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PREDICTORS OF HIV/AIDS RELATED STIGMA AND DISCRIMINATION AMONG ANGLOPHONE CARIBBEAN WOMEN

By

Kimberly A. Hires

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PREDICTORS OF HIV/AIDS RELATED STIGMA AND DISCRIMINATION
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Kimberly A. Hires

Approved:

Rosina Cianelli, Ph.D.
Associate Professor of Nursing

M. Brian Blake, Ph.D.
Dean of the Graduate School

Nilda Peragallo, DrPH.
Dean and Professor of Nursing

Karina Gattamorta, Ph.D.
Assistant Professor of Nursing

Carol-Anne Phekoo, Ph.D.
Assistant Professor of Higher Education
The effects of the Human Immunodeficiency Virus (HIV) global epidemic continue to emerge decades after the first wave of infection. One key aspect of the HIV epidemic that is significantly impacted by culture and knowledge of HIV transmission is stigma, specifically HIV/AIDS related stigma and discrimination (HASD). Since the start of the epidemic, HASD has manifested at societal, community and individual levels. HASD remains among the most poorly understood aspects of the epidemic despite its influence on HIV patterns of infection.

The Caribbean region has the second highest HIV prevalence rate in the world. In 2011, there were approximately 13,000 new infections and 10,000 AIDS related deaths among adults and children in the Caribbean. Three Anglophone nations significantly impacted by the HIV epidemic are Guyana, Trinidad and Tobago, and Jamaica. Public health experts have identified HASD as a significant determinant of HIV transmission among members of the Anglophone Caribbean population. With the disproportionate spread of HIV among Anglophone Caribbean women, an exploration of ecological factors unique to this population is needed to understand predictors of HASD.

Using secondary data from the United Nations Children’s Fund (UNICEF) Multiple Indicators Cluster Survey – 3, the purpose of this study was (a) to conduct a
cross national comparison of knowledge of HIV prevention, history of HIV testing, and HASD and (b) to explore predictors of HASD towards PLWH among Anglophone Caribbean young women who reside in Guyana, Trinidad and Tobago and Jamaica. Two-way analysis of variance, chi-square tests, bivariate analysis and multiple regression were used to analyze study data.

The total size of the sample used for this secondary data analysis study was 13,287 records of women between the ages of 15 to 49 years. Women in Guyana had lower knowledge of HIV transmission and higher HASD than women in Trinidad and Tobago and Jamaica. Personal characteristics (age, level of education, and country of residence) and knowledge of HIV transmission were found to account for variance in HASD among the sample population. Domestic partnership and HIV test were not found to be significant contributors to the model designed in this study.

Future study implications include further exploration of multiple factors that can contribute to HASD among populations in the Caribbean region. The development of interventions that not only factor in cultural differences but also gender, education, and socioeconomic differences may be significantly more effective in managing and reducing the HIV epidemic in the Caribbean region.
Dedication

This dissertation is dedicated to:

1) My Lord and Savior without whom not a single day of my life would be possible...especially during this process.

2) My mighty, mighty prayer warriors – you know who you are!

3) My amazing family. Mommy, Mom, Daddy and Ki, thank you for standing with me and at times carrying me through this journey.

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Love,

Kim (“Mommy”)
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Chapter 1
Introduction

Burden of the HIV Epidemic in Developing Nations

The Human Immunodeficiency Virus (HIV) is classified as a long wave event; effects of this global epidemic continue to emerge decades after the first wave of infection (Merson, O’Malley, Serwadda & Apisuk, 2008). First discovered in the 1980s, HIV has impacted every region of the world in just 40 years. Thirty-four million people are living with HIV worldwide (Joint United Nations Programme on AIDS [UNAIDS], 2011). In developing countries alone approximately 15 million people are living with HIV (UNAIDS, 2011). This is a significant finding, as eighty percent of the world’s population lives in developing nations (World Bank, 2004). A developing nation is defined as a country with low or middle per capita incomes (World Bank, 2004).

Since 1999, a significant number of developing countries have been able to stabilize the spread of HIV through comprehensive prevention and treatment programs (World Health Organization [WHO], 2011). Today, thirty three developing countries have decreased HIV incidence rates by 25% (UNAIDS, 2010). Of the 15 million people living with HIV (PLWH) in these countries, over 6 million are receiving anti-retroviral therapy (UNAIDS, 2011). Despite impressive gains in curtailing the epidemic, the prevalence of HIV in developing countries continues to be a matter of concern. In 2008, developing countries spent over $13.7 billion on antiretroviral therapy, which, for many nations resulted in spending over 50% of domestic expenditures on battling the HIV epidemic (Sidibe, 2011). The percentage of young adults in these nations who are able to correctly identify facts about HIV transmission is 34% (UNAIDS, 2010). Among
developing countries with a total of 131,000 testing facilities, the median number of HIV tests conducted per 1,000 adults was 47 in 2009 and 55 in 2010 (World Health Organization, 2011).

**HIV Related Stigma and Discrimination**

High domestic expenditures, indicators of low knowledge of HIV transmission and poor response to HIV testing may not be explained by HIV prevention and treatment efforts alone. One key aspect of the HIV epidemic that is significantly impacted by culture and knowledge of HIV transmission is stigma, specifically HIV/AIDS related stigma and discrimination (HASD). The concept of stigma was introduced by Goffman (1963), a sociologist who worked in psychiatric hospitals. Goffman defined stigma as “undesired differentness” (p.5). A person with a stigma is assumed to “be not quite human” and upon this “assumption we exercise varieties of discrimination, to which we effectively, if often, unthinkingly reduce his life chance” (Goffman, 1963, p.6).

PLWH are affected financially, emotionally, mentally, socially and physically by the disease process and subsequent stigmatization (Anderson et al., 2008). In his original work, Goffman (1963) identified three causes of stigmatization: (1) abominations of the body (i.e. physical deformities); (2) blemishes of individual character (i.e. mental disorders, addition, unemployment) and (3) tribal identities (i.e. race, nationality, religion). PLWH can experience all three causes of stigmatization discussed by Goffman (1963), depending on stage of disease, country of residence, socioeconomic status and sexual orientation.

Since the occurrence of the HIV epidemic, HASD has been identified as a significant public health concern. HASD is the devaluing of individuals with HIV or
individual suspected of having HIV (Herek, 1999; Parker & Aggleton, 2005). HASD is not limited to PLWH but can extend to caregivers, relatives and friends or associates of PLWH (Bogart et al., 2008; Herek, 1999). There are two main forms of HASD: felt and enacted (Aggleton, 2000; Bogart et al., 2008). Felt stigma is intrapersonal and results from the perception and fear of others’ reaction to the disease condition (Scambler, 1998). Felt stigma is experienced by the person living with HIV. Enacted stigma is interpersonal and results in stigmatization and discrimination (Herek, 2007; Scambler, 1989). Enacted stigma is directed towards a person living with HIV. This study will focus on enacted stigma, herein referred to as HASD.

Since the start of the epidemic, HASD has manifested at societal, community and individual levels (Heatherton, Kleck, Hebl & Hull, 2000; Parker & Aggleton, 2002). Behaviors associated with HASD are often governed by fears of contagion (in which contagion is defined as HIV transmission through personal contact), moral judgment of sexual behaviors and religiosity, poor knowledge of how HIV is transmitted, lack of access to treatment, and the history of the emergence of HIV within the local population (Aggleton, 2000; Aggleton, Wood & Parker, 2005; Rahangdale et al., 2010; Visser & Forsythe, 2009). At the societal level, PLWH experience HASD with health care providers and employers (Cianelli et al., 2011; Rahangdale et al., 2010; Rintamaki et al., 2006; Stein & Li, 2008; Ullah, 2011). At the community level, PLWH experience HASD with violence from community members, exclusion from cultural and religious events or ceremonies and denial of service at places of business (Babalola, 2007; Dlamini et al., 2007; Genberg et al., 2009; Letamo, 2003). At the individual level, HASD is primarily experienced with family members (Carr & Gramling, 2004; Simbayi et al., 2007; Teti,

The impact of discrimination fueled by HASD is a global epidemic. Reports from the People Living with Stigma Index (2012), cited 20% of PLWH in Rwanda and 25% of PLWH in Columbia were victims of physical violence because of their HIV status; 26% of PLWH in Pakistan were excluded from family activities because of their HIV status; 10% of PLWH in Belarus, Myanmar and Paraguay have been denied health care because of their HIV status. In South Africa, 1 in 5 PLWH reported experiencing some form of employment discrimination or homelessness due to their HIV status (Simbayi et al., 2007). In Jamaica, HIV is often viewed as moral judgment for sexual behavior and physical violence towards PLWH is considered justifiable despite human rights laws enacted by the island’s government (Figueroa, 2008).

HASD is a significant barrier to HIV prevention and treatment efforts because PLWH fear the consequences of disclosing their HIV status; consequences that would manifest at social, community and individual levels (Aggleton, 2005; Earnshaw & Chaudoir, 2009; Holzemer & Uys, 2004; Rankin et al., 2005). HASD remain among the most poorly understood aspects of the epidemic despite its influence on HIV patterns of infection (Links & Phelan, 2007; Parker & Aggleton, 2002; Parker, Wood & Malcolm, 2005). Although reduction of stigma is critical to management and elimination of the epidemic, minimal research funding is allocated to address stigma (Figueroa, 2008; Piot, 2006). With minimal research resources allocated to this phenomenon, HASD continues
to be fueled by the historical association between HIV, homosexuality, death, shame and immoral sexual transmission (Mahajan et al., 2008; Parker & Aggleton, 2002).

HIV infection and HASD are highly prevalent in resource limited countries. Amuri et al., (2011) conducted a study among different socioeconomic groups and found that people from the poorest households were more likely than people from higher income households to believe that HIV was punishment for behavior that was deemed sinful. A review of literature revealed that the majority of articles published on HASD utilized samples from high income or developed countries, primarily North America and Europe and concentrated on PLWH perception of being stigmatized (Bogard et al., 2008; Mahajan et al., 2008). Studies published on stigma were also found to lack cross validation and failed to consider cultural and contextual factors upon analysis (Abell, Rutledge, McCann & Padmore, 2007; Nanda & Pramanik, 2010; Simbayi et al., 2007; Ullaha, 2011).

**Significance of HASD on Health Outcomes in PLWH**

In regions with a high prevalence of HASD, people who have low knowledge of HIV transmission, are less likely to be tested for HIV, less likely to initiate antiretroviral therapy and less likely to adhere to treatment guidelines; thereby designating HASD as a significant barrier to HIV prevention and treatment (Hutchinson & Mahlelha, 2006; Roberts, 2005; Ware, Wyatt & Tugenberg, 2006; Zhao et al. 2011). In Botswana, an African nation with an estimated HIV prevalence rate of 37%, forty percent of PLWH reported a delay in getting an HIV test, citing fear of a positive test result that would lead to HIV related stigma as the primary reason for the delayed testing (Wolfe et al.,2006). In Kenya, pregnant women who anticipated male partner stigma were more than twice as
likely to refuse HIV testing (Turan et al., 2010). PLWH in areas with high levels of stigma are also more likely to misinterpret the clinical meaning of CD4 count and to be non-adherent to anti-retroviral therapy treatment regimen (Rintamaki, Davis, Skripkauskas, Bennet & Wolf, 2006). In the Caribbean island of Jamaica, the median survival rate after AIDS diagnosis was 1.02 years, despite Jamaica having an established HIV treatment program for the past 25 years (Losina et al., 2007). The lack of social support and social rejection from HASD has also been shown to affect the self-esteem of PLWH and be a contributing factor to the onset of depression (Kang, Rapkin & DeAlmeida, 2006; Simbayi et al, 2007; Stutterheim et al, 2009; Ying Wu et al., 2008).

**Women and HASD**

In the areas most impacted by HIV, women are disproportionately affected (Coeur, Collins, Pannetier & Lelievre, 2009; Nanda & Pramanik, 2010; Visser, 2012). Sub-Saharan Africa and the Caribbean are the only regions in the world in which the number of women infected with HIV is greater than the number of men infected with HIV (UNAIDS, 2011). This may be attributed to women being more biologically susceptible to contracting HIV, inequalities in gender roles, socioeconomic status and social support; these factors influence the prevalence and impact of HASD on women living with HIV (Clum, Chun & Ellen, 2009; Strebel, Crawford & Shefer, 2006; Visser, 2012; WHO, 2011). Among women, HASD affects access to health care, treatment adherence, utilization of social support and healthy social interaction and may ultimately increase risk behavior (Carr & Gramling, 2004; Inzlicht, McKay & Aronson, 2006).

Inequality in sexual partnerships is perpetuated by cultural norms that encourage age mixing (younger woman with older man), permissibility of males having multiple sex
partners while the woman is expected to remain monogamous, early initiation of sexual activity and feelings of inefficacy related to negotiation of condom use with male sex partners (Abdool, 2005; Campbell, Nair, Maimane & Nicholson, 2007; Strebel, Crawford & Shefer, 2006; Rosenbaum, in press). In countries with frequently practiced traditional gender roles that are patriarchal, men are less likely to experience HASD but are more likely to be perpetrators of HASD (Sambisa, Curtis & Mishra, 2010; Visser et al., 2009; Sorsdahl, Mall, Stein & Joska, 2011; Visser, 2012). Men with greater stigmatizing attitudes hold traditional gender roles in high regard, are also more likely be older, less educated and less knowledgeable about HIV (Herek, Capitanio & Widaman, 2002; Kalichman & Simbayi, 2004). In contrast, women in these societies are more likely to be more tolerant of PLWH as they are often designated as the caregivers for family members who are HIV positive and obtain mandatory HIV testing due to pregnancy (Annan, 2002; Letamo, 2003).

