In order to explore the effect of currently marital status on age at first marriage, we performed an ANOVA test with a set of post-hoc pairwise (Scheffe) comparisons using all possible categories of current marital status: married,

living together, widowed, divorced, and not living together. Our findings indicated that the mean age at marriage among women who were married was 2.2 years younger than women who were divorced ($p < 0.001$); however, when comparing with women who were living together with their partners, mean at marriage for divorced women was 0.34 years older. As there are no previous studies done on this matter in the DR, further research should explore the association between premarital sex and marital status.

Higher education was found to increase the odds of premarital sex for both currently and formerly married women. Also, our study did not find any association between wealth and premarital sex. Discussion of this issue has been previously offered in section 5.1.4 about association between premarital sex and gender indicators between men and women. As the association remained constant between men and women and also between formerly married and currently married women, we suggest that similar reasons may explain the reverse expectation of education and wealth as protective factors.

Those formerly married women who lived in towns and in the countryside were less likely to practice premarital sex. Based on previous work done by the author in few Dominican communities, it may be argued that in the Dominican culture women in the countryside are motivated to get married or unite with a man when they are still very young. Consequently they might initiate sexual intercourse at marriage or after it. On the other hand, Dominican women in the cities tend to delay marriage to later years in life, but initiate sexual intercourse anyways. In our data, 88.3% of all women who had sex at first union lived in small cities, towns, and countryside places. Also, as expected, occupation in professional/technical jobs decreased the likelihood of premarital sex, but only among currently married women. However, we were

expecting to see how higher education, better wealth, and occupation were all protective for premarital sex.

5.2.4. Condom acquisition and gendered indicators

The likelihood to get a condom was not associated with ever-married status itself. However, education was found to be a strong predictor for condom acquisition for both currently married and formerly married women. Although there is limited data on educational attainment and condom acquisition, condom acquisition is mostly assessed as a behavioral outcome for HIV prevention strategies.

Growing evidence on prevention has shown that increasing a woman's knowledge on condom acquisition strategies and empowerment to get a condom can definitively increase condom use among this population (Gebhardt, van der Doef, Billings, Carstens, & Steenhuis, 2012). In our study, just among currently married women, being in the richer or richest quintiles increased the likelihood of getting a condom. As cost and shame have been found to be barriers for condom acquisition (Gebhardt et al., 2012; Spikes, 2013), our findings may be due to availability of resources to buy a condom or to empowerment provided by higher level of education.

Occupations such as sales and professional/technical jobs were found to be positive associated with condom acquisition. Women in these positions may be more educated and perhaps in better SES groups than the rest, and therefore, they are empowered to get a condom if they need to. Accordingly, in our data 66.3% of women who had professional/technical jobs also had higher education and 50% of them were found in the richest quintile. However, when exploring the data for women in sales jobs, 85.4% of them had either primary or secondary education, and only 19.2% of these women were in the richer quintile. Limited information on

specific jobs and their impact on HIV-related attitudes is limited, further research need to address this gap. Also, access to media and agreement with sexual exclusiveness increased the odds of condom acquisition, but only among formerly married women. Exposure to media has been used as an educational strategy to increase women's awareness on HIV-related topic, therefore, as HIV knowledge is positively associated with higher perceived risk and less risky sexual encounters (Jesmin, Chaudhuri, & Abdullah, 2013; Wingood & DiClemente, 2000).

5.3. Limitations

Results need to be considered in light of few limitations. First, DHS data have a cross-sectional nature, thus it is not possible to determine causality between gendered power indicators and condoms use but instead just to describe those associations (Magadi & Desta, 2011). Second, the self-reported nature of the data increases the possibility to have bias due to underrepresentation of specific high-risk groups such as sex workers and even specific sexual behaviors that are perceived not to be social desirable, such as age of first sexual intercourse, and bias due to over-report of desirable behaviors such as condom use (De Walque, 2009). However, DHS data has been found to provide national-representative, reliable estimates (Magadi & Desta, 2011). In addition, to account for underrepresentation, the DHS data used provides information on weight, stratification, and clustering during sampling, thus data analysis can included survey features and provide more accurate estimates (Kreuter & Valliant, 2007). Finally, measurement of condom use by using the question "did you use a condom the last time to have sex" may not be the more accurate instrument to quantify the actual rates of condom use. A recent study suggested that in order to have more accurate estimates of condom use, follow-up questions need to be asked about incomplete condom use and condom use failure (Dolezal, Warne, Santamaria, Elkington, Benavides et al., 2014). However, previous research has successfully used this

question to estimate condom use among several countries in the developing world (Atteraya, Kimm, & Song, 2014; Magadi & Desta, 2011; Reynolds, Luseno, & Speizer, 2013). Future studies should consider these suggestions to improve primary data collection on condom use, and perhaps other sexual behaviors.

5.4. Conclusions and implications

Our study indicated that gender differences between men and women in the DR exist, and they support the presence of gender imbalance across gendered rights, responsibilities, and expectations. Among women, main sources of power are higher education and better wealth; however, rural place of residence, limited access to media, predominantly male-headed households, and conservative attitudes towards sexual expectations represent barriers to women's power. Such imbalance can be also seen in sexual behaviors. Just being women is found to be a negative predictor of condom use, and this is consistent across all models. However, the higher risk of unprotected sex is found among currently married women in older age groups. Improving access to media and rejecting women's sexual submissiveness were found to improve condom use among women.

On the other hand, lower rates of condom use were found among younger men aged 20-24 years. Higher education and higher wealth status further increase condom use in men. In contrast, higher odds of premarital sex were associated with older age, higher education, higher wealth quintile, and residence on big city. Differences in sexual behaviors between younger men and older men may suggest a generational effect related to the pre-AIDS and AIDS eras; such generational approach needs to be investigated. Also, according to our findings, higher education and wealth among men provide them the power to have premarital sex, but under safer

circumstances. In this study, gendered expectation in regards of sexual initiation, promiscuity, and unfaithfulness were not associated with condom use. Results can be used to explore prevention opportunities in the DR. We suggest that gendered-specific interventions tailored to age groups and marital statuses are needed to target areas of empowerment among women in order to promote HIV reduction within heterosexual relationships in the country.

Our study supports the fact that there are power differences between currently married and formerly married women, and as a result, differences in sexual behaviors between the two should be addressed. Married women had lower rates of condom use and condom acquisition than formerly married women. In contrast, premarital sex is higher among formerly married women. Factors associated with higher condom use among currently married women included younger age, occupation in sales, living in a female-headed household, and exposure to sexual violence. However, only older age and occupation were predictive of condom use among formerly married women. Living in rural areas and occupation in professional/technical jobs decreased the likelihood of premarital sex among currently married women. Among both currently married and formerly married women, condom acquisition was positively associated with education, occupation, female-headed household and good access to media.

Our study has provided the evidence to support that gender differences of power and sexual behaviors among the Dominican population call for tailored, gender-specific interventions that account for the specific needs found among men and women. Also, we have found evidence that, even within the female population, prevention strategies need to account for current marital status and identify the best ways to strengthen the sources of power for each group of women. In addition, our findings have identified several areas of future research that may be further explored, either by using more specific high-risk populations or by approaching the data from a

structural modeling approach. For instance, a study that aims to analyze the impact of gendered indicators among married/cohabitating couples may provide us a more comprehensive view of the sources of power for men and women within heterosexual relationships. Also, a study of high risk population may be needed to expand our understanding of sexual behaviors and attitudes among previously married women and to identify opportunities to better address their needs under their own vulnerable circumstances. Both quantitative and qualitative studies need to be conducted to better understand the reasons behind sexual behaviors in the DR. From this study, we plan to initiate a research line focus on gendered power and HIV risk in the DR with the overall goal of creating a sexual high risk profile for several groups of the Dominican population, and from there to identify potential intervention that can be adapted to the Dominican population to help increase safer sexuality, particularly condom use and condom acquisition among women, and protected premarital sex among unmarried sexually active individuals.

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TABLES

Table 1

Demographic characteristics among adults aged 15 to 49 years old in the Dominican Republic by gender, DHS 2007.

	Men		Women		Total	
	Freq.	%	Freq.	%	Freq.	%
Demographics	<i>n</i> = 24,106		<i>n</i> = 26,912		<i>n</i> = 51,018	
Age groups (years)						
15-19	5,676	23.5	5,778	21.5	11,452	21.5
20-24	4,034	16.7	4,303	16.0	8,337	16.5
25-29	3,462	14.4	3,873	14.4	7,335	14.9
30-34	2,960	12.3	3,707	13.8	6,667	13.5
35-40	2,817	11.7	3,535	13.1	6,352	12.6
41-44	2,786	11.6	3,140	11.7	5,926	11.5
45-49	2,371	9.8	2,576	9.6	4,947	9.6
			<i>Design-based</i> $F(5.84, 8828.85) =$		5.52	$P < 0.001$
Ever married						
Never married	10,003	40.9	6,176	24.9	16,179	32.0
Currently married	10,940	45.7	15,687	56.6	26,627	51.5
Formerly married	3,163	13.4	5,049	19.4	8,212	16.5
			<i>Design-based</i> $F(1.99, 3012.35) =$		254.05	$P < 0.001$

DHS: Demographic and Health Surveys.

Table 2

Gendered rights, gendered responsibilities, and gendered expectations among adults aged 15 to 49 years old in the Dominican Republic by gender, DHS 2007.

	Men		Women		Total	
	Freq.	%	Freq.	%	Freq.	%
Gendered rights	<i>n</i> = 24,106		<i>n</i> = 26,912		<i>n</i> = 51,018	
Education						
No education	1,180	4.9	1,184	4.4	2,364	3.3
Primary	11,545	47.9	10,992	40.8	22,537	40.3
Secondary	8,706	36.1	10,132	37.6	18,838	38.9
Higher	2,675	11.1	4,604	17.1	7,279	17.5
			<i>Design-based F</i> (1.95, 2953.41)=		20.50	<i>P</i> < 0.001
Wealth						
Poorest	7,674	20.9	6,553	15.4	14,227	18.0
Poorer	5,206	19.7	5,874	19.2	11,077	19.5
Middle	4,541	20.1	5,669	21.1	10,210	20.6
Richer	3,858	20.3	4,907	21.8	8,765	21.1
Richest	2,830	19.0	3,909	22.5	6,739	20.8
			<i>Design-based F</i> (2.46, 3719.34)=		6.89	<i>P</i> < 0.001
Residence						
Capital/large city	1,899	30.4	2,348	31.5	4,236	31.0
Small city	4,725	21.2	5,806	22.6	10,452	21.9
Town	7,255	18.2	8,222	17.8	15,348	18.0
Countryside	10,564	30.3	10,819	28.0	20,982	29.1
			<i>Design-based F</i> (2.37, 3584.29)=		0.41	<i>P</i> = 0.700
Gendered responsibilities						
Head of the household						
Male	18,052	74.9	17,070	63.4	35,122	67.5
Female	6,054	25.1	9,842	36.6	15,896	32.5
			<i>Design-based F</i> (1, 1511) =		145.10	<i>P</i> < 0.001
Access to media						
Limited access	4,030	16.7	5,637	20.9	9,667	16.4
Fair access	3,071	12.7	2,901	10.8	5,972	11.5
Good access	16,987	70.5	18,347	68.2	35,334	72.1
Missing data	18	0.1	27	0.1	45	0.0
			<i>Design-based F</i> (1.74, 2632.45)=		17.61	<i>P</i> < 0.001
Gendered expectations						
Abstinence until marriage^a						
No acceptable for men or women	5,488	22.8	2,937	10.9	8,425	16.9
Acceptable for men, not for women	873	3.6	757	2.8	1,630	3.1
Acceptable for women, not for men	6,853	28.4	6,577	24.4	13,430	26.9
Acceptable for both men and women	10,892	45.2	16,641	61.8	27,533	53.1
			<i>Design-based F</i> (2.67, 4030.46)=		116.20	<i>P</i> < 0.001
Sexual exclusiveness^b						
No acceptable for men or women	3,680	13.6	1,677	6.0	5,357	9.6
Acceptable for men, not for women	1,984	7.7	1,208	4.2	3,192	5.9
Acceptable for women, not for men	3,264	12.1	2,138	7.6	5,402	9.7
Acceptable for both men and women	15,178	66.6	21,889	82.2	37,067	74.8
			<i>Design-based F</i> (2.83, 4283.40)=		153.80	<i>P</i> < 0.001
Faithfulness to spouse^c						
No acceptable for men or women	1,142	3.9	854	2.9	1,996	3.4
Acceptable for men, not for women	692	2.4	804	2.7	1,496	2.6
Acceptable for women, not for men	2,074	7.1	1,209	4.1	3,283	5.5
Acceptable for both men and women	20,198	86.6	24,045	90.3	44,243	74.8
			<i>Design-based F</i> (2.73, 4120.93)=		32.97	<i>P</i> < 0.001

Table 2 (cont.)

Women's sexual submissiveness						
Disagree	23,325	97.1	26,151	97.2	49,476	97.4
Agree	631	2.2	575	1.7	1,206	1.9
Do not know/No response	150	0.6	186	0.6	336	0.6

Design-based $F(1.92, 2905.41) = 3.21$ $P = 0.0426$

DHS: Demographic and Health Surveys. ^aAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^bSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^cFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses.

Table 3

Sexual behaviors among adults aged 15 to 49 years old in the Dominican Republic by gender, DHS 2007.