Significance of HIV in the Anglophone Caribbean

The Caribbean region has the second highest HIV prevalence rate in the world with HIV prevalence rates varying from 0.1% in Cuba to 5% in the Bahamas (Pan-American Health Organization [PAHO], 2011). In the Caribbean, approximately 70% of PLWH reside on the island of Hispaniola (the island on which Haiti and the Dominican Republic are located) (UNAIDS, 2011). Last year, there were approximately 13,000 new infections and 10,000 AIDS related deaths among adults and children in the Caribbean (UNAIDS, 2011). Heterosexual transmission is the primary mode of transmission however, high risk groups include people who use intravenous drugs, men who have sex with men and commercial sex workers (UNAIDS, 2011; PAHO, 2011). Highest rates of
HIV have been reported among countries with tourist dependent economies, such as, Jamaica and the Bahamas (Baird, Yearwood & Perriono, 2007; Padilla, Guilamo-Ramos, Bouris & Reyes, 2010; Xiridou, van Veen, Coutinho & Prins, 2010).

The Caribbean region is comprised of nations that are classified as Anglophone, Francophone and Spanish-speaking. Nations of interest for this study are classified as Anglophone or English-speaking. Anglophone Caribbean countries were colonized by Great Britain starting from the 16th century to the 19th century and adopted English as the official language. The Anglophone nations of the Caribbean are Anguilla, Antigua and Barbuda, the Bahamas, Barbados, Belize, British Virgin Islands, Dominica, Grenada, Guyana, Jamaica, St. Kitts, St. Lucia, St. Vincent, Trinidad and Tobago and Turks and Caicos. These nations have a population mainly of individuals of African descent who were transferred to the region during the Trans-Atlantic slave trade (Brereton, 2004; Fenton, 2012). During the Trans-Atlantic slave trade, men and women were captured from Africa and distributed to various regions of world which were under colonial rule. Social and power networks are predominantly governed by individuals of African descent (Fenton, 2012). Therefore, it is not surprising that HIV infection patterns such as high prevalence rates and the number of women infected with HIV is higher than the number of men infected with HIV, are similar to HIV infection patterns seen throughout Africa. Among the Caribbean population, very little cultural practices are lost upon migration (Berry, Phinney, Sam & Vedder, 2006; Spooner, Daniel & Mahoney, 2004). As a matter of fact, great effort is taken to maintain cultural ties and observe cultural practices upon migration (Berry et al., 2006; Spooner et al., 2004).
Three Anglophone nations significantly impacted by the HIV epidemic are Guyana, Trinidad and Tobago, and Jamaica. Guyana, Trinidad and Tobago and Jamaica are classified as developing countries by the World Bank (2010). Published reports list 5,900 PLWH in Guyana, 15,000 PLWH in Trinidad and Tobago and 32,000 PLWH in Jamaica (Central Intelligence Agency [CIA], 2012; UNAIDS, 2012). In Guyana, although the main coastal region only consists of 41.3% of the nation’s total population, inhabitants of this area account for 70.8% of all HIV cases (Guyana Presidential Commission on HIV/AIDS, 2011). Trinidad and Tobago have a total population of 1.3 million and an HIV prevalence rate that ranges from 1.5% to 5% (Trinidad and Tobago Office of the Prime Minister, 2011). Jamaica has a total population of approximately 2.7 million. Of Jamaica’s inhabitants, the highest HIV case rates are found in the most urbanized parishes and include approximately 1.7% of the population (Jamaica Ministry of Health, 2011). Also, in Jamaica, 74% of all reported AIDS cases are in the 20-49 year old age group (Figueroa et al., 2008). HIV emerged in all three nations during the 1980s and all three nations launched aggressive and heavily funded HIV prevention and treatment campaigns that have been active for at least 20 years.

**Statement of the Problem**

In the Caribbean region, researchers and epidemiologists have identified HASD as a significant determinant of HIV transmission among inhabitants (Franklin, 2006; Genrich & Barthwaite, 2005; Spooner et al., 2004). PLWH in the Caribbean, cite family members and members of the close community as the primary perpetrators of HASD (Royes, 2007). Among this population, HASD is frequently enacted with verbal abuse, stoning, avoidant behavior, and exclusion from social interaction, employment, religious
activities (Royes, 2007). Fear of contagion and moral judgment of HIV risk behavior may be significant driving forces behind such violent behavior towards PLWH (Archibald, 2010; Figueroa, 2008). To date, there is a dearth of knowledge on the predictors of HASD and factors that contribute to behaviors associated with HASD among this population. Women between the ages of 15-49 years have the highest HIV incidence rates in the region and increase in risk behavior that may be due to HASD (Figueroa, 2008; Inzlicht, McKay & Aronson, 2006).

**Significance of this Study**

Guyana, Trinidad and Tobago and Jamaica have extensive public health and HIV prevention and treatment campaigns that date back to the 1980s and 1990s (Figueroa, 2008; Figueroa, 2012). However, in 2011, UNAIDS country reports written by government officials in these nations identified HASD as significant barriers to the progress and success of HIV prevention and treatment efforts. Ad hoc government agencies have been ordered to address human rights violations against PLWH in the employment and health sectors of Guyana, Trinidad and Tobago and Jamaica; however failure to examine predictors of HASD may reduce the effectiveness and sustainability of anti-stigma programs (Figueroa, 2012). In the Caribbean, women have the highest HIV prevalence; therefore, an exploration of factors that may predict HASD among this sector of the population can be used to develop culturally tailored HIV interventions.

**Purpose of the Study**

Using secondary data from the United Nations Children’s Fund (UNICEF) Multiple Indicators Cluster Survey – 3, the purpose of this study is (1) to conduct a cross national comparison of knowledge of HIV prevention, history of HIV testing, and HIV
related personal stigma and (2) to explore predictors of HIV related personal stigma
towards PLWH among Anglophone Caribbean young women who reside in Guyana,
Trinidad and Tobago and Jamaica. Explored predictors include: a) personal
characteristics (e.g., age, level of education, country of residence, and domestic
partnership) and b) key HIV progress indicators (e.g., knowledge of HIV prevention and
HIV testing). The personal characteristics were selected because to date, research has
been limited to the relationship between gender and/or level of education with HASD
(Andrews, 2011; Babalola, 2006; Le Coeur, Collins, Pannetier & Lelievre, 2009; Turan et
al., 2011). The key HIV indicators were selected because they are used by the UNAIDS
to measure global progress towards managing the HIV epidemic. Responses are taken
from selected modules in a single measure. The measure is the Multiple Indicator Cluster

Definitions of Terms

The conceptual and operational definitions for the study variables are as follows:

(a) Personal Characteristics

Conceptual Definition: Personal characteristics are individual participant
variation within the sample.

Operational Definition: Personal characteristics are operationalized as age, level
of education, country of residence, and domestic partnership. This information is
obtained from participant’s response to demographic questions on the Multiple
Indicator Cluster Surveys -3 (UNICEF, 2005).
Age

Conceptual Definition: Merriam Webster’s Dictionary (2012) defines age as “the length of time that a person has lived” (p. 22).

Operational Definition: Age is operationalized to a woman’s response to the following question in the Women’s Information Panel (WM) in the Multiple Indicator Cluster Survey-3:

WM9 – How old were you at your last birthday?

Level of Education

Conceptual Definition: Merriam Webster’s Dictionary (2012), defines level of education as “a degree, level or kind of schooling” (p. 868).

Operational Definition: Level of education is operationalized to a woman’s response to the following question in the Women’s Information Panel (WM) in the Multiple Indicator Cluster Survey – 3:

WM11 – What is the highest level of school you attended: primary secondary or higher?

Country of Residence

Conceptual Definition: Country of residence may be different from country of birth and is the nation in which a visitor has established permanent residence (US Citizenship & Immigration Services, 2012).

Operational Definition: For the purpose of this study, country of residence is operationalized as the country in which the participant lives at the time of data collection.
Domestic Partnership

Conceptual Definition: The American Heritage Dictionary (2012) defines domestic partnership as, “a person, may not be a spouse, with whom one cohabits and may share a sexual relationship” (p. 289)

Operational Definition: Domestic partnership is operationalized as a response to the following question in the Marriage/Union Module (MA) of the Multiple Indicators Cluster Surveys – 3:

MA1 – Are you currently married or living with a man as if married?

(b) Knowledge of HIV Prevention

Conceptual Definition: UNAIDS (2012) defines knowledge of HIV prevention as “the correct identification of ways of preventing the sexual transmission of HIV and rejection of major misconceptions about HIV transmission” (p. 14)

Operational Definition: Knowledge of HIV prevention is operationalized as the sum of correct responses to the following questions in the HIV/AIDS Module (HA) in the Multiple Indicator Cluster Surveys – 3 (UNICEF, 2005). Each correct answer was assigned a numerical value of 1 (one) and each incorrect, missing or uncertainty answer will be assigned as score of 0 (zero).

HA1- Have you ever heard of the virus HIV or an illness called AIDS?

HA2 – Can people protect themselves from getting infected with the AIDS virus by having one sex partner who is not infected and also has no other partners?

HA3 – Can people get infected with the AIDS virus because of witchcraft
or other supernatural means?

HA4 – Can people reduce their chance of getting the AIDS virus by using condoms every time they have sex?

HA5 – Can people get the AIDS virus from mosquito bites?

HA6 – Can people reduce their chance of getting infected with the AIDS virus by not having sex at all?

HA7 – Can people get the AIDS virus by sharing food with a person who has AIDS?

HA8 – Is it possible for a healthy-looking person to have the AIDS virus?

HA9 – Can the AIDS virus be transmitted from a mother to a baby?
  
  HA9a. During pregnancy?
  
  HA9b. During delivery?
  
  HA9c. By breastfeeding?

(c) HIV Test

Conceptual Definition: UNAIDS (2012) defines HIV testing as “receipt of an HIV test within the past 12 months and know the results” (p. 19).

Operational Definition: HIV test is operationalized as responses of yes/no to the following questions in the HIV/AIDS module of the Multiple Indicator Cluster Surveys – 3 (UNICEF, 2005). Each answer was assigned a numerical value of 1 (one); a score of 2 indicated an affirmative history of an HIV test and knowledge of HIV serostatus.

HA15 – I do not want to know the results, but have you ever been tested to see if you have HIV, the virus that causes AIDS?
HA16 – I do not want you to tell me the results of the test, but have you been told the results?

(d) *HIV Related Personal Stigma (HASD)*

Conceptual Definition: The UNAIDS (2012) defines HIV related stigma as, “a process by which people living with HIV are discredited. It may affect both those infected or suspected of being infected by HIV and those affected by AIDS by association” (p. 2). Genberg et al. (2009) identified two components of HIV related stigma – negative attitudes towards PLWH and perceived acts of discrimination towards PLWH. For this study, HASD is operationalized to stigmatizing and discriminatory attitudes towards PLWH. UNAIDS (2012) defines discrimination as “any form of arbitrary distinction, exclusion or restriction affecting a person, usually but not only by virtue of an inherent personal characteristics or perceived belonging to a particular group – the case of HIV and AIDS, a person confirmed or suspected of having an HIV positive status – irrespective of whether or not there is any justification for these measures.”

Operational Definition: HASD is operationalized as the sum of affirmative ("yes") responses to the questions listed. A response of yes is scored as 1 (one) and a response of no, don’t know or missing is assigned a score of 0 (zero). Responses to the following questions from the HIV/AIDS Module of the Multiple Indicators Cluster Survey – 3 will be used:

HA10 – If a female teacher has the AIDS virus but is not sick, should she be allowed to continue teaching in school?

HA11 – Would you buy fresh vegetables from a shopkeeper or vendor if
you knew that this person had the AIDS virus?

HA12 – If a member of your family became infected with the AIDS virus, would you want it to remain a secret?

HA13 – If a member of your family became sick with the AIDS virus, would you be willing to care for him or her in your household.

Theoretical Framework

Stigma is defined by complex interactions between the individual, culture and society (Parker & Aggleton, 2003; Earnshaw & Chaudoir, 2009). The purpose this study is to identify predictors of HIV related stigma and discrimination, therefore a theoretical framework that takes into consideration the impact of societal, community and individual influences was needed. Brofenbrenner’s bioecological model was used as the theoretical framework. This model utilizes an ecological approach to explain a phenomenon.

An ecological orientation examines multiple environmental factors simultaneously. Originally, Brofenbrenner’s bioecological model used an ecological orientation to identify a variety of influences on child development (Brofenbrenner, 1979; Tudge, Mokrova, Hatfield & Karnik, 2009). Today, the model is becoming widely used in student development research and public health research; the model is no longer limited to studies of child development alone (Evans et al., 2010; Mmari, Blum & Teufel-Shone, 2010; Crosby, Salazar & DiClemente, in press). For example, a recent study by Mojola (2011) provides insight into how changes in the ecological environment in Lake Victoria of sub-Saharan Africa shaped sexual relationships and sexual mixing patterns that ultimately contributed to the spread of HIV within the fishing community.
For this study, the original framework of Brofenbrenner’s model is used and proposed factors that impact HASD is explored at each level.

**Outline of the Original Model.** An ecological paradigm posits that development is guided by interactions between the individual and the surrounding environment; this interaction populates a system (Brofenbrenner, 1979). The conceptualization of the interactions is depicted in a series of four concentric circles or spheres, levels or systems (Brofenbrenner, 1979). Within the first level or microsystem is the individual (Brofenbrenner, 1979). The individual dwells within the core or center. Here, factors are identified as those behaviors or characteristics that affect development directly (Mmari, Blum & Teufel-Shone, 2010).

Another sphere depicts the second level or mesosystem. The mesosystem houses relationships in which the individual is directly involved. Factors within this circle are related to family and peers (Brofenbrenner, 1979; Crosby, Salazar & DiClemente, in press; Mmari, Blum & Teufel-Shone, 2010). Examples of factors in this level include interpersonal relationships.

The third sphere represents the exosystem. Factors related to the individual’s community and school is housed within this system (Brofenbrenner, 1979; Crosby, Salazar & DiClemente, in press; Mmari, Blum & Teufel-Shone, 2010). Examples of factors within the exosystem include neighborhood and school.

The fourth level is the macrosystem. This circle contains factors that are applicable in larger cultural contexts (Brofenbrenner, 1979; Mmari, Blum & Teufel-Shone, 2010; Crosby, Salazar & DiClemente, in press). Examples of factors in the macrosystem include legislation, values, cultural customs and national resources.
Change or development occurs within each system and ultimately influences the surrounding systems (Brofenbrenner, 1979). Brofenbrenner (1979) refers to this change as an ‘ecological transition.’ Ecological transitions are driven by expectations of behavior within a system. However, the concept of interconnectedness explains how ecological transitions within a system can impact the other systems (Brofenbrenner, 1979). This study serves to examine how interconnectedness between selected factors or variables may influence HASD.

Figure 1. Display of Brofenbrenner’s Bioecological Model – Original Version

Figure 1. Depiction of the original version of Brofenbrenner’s Bioecological Model. The individual dwells in the microsystem. Interpersonal relationships that directly affect the individual are in the mesosystem. Community factors are in the exosystem. National customs, values and laws are in the macrosystem. Interconnectedness describes the bidirectional influence of different systems on a single phenomenon. Adapted from U. Brofenbrenner, 1979, *The ecology of human development: Experiments by nature and design*. Copyright 1979 by the President and Fellows of Harvard College.

The Application of Brofenbrenner’s Bio-Ecological Model to this Study. Due to the influence of HIV related stigma as a barrier to prevention and treatment efforts,
HASD is a significant public health problem. Therefore utilization of an ecological approach is warranted as a means of identifying, multiple factors that can be addressed in HIV prevention and treatment programs (Crosby et al., in press). In contrast to individual approaches to public health matters, ecological approaches to public health concerns provide more sustainable changes (Crosby et al., in press). With the disproportionate spread of HIV among Anglophone Caribbean young women, an exploration of ecological factors unique to this population is needed to understand predictors of HIV related stigma. Brofenbrenner’s model is adapted to the population for this study.

The microsystem will consist of the individual. For this study, the individual is a female between the ages of 15-49 years who resides in one of the following countries Guyana, Trinidad and Tobago or Jamaica. Factors within this system include age, level of education, and HIV test. These factors are unique to individual participants and do not involve a direct relationship with another individual.

The mesosystem explores a young woman’s domestic partnership. As Brofenbrenner (1979) described, the mesosystem focuses on direct relationships between the individual and another individual. For this study, a domestic partner is the individual with whom a young woman cohabitates at the time of survey completion and data collection.

The exosystem contains knowledge of HIV transmission. This system contains factors of the environment over which a young woman does not have direct control. In the Anglophone Caribbean, the provision of reputable information pertaining to HIV transmission is obtained from health care providers, teachers, media outlets. A woman’s
ability to gain access to this information may be influenced by such community factors as the availability of electricity, transportation and access to healthcare.

The final system, the macrosystem consists of the country of residence at the time of the interview. The country of residence (Guyana, Trinidad and Tobago or Jamaica) may have unique cultural norms, histories of the emergence of HIV, HIV related legislature, and different religious practices that guide sexual behavior. The country in which the participant resides at time of data collection can significantly influence HASD or attitudes towards PLWH. Figure 2 provides an illustration of the use of Brofenbrenner’s Bio-Ecological Model in this study.

Figure 2. Use of Brofenbrenner’s Bioecological Model in this Study
Chapter 2

Literature Review

In this chapter, first an overview of HASD will be discussed, and then each factor that will be explored in this study will be examined within the context of Brofenbrenner’s Bioecological Model. Factors will be explored in descending order from the macrosystem to the microsystem.

HIV Related Stigma and Discrimination

Awareness, accessibility and education are failing to change risk HIV risk behavior among the Caribbean population (Franklin, 2006; UNAIDS, 2011). In a multi-country study ($n=2,035$) of PLWH between the ages of 18-39 years old, 78% of the respondents reported experiencing stigma associated with their HIV status. Of the participants who reported some experience with stigma, 80% felt that more needed to be done to educate society on HIV (Nachega et al., 2012).

During the early years of the HIV epidemic, graphic pictures used by the media and health organizations depicted people with AIDS dying from Slim Disease in Africa (Merson, O’Malley, Serwadda & Apisuk, 2008). These early associations with HIV and death, punishment, guilt, and shame continue to perpetuate Caribbean society today (Parker & Aggleton, 2002). In the Caribbean, PLWH are portrayed as not having a concern about infecting others (Abell, Rutledge, McCann & Padmore, 2007). However, ending intimate relationships is a common reaction to news of a diagnosis of HIV out of fear of transmitting the disease to an uninfected partner (Anderson et al., 2010).

PLWH in the Caribbean or in Caribbean migrant communities with strong cultural ties are subject to the Caribbean cocktail of fear of contamination, homophobia
and ignorance (Anderson et al., 2008; Archibald, 2010). The Caribbean cocktail is fueled
by religious beliefs (Anderson et al., 2008; Archibald, 2010). HASD of PLWH includes
children being denied entrance in to school, wrongful termination, denial of employment
opportunities, and abandonment by family (BBC, 2004; Parker et al., 2004; Royes, 2007).
More severe reports of physical violence against PLWHA are not uncommon in the
Caribbean (Anderson et al., 2008). In Jamaica, the criminalization of homosexuality and
sex work is viewed as “promoting morality” (Figueroa, 2008). Religious representatives
(n=11) in Trinidad and Tobago associated the spread of HIV with fragmentation of
traditional family structure, erosion of the influence of religious doctrine in society,
carnival mentality (carnival is a multi-day festival similar to Mardi Gras in the United
States of America), sex before marriage, and the use of condoms in lieu of self-control
and promiscuity (Genrich & Brathwaite, 2005).

Compassion for PLWH and belief about ostracizing PLWHA from the general
society is consistent across age groups, gender and nationality. However, sympathetic
attitudes may be influenced by mode of transmission. Approximately 50% of university
students surveyed in Jamaica reported unsympathetic attitudes towards PLWHA who
were homosexual men or female sex workers (Norman & Carr, 2006). In contrast, the
University students did report sympathetic attitudes towards PLWHA who were
heterosexual, and not engaged in sex work.

The Macrosystem: Country of Residency

The History of the Emergence of HIV Epidemic in the Caribbean

The country in which a woman lives is hypothesized to have a significant impact
on HASD. The history of the emergence of HIV plays a pivotal role in shaping the
government’s response to the HIV epidemic, attitudes among the population about PLWH, accessibility to HIV prevention education and access to HIV testing and treatment. This section will discuss the history of the emergence of HIV in Guyana, Trinidad and Tobago, and Jamaica.

The Caribbean is geographically comprised of a chain of islands that stretches from the Bahamas in the North to Trinidad and Tobago in the South and Guyana on the South American mainland (Central Intelligence Agency [CIA], 2012). Remnants of colonization can be heard in primary languages spoken, seen in governmental and educational systems, and similar approaches taken to address the HIV epidemic (Brereton, 2004; Rutledge, Abell, Padmore & McCann, 2009). Over the last two decades, national HIV/AIDS strategic plans, HIV testing at all health care facilities, and distribution of free or subsidized antiretroviral medication programs have been implemented in Guyana, Trinidad and Tobago, and Jamaica.

HIV has infected every global region since its discovery in the 1980s. The Caribbean region ranks second to sub-Saharan Africa for prevalence of HIV/AIDS (Figueroa, 2008; Jacobsen, 2008; UNAIDS, 2009; World Bank, 2006). Caribbean nations did not begin to report AIDS cases to the PAHO until 1984 (Deschamps, 1988). The first AIDS case is suspected to have occurred in Haiti in 1979 according to the autopsy of a 20-year-old male; the presence of toxoplasmosis in the absence of cancer suggests that the young man may have been infected with AIDS (Deschamps, 1988). The commencement of the HIV epidemic in the Caribbean coincided with the growing incidence of HIV in the United States. In 1983, 80% of male HIV patients in the Caribbean reported being bisexual and having at least one lover in North America (Deschamps, 1988). Frequent
travel between the Caribbean and the United States of America and Europe provides opportunity for the spread of communicable diseases (Baird, Yearwood & Perriono, 2007; Wheeler & Radcliffe, 1994).

**Guyana**

Guyana is located in the Northern region of the continent of South America. The nation is bordered by Suriname and Venezuela. Independence from the United Kingdom was granted in 1966 and the official language is English (Brereton, 2004). The ethnic diversity of the population is East Indian (43.5%), Black (30.5%), mixed (16.7%), and Amerindian (9.1%) (CIA, 2012). The median age of females is 25 years, education is compulsory for 12 years and the literacy rate among females is 91.6%. The unemployment rate among females and males between the ages of 15-24 years is 31.3% and 20.6%, respectively (CIA, 2012). The population ratio of males to females is 1:1. Published reports of the HIV prevalence rate range from 1.2% to 2.5% (CIA, 2012; Figueroa, 2008; Laptiste & McClean, 2006).

The first case of AIDS in Guyana was recorded in 1987 (Laptiste et al., 2006). It is suspected that the late arrival of AIDS to Guyana may be attributed to a reliance on agriculture and not tourism during the 1980s (Wheeler & Radcliffe, 1994). This prevented the island from experiencing an influx of tourists from North America and Europe who may have been infected with HIV. By the end of 2004, the prevalence rate of HIV was 2.5% among low risk populations (Laptiste et al., 2006; UNAIDS, 2011). Casual sex encounters and high levels of multiple partnering coupled with high levels of non-use of condoms with partners are the greatest risk factors among low risk
populations (Laptiste et al., 2006; UNAIDS, 2011). High risk populations include men who have sex with men and commercial sex workers (UNAIDS, 2011).

In an attempt to control the spread of the HIV epidemic, Guyana became 1 of 15 nations to receive support from the USA President Emergency Plan for AIDS Relief (Figueroa, 2008; Hubbard & Lee Rodgers, 2009). In 1998, the nation adopted and implemented the National Policy on HIV and AIDS; the policy was revised in 2003 (Government of Guyana Global AIDS Response, 2011). In 2005, the Minister of Health, heralded the Guyanese national treatment program as one of the epidemic’s greatest success stories. Today, the prevalence of HIV among the general population is 1.07% and the number of AIDS related deaths decreased by 56% over a single decade. Mother to child transmission also decreased from 5.8% to 1.9% from 2010 to 2011 (Government of Guyana Global AIDS Response, 2011).

**Trinidad & Tobago**

Trinidad and Tobago is comprised of two islands between the Caribbean Sea and the North Atlantic Ocean. The islands were emancipated from the United Kingdom in 1962 and the official language is English (Brereton, 2004; CIA, 2012). The ethnic diversity of the island is attributed to the following population demographics: Indian (40%), Black (37.5%), and mixed (20.5%). The median age of females is 34 years (CIA, 2012). The school life expectancy is 12 years and literacy of females is 98% (CIA, 2012). The unemployment rate among females and males between the ages of 15-24 years is 12.9% and 8.8%, respectively (CIA, 2012). Trinidad and Tobago is one of the wealthiest Caribbean nations due to oil and natural gas production (CIA, 2012). Tourism in Tobago is expanding; however, violent crime hinders significant growth in the tourism
industry (CIA, 2012). Like Guyana, the population ratio of males to females is 1:1. The HIV prevalence rate ranges between 1.5% to greater than 5% in reports (CIA, 2012; Figueroa, 2008).

The first case of AIDS was reported in 1983 among a young homosexual male (Wheeler & Radcliffe, 1994). Nationally supported HIV antibody testing began in the Caribbean in 1985, with Trinidad and Tobago as the pioneering nation (Wheeler & Radcliffe, 1994). Early sexual initiation and non-condom intercourse with multiple partners are major risk factors for HIV transmission (Reid, Mallow & Rosenberg, 2012). Increased cost of oil, increased travel, men who have sex with men and women, drug abuse and sexually transmitted infections were identified as potential causes for the spread of AIDS in Trinidad and Tobago (Wheeler & Radcliffe, 1994).