Sexual behaviors	Men		Women		Total	
	Freq.	%	Freq.	%	Freq.	%
Condom use^a	n = 19,000		n = 19,822		n = 38,822	
No	12,781	66.7	17,900	88.5	30,681	77.7
Yes	6,219	33.3	1,922	11.5	8,141	22.3
			<i>Design-based F(1, 1511) = 882.13 P < 0.001</i>			
Premarital sex^b	n = 20,628		n = 22,291		n = 42,919	
No ^b	1,876	7.8	14,467	62.2	16,343	35.9
Yes	18,752	92.0	7,824	37.8	26,576	64.1
			<i>Design-based F(1, 1511) = 4692.08 P < 0.001</i>			
Number of sexual partners^c	n = 24,000		n = 26,803		n = 50,803	
None	5,031	20.9	6,962	25.9	11,993	22.8
Just one sexual partner	13,254	55.0	19,150	71.2	32,404	64
Two sexual partners	4,167	17.3	604	2.2	4,771	9.7
Three or more	1,548	6.4	87	0.3	1,635	3.5
			<i>Design-based F(2.94, 4449.23) = 625.72 P < 0.001</i>			

HIV: Human Immunodeficiency Syndrome. DHS: Demographic and Health Survey.

^aCondom use: included all participants who had been sexually active in the last 12 months. This sample excluded 12,163 participants (5,092 men and 7,071 women) who were not sexually active in the last 12 months and 33 cases with no response to the question.

^bPremarital Sex: included all men and women whose age at marriage was greater than their age at first sexual intercourse despite their sexual activity. The sample excluded 8,038 cases that had not initiated sexual intercourse and 61 cases with no response/don't know answers.

^cNumber of sexual partners: categories include the number of sexual partners including the husband in the last 12 months among all currently and formerly married women; counts were between 0 and 95+. The sample excluded 215 participants (106 men and 109 women) who had not heard about AIDS.

Table 4

Nested logistic models for condom use among Dominicans aged 15 to 45 years. DHS, 2007.

Condom use ^a	Gender adjusted			Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value
Female (Male)	0.22	[0.21,0.23]	***	0.31	[0.29,0.33]	***	0.29	[0.27,0.32]	***	0.29	[0.27,0.31]	***	0.30	[0.28,0.32]	***
Age groups (30-34 years old)				1.00			1.00			1.00			1.00		
15-19				1.16	[1.02,1.31]	**	1.18	[1.04,1.34]	***	1.19	[1.05,1.35]	***	1.18	[1.04,1.34]	***
20-24				1.02	[0.91,1.14]		1.00	[0.89,1.12]		1.01	[0.90,1.13]		1.00	[0.89,1.12]	
25-29				1.05	[0.94,1.18]		1.04	[0.93,1.16]		1.05	[0.94,1.17]		1.04	[0.93,1.16]	
35-39				0.98	[0.87,1.11]		0.99	[0.88,1.12]		1.00	[0.88,1.13]		0.99	[0.88,1.12]	
40-44				0.81	[0.71,0.92]	***	0.82	[0.72,0.93]	***	0.82	[0.72,0.94]	***	0.83	[0.72,0.94]	***
45-49				0.70	[0.61,0.81]	***	0.72	[0.62,0.83]	***	0.73	[0.63,0.84]	***	0.72	[0.63,0.84]	***
Ever married status (Never married)				1.00			1.00			1.00			1.00		
Currently married				0.04	[0.04,0.05]	***	0.05	[0.04,0.05]	***	0.05	[0.04,0.05]	***	0.05	[0.04,0.05]	***
Former married				0.59	[0.54,0.64]	***	0.64	[0.58,0.69]	***	0.64	[0.58,0.70]	***	0.63	[0.58,0.69]	***
Education (None)							1.00			1.00			1.00		
Primary							1.16	[0.98,1.37]	*	1.13	[0.95,1.34]		1.12	[0.94,1.32]	
Secondary							1.38	[1.15,1.64]	***	1.34	[1.12,1.59]	***	1.31	[1.10,1.56]	***
Higher							1.44	[1.19,1.74]	***	1.39	[1.15,1.69]	***	1.37	[1.13,1.65]	***
Wealth (Poorest)							1.00			1.00			1.00		
Poorer							1.11	[1.02,1.22]	**	1.10	[1.00,1.20]	*	1.09	[0.99,1.19]	*
Middle							1.12	[1.01,1.24]	**	1.09	[0.99,1.21]	**	1.08	[0.97,1.19]	**
Richer							1.22	[1.10,1.36]	***	1.19	[1.07,1.33]	***	1.17	[1.05,1.30]	***
Richest							1.23	[1.08,1.39]	***	1.20	[1.06,1.36]	***	1.17	[1.03,1.33]	**
Residence (Large city)							1.00			1.00			1.00		
Small city							0.97	[0.86,1.10]		0.98	[0.86,1.10]		0.98	[0.87,1.11]	
Town							1.00	[0.89,1.13]		1.01	[0.89,1.13]		1.02	[0.90,1.14]	
Countryside							0.89	[0.78,1.00]	*	0.89	[0.79,1.01]	*	0.89	[0.79,1.01]	*
Female head of the household (Male head of the household)										1.08	[1.01,1.16]	**	1.09	[1.01,1.17]	**
Access to media (Limited)										1.00			1.00		
Fair										1.13	[1.00,1.27]	**	1.12	[0.99,1.26]	*
Good										1.15	[1.05,1.25]	***	1.15	[1.05,1.25]	***
Abstinence until marriage ^b (Acceptable for women, not for men)													1.00		
No acceptable for men or women													1.02	[0.92,1.12]	
Acceptable for men, not for women													1.11	[0.92,1.34]	
Acceptable for both men and women													0.96	[0.89,1.04]	
Sexual exclusiveness ^c (Acceptable for women, not for men)													1.00		
No acceptable for men or women													1.06	[0.93,1.20]	
Acceptable for men, not for women													1.03	[0.89,1.21]	
Acceptable for both men and women													1.00	[0.90,1.10]	
Faithfulness to spouse ^d (Acceptable for women, not for men)													1.00		
No acceptable for men or women													1.05	[0.86,1.27]	
Acceptable for men, not for women													1.01	[0.82,1.25]	
Acceptable for both men and women													1.11	[0.98,1.26]	*
Women's sexual submissiveness ^e (Disagree)													1.00		
Agree													0.83	[0.67,1.04]	
Do not know/no response													0.67	[0.43,1.03]	*
Intercept	0.49	[0.47,0.50]	***	2.25	[2.02,2.50]	***	1.64	[1.32,2.05]	***	1.34	[1.05,1.71]	**	1.25	[0.95,1.66]	
Chi-square	3228			13893			14017			14010			13957		
Bayesian information criterium	36668			26088			26069			26060			26333		
Akaike's information criterion	36651			26002			25898			25863			26041		
No. of Cases	38822			38822			38822			38782			38815		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom use: participants who reported to use a condom in their last sexual encounter among ever-married women who had been sexually active in the last 12 months.

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 5

Nested logistic models for condom use among Dominican men aged 15 to 45 years. DHS, 2007.

Condom use ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	1.10	[0.94,1.30]		1.10	[0.93,1.30]		1.10	[0.93,1.30]		1.10	[0.93,1.29]	
20-14	0.95	[0.82,1.10]		0.92	[0.79,1.06]		0.92	[0.79,1.06]		0.92	[0.79,1.07]	
25-29	1.00	[0.86,1.16]		0.97	[0.84,1.13]		0.98	[0.84,1.13]		0.98	[0.84,1.13]	
35-39	1.13	[0.96,1.33]		1.14	[0.97,1.34]		1.15	[0.98,1.35]	*	1.15	[0.98,1.35]	*
40-44	0.97	[0.82,1.14]		0.99	[0.84,1.16]		0.99	[0.84,1.17]		1.00	[0.85,1.17]	
45-49	0.84	[0.71,1.01]	*	0.86	[0.72,1.03]		0.87	[0.73,1.04]		0.87	[0.73,1.05]	
Ever married status (Never married)	1.00			1.00			1.00			1.00		
Currently married	0.03	[0.03,0.04]	***	0.03	[0.03,0.04]	***	0.03	[0.03,0.04]	***	0.03	[0.03,0.04]	***
Former married	0.62	[0.55,0.69]	***	0.67	[0.60,0.75]	***	0.67	[0.60,0.75]	***	0.67	[0.60,0.75]	***
Education (None)				1.00			1.00			1.00		
Primary				1.16	[0.95,1.42]		1.14	[0.94,1.40]		1.14	[0.93,1.39]	
Secondary				1.47	[1.19,1.81]	***	1.43	[1.16,1.77]	***	1.42	[1.15,1.76]	***
Higher				1.61	[1.28,2.04]	***	1.58	[1.25,2.00]	***	1.57	[1.24,1.99]	***
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				1.17	[1.04,1.31]	***	1.15	[1.02,1.29]	**	1.15	[1.02,1.29]	**
Middle				1.15	[1.01,1.30]	**	1.12	[0.99,1.27]	*	1.12	[0.98,1.27]	*
Richer				1.22	[1.06,1.39]	***	1.18	[1.03,1.36]	**	1.18	[1.03,1.36]	**
Richest				1.28	[1.10,1.50]	***	1.25	[1.07,1.46]	***	1.25	[1.07,1.46]	***
Residence (Large city)				1.00			1.00			1.00		
Small city				1.10	[0.93,1.29]		1.10	[0.93,1.29]		1.10	[0.94,1.30]	
Town				1.17	[1.00,1.37]	*	1.17	[1.00,1.37]	**	1.18	[1.01,1.38]	**
Countryside				1.13	[0.96,1.32]		1.13	[0.97,1.33]		1.14	[0.97,1.34]	
Female head of the household (Male head of the household)							1.13	[1.03,1.23]	***	1.13	[1.03,1.23]	***
Access to media (Limited)							1.00			1.00		
Fair							1.06	[0.91,1.23]		1.06	[0.91,1.23]	
Good							1.10	[0.98,1.23]		1.10	[0.98,1.23]	*
Abstinence until marriage ^b (Acceptable for women, not for men)										1.00		
No acceptable for men or women										1.02	[0.91,1.14]	
Acceptable for men, not for women										1.17	[0.93,1.47]	
Acceptable for both men and women										1.03	[0.94,1.14]	
Sexual exclusiveness ^c (Acceptable for women, not for men)										1.00		
No acceptable for men or women										1.01	[0.87,1.17]	
Acceptable for men, not for women										1.07	[0.90,1.28]	
Acceptable for both men and women										0.94	[0.83,1.06]	
Faithfulness to spouse ^d (Acceptable for women, not for men)										1.00		
No acceptable for men or women										1.10	[0.88,1.38]	
Acceptable for men, not for women										1.04	[0.80,1.36]	
Acceptable for both men and women										1.16	[1.01,1.35]	**
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										0.90	[0.70,1.16]	
Do not know/no response										0.71	[0.42,1.19]	
Intercept	2.36	[2.06,2.71]	***	1.39	[1.06,1.83]	**	1.13	[0.83,1.53]		1.00	[0.71,1.42]	
Chi-square	8222			8311			8321			8331		
Bayesian information criterium	15867			15875			15895			15984		
Akaike's information criterion	15796			15726			15723			15733		
No. of Cases	18983			18983			18983			18983		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom use: participants who reported to use a condom in their last sexual encounter among ever-married women who had been sexually active in the last 12 months.

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with th question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 6

Nested logistic models for condom use among Dominican women aged 15 to 45 years. DHS, 2007.