Unlike Guyana, Trinidad and Tobago continues to struggle to establish a single government supported entity to monitor and address the HIV epidemic in the islands. A multitude of government agencies, civil societies and non-governmental organizations are actively responding to the HIV crisis (Trinidad and Tobago Office of the Prime Minister, 2011). With multiple agencies attempting to address the epidemic, figures reported from Trinidad and Tobago are to be interpreted with caution. For example, one study by Franklin (2006) identified that in early 2004, a total of 1,445 cases of AIDS were reported in Trinidad and Tobago. However, in late 2004, a total of 14,604 AIDS cases were reported. Franklin (2006) attributes such gross inconsistencies to duplication of test results, differences in published data, delays in reporting data, lack of coordination of data collection activities, infrequent intervals in which problems occur, resource limitations and absence of a single database. The Office of the Prime Minister (2011)
estimates the current HIV prevalence rate to be greater than 1% in low risk population and greater than 5% in high risk populations. The primary mode of transmission is sexual contact (UNAIDS, 2011). The Office of the Prime Minister (2011) noted that these figures may not be comprehensive and data from private labs were not available.

**Jamaica**

The island of Jamaica is located in the Caribbean Sea, south of Cuba. Independence was granted from the United Kingdom in 1962 and the official language is English (Brereton, 2004). The ethnic diversity is Black (91.2%), mixed (6.2%) and other or unknown (2.6%). The median age of females is 24.9 years (CIA, 2012). The school life expectancy and literacy for males and is 13 years and 84.1%. The school life expectancy and literacy for females is 15 years and 91.6%. The unemployment rate among females and males between the ages of 15-24 years is 33.1% and 22.5%, respectively (CIA, 2012). The Jamaican economy is heavily dependent upon tourism with over 2 million tourists visiting the island each year (Figueroa et al., 2008; CIA, 2012). The population ratio of males to females is 1:1. The HIV prevalence rate ranges between 1.5% to 1.7% (CIA, 2012; Figueroa, 2008).

The first case of AIDS was reported in 1982 the person was the common law wife of a migrant farmworker in a rural area (Figueroa et al., 1995). Today, the primary mode of transmission is heterosexual sex. Homosexual sex and bisexual sex account for 15% of transmission and vertical transmission accounts for 6% of the HIV infections. The homosexual and bisexual sex may be significantly underreported due to violence against homosexuals ((Figueroa, 2008; UNAIDS, 2011).
Table 1

Comparison Country Characteristics of Guyana, Trinidad and Tobago, and Jamaica

<table>
<thead>
<tr>
<th>Country</th>
<th>Year of independence from UK*</th>
<th>First AIDS case**</th>
<th>Female median age</th>
<th>HIV prevalence</th>
<th>Female literacy rate</th>
<th>Primary economic resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>1966</td>
<td>1987</td>
<td>25 yrs</td>
<td>1.2 - 2.5</td>
<td>91.6</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>1962</td>
<td>1983</td>
<td>34 yrs</td>
<td>1.5 - &gt;5</td>
<td>98</td>
<td>Oil, natural gas</td>
</tr>
<tr>
<td>Jamaica</td>
<td>1962</td>
<td>1982</td>
<td>24.5 yrs</td>
<td>1.5 - 1.7</td>
<td>91.6</td>
<td>Tourism</td>
</tr>
</tbody>
</table>

*Note: Year of independence from UK was adapted from Brereton, B. (Ed), 2004, General History of the Caribbean: Volume V. Copyright 2004 by UNESCO.

**First AIDS case was reported by Deschamps, M.D., 1998, AIDS in the Caribbean, Archives of AIDS Research, 2, 51-56.

***Median age, literacy rate, HIV prevalence and primary economic resource were taken from country reports published by the Central Intelligence Agency, 2012. Copyright 2012 by the CIA.

The Exosystem: Knowledge of HIV Prevention

UNAIDS (2012) defines knowledge of HIV prevention as “correct identification of two major ways of preventing the sexual transmission of HIV (using condoms and limiting sex to one faithful, uninfected partner), rejecting the two most common local misconceptions about HIV transmission and knowledge that a healthy looking person can
have HIV” (p.9). As previously stated, only 34% of young adults were categorized as having a high level of knowledge of HIV transmission according to standards set forth by the United Nations (2011). Previous studies have identified a negative association between knowledge of HIV transmission and HASD (Genberg et al., 2009; Rahangdale et al., 2010; Sorsdahl, Mall, Stein & Joska, 2011; Visser et al., 2009; Zhao et al., 2011).

Prevention education campaigns in the Caribbean utilize the “ABC” approach. ABC is the acronym for “Abstinence, Be Faithful and Condom use” (Hubbard & Lee Rodgers, 2009; Reid, Mallow & Rosenberg, 2012). These programs are geared towards young men and women between the ages of 15-24 years (Reid et al., 2012). This section will review knowledge of HIV transmission among the Anglophone Caribbean population.

In Guyana, Trinidad and Tobago and Jamaica, education on HIV transmission is provided by governmental organizations and non-governmental organizations (Figueroa, 2008). The focus of HIV education is behavioral change (Hubbard et al., 2009). Key behavioral change outcomes in HIV education include: abstinence and fidelity; safe sex practices; reduction of stigma and discrimination; early HIV testing, and community involvement in HIV treatment and care (Hubbard et al., 2009).

Despite the availability and accessibility of prevention education programs, studies demonstrate that large knowledge gaps are quite prevalent among Anglophone Caribbean youth. In a study conducted by Archibald (2007) adolescent girls ($n=22$; ages 14-18 years) reported that a friend with HIV would not be invited to their home nor would such a friend be permitted to share bathroom facilities, use personal items or prepare food for the non-infected individual.
A sample \((n=119)\) of Health Studies students enrolled at University of Guyana participated in a cross sectional study (Balfour et al., 2010). The findings suggest that overall knowledge was high but gaps in knowledge pertaining to vertical transmission, effective use of condoms and timeframe of HIV seroconversion were identified and deemed significant. Specific knowledge deficits were seen in 20% of the students who reported being unaware that using Vaseline with condoms increases the chance of HIV transmission and HIV could be transmitted through oral sex and ‘natural skin’ condoms (Balfour et al., 2010).

Archibald (2010) conducted focus groups comprised of young Anglophone Caribbean women \((n=22)\) between the ages of 14 to 18 years. When asked to discuss “what they know about AIDS,” the young women provided responses that revealed gross inaccuracies and confusion. Although they could identify what HIV is and verbalize how HIV could be transmitted through bodily fluids exchanged during sex, respondents believed HIV among individuals from the 14-18 years age group was acquired via maternal-to-child-transmission and antibiotics could put the disease in remission.

Possible reasons messages of prevention and willingness to practice personal protection is often rejected by youths include preoccupation with economic survival, denial of risk, fatalistic attitude and low self-esteem (Morrison & Chen, 2005). Inabilities to relate to educational messages are also a contributing factor to rejection of HIV transmission messages (Baird, Yearwood & Perrino, 2007). One hundred female respondents from Trinidad and Tobago (mean age 16.22 years), revealed a preference to hear ‘real life stories’ and to see images of people afflicted with HIV and AIDS instead of music videos (Baird et al., 2007).
In Jamaica, focus groups of adolescents \((n=41)\) verbalized a desire to learn more about HIV in school or a health promotion program (Hutchinson et al., 2007). In addition to conflicting feelings towards sex that were fueled by normative gender roles, the participants stated popular myths that were circulating throughout the nation. These myths include: HIV can be transmitted by mosquito bites, perspiration, and toilet seats; HIV could be cured by having sex with a virgin and the United States of America sent AIDS to Jamaica by putting the virus in condoms (Hutchinson et al., 2007).

**The Mesosystem: Domestic Partnership**

In developing nations, national history, socioeconomics and ethno-cultural norms play a significant role in the prevalence and purpose of domestic partnerships (St. Bernard, 2003). In the Caribbean region, domestic partnerships are common; however, their level of acceptance varies across ethno cultural groups (St. Bernard, 2003). Remnants of slavery can be seen in the high prevalence of consensual unions and domestic partnerships, and low prevalence of formal marriages, specifically among women of African ancestry (St. Bernard, 2003). Under colonial rule, slaves were not permitted to marry in the Caribbean, however, they were permitted to engage in domestic partnerships. In the 21st century, increased frequency of domestic partnerships is being observed beyond groups of African descent for reasons related to educational attainment and cultural acceptance (McKenzie, 2003; St. Bernard, 2003).

Domestic partnership is commonly treated as a demographic characteristic or limited to the context of intimate partner violence. (Hadeed, 2006; Lichetenstein, in press). Domestic partnership has also been explored within the context of HIV risk behavior (specifically sexual risk behavior) (Chimibiri, 2007). One study \((n=3,844)\) of
young people in Nigeria, identified marital status as a strong predictor of readiness for an HIV test and being single was reported with the odds of being more likely to obtain an HIV test (Babalola, 2006). It is important to point out that the study was specific to marital status and did not take into account domestic partnerships. To date, no published study has explored a relationship between the occurrence of domestic partnership and HASD. This study attempted to address this knowledge gap with this population.

**The Microsystem: Feminization of HIV**

This section will explore the relationship between gender and biology as they relate to HIV infection and HASD.

**Gender**

Although the parent study utilized a female and child population and excluded adult males, and understanding of how HIV affects women specifically is of importance. Despite a 1:1 ratio of males to females in the population, the ratio of HIV positive females to HIV positive males is 2:1 (Baird et al., 2004; Reid et al., 2012). The occurrence of HIV becoming more prevalent in the female population is called the “feminization of HIV” (Baird et al., 2004). From 1985 to 1991, homosexual and bisexual cases of HIV decreased from 51% to 16%; however, heterosexual cases increased from 13% to 83% (Wheeler & Radcliffe, 1994). Today, homosexual and bisexual cases are less prevalent than heterosexual cases and range from 16% to 32% in Guyana, Trinidad and Tobago and Jamaica (UNAIDS, 2011).

Sexual patterns, coupled with culturally defined gender roles, that are determined by gender inequities contribute to the feminization of HIV in the Caribbean (Figueroa, 2008; Rammasamy, 2006; UNAIDs, 2010). Risk factors for transmission among women
are further exacerbated by poverty, limited education and unemployment (Cianelli et al., 2012; Figueroa, 2008; WHO, 2010). Sex trading or the exchange of sex for money, payment of school fees, or assistance with unemployment are significant contributing factors to the spread of HIV among Caribbean young women (Figueroa et al., 2008). Sex mixing, also plays an influential role as young women are socialized to have a relationship with older men due to the older man’s greater economic stability and potential to provide financially (Figueroa, 2008).

**Biological Susceptability**

In addition to social, psychological and financially related risk factors, women have an anatomical difference from men that causes them to be more susceptible to transmission of the HIV virus (Wu, 2008). HIV is a retrovirus that primarily suppresses the immune system’s response to HIV and causes a generalized suppression of the immune system by affecting the innate and adaptive drives of the defense system (Engleman & Cherepanov, 2012; Huether & McCance, 2008). HIV is a blood borne pathogen and is transmitted through bodily fluids (blood, semen, vaginal secretion). The period of infection to detection of an antibody varies from 4 weeks to 14 months. This period is determined by mode of transmission, virus strain and characteristics of the host (age, health status, co-infections, co-morbidity, etc) (Heuther & McCance, 2008).

The suppression of the immune response is attributed to impairment of CD4+ cells (Heuther & McCance, 2008). Diagnosis of HIV or AIDS is determined by presentation in one of four categories: (1) serologically negative; (2) serologically positive, asymptomatic; and (3) serologically positive with symptoms of the early stage
of infection or AIDS; (4) AIDS (serologically positive, CD4+ count of 300 mm$^3$ or less and symptoms of late stage of infection) (Heuther & McCance, 2008).

Two strains of HIV, HIV-1 and HIV-2, infect over 30 million people worldwide (Engleman & Cherepanov, 2012). Ninety-eight percent of HIV cases are attributed to infection with HIV-1 (Sharp & Hahn, 2010). HIV-1 has a faster rate of evolution than HIV-2 (Sharp et al., 2010). HIV-2 is typically seen among West African populations (Sharp et al., 2010).

HIV-1 primarily gains entry to a host via sexual intercourse (Ganor & Bomsel, 2010). Unprotected sexual intercourse between discordant couples is the major route of HIV-1 infection (Sabatte et al., 2011). Specifically, the epithelial cells that line the vaginal canal, are involved with HIV-1 transmission (Wu, 2008).

Research utilizing small animal models and non-human primates enabled researchers to better understand how mode of transmission impacts the occurrence of infection. Semen contains three key components of infection: free virions, spermatozoa-associate virions, and infected leucocytes (Sabatte et al., 2011). Although the vagina utilizes natural barriers to protect hosts from various microorganisms, small tears in the mucosa which can occur during sexual intercourse, reduce the effectiveness of natural barriers (Lederman, Offord & Hartley, 2006). Tears in vaginal mucosa, with or without, postcoital bleeding, permit access to cells that are targeted by HIV-1 infection (Guimaraes, Vlahov & Castilho, 1997; Lederman et al., 2006). In a study conducted with Simian Immunodeficiency Virus (SIV), a closely related virus to HIV, researchers learned that SIV crossed the vaginal mucosa within one hour of exposure (Lederman et al., 2006).
**Gender Inequality**

Gender roles that result in male dominance in relationships, gender based crime and subordination of women are quite salient (Hadeed, 2006; Peragallo et al., 2005). Socialization of boys and girls fuels the occurrence of power imbalances in relationships. In Caribbean culture, boys are allowed and oftentimes encouraged to engage in multiple partner relationships, while girls are heavily discouraged to engage in similar behavior (Spooner et al., 2004). Social norms that encourage male sexual prowess and fathering multiple children date back to slavery during colonial rule (World Bank, 2003). This socialization of a subordinate normative gender role for girls prohibits the development of fundamental skills needed to negotiate safe sex practices (Spooner et al., 2004).

The cultural taboos of women being empowered in sexual relationships is fueled by religiosity, conservatism and fear (Inciardi, Syvertsen & Surratt, 2005). In a study conducted with Anglophone Caribbean men and women, more men (28%) than women (11.7%) reported ever having a sexually transmitted disease, having more than one sexual partner in the past year (49.1% and 11.4%) and usually using a condom during sexual intercourse (55.3% and 40.5%). In another study, women \(n=17\) from Trinidad and Tobago reported being severely abused by an intimate partner (88%), sexually abused by fathers, stepfathers or uncles (40%) and financially manipulated by male partners (Hadeed, 2006). Anglophone Caribbean women who lived in a Caribbean neighborhood in Canada reported encountering verbal, physical and psychological abuse after disclosing their serostatus to their male partners (Gardezi et al., 2008; Teti, Bowleg & Lloyd, 2010). Women fear disclosure of HIV serostatus will cause them to be labeled as promiscuous or sex workers (Parker & Aggleton, 2002). In countries where heterosexual
transmission is the primary mode of transmission, the spread of HIV is often associated
with female sexual behavior that defies gender norms (Parker et al., 2002).

**History of HIV Test**

There is a relationship between the UNAIDS designated key indicators of
knowledge of HIV transmission and HIV testing; this association is mediated by personal
factors (Norman, 2006; Hubbard & Lee Rodgers, 2009). Among Guyanese youth, high
HIV knowledge was associated with increased odds of reporting HIV testing than youth
with low HIV knowledge (Andrews, 2011). Young women were more likely to be tested
than young men as were currently and previously married youth (Andrews, 2011). Other
studies support the finding that women are more likely to receive an HIV test than men
(Babalola, 2007; Sambisa, 2010).

A review of the literature does not identify a clear relationship between history of
an HIV test and HASD. HIV testing is a key factor in HIV prevention education as it
provides an opportunity to educate an individual about HIV prevention (Mwamburi et al.,
2005). In regards to treatment, HIV testing is also the first step in establishing a need for
treatment (UNAIDS, 2011). Unfortunately, in most developing nations, obtaining an
HIV test and revealing serostatus results is equally fearful for men and women. Men fear
that disclosure of their HIV status will have them labeled as homosexual and women fear
disclosing their HIV status will have them labeled as promiscuous (Deschamps, 1988;
Parker & Aggleton, 2002).

A cross sectional study conducted by Turan et al. (2011) in Kenya (n=1525)
utilized a convenience sample of women who were receiving care from an antenatal
clinic. Reasons for refusing HIV testing were directly related to fear of manifestations of
HASD. Women who anticipated high male HASD were twice as likely to refuse HIV testing. More than one third of the women feared that a positive test result would cause an end to their romantic relationship and an end to friendships (Turan et al., 2011).

Another study conducted by Mwamburie et al. (2005) \((n=628)\) found that 80% of respondents did want to know the results of their HIV test. The primary reason cited by participants for wanting to know the results was to protect against future infections. In addition, age, education level, income, migration destination, number of dependents and condom use were personal characteristics that were associated with wanting to know the results of the HIV test (Mwamburi et al., 2005). HASD was not examined in this study.

A single study of Anglophone Caribbean young women \((n=100)\) who were of reproductive age but did not have children, explored the relationship between HIV testing and HASD. Ninety eight percent reported that they never had an HIV test done. The reason cited for not having an HIV test done voluntarily was fear testing would lead to breaches in confidentiality and ultimately stigmatization from family and the community (Baird, Yearwood & Perrino, 2007). Further exploration of this association is warranted and will be addressed by this proposed study.

**Age and the Caribbean Perspective of Youth**

In 1950, an anthropological study conducted by Kitzinger, identified age at first coitus as 16 years among Caribbean young women. A survey conducted in 2005 of over 15,000 Caribbean youths (10-18 years) from Anglophone countries found that of the 34% of participants reported to have been sexually active (Ohene, Ireland & Blume, 2005). Eighty-two percent of the males and 52% of the females initiated sexual activity at or before 13 years of age (Ohene et al., 2005). The age of first coitus has decreased from 16
years to 13 years. A report published by the World Bank in 2003 identified the onset of sexual initiation in the Caribbean to be the earliest in the world.

The concept of youth is a culturally derived (World Bank, 2003). For the purpose of this study, the concept of youth encompassed the developmental stages between the ages of 15 to 24 years (World Bank, 2003). This late adolescent stage is marked by periods of significant emotional, psychological and financial growth (Evans, Forney, Guido, Patton & Renn, 2010). During this period, youth are able to integrate and act upon a variety of influences from previous years (Evans et al., 2010).

The HIV epidemic continues to grow among young women between the ages of 15-24 years in Guyana, Trinidad and Tobago and Jamaica who could be classified as “youth” (Baird et al., 2007). Seventy-four percent (74%) of all new HIV cases in Trinidad and Tobago were among female patients (British Broadcasting Channel [BBC], 2004). Fifteen to twenty-four years is the demographic with the fastest growing rates of HIV incidence and prevalence in the Caribbean (Figueroa, 2008; Ramsammy, 2005; Reid, Mallow & Rosenberg, 2012). This population demographic is significant to a nation’s productivity, growth and population sustainment. AIDS related mortality result in lower life expectancy, higher infant mortality, elevated death rates, decreased population growth rates and changes in the population distribution by age and sex (CIA, 2012). In single resource dependent economies (i.e. tourism), AIDS related mortality can be crippling to a nation’s prosperity. The risk of unprotected sex could be reduced with safe sex negotiation, however gender inequity prevents such negotiation (Cianelli et al., 2012; Peragallo, Gonzalez-Guarda, McCabe & Cianelli, 2012). Women ages 25-49 were
also included with the sample utilized in this study as a means of identifying generational differences in the variables of interest.

**Level of Education**

There is a dearth of literature that explores the relationship between level of education and HASD. One study, examined the association between level of education and knowledge of HIV. High levels of formal education were associated with higher levels of HIV knowledge. However, higher HIV knowledge was also associated with concern about personal risk of HIV (Norman & Carr, 2003). The proposed study will attempt to address this knowledge gap.

**Summary**

A review of the literature demonstrated a significant knowledge gap pertaining to the association between HASD, domestic partnership, and level of education. Previous studies identified an association between knowledge of HIV transmission, HIV testing and age. To date, no studies have been conducted that examine the predictive value of personal characteristics, knowledge of HIV transmission and HIV testing on HASD. High levels of HASD are significantly associated with lack of social support, poorer physical health, poor mental health, lower income and younger age (Logie & Gadalla, 2009). Socially isolating individuals with HIV further drives the epidemic underground (Figueroa, 2008; Spooner et al., 2004). This proposed study can make a significant contribution to the body of knowledge related to HASD within the Anglophone Caribbean population by (1) examining HASD, knowledge of HIV transmission and HIV testing and (2) identifying predictors of HASD via the utilization of national datasets.
Chapter 3

Methods

This chapter formats the study design, sampling method, instrumentation, data collection procedures, data management, data analysis and protection of human subjects.

Purpose

The purpose of this study is (1) to conduct a cross national comparison of knowledge of HIV transmission, history of HIV testing and HASD (2) to explore predictors of HASD towards PLWH among Anglophone Caribbean young women who reside in Guyana, Trinidad and Tobago and Jamaica. Personal characteristics of the participants (specifically gender, age, level of education, literacy level, country of residence), as well as UNAIDS (2012) designated key HIV indicators (knowledge of HIV transmission and history of HIV test), were evaluated for their predictive value of HASD.

Study Design

The study is a secondary data analysis of selected data from a multi-year parent study, the Multiple Indicator Cluster Survey – Round 3 (MICS3). The first round of MICS3 was completed in 1995 and a new iteration of data collection is conducted every five years. The original study utilized a cross-sectional population based design.

Parent Study

The MICS3 was developed by the United Children’s Fund (UNICEF) in 1990 to monitor the situation of women and children in nations throughout the world. The MICS3 is the third iteration of the study and data collection started in 2005. The studies are designed to collect mid-decade data on a large number of indicators. A country’s participation is voluntary and selection of indicators is at the discretion of each country.
These indicators serve to track a nation’s progress towards internationally agreed upon goals, and evaluate health programs. Each participating country is allowed to select indicators that are applicable to its population. Participating countries are encouraged to utilize population sampling that will provide an accurate picture of the entire population (UNICEF, 2009).

Setting

Sixty seven countries from regions in Africa, Asia, Latin America, the Caribbean, Central Europe, Eastern Europe, Middle East, and North Africa participated in the third round of questionnaires during 2005-2006. In the Caribbean region, the following countries participated in the third iteration of the study: Cuba, Guyana, Jamaica, Suriname, and Trinidad and Tobago (UNICEF, 2006).

Data Collection and Management

UNICEF (2006) data collection and management was a complex and multi-tiered process. Countries that wish to participate in MICS3 were required to establish a central headquarters. Central headquarters were typically located in the capital city and was responsible for coordinating all aspect of data collection, management, and analysis. Data was collected in face-to-face household interviews. UNICEF required the use of female fieldworkers due to the sensitive topics covered in some of the modules. All fieldworkers were required to complete a 9-day training course prior to interacting with study participants. Fieldworkers or interviewers asked participants questions from selected modules in the MICS3 and participants’ answers were recorded on a paper format of the questionnaire. Data entry personnel were responsible for transferring the information from paper in to a centralized database. Databases were housed in central
headquarters and updated weekly. Final reports and data were stored in DevInfo®. DevInfo® is a web-based tool developed and used by the United Nations to track multiple indicators in member countries. DevInfo® is royalty-free to member nations. Member nations are able to download the software, organize national data and convert files to Excel, SPSS, SAS, Stata, Redatam, and CSpro.

**Parent Study Sample**

The final report of MICS3 was published and globally distributed in 2009. Sample sizes ranged from 1,832 to 62,463 for participating countries.

Females in select households, between the ages of 15-49 years and children under the age of 5 years were eligible to participate in MICS3. Exclusion criteria included: age limits beyond the defined parameters for women and children; illness that prevented participants from responding to fieldworkers’ questions; cognitive inability to understand questions; and any condition that prohibited comprehension and communication between fieldworker and participant.

**Measures**

The MICS3 can be modified and adapted to meet country-level needs and contexts. A questionnaire can be divided into four modules that contain specific sub-modules applicable to the sample. Modules were determined by the Millennium Development Goals.

Modules are classified as Household Modules, Modules for Children under Five, Modules for Women and Optional Modules. The modules are further divided into indicators. With over 101 indicators, countries are able to tailor the surveys to measure
country specific programs and needs. Table 2 lists the indicators available with the Multiple Indicator Surveys.

Table 2

*Multiple Indicator Survey Indicators Classified by Module*

<table>
<thead>
<tr>
<th>Module</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household Modules</td>
<td>Household information, household listing or extending household listing, water and sanitation, household characteristics, insecticide treated nets, children orphaned and made vulnerable by HIV/AIDS, child labor, salt iodization</td>
</tr>
<tr>
<td>Modules for Children Under Five</td>
<td>Under-five information panel, birth registration, early learning, Vitamin A, breastfeeding, care of illness, malaria, immunization, anthropometry</td>
</tr>
<tr>
<td>Modules for Women</td>
<td>Women’s information panel, child mortality, tetanus toxoid, maternal and newborn health, malaria prevention, marriage/union and polygyny, contraception, female genital mutilation, HIV/AIDS</td>
</tr>
<tr>
<td>Optional Modules</td>
<td>Sexual behavior, additional household characteristics, security of tenure and durability of housing, child discipline, source and cost of supplies for insecticide treated nets, ORS packets, antibiotics and antimalarials, contraception and unmet need, attitudes towards domestic violence, child development, disability, maternal mortality.</td>
</tr>
</tbody>
</table>

Note: Modules and indicators were provided by UNICEF. Copyright 2006 UNICEF.
Secondary Study

Research Aims:

The research aims of this secondary study were:

(1) To conduct a cross national comparison of knowledge of HIV transmission, history of HIV testing and HIV related personal stigma;

(2) To explore predictors of HIV related personal stigma towards PLWH among female youth between the ages of 15-49 years who reside in households in Guyana, Trinidad and Tobago and Jamaica.

Study Design

The secondary study utilized a cross-sectional design. Cross-sectional studies allow for measures to be taken at a single time point, this type of study design is beneficial for examining associations and establishing prevalence while eliminating the risk for attrition (Hulley et al., 2007).