Condom use ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	1.19	[0.99,1.44]	*	1.27	[1.05,1.55]	**	1.33	[1.09,1.61]	***	1.32	[1.09,1.61]	***
20-24	1.11	[0.93,1.32]		1.11	[0.93,1.33]		1.14	[0.96,1.36]		1.13	[0.95,1.35]	
25-29	1.15	[0.97,1.38]		1.15	[0.96,1.37]		1.16	[0.97,1.39]	*	1.16	[0.97,1.39]	*
35-39	0.84	[0.68,1.02]	*	0.82	[0.67,1.01]	*	0.82	[0.67,1.00]	**	0.82	[0.67,1.00]	*
40-44	0.57	[0.45,0.72]	***	0.57	[0.45,0.72]	***	0.56	[0.44,0.72]	***	0.57	[0.45,0.72]	***
45-49	0.45	[0.34,0.60]	***	0.46	[0.35,0.62]	***	0.46	[0.34,0.61]	***	0.46	[0.34,0.61]	***
Ever married status (Never married)	1.00			1.00			1.00			1.00		
Currently married	0.06	[0.05,0.07]	***	0.07	[0.06,0.09]	***	0.08	[0.07,0.10]	***	0.08	[0.07,0.10]	***
Former married	0.56	[0.49,0.65]	***	0.63	[0.54,0.73]	***	0.62	[0.53,0.72]	***	0.63	[0.54,0.73]	***
Education (None)				1.00			1.00			1.00		
Primary				1.26	[0.89,1.78]		1.21	[0.85,1.72]		1.19	[0.84,1.69]	
Secondary				1.39	[0.97,1.98]	*	1.32	[0.92,1.88]		1.28	[0.90,1.84]	
Higher				1.38	[0.95,1.99]	*	1.31	[0.90,1.89]		1.27	[0.87,1.84]	
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				1.13	[0.96,1.34]		1.12	[0.94,1.32]		1.1	[0.93,1.30]	
Middle				1.17	[0.99,1.40]	*	1.15	[0.97,1.37]		1.13	[0.95,1.35]	
Richer				1.33	[1.11,1.61]	***	1.3	[1.08,1.57]	***	1.26	[1.05,1.53]	**
Richest				1.24	[1.00,1.53]	**	1.21	[0.98,1.49]	*	1.16	[0.94,1.44]	
Residence (Large city)				1.00			1.00			1.00		
Small city				0.84	[0.70,1.01]	*	0.84	[0.70,1.00]	*	0.84	[0.70,1.01]	*
Town				0.81	[0.67,0.96]	**	0.81	[0.68,0.97]	**	0.82	[0.68,0.98]	**
Countryside				0.60	[0.50,0.73]	***	0.61	[0.50,0.73]	***	0.61	[0.50,0.74]	***
Female head of the household (Male head of the household)							1.26	[1.12,1.41]	***	1.26	[1.12,1.41]	***
Access to media (Limited)							1.00			1.00		
Fair							1.26	[1.03,1.54]	**	1.26	[1.03,1.54]	**
Good							1.24	[1.07,1.43]	***	1.24	[1.07,1.43]	***
Abstinence until marriage ^b (Acceptable for women, not for men)										1.00		
No acceptable for men or women										1.04	[0.87,1.25]	
Acceptable for men, not for women										0.99	[0.72,1.38]	
Acceptable for both men and women										0.84	[0.74,0.96]	***
Sexual exclusiveness ^c (Acceptable for women, not for men)										1.00		
No acceptable for men or women										1.30	[0.97,1.73]	*
Acceptable for men, not for women										0.96	[0.69,1.33]	
Acceptable for both men and women										1.20	[0.98,1.48]	*
Faithfulness to spouse ^d (Acceptable for women, not for men)										1.00		
No acceptable for men or women										0.86	[0.58,1.27]	
Acceptable for men, not for women										0.93	[0.63,1.36]	
Acceptable for both men and women										1.00	[0.77,1.30]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										0.69	[0.44,1.09]	**
Do not know/no response										0.55	[0.21,1.43]	
Intercept	0.65	[0.54,0.78]	***	0.50	[0.33,0.76]	***	0.30	[0.19,0.48]	***	0.29	[0.16,0.50]	***
Chi-square	2562			2653			2677			2696		
Bayesian information criterium	10135			10142			10148			10228		
Akaike's information criterion	10064			9992			9975			9975		
No. of Cases	19799			19799			19799			19799		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom use: participants who reported to use a condom in their last sexual encounter among ever-married women who had been sexually active in the last 12 months.

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 7

Nested logistic models for premarital sex among Dominicans aged 15 to 45 years. DHS, 2007.

Premarital sex ^a	Gender adjusted			Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value
Female (Male)	0.05	[0.05,0.06]	***	0.07	[0.06,0.07]	***	0.06	[0.06,0.07]	***	0.06	[0.06,0.07]	***	0.06	[0.06,0.07]	***
Age groups (30-34 years old)	1.00			1.00			1.00			1.00			1.00		
15-19				0.87	[0.77,0.98]	**	0.93	[0.82,1.05]		0.93	[0.82,1.05]		0.93	[0.82,1.05]	
20-24				0.96	[0.88,1.06]		0.97	[0.88,1.06]		0.97	[0.88,1.06]		0.96	[0.87,1.05]	
25-29				1.02	[0.93,1.11]		1.01	[0.92,1.10]		1.01	[0.93,1.10]		1.01	[0.92,1.10]	
35-39				0.97	[0.89,1.06]		0.98	[0.89,1.06]		0.98	[0.89,1.06]		0.98	[0.90,1.07]	
40-44				1.03	[0.94,1.12]		1.04	[0.95,1.13]		1.04	[0.95,1.13]		1.04	[0.95,1.14]	
45-49				1.03	[0.94,1.13]		1.07	[0.97,1.17]		1.07	[0.97,1.17]		1.07	[0.97,1.18]	
Ever married status (Never married)				1.00			1.00			1.00			1.00		
Currently married				0.94	[0.89,1.00]	*	0.96	[0.91,1.02]		0.97	[0.91,1.04]		0.98	[0.92,1.05]	
Former married				1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Education (None)							1.00			1.00			1.00		
Primary							0.96	[0.86,1.08]		0.95	[0.85,1.07]		0.95	[0.85,1.07]	
Secondary							1.14	[1.01,1.29]	**	1.12	[0.99,1.27]	*	1.12	[0.99,1.27]	*
Higher							1.33	[1.16,1.53]	***	1.31	[1.14,1.50]	***	1.31	[1.14,1.50]	***
Wealth (Poorest)							1.00			1.00			1.00		
Poorer							1.02	[0.95,1.10]		1.02	[0.94,1.10]		1.01	[0.94,1.09]	
Middle							1.02	[0.94,1.11]		1.02	[0.94,1.10]		1.01	[0.93,1.09]	
Richer							1.11	[1.01,1.21]	**	1.1	[1.00,1.20]	**	1.08	[0.99,1.19]	*
Richest							1.16	[1.05,1.29]	***	1.15	[1.03,1.28]	***	1.13	[1.01,1.25]	**
Residence (Large city)							1.00			1.00			1.00		
Small city							0.88	[0.79,0.98]	**	0.88	[0.79,0.98]	**	0.89	[0.80,0.99]	**
Town							0.77	[0.69,0.85]	***	0.77	[0.69,0.85]	***	0.77	[0.69,0.85]	***
Countryside							0.72	[0.65,0.80]	***	0.72	[0.65,0.80]	***	0.72	[0.65,0.80]	***
Female head of the household (Male head of the household)										1.03	[0.96,1.09]		1.02	[0.96,1.09]	
Access to media (Limited)										1.00			1.00		
Fair										1.07	[0.97,1.17]		1.07	[0.97,1.17]	
Good										1.07	[1.00,1.14]	*	1.07	[1.00,1.14]	*
Abstinence until marriage ^b (Acceptable for women, not for men)													1.00		
No acceptable for men or women													1.17	[1.05,1.29]	***
Acceptable for men, not for women													0.98	[0.83,1.15]	***
Acceptable for both men and women													0.91	[0.85,0.97]	***
Sexual exclusiveness ^c (Acceptable for women, not for men)													1.00		
No acceptable for men or women													0.87	[0.77,1.00]	**
Acceptable for men, not for women													0.82	[0.71,0.95]	***
Acceptable for both men and women													0.98	[0.89,1.08]	
Faithfulness to spouse ^d (Acceptable for women, not for men)													1.00		
No acceptable for men or women													0.85	[0.71,1.03]	*
Acceptable for men, not for women													1.03	[0.85,1.23]	
Acceptable for both men and women													0.90	[0.80,1.02]	*
Women's sexual submissiveness ^e (Disagree)													1.00		
Agree													0.92	[0.78,1.10]	
Do not know/no response													0.83	[0.57,1.19]	
Intercept	10.00	[9.54,10.49]	***	6.79	[6.22,7.42]	***	7.87	[6.65,9.31]	***	7.27	[5.98,8.84]	***	8.51	[6.73,10.75]	***
Chi-square	15567			11690			11937			11942			11986		
Bayesian information criterium	41429			36452			36310			36336			36407		
Akaike's information criterion	41412			36376			36149			36150			36128		
No. of Cases	42875			34751			34751			34751			34751		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aPremarital sex: participants whose age at marriage was less than their age at first sexual intercourse

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?"

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 8

Nested logistic models for premarital sex among Dominican men aged 15 to 45 years. DHS, 2007.

Premarital sex ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.41	[0.30,0.56]	***	0.42	[0.31,0.57]	***	0.42	[0.31,0.57]	***	0.43	[0.31,0.58]	***
20-24	0.68	[0.57,0.81]	***	0.68	[0.57,0.81]	***	0.68	[0.57,0.81]	***	0.67	[0.56,0.80]	***
25-29	0.93	[0.79,1.10]		0.93	[0.78,1.09]		0.93	[0.79,1.09]		0.92	[0.78,1.09]	
35-39	1.01	[0.86,1.19]		1.01	[0.86,1.19]		1.01	[0.86,1.19]		1.01	[0.86,1.19]	
40-44	1.09	[0.92,1.28]		1.09	[0.92,1.28]		1.09	[0.92,1.29]		1.10	[0.93,1.30]	
45-49	1.21	[1.01,1.44]	**	1.22	[1.02,1.46]	**	1.23	[1.03,1.47]	**	1.24	[1.04,1.48]	**
Ever married status (Never married)				1.00			1.00			1.00		
Currently married	1.17	[1.04,1.31]	***	1.13	[1.00,1.26]	**	1.14	[1.01,1.28]	**	1.15	[1.02,1.29]	**
Former married	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Education (None)				1.00			1.00			1.00		
Primary				1.08	[0.89,1.31]		1.06	[0.87,1.28]		1.04	[0.86,1.26]	
Secondary				1.35	[1.09,1.67]	***	1.31	[1.06,1.63]	**	1.28	[1.03,1.60]	**
Higher				1.41	[1.08,1.84]	**	1.36	[1.04,1.79]	**	1.33	[1.01,1.74]	**
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				1.13	[0.99,1.29]	*	1.12	[0.98,1.28]	*	1.10	[0.96,1.26]	
Middle				1.27	[1.09,1.48]	***	1.25	[1.07,1.46]	***	1.23	[1.05,1.43]	***
Richer				1.41	[1.17,1.68]	***	1.38	[1.15,1.65]	***	1.35	[1.12,1.62]	***
Richest				1.65	[1.31,2.07]	***	1.61	[1.28,2.03]	***	1.56	[1.24,1.97]	***
Residence (Large city)				1.00			1.00			1.00		
Small city				0.92	[0.72,1.16]		0.92	[0.72,1.17]		0.94	[0.74,1.19]	
Town				0.80	[0.63,1.00]	**	0.80	[0.63,1.00]	*	0.81	[0.64,1.01]	*
Countryside				0.78	[0.62,0.98]	**	0.78	[0.62,0.98]	**	0.79	[0.63,0.99]	**
Female head of the household (Male head of the household)							1.05	[0.92,1.20]		1.04	[0.91,1.19]	
Access to media (Limited)							1.00			1.00		
Fair							1.12	[0.94,1.33]		1.11	[0.93,1.32]	
Good							1.13	[1.00,1.29]	*	1.13	[1.00,1.29]	*
Abstinence until marriage ^b (Acceptable for women, not for men)										1.00		
No acceptable for men or women										0.98	[0.84,1.15]	
Acceptable for men, not for women										0.75	[0.57,1.00]	**
Acceptable for both men and women										0.77	[0.68,0.87]	***
Sexual exclusiveness ^c (Acceptable for women, not for men)										1.00		
No acceptable for men or women										0.92	[0.75,1.11]	
Acceptable for men, not for women										0.74	[0.60,0.92]	***
Acceptable for both men and women										1.09	[0.93,1.28]	
Faithfulness to spouse ^d (Acceptable for women, not for men)										1.00		
No acceptable for men or women										0.80	[0.60,1.08]	
Acceptable for men, not for women										0.89	[0.63,1.24]	
Acceptable for both men and women										0.81	[0.67,0.98]	**
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										0.74	[0.55,0.99]	**
Do not know/no response										0.97	[0.49,1.91]	
Intercept	6.00	[5.18,6.94]	***	5.44	[3.98,7.44]	***	4.76	[3.32,6.84]	***	6.68	[4.37,10.21]	***
Chi-square	85			202			207			249		
Bayesian information criterium	11027			11005			11029			11092		
Akaike's information criterion	10967			10869			10871			10850		
No. of Cases	14058			14058			14058			14058		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aPremarital sex: participants whose age at marriage was less than their age at first sexual intercourse

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 9

Nested logistic models for premarital sex among Dominican women aged 15 to 45 years. DHS, 2007.