Utilization of secondary data or existing data provides researchers with an opportunity to avoid financial and time constraints seen with the collection of primary data (Tanenbaum, 1980). Secondary data is collected by another source (Boslaugh, 2007). For this secondary analysis study, data was collected by fieldworkers in each country under the guidance of UNICEF (UNICEF, 2006). The electronic storage and accessibility, as with UNICEF’s MICS3, facilitates analysis of data that may be difficult to obtain via primary data collection methods (Boslaugh, 2007).

Despite the convenience of secondary data analysis, use of such data limits manipulation of conditions and contexts that could impact findings (Boslaugh, 2007; Rogers, Anderson, Linger & Dawber, 2006). Secondary data is also at risk for sampling
error and measurement error. For this study, findings will be interpreted with caution as there can be no guarantee of the quality of data integrity. To address missing data, only observed values will be analyzed. Due to the fact that the use of imputation methods cannot be confirmed, no further imputations will be used in this secondary study. Utilizing multiple imputations may not provide confidence intervals with confident coefficients (Wang, Sedransk, & Jinn, 1992).

**Setting**

Participants from households interviewed in Guyana, Trinidad and Tobago and Jamaica were included in this secondary study. MICS3 had approximately a 90% response rate in each country, respectively.

**Sample**

For this secondary study, a convenience sample from the MICS3 original sample of females between the reproductive ages of 15 to 49 years who reside in Guyana, Trinidad and Tobago, and Jamaica was used. Inclusion criteria for participants in the secondary study are self-identifying as a female respondent between the ages of 15 to 49 years. Convenience samples allow findings to be generalized to the larger population of individuals; therefore, findings from the secondary study will provide an accurate representation of females between the ages of 15 to 49 who reside in the countries of interest (Motulsky, 2010). For analysis, the sample will be stratified into four year intervals (i.e. 15-19 years and 20-24 years etc.) and separated by country.

One disadvantage of secondary data analysis is an absence of control of the size of the study sample (Boslaugh, 2007). In the original study, purposive sampling was used to determine the size of the study sample. A small sample size increases the risk of
not finding a statistical difference even though one exists (type II error) (Heavey, 2011).

For the original MICS3 study, 5,035 women completed the questionnaire in Guyana; 4,605 women completed the questionnaire in Trinidad and Tobago and 3,647 women completed the questionnaire in Jamaica. The proposed secondary study will utilize the same sample size for each country, respectively. According to Krejcie and Morgan (1970), these sample sizes will yield statistically significant findings because the sample size for the secondary analysis is greater than 368 participants (the minimum sample size needed for a population of 1 million) for each country.

**Variables**

For the purpose of the secondary data analysis, all information was obtained from the MICS3. For clarity, the classification for each variable is listed.

**Personal Characteristics**

Individual participant characteristics were obtained from the Women’s Information Panel (WM) and the Marriage/Union Module (MA) of the MICS3. The WM is a 14 item measure that consists of closed and open-ended questions. Data collected include: age and level of education completion.

The following items were selected for analysis

(\textit{WM9}) \textit{How old were you at your last birthday?}

- Continuous variable (Ratio data)

(\textit{WM11}). \textit{What is the highest level of school you attended: primary, secondary, or higher?}

- Categorical variable (Ordinal data)
The Marriage/Union Module (MA) is an 8 item measure also consisting of closed and open-ended questions. Applicable data for this study are marital status and domestic partnership.

The following item was selected for this analysis:

\( (MA1) \) Are you currently married or living together with a man as if married?

a. Categorical variable (Nominal data)

Knowledge of HIV Transmission

Participants’ knowledge of HIV transmission was obtained from recorded responses to the HIV/AIDS Module (HA). The HA is an 18 item measure from which data from 12 items was used for this variable. Item responses were limited to yes/no. A total number of correct answers (i.e., correct = 1; incorrect, missing or don’t know = 0) was converted to a sum score and used to indicate knowledge of HIV transmission. A higher score was indicative of greater knowledge of prevention. The maximum score was 11; minimum score was 0 (0 – 4 = low knowledge; 4 – 7 = moderately knowledge; 8 - 11 = highly knowledgeable). The sum total was a continuous variable (Ratio data), however, the level of knowledge was recoded into a categorical variable (Ordinal data).

The following items were selected for analysis:

\( (HA1) \) Have you ever heard of the virus HIV or an illness called AIDS?
\( (HA2) \) Can people protect themselves from getting infected with the AIDS virus by having one sex partner who is not infected and also has no other partners?
(HA3) Can people get infected with the AIDS virus because of witchcraft or other supernatural means?

(HA4) Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?

(HA5) Can people get the AIDS virus from mosquito bites?

(HA6) Can people reduce their chance of getting infected with the AIDS virus by not having sex at all?

(HA7) Can people get the AIDS virus by sharing food with a person who has AIDS?

(HA7A) Can people get the AIDS virus by getting injections with a needle that was already used by someone else?

(HA8) Is it possible for a health-looking person to have the AIDS virus?

(HA9) Can the AIDS virus be transmitted from a mother to a baby

1. During pregnancy?

2. During delivery?

3. By breastfeeding?

**HIV Related Personal Stigma**

For this study, HASD was operationalized to stigmatizing and discriminatory attitudes towards PLWH. Participant’s agreement with stigmatization and discrimination towards PLWH was explored using 4 items from the HA module. Each item is comprised of a single interrogative sentence concerning a person living with HIV. Participants expressed their agreement or disagreement with statement by stating “yes” or “no.” For the secondary data analysis, items were limited to yes/no. A sum score was obtained for
the scale (i.e. yes, don’t know, missing = 0; no = 1) with a higher score indicating a higher level of HASD. A score of 4 was indicative of a high level of stigma. Scores of 2 or 3 were indicative of a moderate level of stigma. Scores of 0 or 1 were indicative of a low level of stigma. The sum score was continuous variable (ratio data), however, the level of HASD was a categorical variable (ordinal data).

The following items were selected for this analysis:

(HA10) If a female teacher has the AIDS virus but is not sick, should she be allowed to continue teaching in school?

(HA11) Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had the AIDS virus?

(HA12) If a member of your family became infected with the AIDS virus, would want it to remain a secret?

(HA13) If a member of your family became sick with the AIDS virus, would you be willing to care for him or her in your household?

**HIV Test**

Information regarding having an HIV test was collected from 2 items from the HA module. The items consisted of two interrogative sentences. For the secondary data analysis, these responses to the items were also limited to yes/no responses. A sum score was obtained for the scale (i.e. yes = 1; no, don’t know or missing = 0) with a score of 1 indicating that an HIV test was done and a score of 2 indicative of an affirmative history of an HIV test and knowledge of HIV serostatus.

*The following items were selected for this analysis:*
(HA15) *I do not want to know the results, but have you ever been tested to see if you have HIV, the virus that causes AIDS?*

(HA16) *I do not want you to tell me the results of the test, but have you been told the results?*

**Protection of Human Subjects**

A formal request to access country specific datasets was sent to UNICEF. The request contained contact information for the Principal Investigator and Co-Investigator, academic institution affiliation, reason for requesting access and disclosure of how the findings will be disseminated. Permission was granted for access to the MICS3 dataset via electronic correspondence and receipt of a UNICEF issued Username and Password.

In addition to obtaining permission from UNICEF, written approval from the University of Miami Institutional Review Board was be obtained. All of the data was de-identified by UNICEF.

**Data Management**

Data was obtained from a centralized database accessible via the UNICEF website. Datasets are password protected and do not contain information that could disclose participant identifying information. The respective dataset for each country was downloaded in *IBM Statistical Package for the Social Sciences (SPSS®) Version 20.0*. The datasets are stored on a password protected desktop computer. The computer is stored in a locked office. No data is available in paper format.

**Descriptive Statistics**

A review of the original datasets and the secondary datasets was conducted to ensure that statistical assumptions were met before analyses. Sample demographics were
analyzed using frequencies and percentages for categorical variables and means with standard deviations for continuous variables. A review of the descriptive statistics to verify the normalcy of distribution and identification of outliers was conducted.

**Hypothesis Testing**

The variables of knowledge of HIV transmission, HIV test, and HASD have not been analyzed in a single study using only women from Guyana, Trinidad and Tobago and Jamaica. The dependent variable is HASD. The independent variables are personal characteristics (selected as age, level of education, country of residence and domestic partnership), knowledge of HIV transmission and HIV test. The following research hypotheses will be tested in this study:

1. **Null Hypothesis:** There is no difference in knowledge of HIV transmission among women in Guyana, Trinidad and Tobago and Jamaica.

   **Alternative Hypothesis:** This is a difference in knowledge of HIV transmission among women in Guyana, Trinidad and Tobago and Jamaica.

2. **Null Hypothesis:** There is no difference in HIV test among women in Guyana, Trinidad and Tobago and Jamaica.

   **Alternative Hypothesis:** There is a difference in HIV test among women in Guyana, Trinidad and Tobago and Jamaica.

3. **Null Hypothesis:** There is no difference in HASD among women towards PLWH in Guyana, Trinidad and Tobago and Jamaica.
Alternative Hypothesis: There is a difference HASD among women towards PLWH in Guyana, Trinidad and Tobago and Jamaica.

(4) Null Hypothesis: Age is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Alternative Hypothesis: Age is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

(5) Null Hypothesis: Level of education is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Alternative Hypothesis: Level of education is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

(6) Null Hypothesis: Domestic partnership is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Alternative Hypothesis: Domestic partnership is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

(7) Null Hypothesis: Country of residence is not a predictive factor of HASD among women in Guyana, Trinidad and Tobago and Jamaica.
Alternative Hypothesis: Country of residence is a predictive factor of HASD among women in Guyana, Trinidad and Tobago and Jamaica.

(8) Null Hypothesis: Knowledge of HIV transmission is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Alternative Hypothesis: Knowledge of HIV transmission is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

(9) Null Hypothesis: HIV testing is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Alternative Hypothesis: HIV testing is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Data Analysis

Descriptive statistics were conducted of all variables. Specifically, central tendency, dispersion and frequency distributions were done for all variables.

Mean comparisons and predictive values between variables were explored. Data was analyzed using IBM SPSS® Version 20.0 software.

Chi-square test for independence was used to compare knowledge of HIV transmission and HIV test across groups. Chi-square test for independence is used to examine the relationship between two categorical variables (Pallant, 2010). This statistical test compares the frequency of cases that occur in each of the categories with
the expected values if there was no association between the two variables being measured (Pallant, 2010).

Analysis of Variance (ANOVA) enabled a comparison of mean scores of HASD across groups. ANOVA is used to detect differences between more than two groups (Salkind, 2011). Although comparison of three groups can be accomplished with t-tests, the risk of incorrectly rejecting the null hypothesis (type I error) is increased .15 (Heavey, 2011). Both within group comparisons divided by age and cross national comparisons will be conducted. The $\alpha$ will be set at .05.

Bi-variate analysis was conducted on age, country of residence, level of education, domestic partnership, knowledge of HIV transmission, and HIV testing to determine the significance of an association between the factor and HASD. Spearman correlation tests were used to explore the association between the independent variables and HASD. Spearman correlation tests are less stringent than Pearson correlation tests and permit the analysis of categorical variables (Heavey, 2011). Only factors that were statistically significant will be included in a single regression model.

Multivariate regression analysis was used to determine the predictive value of personal characteristics (age, level of education and domestic partnership), knowledge of HIV prevention and HIV test on HASD. Regression analysis enables researchers to predict the impact of one or more variables on an outcome (Salkind, 2011). Multiple regression was selected over a logistic regression because the dependent variable in this study was coded as a continuous variable. Logistic regression is appropriate for use with categorical variables as dependent variables (Tabanachick & Fidell, 2007).
To further strengthen cross sample comparisons a reliability analysis was conducted with the subscales of HA Module as a means of determining the performance of the MICS3 among this population. The internal consistency of the scale or the ability of the scale to measure the underlying construct across the samples was explored. Due to differences between members in each group, understanding how each group understands the concept of HASD is worthy of exploration. The original HA Module in MICS3 measures knowledge of HIV transmission, HASD and HIV testing. Chronbach’s alpha coefficient were reported. An optimal range for the Chronbach’s alpha coefficient is .7 or greater (DeVellis, 2003).

**Dissemination of Findings**

Findings will be disseminated via oral presentations and publications with University of Miami, the Guyanese Ministry of Health, the Ministry of Health of Trinidad and Tobago and the Ministry of Health of Jamaica.
Chapter 4

Results

The purpose of this study was (1) to conduct a cross national comparison of knowledge of HIV prevention, history of HIV testing and HASD and (2) to explore predictors of HASD towards PLWH among Anglophone Caribbean women who reside in Guyana, Trinidad and Tobago and Jamaica. A secondary data analysis was conducted with data obtained from the third iteration of the UNICEF Multiple Indicators Cluster Survey -3. This chapter contains the results of the secondary study. First, descriptive statistics will be used to present demographic characteristics of the study sample. Then, descriptions for each variable and the results of inferential statistical tests will be presented to answer the research hypotheses. All data was analyzed using IBM SPSS version 20.0.

Descriptive Statistics

Demographic Characteristics

The sample of this secondary analysis consisted of 13,287 women who participated in the UNICEF Multiple Indicators Cluster Survey - 3 (MICS3), which measured country progress towards millennium development goals. A secondary data analysis of publicly accessible, de-identified data was used for this study. The demographic characteristics of the total sample are presented in Table 3 and Table 4. The demographic characteristics for each country are presented in Table 5 and Table 6. For all variables except HIV testing, missing data was less than 10%. For HIV test, missing data was greater than 50%. Of the total sample, women ranged in age from 15 to 49 years ($M = 30.57, SD = 10.13$). The 60% of respondents reported Secondary as the
highest level of education completed. At the time of data collection, 50% of the women reported not in a union. For country of residence, the greatest percentage (38%) of respondents resided in Guyana.

Table 3

Demographic Characteristics of the Total Sample

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Partnership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, currently married</td>
<td>4,047</td>
<td>30</td>
</tr>
<tr>
<td>Yes, living with a man</td>
<td>2,658</td>
<td>20</td>
</tr>
<tr>
<td>No, not in a union</td>
<td>6,581</td>
<td>50</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-School</td>
<td>28</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Primary</td>
<td>1,098</td>
<td>8</td>
</tr>
<tr>
<td>Secondary</td>
<td>7,388</td>
<td>55</td>
</tr>
<tr>
<td>Post-Secondary</td>
<td>3,426</td>
<td>26</td>
</tr>
</tbody>
</table>

Table 4

Sample Distribution Across Country of Residence

<table>
<thead>
<tr>
<th>Country of Residence</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>5,253</td>
<td>38</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>4,826</td>
<td>35</td>
</tr>
<tr>
<td>Jamaica</td>
<td>3,777</td>
<td>27</td>
</tr>
</tbody>
</table>
Table 5

*Age (in Years) of the Sample from each Country*

<table>
<thead>
<tr>
<th>Country</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>30.06</td>
<td>9.98</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>31.00</td>
<td>10.31</td>
</tr>
<tr>
<td>Jamaica</td>
<td>30.74</td>
<td>10.08</td>
</tr>
<tr>
<td>Total Sample</td>
<td>30.57</td>
<td>10.13</td>
</tr>
</tbody>
</table>

Table 6

*Demographic Characteristics of each Country*

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Guyana</th>
<th>Trinidad &amp; Tobago</th>
<th>Jamaica</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Domestic Partnership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, currently married</td>
<td>1,823 (36)</td>
<td>1,523 (33)</td>
<td>701 (19)</td>
</tr>
<tr>
<td>Yes, living with a man</td>
<td>1,219 (24)</td>
<td>713 (16)</td>
<td>726 (20)</td>
</tr>
<tr>
<td>No, not in a union</td>
<td>1,993 (40)</td>
<td>2,368 (51)</td>
<td>2,220 (61)</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>1,013 (20)</td>
<td>18 (&lt; .1)</td>
<td>95 (3)</td>
</tr>
<tr>
<td>Secondary</td>
<td>3,738 (74)</td>
<td>809 (22)</td>
<td>2,841 (80)</td>
</tr>
<tr>
<td>Post-Secondary</td>
<td>290 (6)</td>
<td>2,892 (78)</td>
<td>627 (18)</td>
</tr>
</tbody>
</table>
Analysis of Study Variables

Research Questions 1-3

Knowledge of HIV Transmission

Description of the Variable. Knowledge of HIV Transmission was measured with 11 items from the HIV/AIDS Module of the MICS3 (UNICEF, 2005). The Knowledge of HIV Transmission subscale had poor reliability with a Chronbach’s alpha of .648 for the sample. The variable was dichotomized and correct responses were scored with a 1 and incorrect items were scored with a 0. A sum total of correct responses were calculated. This score was used to represent knowledge of HIV transmission with a high numerical score indicative of high knowledge of HIV transmission and a low score indicative of poor knowledge of HIV transmission. Scores were further categorized to represent low (score of 0-3), moderate (score of 4-7) and high (score of 8-11) levels of knowledge of HIV transmission.

Table 7

Mean Score on Knowledge of HIV Transmission

<table>
<thead>
<tr>
<th>Country</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>9.09</td>
<td>1.82</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>9.47</td>
<td>1.34</td>
</tr>
<tr>
<td>Jamaica</td>
<td>9.61</td>
<td>1.37</td>
</tr>
<tr>
<td>Total Sample</td>
<td>9.37</td>
<td>1.57</td>
</tr>
</tbody>
</table>
Across all three nations, over 80% of the respondents had a high level of knowledge of HIV transmission ($M = 9.37, SD = 1.57$). Table 7 lists mean scores on the knowledge of HIV transmission subscale from each country’s sample. Table 8 describes the level of knowledge of HIV transmission by country. Table 9 displays mean scores by age group and country. Table 10 displays the percentage of correct responses of each question for each country.

Table 8

**Level of Knowledge of HIV Transmission by Country**

<table>
<thead>
<tr>
<th>Country</th>
<th>Low Level</th>
<th>Moderate Level</th>
<th>High Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$ (%)</td>
<td>$N$ (%)</td>
<td>$N$ (%)</td>
</tr>
<tr>
<td>Guyana</td>
<td>68 (1)</td>
<td>669 (14)</td>
<td>3,978 (84)</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>10 (&lt; 1)</td>
<td>390 (9)</td>
<td>4,192 (91)</td>
</tr>
<tr>
<td>Jamaica</td>
<td>4 (&lt; 1)</td>
<td>286 (8)</td>
<td>3,336 (92)</td>
</tr>
</tbody>
</table>

Table 9

**Mean Score of Knowledge of HIV Transmission by Age Group and Country**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>9.20</td>
<td>9.29</td>
<td>9.03</td>
<td>9.02</td>
<td>8.99</td>
<td>9.06</td>
<td>8.94</td>
</tr>
</tbody>
</table>
Table 10

*Correct HIV Responses to Each Question by Country*

<table>
<thead>
<tr>
<th>Question</th>
<th>Guyana</th>
<th>Trinidad &amp; Tobago</th>
<th>Jamaica</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Ever heard of HIV or AIDS</td>
<td>4,715 (94)</td>
<td>4,592 (99)</td>
<td>3,626 (99)</td>
</tr>
<tr>
<td>Can avoid AIDS by having one uninfection partner</td>
<td>3,905 (83)</td>
<td>4,185 (91)</td>
<td>3,057 (84)</td>
</tr>
<tr>
<td>Can get AIDS through supernatural means</td>
<td>4,089 (87)</td>
<td>4,279 (93)</td>
<td>3,422 (94)</td>
</tr>
<tr>
<td>Can avoid AIDS by using a condom correctly every time</td>
<td>3,812 (81)</td>
<td>3,861 (84)</td>
<td>3,224 (89)</td>
</tr>
<tr>
<td>Can get AIDS from mosquito bites</td>
<td>3,700 (79)</td>
<td>3,696 (81)</td>
<td>2,946 (81)</td>
</tr>
<tr>
<td>Can avoid AIDS by not having sex at all</td>
<td>3,403 (72)</td>
<td>4,124 (90)</td>
<td>3,196 (87)</td>
</tr>
<tr>
<td>Can get AIDS by sharing food with person with AIDS virus</td>
<td>3,859 (82)</td>
<td>4,009 (87)</td>
<td>3,286 (91)</td>
</tr>
<tr>
<td>Healthy looking person to have AIDS</td>
<td>4,121 (87)</td>
<td>4,431 (96)</td>
<td>3,478 (96)</td>
</tr>
<tr>
<td>AIDS from mother to child during pregnancy</td>
<td>4,134 (88)</td>
<td>4,054 (88)</td>
<td>3,151 (87)</td>
</tr>
<tr>
<td>AIDS from mother to child at delivery</td>
<td>3,345 (71)</td>
<td>3,093 (67)</td>
<td>2,639 (73)</td>
</tr>
<tr>
<td>AIDS from mother to child through breastmilk</td>
<td>3,785 (80)</td>
<td>3,144 (69)</td>
<td>2,857 (79)</td>
</tr>
</tbody>
</table>
Analysis of Research Question 1

Hypothesis:

$H_0$: There is no difference in knowledge of HIV transmission among women in Guyana, Trinidad and Tobago and Jamaica.

$H_A$: There is a difference in knowledge of HIV transmission among women in Guyana, Trinidad and Tobago and Jamaica.

A Chi-square test for independence indicated a significant association between country of residence and knowledge of HIV transmission, $x^2 (4, N=12,933) = 197.70$, $p<.001$. Despite reaching statistical significance, the effect of country of residence on knowledge of HIV transmission was small, Cramer’s $V = .087$. A significant association between age group and knowledge of HIV transmission was also found, $x^2 (12, N=12,933) = 24$, $p<.05$. Although statistically significant, the effect of age on knowledge of HIV transmission was also small, Cramer’s $V = .031$. Table 11 displays the crosstabulation of level of knowledge of HIV transmission by country of residence. Table 12 displays the crosstabulation of level of knowledge of HIV transmission by age group. Based on the findings of the Chi-square test, it is appropriate to reject the null hypothesis.
<table>
<thead>
<tr>
<th>Level of Knowledge of HIV Transmission</th>
<th>N</th>
<th>% within level of HIV transmission</th>
<th>% within country of residence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td>68</td>
<td>83</td>
<td>1</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>10</td>
<td>12</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Jamaica</td>
<td>4</td>
<td>5</td>
<td>&lt;1</td>
</tr>
<tr>
<td><strong>Moderate</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td>669</td>
<td>50</td>
<td>14</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>390</td>
<td>29</td>
<td>9</td>
</tr>
<tr>
<td>Jamaica</td>
<td>286</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td>3978</td>
<td>35</td>
<td>84</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>4192</td>
<td>36</td>
<td>91</td>
</tr>
<tr>
<td>Jamaica</td>
<td>3336</td>
<td>29</td>
<td>92</td>
</tr>
</tbody>
</table>
Table 12  *Level of Knowledge of HIV Transmission by Age Group*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within level of knowledge</td>
<td>24</td>
<td>11</td>
<td>15</td>
<td>6</td>
<td>20</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>% within age groups</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>1</td>
<td>&lt;1</td>
<td>1</td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within level of knowledge</td>
<td>19</td>
<td>14</td>
<td>13</td>
<td>15</td>
<td>13</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>% within age groups</td>
<td>11</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% within level of knowledge</td>
<td>18</td>
<td>16</td>
<td>14</td>
<td>14</td>
<td>13</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>% within age groups</td>
<td>88</td>
<td>90</td>
<td>90</td>
<td>89</td>
<td>88</td>
<td>90</td>
<td>87</td>
</tr>
</tbody>
</table>
HIV Testing

**Description of Variable.** HIV testing was measured with 2 items from the HIV/AIDS Module of the MICS3 (UNICEF, 2005). Due to the subscale only consisting of two items, a reliability analysis was not conducted. The variable was dichotomized and responses were limited to “yes” (coded as 1) and “no” (coded as 0). A sum total of responses were calculated. Scores ranged from 0 to 2. A score of 1 was indicative of having an HIV test and not knowing the results. A score of 2 was indicative of having an HIV test and knowing the results. This score was used to represent history of an HIV test and knowledge of the results of the HIV test.

Over 9,000 responses were missing. Of the 3,838 available responses, 3% reported having an HIV test done and not knowing the results. Twenty-five percent of respondents reported having an HIV test done and knowing the results. When the variable is examined across countries, a total of 20% of the respondents had an HIV test in Guyana, 31% in Trinidad and Tobago and 34% in Jamaica.

**Analysis of Research Question 2.**

**Hypothesis**

$H_0$: There is no difference in HIV test among women in Guyana, Trinidad and Tobago and Jamaica.

$H_A$: There is a difference in HIV test among women in Guyana, Trinidad and Tobago and Jamaica.

A Chi-square test for independence indicated no significant association between country of residence and knowledge of HIV transmission, $\chi^2 (2, N=3,838) = .97, p>.05$. 
There was also no significant association between age and knowledge of HIV transmission, $x^2 (2, N=3,838) = 11.06, p>.05$.

**HIV/AIDS Related Stigma and Discrimination (HASD)**

**Description of the Variable.** HASD was measured with 4 items from the HIV/AIDS Module of the MICS3 (UNICEF, 2005). The HASD subscale had poor reliability for a Chronbach’s alpha of .455 for the sample. The variable was dichotomized and responses that agreed (“yes”) with interrogative statements were recoded to 0 to represent an absence of agreement with stigmatizing behavior towards PLWH. Responses that disagreed (“no”) with interrogative statements about stigmatizing PLWH were recoded to 1 to represent presence of agreement with stigmatizing behavior towards PLWH. A sum total of responses were calculated. This score was used to represent HASD. A high score was indicative of high HASD (or strong negative attitudes towards PLWH). Scores were further categorized to represent low (0-1), moderate (2-3) and high (4) levels of HASD.