Premarital sex ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.96	[0.84,1.09]		1.02	[0.90,1.16]		1.02	[0.90,1.16]		1.01	[0.89,1.15]	
20-24	1.08	[0.97,1.20]		1.08	[0.97,1.20]		1.08	[0.97,1.20]		1.07	[0.96,1.19]	
25-29	1.05	[0.95,1.17]		1.04	[0.94,1.15]		1.04	[0.94,1.16]		1.04	[0.94,1.15]	
35-39	0.95	[0.86,1.06]		0.96	[0.86,1.06]		0.96	[0.86,1.06]		0.96	[0.87,1.07]	
40-44	1.00	[0.90,1.11]		1.01	[0.90,1.12]		1.01	[0.91,1.12]		1.01	[0.91,1.12]	
45-49	0.95	[0.85,1.07]		0.99	[0.88,1.11]		0.99	[0.88,1.11]		1.00	[0.89,1.12]	
Ever married status (Never married)				1.00			1.00			1.00		
Currently married	0.86	[0.81,0.92]	***	0.88	[0.83,0.95]	***	0.89	[0.82,0.96]	***	0.89	[0.82,0.97]	***
Former married	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Education (None)				1.00			1.00			1.00		
Primary				0.90	[0.79,1.04]		0.90	[0.78,1.03]		0.90	[0.79,1.04]	
Secondary				1.05	[0.90,1.21]		1.03	[0.89,1.20]		1.04	[0.90,1.21]	
Higher				1.26	[1.08,1.48]	***	1.24	[1.06,1.46]	***	1.25	[1.07,1.47]	***
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				0.95	[0.87,1.04]		0.95	[0.87,1.04]		0.95	[0.86,1.04]	
Middle				0.93	[0.84,1.02]		0.92	[0.83,1.01]	*	0.91	[0.83,1.01]	*
Richer				1.00	[0.90,1.11]		0.99	[0.89,1.11]		0.99	[0.89,1.10]	
Richest				1.04	[0.92,1.17]		1.03	[0.91,1.16]		1.01	[0.89,1.14]	
Residence (Large city)				1.00			1.00			1.00		
Small city				0.87	[0.77,0.98]	**	0.87	[0.77,0.98]	**	0.87	[0.78,0.99]	**
Town				0.75	[0.67,0.85]	***	0.75	[0.67,0.85]	***	0.75	[0.67,0.85]	***
Countryside				0.7	[0.62,0.78]	***	0.7	[0.62,0.78]	***	0.7	[0.62,0.78]	***
Female head of the household (Male head of the household)							1.01	[0.94,1.08]		1.00	[0.93,1.08]	
Access to media (Limited)							1.00			1.00		
Fair							1.06	[0.95,1.19]		1.06	[0.95,1.18]	
Good							1.05	[0.98,1.13]		1.05	[0.98,1.13]	
Abstinence until marriage ^b (Acceptable for women, not for men)										1.00		
No acceptable for men or women										1.30	[1.15,1.47]	***
Acceptable for men, not for women										1.08	[0.89,1.31]	
Acceptable for both men and women										0.97	[0.90,1.05]	
Sexual exclusiveness ^c (Acceptable for women, not for men)										1.00		
No acceptable for men or women										0.87	[0.73,1.03]	
Acceptable for men, not for women										0.91	[0.76,1.09]	
Acceptable for both men and women										0.93	[0.83,1.04]	
Faithfulness to spouse ^d (Acceptable for women, not for men)										1.00		
No acceptable for men or women										0.89	[0.70,1.13]	
Acceptable for men, not for women										1.08	[0.87,1.34]	
Acceptable for both men and women										0.96	[0.83,1.12]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										1.04	[0.85,1.27]	
Do not know/no response										0.74	[0.47,1.16]	
Intercept	0.48	[0.44,0.53]	***	0.61	[0.51,0.74]	***	0.59	[0.47,0.74]	***	0.65	[0.49,0.86]	***
Chi-square	27			184			186			221		
Bayesian information criterion	25390			25332			25360			25434		
Akaike's information criterion	25326			25190			25193			25180		
No. of Cases	20693			20693			20693			20693		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aPremarital sex participants whose age at marriage was less than their age at first sexual intercourse

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 10

Demographic characteristics and gendered rights indicators among ever-married women aged 15 to 49 years old in the Dominican Republic, DHS 2007.

	Currently married		Formerly married		Total	
	Freq.	%	Freq.	%	Freq.	%
Demographics	<i>n</i> = 15,670		<i>n</i> = 5,040		<i>n</i> = 20,710	
Age groups (years)						
15-19	1,220	6.8	438	8.2	1,658	7.2
20-14	2,263	13.9	792	15.8	3,055	14.4
25-29	2,622	16.8	815	16.6	3,437	16.7
30-34	2,783	18.3	740	14.5	3,523	17.3
35-39	2,652	17.5	781	16.3	3,433	17.2
40-44	2,305	14.9	780	15.5	3,085	15.1
45-49	1,825	11.8	694	13.0	2,519	12.1
			<i>Design-based</i> $F(5.43, 3972.84) = 4.68$			$P < 0.001$
Gendered rights						
Education						
No education	920	4.2	217	3.6	1,137	4.0
Primary	7,420	44.0	2,144	39.9	9,564	43.0
Secondary	4,885	33.4	1,825	37.7	6,710	34.4
Higher	2,445	18.5	854	18.9	854	18.6
			<i>Design-based</i> $F(2.72, 1988.85) = 4.33$			$P = 0.0063$
Wealth						
Poorest	4,412	17.9	1,125	15.2	5,537	17.2
Poorer	3,502	20.3	1,222	22.1	4,724	20.7
Middle	3,131	21.0	1,174	23.5	4,305	21.7
Richer	2,593	20.2	934	21.8	3,527	20.6
Richest	2,032	20.7	585	17.4	2,617	19.8
			<i>Design-based</i> $F(3.83, 2804.55) = 5.43$			$P = 0.0003$
Residence						
Capital/large city	1,212	29.6	476	31.9	1,688	30.2
Small city	3,088	21.2	1,251	25.0	4,339	22.2
Town	4,596	18.0	1,572	18.2	6,168	18.1
Countryside	6,774	31.1	1,741	24.9	8,515	29.5
			<i>Design-based</i> $F(2.38, 1743.91) = 10.84$			$P < 0.001$
Occupation						
Not working	8,238	48.8	1,878	34.0	10,116	45.0
Professional/technical	1,572	11.9	550	11.7	2,122	11.8
Clerical	825	5.8	422	8.7	1,247	6.5
Sales	1,135	8.2	594	12.6	1,729	9.3
Agriculture self-employed	254	0.1	65	0.1	319	0.8
Household/domestic	1,129	7.7	571	13.2	1,700	9.1
Services	1,031	6.4	352	6.7	1,383	6.5
Skilled manual	793	5.9	303	7.1	1,096	6.2
Unskilled manual	679	4.5	298	5.4	977	4.7
No response	14	0.1	7	0.1	21	0.1
			<i>Design-based</i> $F(7.52, 5501.43) = 23.93$			$P < 0.001$

DHS: Demographics and Health Survey

Table 11

Indicators of gendered responsibilities and gendered expectations among ever-married women aged 15 to 49 years old in the Dominican Republic, DHS 2007.

Gendered responsibilities	Currently married <i>n</i> = 15,670		Formerly married <i>n</i> = 5,040		Total <i>n</i> = 20,170	
	Freq.	%	Freq.	%	Freq.	
Head of the household						
Male	12,396	78.1	1,140	22.6	13,536	64.0
Female	3,274	21.9	3,900	77.4	7,174	36.0
			<i>Design-based F</i> (1, 732) = 1810.68 <i>P</i> < 0.001			
Access to media						
Limited access	3,798	21.2	1,173	20.9	4,971	21.2
Fair access	1,770	11.6	561	11.1	2,331	11.4
Good access	10,102	67.2	3,306	68.0	13,408	67.4
			<i>Design-based F</i> (1.99, 1458.99) = 0.25 <i>P</i> = 0.7767			
Gendered expectations						
Abstinence until marriage^a						
No acceptable for men or women	1,527	9.9	629	14.2	2,156	11.0
Acceptable for men, not for women	474	3.2	139	2.8	613	3.1
Acceptable for women, not for men	3,743	24.5	1,373	27.0	5,116	25.2
Acceptable for both men and women	9,926	62.4	2,899	56.0	12,825	60.7
			<i>Design-based F</i> (2.86, 2095.21) = 15.90 <i>P</i> < 0.001			
Sexual exclusiveness^b						
No acceptable for men or women	487	2.8	184	3.3	671	2.9
Acceptable for men, not for women	489	2.7	151	3.0	640	2.8
Acceptable for women, not for men	723	4.2	255	4.3	978	4.3
Acceptable for both men and women	13,971	90.3	4,450	89.4	18,421	90.0
			<i>Design-based F</i> (2.83, 2071.37) = 1.30 <i>P</i> = 0.2718			
Faithfulness to spouse^c						
No acceptable for men or women	960	5.4	335	6.6	1,295	5.7
Acceptable for men, not for women	724	4.3	219	4.2	943	4.3
Acceptable for women, not for men	1,252	8.0	404	7.5	1,656	7.8
Acceptable for both men and women	12,734	82.29	4,082	81.8	16,816	82.2
			<i>Design-based F</i> (2.83, 2071.37) = 1.30 <i>P</i> = 0.2718			
Women's sexual submissiveness						
Agree	15,222	97.6	4,919	97.9	20,141	97.7
Disagree	372	1.9	90	1.6	462	1.9
Do not know/No response	76	0.5	31	0.5	107	0.5
			<i>Design-based F</i> (1.92, 1402.06) = 0.51 <i>P</i> = 0.5952			

DHS: Demographic and Health Surveys. ^aAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^bSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^cFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses.

Table 12

Sexual behaviors and HIV-related attitudes among ever-married women aged 15 to 49 years old in the Dominican Republic, DHS 2007.

Sexual behaviors and HIV-related attitudes	Currently married		Formerly married		Total	
	Freq.	%	Freq.	%	Freq.	%
Condom use^a	n = 15,264		n = 3,247		n = 18,511	
No	14,722	95.8	2,409	72.7	17,131	91.4
Yes	542	4.2	838	27.3	1,380	8.6
			<i>Design-based F(1, 732) = 790.19 P < 0.001</i>			
Premarital sex^b	n = 15,661		n = 5,032		n = 20,693	
No	11,058	68.5	3,394	66.9	14,452	68.1
Yes	4,603	31.5	1,638	33.1	6,241	31.9
			<i>Design-based F(1, 732) = 1.29 P = 0.256</i>			
Number of sexual partners^c	n = 15,590		n = 5,018		n = 20,608	
None	311	2.3	1,767	32.7	2,078	10.0
Just one sexual partner	15,039	96.2	2,949	60.6	17,988	87.1
Two sexual partners	222	1.4	254	5.8	476	2.5
Three or more	18	0.2	48	0.9	66	0.3
			<i>Design-based F(2.94, 2154.84) = 641.12 P < 0.001</i>			
Condom acquisition^d	n = 13,774		n = 4,624		n = 18,398	
No	1,583	11.4	448	9.7	2,031	11.0
Yes	11,848	85.9	4,093	88.7	15,941	86.6
Do not know/No response	343	2.7	83	1.6	426	2.43
			<i>Design-based F(2.80, 2037.34) = 4.9623 P = 0.0025</i>			

DHS: Demographic and Health Survey.

^aCondom use: included all currently or formerly married women who reported to use a condom in their last sexual encounter and had been sexually active in the last 12 months. This sample excluded 2,180 women who were not sexually active in the last 12 months and 19 cases of no response to the question.

^bPremarital Sex: included all currently and formerly married women whose age at marriage was greater than their age at first sexual intercourse despite their sexual activity. The sample excluded 17 cases with no response/don not know answers.

^cNumber of sexual partners: categories include the number of sexual partners including the husband in the last 12 months among all currently and formerly married women; counts were between 0 and 95+. The sample excluded 102 women who had not heard about AIDS.

^dCondom acquisition: included all currently or formerly married women who have been sexually active in the last 12 months and answered the question "who would get by yourself if they wanted to?" The sample excluded 566 women with no data and 19 cases with missing data on access to media.

Table 13

Nested logistic models for condom use among ever-married Dominican women aged 15 to 45 years. DHS, 2007.

Condom use ^a	Marital status adjusted			Model 1		Model 2			Model 3			Model 4			
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value
Ever married status (Currently married)	1.00			1.00			1.00			1.00			1.00		
Formerly married	9.45	[8.41,10.61]	***	9.00	[8.00,10.12]	***	8.26	[7.32,9.31]	***	7.00	[6.09,8.04]	***	6.72	[5.85,7.71]	***
Age groups (30-34 years)				1.00			1.00			1.00			1.00		
15-19				1.06	[0.85,1.32]		1.21	[0.96,1.52]		1.27	[1.01,1.60]	**	1.23	[0.98,1.55]	*
20-24				1.04	[0.86,1.25]		1.08	[0.89,1.30]		1.11	[0.91,1.35]		1.09	[0.90,1.32]	
25-29				1.12	[0.93,1.35]		1.13	[0.94,1.37]		1.15	[0.96,1.39]		1.13	[0.94,1.36]	
35-39				0.83	[0.68,1.02]	*	0.81	[0.66,1.00]	**	0.81	[0.66,0.99]	**	0.80	[0.65,0.98]	**
40-44				0.55	[0.44,0.70]	***	0.56	[0.44,0.71]	***	0.55	[0.43,0.71]	***	0.57	[0.45,0.72]	***
45-49				0.46	[0.34,0.61]	***	0.48	[0.36,0.64]	***	0.47	[0.35,0.63]	***	0.48	[0.36,0.63]	***
Education (None)				1.00			1.00			1.00			1.00		
Primary				1.30	[0.90,1.87]		1.26	[0.87,1.82]		1.24	[0.87,1.82]		1.24	[0.86,1.79]	
Secondary				1.39	[0.95,2.02]	*	1.33	[0.91,1.94]	*	1.33	[0.91,1.94]		1.31	[0.90,1.90]	
Higher				1.39	[0.93,2.08]		1.34	[0.89,2.01]		1.34	[0.89,2.01]		1.31	[0.87,1.96]	
Wealth (Poorest)				1.00			1.00			1.00			1.00		
Poorer				1.11	[0.92,1.32]		1.09	[0.91,1.31]		1.09	[0.91,1.31]		1.07	[0.89,1.28]	
Middle				1.06	[0.88,1.29]		1.05	[0.87,1.28]		1.05	[0.87,1.28]		1.00	[0.82,1.21]	
Richer				1.17	[0.95,1.45]		1.15	[0.93,1.43]		1.15	[0.93,1.43]		1.08	[0.87,1.33]	
Richest				1.20	[0.94,1.53]		1.18	[0.92,1.51]		1.18	[0.92,1.51]		1.09	[0.85,1.39]	
Residence (Large city)				1.00			1.00			1.00			1.00		
Small city				0.87	[0.71,1.08]		0.87	[0.70,1.07]		0.87	[0.70,1.07]		0.87	[0.71,1.08]	
Town				0.84	[0.68,1.04]		0.84	[0.68,1.04]		0.84	[0.68,1.04]		0.86	[0.70,1.06]	
Countryside				0.60	[0.48,0.75]	***	0.61	[0.49,0.76]	***	0.61	[0.49,0.76]	***	0.61	[0.49,0.76]	***
Respondent occupation (Not working)				1.00			1.00			1.00			1.00		
Prof., tech., manag.				1.19	[0.95,1.50]		1.17	[0.93,1.47]		1.17	[0.93,1.47]		1.16	[0.92,1.46]	
Clerical				1.29	[1.03,1.61]		1.27	[1.02,1.59]	**	1.27	[1.02,1.59]	**	1.26	[1.01,1.58]	**
Sales				1.69	[1.40,2.04]	***	1.65	[1.37,2.00]	***	1.65	[1.37,2.00]	***	1.60	[1.33,1.94]	***
Agric-self employed				0.97	[0.53,1.79]		1.00	[0.54,1.85]		1.00	[0.54,1.85]		0.96	[0.52,1.77]	
Household & domestic				1.33	[1.07,1.65]	**	1.32	[1.06,1.64]	**	1.32	[1.06,1.64]	**	1.31	[1.05,1.62]	**
Services				1.32	[1.03,1.69]	**	1.29	[1.01,1.65]	**	1.29	[1.01,1.65]	**	1.29	[1.01,1.66]	**
Skilled manual				1.23	[0.95,1.61]		1.21	[0.92,1.58]		1.21	[0.92,1.58]		1.20	[0.92,1.56]	
Unskilled manual				1.13	[0.84,1.52]		1.12	[0.84,1.51]		1.12	[0.84,1.51]		1.14	[0.86,1.53]	
No response				1.10	[0.23,5.28]		1.09	[0.23,5.22]		1.09	[0.23,5.22]		1.10	[0.23,5.33]	
Female head of the household (Male head of the household)				1.38	[1.20,1.58]	***	1.38	[1.20,1.58]	***	1.38	[1.20,1.58]	***	1.39	[1.21,1.60]	***
Access to media (Limited)				1.00			1.00			1.00			1.00		
Fair				1.21	[0.97,1.51]	*	1.21	[0.97,1.51]	*	1.21	[0.97,1.51]	*	1.18	[0.95,1.47]	*
Good				1.19	[1.02,1.39]	**	1.19	[1.02,1.39]	**	1.19	[1.02,1.39]	**	1.20	[1.03,1.39]	**
Abstinence until marriage ^b (Acceptable for men, not for women)													1.00		
Acceptable for men, not for women													1.09	[0.87,1.36]	
Acceptable for women, not for men													1.04	[0.71,1.52]	
Acceptable for both men and women													0.86	[0.75,0.99]	**
Sexual exclusiveness ^c (Acceptable for men, not for women)													1.00		
Acceptable for men, not for women													1.33	[0.96,1.86]	*
Acceptable for women, not for men													0.89	[0.61,1.31]	
Acceptable for both men and women													1.20	[0.95,1.52]	
Faithfulness to spouse ^d (Acceptable for men, not for women)													1.00		
Acceptable for men, not for women													0.77	[0.49,1.21]	
Acceptable for women, not for men													0.73	[0.47,1.15]	
Acceptable for both men and women													0.91	[0.68,1.21]	
Women's sexual submissiveness ^e (Disagree)													1.00		
Agree													0.62	[0.37,1.05]	*
Do not know/no response													0.43	[0.13,1.43]	
Intercept	0.00	[0.00,0.00]	***	0.00	[0.00,0.01]	***	0.00	[0.00,0.01]	***	0.00	[0.00,0.00]	***	0.00	[0.00,0.01]	***
Chi-square	1429			1510			1615			1641			1647		
Bayesian information criterion	8411			8389			8470			8474			8675		
Akaike's information criterion	8395			8326			8259			8239			8354		
No. of Cases	18511			18511			18511			18511			18530		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom use: participants who reported to use a condom in their last sexual encounter among ever-married women who had been sexually active in the last 12 months.

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 14

Nested logistic models for condom use among currently married Dominican women aged 15 to 45 years. DHS, 2007.

Condom use ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	1.16	[0.88,1.54]		1.26	[0.94,1.68]		1.25	[0.94,1.67]		1.25	[0.94,1.67]	
20-24	1.32	[1.01,1.72]	**	1.35	[1.03,1.76]	**	1.34	[1.02,1.75]	**	1.34	[1.03,1.76]	**
25-29	0.80	[0.60,1.08]		0.80	[0.59,1.07]		0.80	[0.59,1.08]		0.80	[0.59,1.08]	
35-39	0.58	[0.41,0.82]	***	0.58	[0.41,0.82]	***	0.58	[0.41,0.82]	***	0.58	[0.41,0.82]	***
40-44	0.41	[0.27,0.62]	***	0.41	[0.27,0.63]	***	0.41	[0.26,0.63]	***	0.41	[0.26,0.63]	***
45-49	1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Education (None)				1.00			1.00			1.00		
Primary				1.45	[0.86,2.44]		1.41	[0.84,2.38]		1.40	[0.83,2.36]	
Secondary				1.34	[0.78,2.30]		1.28	[0.74,2.20]		1.27	[0.74,2.18]	
Higher				1.59	[0.89,2.83]		1.52	[0.85,2.72]		1.52	[0.85,2.72]	
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				1.05	[0.80,1.38]		1.03	[0.78,1.35]		1.02	[0.78,1.35]	
Middle				1.16	[0.87,1.55]		1.11	[0.83,1.48]		1.11	[0.83,1.49]	
Richer				1.17	[0.86,1.60]		1.08	[0.79,1.48]		1.08	[0.79,1.49]	
Richest				1.30	[0.92,1.84]		1.20	[0.85,1.70]		1.21	[0.86,1.72]	
Residence (Large city)				1.00			1.00			1.00		
Small city				0.80	[0.58,1.09]		0.79	[0.58,1.08]		0.79	[0.58,1.08]	
Town				0.77	[0.57,1.05]	*	0.77	[0.57,1.05]	*	0.78	[0.57,1.05]	
Countryside				0.53	[0.38,0.73]	***	0.53	[0.38,0.73]	***	0.53	[0.38,0.73]	***
Respondent occupation (Not working)				1.00			1.00			1.00		
Prof., tech., manag.				1.18	[0.85,1.63]		1.17	[0.84,1.62]		1.16	[0.83,1.60]	
Clerical				0.99	[0.67,1.46]		0.97	[0.66,1.43]		0.97	[0.66,1.43]	
Sales				1.58	[1.17,2.13]	***	1.53	[1.13,2.06]	***	1.53	[1.13,2.06]	***
Agric-self employed				0.73	[0.27,2.00]		0.74	[0.27,2.04]		0.73	[0.27,2.00]	
Household & domestic				1.03	[0.71,1.49]		1.00	[0.69,1.45]		1.00	[0.69,1.45]	
Services				1.13	[0.78,1.64]		1.12	[0.77,1.62]		1.11	[0.77,1.61]	
Skilled manual				1.15	[0.77,1.72]		1.14	[0.76,1.70]		1.13	[0.76,1.69]	
Unskilled manual				1.31	[0.85,2.00]		1.28	[0.83,1.96]		1.27	[0.83,1.94]	
No response				2.46	[0.31,19.34]		2.63	[0.33,20.76]		2.71	[0.34,21.30]	
Female head of the household (Male head of the household)							1.72	[1.42,2.08]	***	1.71	[1.42,2.07]	***
Access to media (Limited)							1.00			1.00		
Fair							1.41	[1.04,1.92]	**	1.41	[1.03,1.92]	**
Good							1.16	[0.93,1.46]		1.16	[0.92,1.46]	
Abstinence until marriage ^b (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.94	[0.63,1.38]	
Acceptable for women, not for men										1.34	[0.79,2.26]	
Acceptable for both men and women										1.08	[0.87,1.34]	
Sexual exclusiveness ^c (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.03	[0.63,1.70]	
Acceptable for women, not for men										0.60	[0.33,1.09]	*
Acceptable for both men and women										1.05	[0.74,1.48]	
Faithfulness to spouse ^d (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.16	[0.59,2.28]	
Acceptable for women, not for men										0.66	[0.34,1.30]	
Acceptable for both men and women										0.73	[0.48,1.12]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										0.70	[0.34,1.43]	
Do not know/no reponse										0.42	[0.06,3.05]	
Intercept	0.04	[0.03,0.05]	***	0.03	[0.02,0.06]	***	0.02	[0.01,0.03]	***	0.02	[0.01,0.04]	***
Chi-square	61			124			158			171		
Bayesian information criterium	4689			4809			4804			4898		
Akaike's information criterion	4635			4611			4582			4592		
No. of Cases	15264			15264			15264			15264		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom use: participants who reported to use a condom in their last sexual encounter among ever-married women who had been sexually active in the last 12 months.

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 15

Nested logistic models for condom use among formerly married Dominican women aged 15 to 45 years. DHS, 2007.

Condom use ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.91	[0.68,1.23]		1.01	[0.74,1.38]		1.01	[0.74,1.39]		1.01	[0.74,1.39]	
20-24	0.94	[0.73,1.21]		0.94	[0.72,1.22]		0.93	[0.71,1.22]		0.93	[0.71,1.22]	
25-29	0.97	[0.75,1.25]		0.97	[0.75,1.26]		0.97	[0.75,1.27]		0.98	[0.75,1.28]	
35-39	0.85	[0.64,1.13]		0.82	[0.61,1.09]		0.81	[0.61,1.08]		0.82	[0.62,1.10]	
40-44	0.52	[0.37,0.74]	***	0.54	[0.38,0.76]	***	0.54	[0.38,0.76]	***	0.55	[0.39,0.78]	***
45-49	0.51	[0.35,0.77]	***	0.54	[0.36,0.82]	***	0.54	[0.36,0.81]	***	0.54	[0.36,0.82]	***
Education (None)				1.00						1.00		
Primary				1.12	[0.66,1.90]		1.09	[0.65,1.86]		1.10	[0.65,1.88]	
Secondary				1.34	[0.78,2.30]		1.29	[0.75,2.21]		1.29	[0.75,2.23]	
Higher				1.16	[0.65,2.07]		1.11	[0.62,1.98]		1.10	[0.61,1.98]	
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				1.16	[0.91,1.48]		1.14	[0.89,1.45]		1.12	[0.88,1.43]	
Middle				1.01	[0.78,1.32]		0.99	[0.76,1.29]		0.96	[0.73,1.25]	
Richer				1.20	[0.90,1.60]		1.17	[0.87,1.56]		1.12	[0.83,1.49]	
Richest				1.14	[0.81,1.61]		1.11	[0.78,1.57]		1.01	[0.71,1.43]	
Residence (Large city)				1.00			1.00			1.00		
Small city				0.95	[0.71,1.27]		0.95	[0.71,1.27]		0.95	[0.71,1.27]	
Town				0.91	[0.69,1.21]		0.92	[0.69,1.22]		0.93	[0.70,1.24]	
Countryside				0.69	[0.51,0.92]	**	0.69	[0.51,0.92]	**	0.69	[0.51,0.93]	**
Respondent occupation (Not working)				1.00			1.00			1.00		
Prof., tech., manag.				1.19	[0.87,1.64]		1.19	[0.86,1.64]		1.16	[0.84,1.61]	
Clerical				1.50	[1.13,2.00]	***	1.49	[1.12,1.98]	***	1.44	[1.08,1.92]	**
Sales				1.78	[1.39,2.28]	***	1.78	[1.39,2.28]	***	1.72	[1.34,2.21]	***
Agric-self employed				1.19	[0.53,2.65]		1.22	[0.55,2.71]		1.19	[0.53,2.66]	
Household & domestic				1.56	[1.18,2.06]	***	1.56	[1.17,2.06]	***	1.55	[1.17,2.05]	***
Services				1.52	[1.08,2.15]	**	1.51	[1.07,2.12]	**	1.48	[1.04,2.09]	**
Skilled manual				1.31	[0.92,1.88]		1.32	[0.92,1.89]		1.30	[0.91,1.87]	
Unskilled manual				1.03	[0.70,1.53]		1.03	[0.70,1.53]		1.04	[0.70,1.55]	
No response				0.63	[0.07,5.49]		0.65	[0.07,5.67]		0.64	[0.07,5.60]	
Female head of the household (Male head of the household)							1.04	[0.86,1.27]		1.05	[0.86,1.27]	
Access to media (Limited)							1.00			1.00		
Fair							1.03	[0.76,1.41]		1.03	[0.75,1.41]	
Good							1.21	[0.99,1.49]	*	1.21	[0.98,1.49]	*
Abstinence until marriage ^b (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.15	[0.86,1.54]	
Acceptable for women, not for men										0.85	[0.49,1.47]	
Acceptable for both men and women										0.72	[0.59,0.87]	***
Sexual exclusiveness ^c (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.61	[1.02,2.56]	**
Acceptable for women, not for men										1.20	[0.71,2.03]	
Acceptable for both men and women										1.37	[0.98,1.91]	*
Faithfulness to spouse ^d (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.67	[0.36,1.23]	
Acceptable for women, not for men										0.84	[0.45,1.55]	
Acceptable for both men and women										1.11	[0.74,1.66]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										0.59	[0.27,1.28]	
Do not know/no reponse										0.48	[0.11,2.19]	
Intercept	0.41	[0.33,0.49]	***	0.28	[0.15,0.52]	***	0.24	[0.12,0.50]	***	0.20	[0.09,0.48]	***
Chi-square	28			89			93			120		
Bayesian information criterium	3737			3830			3850			3912		
Akaike's information criterion	3694			3672			3673			3668		
No. of Cases	3247			3247			3247			3247		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom use: participants who reported to use a condom in their last sexual encounter among ever-married women who had been sexually active in the last 12 months.

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with th question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 16

Nested logistic models for premarital sex among ever-married Dominican women aged 15 to 45 years. DHS, 2007.

Premarital sex ^a	Marital status adjusted			Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value	OR	95% CI	p-value
Ever married status (Currently married)	1.00			1.00			1.00			1.00			1.00		
Formerly married	1.16	[1.08,1.24]	***	1.16	[1.08,1.24]	***	1.13	[1.05,1.21]	***	1.12	[1.04,1.22]	***	1.12	[1.03,1.21]	***
Age group (30-34 years)															
15-19				0.96	[0.84,1.09]		1.01	[0.89,1.15]		1.01	[0.89,1.15]		1	[0.88,1.14]	
20-24				1.08	[0.97,1.20]		1.07	[0.96,1.19]		1.07	[0.96,1.19]		1.06	[0.95,1.18]	
25-29				1.05	[0.95,1.17]		1.03	[0.93,1.15]		1.03	[0.93,1.15]		1.03	[0.93,1.15]	
35-39				0.95	[0.86,1.06]		0.96	[0.87,1.07]		0.96	[0.87,1.07]		0.97	[0.87,1.07]	
40-44				1.00	[0.90,1.11]		1.02	[0.91,1.13]		1.02	[0.91,1.13]		1.02	[0.92,1.13]	
45-49				0.95	[0.85,1.07]		1.00	[0.89,1.12]		1.00	[0.90,1.13]		1.01	[0.90,1.13]	
Education (None)							1.00			1.00			1.00		
Primary							0.9	[0.79,1.04]		0.9	[0.78,1.03]		0.91	[0.79,1.04]	
Secondary							1.06	[0.91,1.23]		1.05	[0.90,1.21]		1.06	[0.91,1.23]	
Higher							1.35	[1.14,1.59]	***	1.33	[1.12,1.57]	***	1.34	[1.13,1.58]	***
Wealth (Poorest)							1.00			1.00			1.00		
Poorer							0.95	[0.87,1.04]		0.95	[0.87,1.04]		0.95	[0.86,1.04]	
Middle							0.93	[0.84,1.02]		0.92	[0.83,1.02]	*	0.92	[0.83,1.01]	*
Richer							1.01	[0.90,1.12]		1.00	[0.90,1.11]		0.99	[0.89,1.10]	
Richest							1.05	[0.93,1.19]		1.04	[0.92,1.18]		1.02	[0.90,1.16]	
Residence (Large city)							1.00			1.00			1.00		
Small city							0.87	[0.77,0.98]	**	0.87	[0.78,0.98]	**	0.88	[0.78,0.99]	**
Town							0.75	[0.67,0.85]	***	0.76	[0.67,0.85]	***	0.76	[0.67,0.85]	***
Countryside							0.70	[0.62,0.78]	***	0.70	[0.62,0.79]	***	0.70	[0.62,0.79]	***
Respondent occupation (Not working)							1.00			1.00			1.00		
Prof., tech., manag.							0.84	[0.74,0.94]	***	0.83	[0.74,0.94]	***	0.84	[0.74,0.94]	***
Clerical							1.02	[0.89,1.16]		1.01	[0.89,1.16]		1.02	[0.89,1.16]	
Sales							1.05	[0.94,1.18]		1.05	[0.94,1.17]		1.05	[0.94,1.17]	
Agric-self employed							0.98	[0.76,1.26]		0.98	[0.76,1.27]		0.97	[0.75,1.25]	
Household & domestic							1.01	[0.90,1.13]		1.01	[0.90,1.13]		1.01	[0.90,1.14]	
Services							0.96	[0.85,1.09]		0.96	[0.85,1.09]		0.97	[0.85,1.10]	
Skilled manual							0.93	[0.81,1.07]		0.93	[0.81,1.07]		0.93	[0.81,1.07]	
Unskilled manual							0.97	[0.83,1.12]		0.96	[0.83,1.12]		0.96	[0.83,1.12]	
No response							0.49	[0.16,1.47]		0.49	[0.16,1.48]		0.51	[0.17,1.53]	
Female head of the household (Male head of the household)										1.01	[0.94,1.08]		1.00	[0.93,1.08]	
Access to media (Limited)										1.00			1.00		
Fair										1.06	[0.95,1.19]		1.06	[0.95,1.18]	
Good										1.05	[0.98,1.14]		1.05	[0.98,1.13]	
Abstinence until marriage ^c (Acceptable for men, not for women)													1.00		
Acceptable for men, not for women													1.30	[1.14,1.47]	***
Acceptable for women, not for men													1.08	[0.89,1.31]	
Acceptable for both men and women													0.98	[0.91,1.05]	
Sexual exclusiveness ^d (Acceptable for men, not for women)													1.00		
Acceptable for men, not for women													0.87	[0.73,1.03]	
Acceptable for women, not for men													0.91	[0.76,1.09]	
Acceptable for both men and women													0.93	[0.83,1.04]	
Faithfulness to spouse ^e (Acceptable for men, not for women)													1.00		
Acceptable for men, not for women													0.89	[0.70,1.13]	
Acceptable for women, not for men													1.07	[0.86,1.34]	
Acceptable for both men and women													0.96	[0.83,1.12]	
Women's sexual submissiveness ^f (Disagree)													1.00		
Agree													1.04	[0.85,1.28]	
Do not know/no response													0.74	[0.47,1.15]	
Intercept	0.36	[0.33,0.39]	***	0.36	[0.32,0.40]	***	0.48	[0.39,0.59]	***	0.47	[0.38,0.58]	***	0.52	[0.40,0.68]	***
Chi-square	18			27			198			200			235		
Bayesian information criterion	25339			25390			25407			25435			25510		
Akaike's information criterion	25323			25326			25193			25197			25184		
No. of Cases	20693			20693			20693			20693			20693		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aPremarital sex participants whose age at marriage was less than their age at first sexual intercourse

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 17

Nested logistic models for premarital sex among currently married Dominican women aged 15 to 45 years. DHS, 2007.												
Premarital sex ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.96	[0.82,1.11]		1.01	[0.86,1.17]		1.00	[0.86,1.17]		0.99	[0.85,1.16]	
20-24	1.07	[0.95,1.21]		1.06	[0.94,1.20]		1.06	[0.94,1.20]		1.05	[0.93,1.19]	
25-29	1.04	[0.93,1.17]		1.02	[0.91,1.15]		1.02	[0.91,1.15]		1.02	[0.91,1.15]	
35-39	0.95	[0.85,1.07]		0.96	[0.85,1.08]		0.96	[0.85,1.08]		0.96	[0.86,1.09]	
40-44	1.04	[0.92,1.17]		1.06	[0.94,1.19]		1.06	[0.94,1.20]		1.06	[0.94,1.20]	
45-49	0.94	[0.83,1.07]		0.98	[0.86,1.12]		0.98	[0.86,1.12]		0.98	[0.86,1.12]	
Education (None)				1.00			1.00			1.00		
Primary				0.87	[0.74,1.01]	*	0.86	[0.74,1.00]	*	0.86	[0.74,1.01]	*
Secondary				0.99	[0.84,1.17]		0.97	[0.82,1.15]		0.98	[0.82,1.15]	
Higher				1.27	[1.05,1.54]	**	1.25	[1.03,1.52]	**	1.25	[1.03,1.52]	**
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				0.95	[0.86,1.06]		0.95	[0.86,1.05]		0.94	[0.85,1.05]	
Middle				0.94	[0.84,1.05]		0.93	[0.83,1.05]		0.93	[0.83,1.04]	
Richer				1.01	[0.89,1.14]		1.00	[0.88,1.13]		0.99	[0.87,1.12]	
Richest				1.02	[0.89,1.18]		1.01	[0.88,1.16]		0.99	[0.86,1.14]	
Residence (Large city)				1.00			1.00			1.00		
Small city				0.82	[0.71,0.94]	***	0.82	[0.71,0.94]	***	0.82	[0.71,0.95]	***
Town				0.69	[0.60,0.79]	***	0.69	[0.60,0.79]	***	0.69	[0.60,0.79]	***
Countryside				0.65	[0.56,0.75]	***	0.65	[0.57,0.75]	***	0.65	[0.57,0.75]	***
Respondent occupation (Not working)				1.00			1.00			1.00		
Prof., tech., manag.				0.84	[0.73,0.96]	**	0.84	[0.73,0.96]	**	0.84	[0.73,0.97]	**
Clerical				1.04	[0.89,1.22]		1.04	[0.89,1.22]		1.04	[0.89,1.22]	
Sales				0.97	[0.84,1.11]		0.96	[0.84,1.11]		0.96	[0.84,1.10]	
Agric-self employed				0.96	[0.72,1.28]		0.97	[0.72,1.29]		0.95	[0.71,1.27]	
Household & domestic				0.98	[0.85,1.13]		0.97	[0.85,1.12]		0.98	[0.85,1.13]	
Services				1.02	[0.88,1.18]		1.01	[0.88,1.17]		1.02	[0.88,1.18]	
Skilled manual				0.93	[0.79,1.10]		0.93	[0.79,1.09]		0.93	[0.79,1.09]	
Unskilled manual				0.95	[0.80,1.13]		0.95	[0.79,1.13]		0.95	[0.79,1.13]	
No response				0.62	[0.17,2.22]		0.62	[0.17,2.23]		0.65	[0.18,2.35]	
Female head of the household (Male head of the household)							1.06	[0.98,1.16]		1.06	[0.97,1.15]	
Access to media (Limited)							1.00			1.00		
Fair							1.12	[0.99,1.27]	*	1.12	[0.99,1.27]	*
Good							1.06	[0.97,1.15]		1.06	[0.97,1.15]	
Abstinence until marriage ^c (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.36	[1.17,1.58]	***
Acceptable for women, not for men										1.13	[0.91,1.40]	
Acceptable for both men and women										0.97	[0.89,1.06]	
Sexual exclusiveness ^d (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.89	[0.73,1.09]	
Acceptable for women, not for men										0.94	[0.76,1.16]	
Acceptable for both men and women										0.95	[0.83,1.09]	
Faithfulness to spouse ^e (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.81	[0.61,1.08]	
Acceptable for women, not for men										1.05	[0.81,1.35]	
Acceptable for both men and women										1.01	[0.84,1.21]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										1.03	[0.82,1.30]	
Do not know/no response										0.59	[0.33,1.05]	*
Intercept	0.41	[0.38,0.45]	***	0.62	[0.50,0.76]	***	0.56	[0.44,0.70]	***	0.58	[0.43,0.79]	***
Chi-square	7			137			143			172		
Bayesian information criterium	19030			19083			19106			19183		
Akaike's information criterion	18976			18884			18884			18877		
No. of Cases	15661			15661			15661			15661		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aPremarital sex: participants whose age at marriage was less than their age at first sexual intercourse

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 18

Nested logistic models for premarital sex among formerly married Dominican women aged 15 to 45 years. DHS, 2007.

Premarital sex ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.97	[0.75,1.25]		1.03	[0.80,1.34]		0.99	[0.76,1.29]		0.99	[0.76,1.29]	
20-24	1.11	[0.90,1.37]		1.10	[0.88,1.36]		1.06	[0.85,1.32]		1.06	[0.85,1.32]	
25-29	1.09	[0.89,1.35]		1.08	[0.87,1.34]		1.07	[0.86,1.32]		1.06	[0.86,1.32]	
35-39	0.96	[0.77,1.19]		0.97	[0.78,1.21]		0.98	[0.79,1.22]		0.98	[0.79,1.22]	
40-44	0.89	[0.72,1.11]		0.92	[0.74,1.14]		0.93	[0.74,1.16]		0.93	[0.74,1.16]	
45-49	0.99	[0.79,1.23]		1.07	[0.85,1.34]		1.09	[0.87,1.36]		1.09	[0.87,1.37]	
Education (None)				1.00			1.00			1.00		
Primary				1.07	[0.78,1.48]		1.08	[0.78,1.49]		1.11	[0.80,1.53]	
Secondary				1.37	[0.98,1.91]	*	1.37	[0.98,1.92]	*	1.41	[1.01,1.97]	**
Higher				1.69	[1.17,2.42]	***	1.68	[1.17,2.41]	***	1.73	[1.20,2.49]	***
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				0.95	[0.79,1.14]		0.94	[0.78,1.13]		0.95	[0.79,1.14]	
Middle				0.89	[0.73,1.08]		0.88	[0.73,1.07]		0.89	[0.73,1.08]	
Richer				0.99	[0.80,1.23]		0.98	[0.79,1.21]		0.98	[0.79,1.22]	
Richest				1.15	[0.90,1.48]		1.12	[0.87,1.44]		1.11	[0.86,1.43]	
Residence (Large city)				1.00			1.00			1.00		
Small city				1.02	[0.82,1.28]		1.03	[0.82,1.29]		1.04	[0.83,1.30]	
Town				0.96	[0.77,1.20]		0.96	[0.77,1.20]		0.96	[0.77,1.20]	
Countryside				0.83	[0.66,1.04]		0.82	[0.65,1.03]	*	0.82	[0.65,1.03]	*
Respondent occupation (Not working)				1.00			1.00			1.00		
Prof., tech., manag.				0.82	[0.65,1.03]	*	0.83	[0.66,1.04]		0.84	[0.67,1.06]	
Clerical				0.96	[0.76,1.21]		0.96	[0.76,1.21]		0.97	[0.77,1.22]	
Sales				1.21	[1.00,1.48]	*	1.22	[1.00,1.49]	**	1.23	[1.01,1.50]	**
Agric-self employed				1.03	[0.59,1.79]		1.03	[0.59,1.78]		1.01	[0.58,1.76]	
Household & domestic				1.10	[0.90,1.36]		1.10	[0.90,1.35]		1.12	[0.91,1.37]	
Services				0.83	[0.64,1.07]		0.83	[0.64,1.07]		0.84	[0.65,1.08]	
Skilled manual				0.93	[0.71,1.22]		0.95	[0.72,1.24]		0.96	[0.73,1.25]	
Unskilled manual				1.01	[0.77,1.33]		1.02	[0.78,1.33]		1.02	[0.78,1.33]	
No response				0.29	[0.03,2.45]		0.3	[0.04,2.51]		0.32	[0.04,2.65]	
Female head of the household (Male head of the household)							0.88	[0.76,1.03]		0.88	[0.76,1.03]	
Access to media (Limited)							1.00			1.00		
Fair							0.89	[0.71,1.11]		0.88	[0.71,1.11]	
Good							1.03	[0.89,1.20]		1.03	[0.88,1.19]	
Abstinence until marriage ^c (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.15	[0.91,1.45]	
Acceptable for women, not for men										0.95	[0.64,1.40]	
Acceptable for both men and women										1.00	[0.86,1.15]	
Sexual exclusiveness ^d (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.81	[0.58,1.15]	
Acceptable for women, not for men										0.86	[0.59,1.24]	
Acceptable for both men and women										0.88	[0.70,1.11]	
Faithfulness to spouse ^e (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.10	[0.70,1.71]	
Acceptable for women, not for men										1.19	[0.77,1.83]	
Acceptable for both men and women										0.84	[0.63,1.13]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										1.09	[0.70,1.72]	
Do not know/no reponse										1.15	[0.54,2.45]	
Intercept	0.48	[0.41,0.56]	***	0.41	[0.27,0.62]	***	0.52	[0.31,0.85]	***	0.64	[0.36,1.16]	
Chi-square	6			66			71			85		
Bayesian information criterium	6404			6505			6526			6606		
Akaike's information criterion	6358			6336			6337			6345		
No. of Cases	5032			5032			5032			5032		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aPremarital sex: participants whose age at marriage was less than their age at first sexual intercourse

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 19

Nested logistic models for condom acquisition among ever-married Dominican women aged 15 to 45 years. DHS, 2007.

Condom acquisition ^a	Marital status adjusted			Model 1		Model 2		Model 3		Model 4	
	OR	95% CI	p-value	OR	p-value	OR	p-value	OR	p-value	OR	p-value
Ever married status (Currently married)	1.00			1.00		1.00		1.00		1.00	
Former married	1.22	[1.09,1.36]	***	1.24	[1.11,1.39]	***	1.16	[1.03,1.30]	**	1.06	[0.93,1.22]
Age group (30-34 years)				1.00			1.00			1.00	
15-19				0.71	[0.59,0.87]	***	0.84	[0.69,1.02]	*	0.84	[0.69,1.03]
20-24				0.99	[0.83,1.18]		1.02	[0.86,1.22]		1.03	[0.86,1.23]
25-29				1.11	[0.93,1.31]		1.10	[0.93,1.31]		1.11	[0.93,1.31]
35-39				0.85	[0.72,1.00]	**	0.84	[0.72,1.00]	**	0.84	[0.71,0.99]
40-44				0.71	[0.60,0.84]	***	0.72	[0.61,0.85]	***	0.72	[0.61,0.85]
45-49				0.57	[0.48,0.68]	***	0.60	[0.51,0.71]	***	0.60	[0.51,0.71]
Education (None)							1.00			1.00	
Primary				1.6	[1.31,1.95]	***	1.56	[1.28,1.90]	***	1.54	[1.27,1.88]
Secondary							2.00	[1.62,2.48]	***	1.94	[1.56,2.40]
Higher							2.39	[1.84,3.10]	***	2.30	[1.78,2.99]
Wealth (Poorest)							1.00			1.00	
Poorer							1.16	[1.02,1.33]	**	1.14	[1.00,1.31]
Middle							1.21	[1.04,1.40]	**	1.17	[1.01,1.36]
Richer							1.35	[1.14,1.60]	***	1.30	[1.10,1.54]
Richest							1.64	[1.34,2.02]	***	1.58	[1.28,1.94]
Residence (Large city)							1.00			1.00	
Small city							0.89	[0.73,1.09]		0.90	[0.73,1.09]
Town							1.14	[0.94,1.39]		1.15	[0.94,1.40]
Countryside							1.03	[0.85,1.26]		1.04	[0.85,1.26]
Respondent occupation (Not working)							1.00			1.00	
Prof., tech., manag.							1.50	[1.22,1.85]	***	1.49	[1.21,1.83]
Clerical							1.58	[1.24,2.02]	***	1.57	[1.23,2.00]
Sales							1.38	[1.15,1.66]	***	1.36	[1.13,1.63]
Agric-self employed							1.10	[0.76,1.60]		1.12	[0.77,1.62]
Household & domestic							1.24	[1.04,1.47]	**	1.23	[1.03,1.47]
Services							1.24	[1.02,1.51]	**	1.24	[1.02,1.51]
Skilled manual							1.25	[1.01,1.56]	**	1.25	[1.01,1.54]
Unskilled manual							1.3	[1.03,1.63]	**	1.29	[1.03,1.62]
No response							1.00	[1.00,1.00]		1.00	[1.00,1.00]
Female head of the household (Male head of the household)							1.16	[1.03,1.30]	**	1.16	[1.03,1.30]
Access to media (Limited)							1.00			1.00	
Fair							1.08	[0.92,1.27]		1.08	[0.91,1.27]
Good							1.22	[1.09,1.36]	***	1.22	[1.09,1.36]
Abstinence until marriage ^c (Acceptable for men, not for women)										1.00	
Acceptable for men, not for women										1.03	[0.82,1.29]
Acceptable for women, not for men										0.77	[0.57,1.03]
Acceptable for both men and women										0.82	[0.72,0.92]
Sexual exclusiveness ^d (Acceptable for men, not for women)										1.00	
Acceptable for men, not for women										1.04	[0.78,1.37]
Acceptable for women, not for men										0.85	[0.64,1.13]
Acceptable for both men and women										1.09	[0.90,1.31]
Faithfulness to spouse ^e (Acceptable for men, not for women)										1.00	
Acceptable for men, not for women										0.81	[0.55,1.20]
Acceptable for women, not for men										1.19	[0.82,1.72]
Acceptable for both men and women										0.94	[0.73,1.20]
Women's sexual submissiveness ^f (Disagree)										1.00	
Agree										0.59	[0.44,0.79]
Do not know/no response										0.52	[0.26,1.05]
Intercept	7.48	[7.10,7.89]	***	8.83	[7.83,9.96]	***	3.44	[2.57,4.61]	***	2.64	[1.90,3.67]
Chi-square	13			98			343			362	
Bayesian information criterium	12686			12660			12588			12598	
Akaike's information criterion	12671			12598			12385			12372	
No. of Cases	17972			17972			17957			17957	

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom acquisition: participants who responded yes to the question "Would you get a condom?"

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men/women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 20

Nested logistic models for condom acquisition among currently married Dominican women aged 15 to 45 years. DHS, 2007.

Condom acquisition ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.77	[0.62,0.96]	**	0.91	[0.72,1.15]		0.90	[0.72,1.14]		0.90	[0.72,1.13]	
20-24	1.06	[0.87,1.29]		1.11	[0.91,1.35]		1.11	[0.91,1.35]		1.09	[0.89,1.34]	
25-29	1.12	[0.93,1.35]		1.12	[0.92,1.36]		1.12	[0.93,1.36]		1.12	[0.92,1.35]	
35-39	0.88	[0.73,1.05]		0.87	[0.73,1.05]		0.88	[0.73,1.05]		0.87	[0.72,1.04]	
40-44	0.74	[0.61,0.88]	***	0.74	[0.61,0.89]	***	0.74	[0.62,0.90]	***	0.74	[0.62,0.90]	***
45-49	0.62	[0.51,0.75]	***	0.65	[0.54,0.79]	***	0.65	[0.54,0.79]	***	0.65	[0.53,0.79]	***
Education (None)				1.00			1.00			1.00		
Primary				1.56	[1.26,1.94]	***	1.53	[1.23,1.90]	***	1.51	[1.21,1.88]	***
Secondary				1.99	[1.57,2.54]	***	1.93	[1.51,2.45]	***	1.89	[1.49,2.41]	***
Higher				2.43	[1.80,3.26]	***	2.33	[1.73,3.14]	***	2.29	[1.70,3.09]	***
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				1.24	[1.07,1.45]	***	1.22	[1.05,1.42]	***	1.20	[1.03,1.40]	**
Middle				1.26	[1.06,1.48]	***	1.22	[1.03,1.44]	**	1.2	[1.01,1.41]	**
Richer				1.48	[1.22,1.80]	***	1.42	[1.17,1.73]	***	1.39	[1.14,1.68]	***
Richest				1.85	[1.46,2.33]	***	1.77	[1.40,2.24]	***	1.72	[1.36,2.18]	***
Residence (Large city)				1.00			1.00			1.00		
Small city				0.94	[0.74,1.18]		0.94	[0.74,1.18]		0.94	[0.75,1.19]	
Town				1.23	[0.98,1.55]	*	1.24	[0.99,1.56]	*	1.24	[0.99,1.56]	*
Countryside				1.12	[0.89,1.41]		1.12	[0.90,1.41]		1.12	[0.89,1.41]	
Respondent occupation (Not working)				1.00			1.00			1.00		
Prof., tech., manag.				1.41	[1.11,1.79]	***	1.4	[1.10,1.77]	***	1.40	[1.10,1.78]	***
Clerical				1.67	[1.23,2.27]	***	1.65	[1.22,2.24]	***	1.63	[1.20,2.22]	***
Sales				1.29	[1.03,1.60]	**	1.26	[1.02,1.57]	**	1.26	[1.01,1.57]	**
Agric-self employed				1.00	[0.67,1.49]		1.01	[0.68,1.51]		1.00	[0.67,1.49]	
Household & domestic				1.21	[0.99,1.48]	*	1.21	[0.98,1.48]	*	1.21	[0.98,1.48]	*
Services				1.35	[1.07,1.70]	**	1.34	[1.06,1.69]	**	1.35	[1.07,1.70]	**
Skilled manual				1.28	[0.99,1.64]	*	1.27	[0.99,1.63]	*	1.25	[0.97,1.62]	*
Unskilled manual				1.32	[1.01,1.73]	**	1.32	[1.00,1.72]	**	1.32	[1.01,1.73]	**
No response				1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Female head of the household (Male head of the household)							1.15	[1.00,1.32]	**	1.14	[1.00,1.31]	*
Access to media (Limited)							1.00			1.00		
Fair							1.16	[0.97,1.41]		1.16	[0.96,1.40]	
Good							1.22	[1.07,1.38]	***	1.22	[1.07,1.38]	***
Abstinence until marriage ^c (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.96	[0.75,1.25]	
Acceptable for women, not for men										0.76	[0.54,1.07]	
Acceptable for both men and women										0.80	[0.69,0.91]	***
Sexual exclusiveness ^d (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.93	[0.68,1.27]	
Acceptable for women, not for men										0.88	[0.64,1.21]	
Acceptable for both men and women										1.08	[0.87,1.34]	
Faithfulness to spouse ^e (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.86	[0.55,1.34]	
Acceptable for women, not for men										1.04	[0.69,1.59]	
Acceptable for both men and women										0.88	[0.66,1.17]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										0.53	[0.39,0.73]	***
Do not know/no response										0.63	[0.25,1.54]	
Intercept	8.48	[7.45,9.65]	***	2.99	[2.16,4.15]	***	2.30	[1.59,3.32]	***	3.06	[1.90,4.94]	***
Chi-square	54			278			291			322		
Bayesian information criterium	9753			9699			9714			9788		
Akaike's information criterion	9701			9511			9504			9495		
No. of Cases	13431			13421			13421			13421		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom acquisition: participants who responded yes to the question "Would you get a condom?"

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

Table 21

Nested logistic models for condom acquisition among formerly married Dominican women aged 15 to 45 years. DHS, 2007.

Condom acquisition ^a	Model 1			Model 2			Model 3			Model 4		
	OR	95% CI	p-value									
Age groups (30-34 years old)	1.00			1.00			1.00			1.00		
15-19	0.53	[0.35,0.80]	***	0.61	[0.40,0.94]	**	0.62	[0.40,0.96]	**	0.62	[0.40,0.95]	**
20-24	0.75	[0.51,1.10]		0.77	[0.52,1.13]		0.76	[0.51,1.13]		0.77	[0.52,1.14]	
25-29	1.03	[0.68,1.55]		1.04	[0.69,1.56]		1.04	[0.69,1.56]		1.04	[0.69,1.57]	
35-39	0.71	[0.48,1.04]	*	0.72	[0.49,1.05]	*	0.71	[0.48,1.04]	*	0.72	[0.49,1.07]	
40-44	0.60	[0.41,0.87]	***	0.62	[0.42,0.91]	**	0.61	[0.41,0.89]	**	0.62	[0.42,0.90]	**
45-49	0.42	[0.29,0.61]	***	0.46	[0.31,0.67]	***	0.45	[0.31,0.66]	***	0.46	[0.31,0.67]	***
Education (None)				1.00			1.00			1.00		
Primary				1.75	[1.10,2.77]	**	1.69	[1.06,2.68]	**	1.66	[1.04,2.65]	**
Secondary				2.04	[1.26,3.32]	***	1.94	[1.19,3.17]	***	1.91	[1.17,3.13]	**
Higher				2.30	[1.32,4.02]	***	2.20	[1.26,3.86]	***	2.18	[1.24,3.84]	***
Wealth (Poorest)				1.00			1.00			1.00		
Poorer				0.90	[0.67,1.21]		0.89	[0.66,1.19]		0.88	[0.65,1.18]	
Middle				1.02	[0.75,1.41]		1.00	[0.73,1.38]		0.98	[0.71,1.35]	
Richer				0.98	[0.69,1.39]		0.95	[0.66,1.35]		0.92	[0.65,1.32]	
Richest				1.06	[0.68,1.64]		1.01	[0.65,1.56]		0.96	[0.62,1.49]	
Residence (Large city)				1.00			1.00			1.00		
Small city				0.78	[0.52,1.17]		0.79	[0.52,1.18]		0.80	[0.53,1.20]	
Town				0.91	[0.61,1.36]		0.92	[0.62,1.38]		0.94	[0.63,1.41]	
Countryside				0.81	[0.54,1.22]		0.82	[0.54,1.23]		0.83	[0.55,1.25]	
Respondent occupation (Not working)				1.00			1.00			1.00		
Prof., tech., manag.				1.82	[1.18,2.81]	***	1.81	[1.18,2.80]	***	1.81	[1.17,2.80]	***
Clerical				1.46	[0.96,2.21]	*	1.43	[0.94,2.17]	*	1.42	[0.93,2.16]	
Sales				1.61	[1.13,2.29]	***	1.60	[1.12,2.28]	***	1.59	[1.12,2.27]	**
Agric-self employed				2.28	[0.69,7.53]		2.28	[0.69,7.53]		2.32	[0.70,7.69]	
Household & domestic				1.26	[0.90,1.77]		1.25	[0.89,1.76]		1.26	[0.90,1.77]	
Services				1.00	[0.69,1.46]		0.99	[0.68,1.44]		0.99	[0.68,1.44]	
Skilled manual				1.19	[0.78,1.81]		1.19	[0.78,1.83]		1.20	[0.78,1.83]	
Unskilled manual				1.22	[0.80,1.86]		1.22	[0.80,1.87]		1.23	[0.80,1.88]	
No response				1.00	[1.00,1.00]		1.00	[1.00,1.00]		1.00	[1.00,1.00]	
Female head of the household (Male head of the household)							1.11	[0.85,1.43]		1.12	[0.87,1.45]	
Access to media (Limited)							1.00			1.00		
Fair							0.83	[0.60,1.16]		0.84	[0.60,1.17]	
Good							1.25	[0.98,1.59]	*	1.25	[0.98,1.59]	*
Abstinence until marriage ^c (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.25	[0.80,1.95]	
Acceptable for women, not for men										0.80	[0.42,1.50]	
Acceptable for both men and women										0.88	[0.70,1.12]	
Sexual exclusiveness ^d (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										1.65	[0.88,3.10]	
Acceptable for women, not for men										0.79	[0.44,1.42]	
Acceptable for both men and women										1.10	[0.74,1.63]	
Faithfulness to spouse ^e (Acceptable for men, not for women)										1.00		
Acceptable for men, not for women										0.61	[0.28,1.33]	
Acceptable for women, not for men										1.90	[0.80,4.52]	
Acceptable for both men and women										1.12	[0.68,1.84]	
Women's sexual submissiveness ^e (Disagree)										1.00		
Agree										1.03	[0.46,2.33]	
Do not know/no response										0.33	[0.10,1.07]	*
Intercept	13.27	[9.90,17.80]	***	6.71	[3.46,12.99]	***	5.30	[2.31,12.15]	***	4.54	[1.68,12.27]	***
Chi-square	36			77			85			99		
Bayesian information criterium	2948			3058			3075			3154		
Akaike's information criterion	2903			2898			2895			2903		
No. of Cases	4541			4536			4536			4536		

P-values: * 0.10 ** 0.05 *** 0.01

DHS: Demographic and Health Survey. OR: Odd Ratios.

^aCondom acquisition: participants who responded yes to the question "Would you get a condom?"

^bAbstinence until marriage: participants' opinion on whether young men/women should wait until marriage to initiate sexual activity. ^cSexual exclusiveness: participants' opinion on whether sexually active unmarried men /women should have sex with only one sexual partner. ^dFaithfulness to spouse: participants' opinion on whether married men/women should have sex only with their spouses. ^eWomen's sexual submissiveness: agreement with the question "Is a wife justified to ask the husband to use a condom if he has a sexually transmitted disease?".

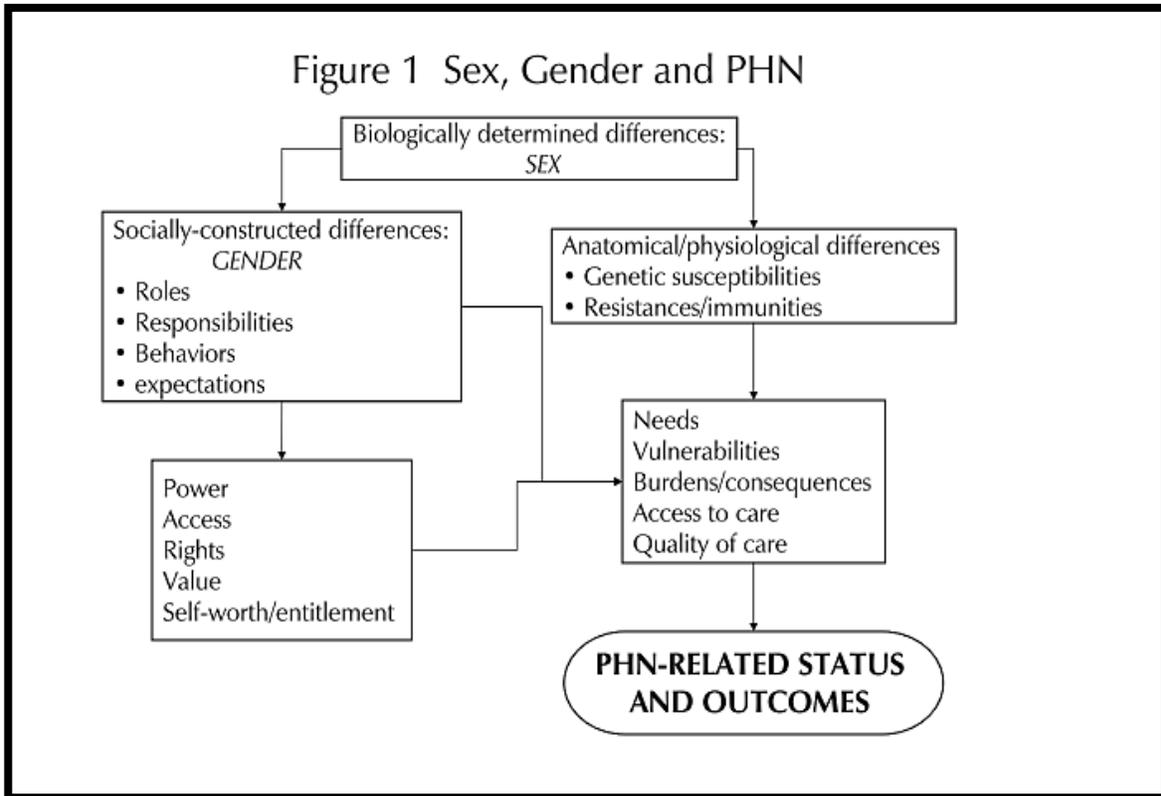
Model 1: gender + demographics.

Model 2: model 1 + gendered rights (education, wealth, and residence).

Model 3: model 2 + gendered responsibilities (head of the household and access to media).

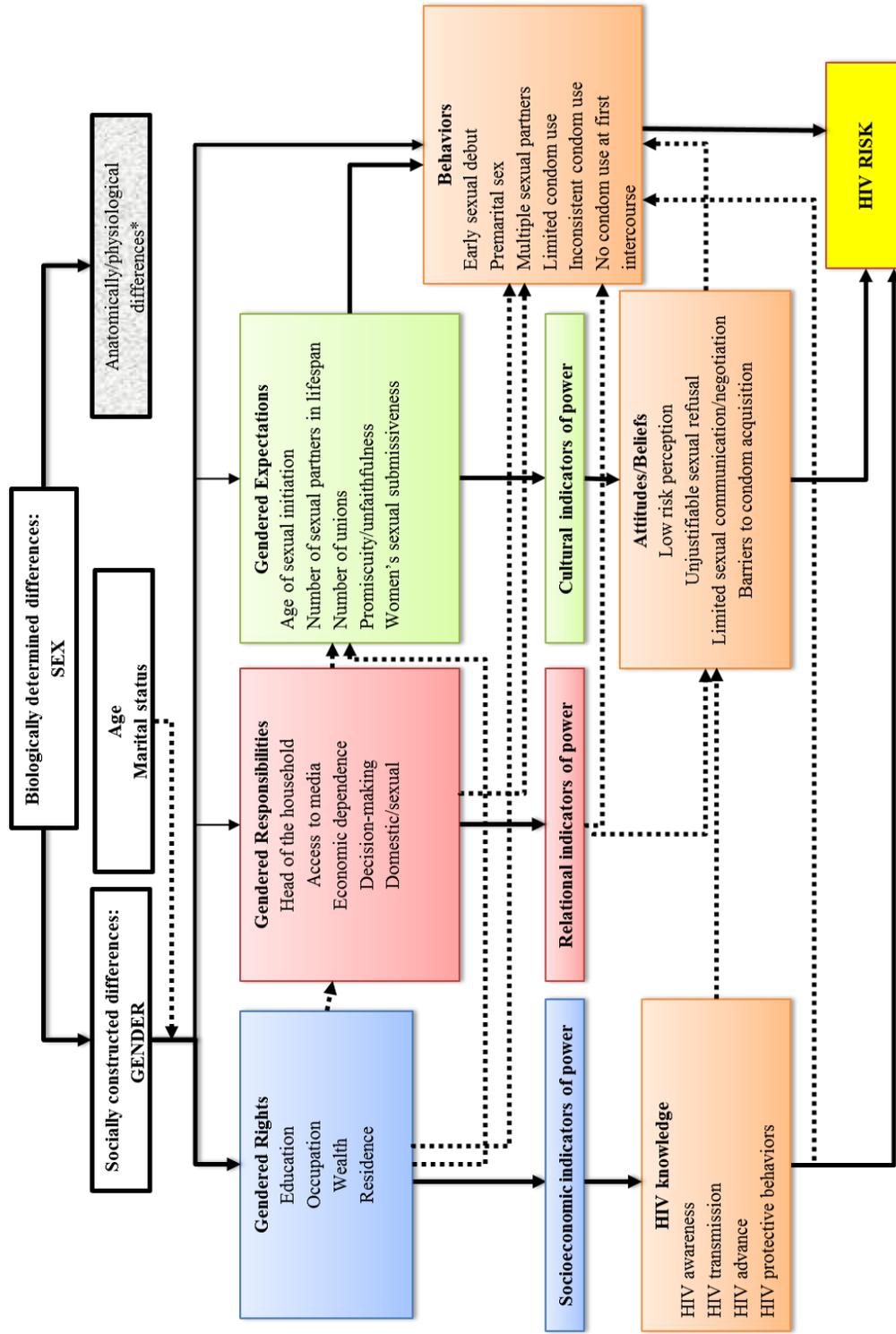
Model 4 (full model): model 3 + (acceptance of abstinence before marriage, sexual exclusiveness, faithfulness to spouse, and women's sexual submissiveness).

APPENDIX A: RELATIONSHIP BETWEEN SEX, GENDER AND POPULATION/HEALTH/NUTRITION OUTCOMES AS INITIALLY CONCEIVED TO INTEGRATE SPECIFIC GENDER QUESTIONS IN THE DHS QUESTIONNAIRES



DHS: Demographic and Health Survey. PHN: Population/Health/Nutrition. Source: Kishor, S. 2005. A Focus on Gender: Collected Papers on Gender Using DHS Data. Calverton, Maryland, USA: ORC Macro.

APPENDIX B: ADOPTED THEORETICAL FRAMEWORK: EXPLAINING WOMEN'S HIV RISK IN THE DR



HIV: Human Immunodeficiency Virus. DR: Dominican Republic. PHN: Population/Health/Nutrition.