Across all three nations ($N=12,933$), 69% of the respondents had a low level of HASD ($M=1.172, SD=1.048$) and 3% or respondents had a high level of HASD. In Guyana, 61% of the respondents had a low level of HASD. In Trinidad and Tobago, 74% of the respondents had a low level of HASD. In Jamaica, 73% of the respondents had a low level of HASD. Table 13 summarizes participants responses that demonstrate being in favor of stigmatizing behavior towards PLWH.
Table 13

*Participant Disagreement ("No") Responses to Statements of HASD towards PLWH*

<table>
<thead>
<tr>
<th>Item</th>
<th>Guyana</th>
<th>Trinidad &amp; Tobago</th>
<th>Jamaica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should a teacher with AIDS be allowed to teach in a school?</td>
<td>1,328</td>
<td>809 (18)</td>
<td>477 (13)</td>
</tr>
<tr>
<td>Would you buy fresh vegetables from a shopseller with AIDS?</td>
<td>1,960 (42)</td>
<td>1,716 (37)</td>
<td>1,767 (49)</td>
</tr>
<tr>
<td>If a member became infected with AIDS in the house, would you want it to remain a secret?</td>
<td>2,770 (59)</td>
<td>1,902 (41)</td>
<td>1,177 (33)</td>
</tr>
<tr>
<td>If a member of your family became sick with the AIDS virus, would you be willing to care for him or her in your household?</td>
<td>618 (13)</td>
<td>239 (5)</td>
<td>309 (9)</td>
</tr>
</tbody>
</table>

**Analysis of Research Question 3**

Hypothesis:

\[ H_0: \text{There is no difference in HASD among women in Guyana, Trinidad and Tobago and Jamaica.} \]

\[ H_A: \text{There is a difference in HASD among women in Guyana, Trinidad and Tobago and Jamaica.} \]

A two-way analysis of variance was conducted that examined the effect of age and country of residence on HASD. Participants were divided into three groups (Group
1: Guyana; Group 2: Trinidad and Tobago and Group 3: Jamaica) for country of residence. Participants were further divided into seven subgroups for age (Group 1: 15-19 years; Group 2: 20-24 years; Group 3: 25-29 years; Group 4: 30-34 years; Group 5: 35-39 years; Group 6: 40-44 years and Group 7: 45-49 years).

Table 14

Mean Differences for HASD between Countries, Reported by Age Group

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Country (Mean)</th>
<th>Country (Mean)</th>
<th>Mean Difference</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>Trinidad &amp; Tobago (1.062)</td>
<td>Guyana (1.297)</td>
<td>- .235</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Guyana (1.297)</td>
<td>Jamaica (1.059)</td>
<td>.38</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>20-24</td>
<td>Trinidad &amp; Tobago (.887)</td>
<td>Guyana (1.416)</td>
<td>- .434</td>
<td>&lt;.05</td>
</tr>
<tr>
<td></td>
<td>Guyana (1.416)</td>
<td>Jamaica (1.978)</td>
<td>.372</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>25-29</td>
<td>Trinidad &amp; Tobago (.922)</td>
<td>Guyana (1.418)</td>
<td>- .493</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Jamaica (1.015)</td>
<td>Guyana (1.414)</td>
<td>-.401</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>30-34</td>
<td>Trinidad &amp; Tobago (1.092)</td>
<td>Guyana (1.520)</td>
<td>- .326</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Guyana (1.520)</td>
<td>Jamaica (.979)</td>
<td>-.439</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>35-39</td>
<td>Trinidad &amp; Tobago (1.017)</td>
<td>Guyana (1.555)</td>
<td>- .513</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Guyana (1.555)</td>
<td>Jamaica (1.049)</td>
<td>.471</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>40-44</td>
<td>Trinidad &amp; Tobago (1.017)</td>
<td>Guyana (1.493)</td>
<td>- .538</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Jamaica (1.077)</td>
<td>Guyana (1.493)</td>
<td>-.478</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>45-49</td>
<td>Trinidad &amp; Tobago (1.155)</td>
<td>Guyana (1.493)</td>
<td>.338</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>Guyana (1.493)</td>
<td>Jamaica (1.046)</td>
<td>.447</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>
The main effect of country and HASD was significant, $F(2, 12933) = 227.372$, $p < .001$. The main effect of age on HASD was significant, $F(12, 12933) = 5.939$, $p < .001$. The interaction effect of country and age was also significant, $F(12, 12933) = 2.940$, $p < .001$.

A Bonferroni post-hoc test identified within and between group differences. Statistically significant findings are summarized and reported in Table 14 and Table 15. Based on the statistical outcomes, it is appropriate to reject the null hypothesis and accept the alternative hypothesis.

Table 15

*Within Country Mean Difference for HASD Reported by Age Groups*

<table>
<thead>
<tr>
<th>Country</th>
<th>Age in Years (Mean)</th>
<th>Age in Years (Mean)</th>
<th>Mean Difference</th>
<th>p - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>15-19 (1.297)</td>
<td>35-39 (1.520)</td>
<td>-.223</td>
<td>&lt;.01</td>
</tr>
<tr>
<td></td>
<td>15-19 (1.297)</td>
<td>40-44 (1.555)</td>
<td>-.257</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>15-19 (1.297)</td>
<td>45-49 (1.493)</td>
<td>-.195</td>
<td>&lt;.05</td>
</tr>
<tr>
<td></td>
<td>20-24 (1.321)</td>
<td>40-44 (1.555)</td>
<td>-.234</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>15-19 (1.062)</td>
<td>20-24 (.887)</td>
<td>.175</td>
<td>&lt;.05</td>
</tr>
<tr>
<td></td>
<td>25-29 (.922)</td>
<td>45-49 (1.155)</td>
<td>-.233</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>30-34 (1.009)</td>
<td>20-24 (.887)</td>
<td>.205</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>

Table 16 provides a summary of knowledge of HIV transmission, HIV test and HASD in this study population.
Table 16

Mean Score of Knowledge of HIV Transmission, HIV Test and HASD

<table>
<thead>
<tr>
<th>Country</th>
<th>Age Group (Years)</th>
<th>N</th>
<th>Mean Score of Knowledge of HIV Transmission</th>
<th>SD</th>
<th>N</th>
<th>Mean Score HIV Test</th>
<th>SD</th>
<th>N</th>
<th>Mean Score HASD</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guyana</td>
<td>15-19</td>
<td>938</td>
<td>9.20</td>
<td>1.795</td>
<td>114</td>
<td>1.82</td>
<td>.382</td>
<td>938</td>
<td>1.30</td>
<td>1.127</td>
</tr>
<tr>
<td></td>
<td>20-24</td>
<td>730</td>
<td>9.29</td>
<td>1.697</td>
<td>169</td>
<td>1.91</td>
<td>.294</td>
<td>730</td>
<td>1.32</td>
<td>1.128</td>
</tr>
<tr>
<td></td>
<td>25-29</td>
<td>688</td>
<td>9.03</td>
<td>1.833</td>
<td>191</td>
<td>1.90</td>
<td>.307</td>
<td>688</td>
<td>1.42</td>
<td>1.182</td>
</tr>
<tr>
<td></td>
<td>30-34</td>
<td>699</td>
<td>9.02</td>
<td>1.754</td>
<td>192</td>
<td>1.88</td>
<td>.328</td>
<td>699</td>
<td>1.42</td>
<td>1.206</td>
</tr>
<tr>
<td></td>
<td>35-39</td>
<td>617</td>
<td>8.99</td>
<td>1.942</td>
<td>145</td>
<td>1.90</td>
<td>.271</td>
<td>617</td>
<td>1.52</td>
<td>1.152</td>
</tr>
<tr>
<td></td>
<td>40-44</td>
<td>566</td>
<td>9.06</td>
<td>1.696</td>
<td>126</td>
<td>1.92</td>
<td>.271</td>
<td>566</td>
<td>1.55</td>
<td>1.203</td>
</tr>
<tr>
<td></td>
<td>45-49</td>
<td>477</td>
<td>8.94</td>
<td>2.051</td>
<td>110</td>
<td>1.89</td>
<td>.313</td>
<td>477</td>
<td>1.49</td>
<td>1.078</td>
</tr>
<tr>
<td>Trinidad &amp;</td>
<td>15-19</td>
<td>771</td>
<td>9.29</td>
<td>1.509</td>
<td>58</td>
<td>1.91</td>
<td>.283</td>
<td>771</td>
<td>1.06</td>
<td>.982</td>
</tr>
<tr>
<td>Tobago</td>
<td>20-24</td>
<td>804</td>
<td>9.51</td>
<td>1.350</td>
<td>234</td>
<td>1.90</td>
<td>.304</td>
<td>804</td>
<td>0.89</td>
<td>.855</td>
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<td></td>
<td>25-29</td>
<td>631</td>
<td>9.67</td>
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<td>275</td>
<td>1.89</td>
<td>.308</td>
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<td>0.92</td>
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<td></td>
<td>30-34</td>
<td>586</td>
<td>9.49</td>
<td>1.354</td>
<td>270</td>
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<td></td>
<td>35-39</td>
<td>537</td>
<td>9.43</td>
<td>1.439</td>
<td>209</td>
<td>1.88</td>
<td>.325</td>
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<td></td>
<td>40-44</td>
<td>637</td>
<td>9.52</td>
<td>1.351</td>
<td>240</td>
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<td></td>
<td>45-49</td>
<td>626</td>
<td>9.37</td>
<td>1.474</td>
<td>212</td>
<td>1.91</td>
<td>.286</td>
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<td>658</td>
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<td>1.539</td>
<td>86</td>
<td>1.84</td>
<td>.371</td>
<td>658</td>
<td>1.06</td>
<td>.927</td>
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<td>20-24</td>
<td>556</td>
<td>9.66</td>
<td>1.369</td>
<td>199</td>
<td>1.89</td>
<td>.308</td>
<td>556</td>
<td>0.98</td>
<td>.979</td>
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<tr>
<td></td>
<td>25-29</td>
<td>476</td>
<td>9.58</td>
<td>1.378</td>
<td>211</td>
<td>1.94</td>
<td>.241</td>
<td>476</td>
<td>1.01</td>
<td>.976</td>
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<td></td>
<td>30-34</td>
<td>529</td>
<td>9.59</td>
<td>1.275</td>
<td>229</td>
<td>1.92</td>
<td>.270</td>
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<td>.978</td>
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<tr>
<td></td>
<td>35-39</td>
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<td>9.71</td>
<td>1.289</td>
<td>229</td>
<td>1.88</td>
<td>.235</td>
<td>529</td>
<td>1.05</td>
<td>.978</td>
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<tr>
<td></td>
<td>40-44</td>
<td>483</td>
<td>9.60</td>
<td>1.345</td>
<td>201</td>
<td>1.90</td>
<td>.300</td>
<td>483</td>
<td>1.08</td>
<td>.992</td>
</tr>
<tr>
<td></td>
<td>45-49</td>
<td>395</td>
<td>9.57</td>
<td>1.329</td>
<td>117</td>
<td>1.80</td>
<td>.399</td>
<td>395</td>
<td>1.05</td>
<td>.925</td>
</tr>
</tbody>
</table>
**Bivariate Analysis**

Before exploring the predictive value of personal characteristics (age, level of education, country of residence and domestic partnership), knowledge of HIV transmission and HIV testing on HASD among the sample, bivariate analyses were conducted. This analysis sought to identify a relationship between each independent variable and the dependent variable in order to identify which variables would be included in the final model. Sphearman’s rho was conducted with each independent variable and HASD. Table 17 summarizes the findings for this section.

**Age and HASD.** The relationship between age and HASD was explored. There was a weak, positive correlation between the two variables, $r = .03, n = 13287, p = .001$, with being older in age associated with higher HASD. Age alone is not a strong predictor of HASD ($r^2 = .001$)

**Level of Education and HASD.** The relationship between level of education and HASD was explored. There was a small, negative correlation between the two variables, $r = -.11, n = 12933, p < .001$, with a higher level of education completion associated with lower HASD. Level of education alone is not a strong predictor of HASD ($r^2 = .012$).

**Country of Residence and HASD.** The relationship between country of residence and HASD was explored. There was a small, negative correlation between the two variables, $r = -.14, n = 12933, p < .001$ with residing in Jamaica associated with higher HASD. Country or residence alone is not a strong predictor of HASD ($r^2 = .02$).

**Domestic Partnership and HASD.** The relationship between domestic partnership and HASD was explored. There was a small, positive correlation between
the two variables, \( r = .11, n = 12932, p < .001 \), with being married is associated with higher HASD. Domestic partnership alone is not a strong predictor of HASD \((r^2 = .012)\).

**Knowledge of HIV Transmission and HASD.** The relationship between knowledge of HIV transmission and HASD was explored. There was a small, negative correlation between the two variables, \( r = -.14, n = 12933, p < .001 \), with a greater knowledge of HIV transmission associated with lower HASD. Knowledge of HIV transmission alone is not a strong predictor of HASD \((r^2 = .02)\).

Table 17

**Correlation of Independent Variables to HASD**

<table>
<thead>
<tr>
<th>Variable</th>
<th>( N )</th>
<th>( r )</th>
<th>( r^2 )</th>
<th>( p)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>13,287</td>
<td>.03</td>
<td>.001</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Level of Education</td>
<td>12,933</td>
<td>-.11</td>
<td>.012</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Country of Residence</td>
<td>12,933</td>
<td>-.14</td>
<td>.021</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Domestic Partnership</td>
<td>12,932</td>
<td>.11</td>
<td>.012</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Knowledge of HIV</td>
<td>12,933</td>
<td>-.14</td>
<td>.021</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>HIV Test</td>
<td>3,838</td>
<td>-.04</td>
<td>.002</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>
**HIV Test and HASD.** The relationship between HIV test and HASD was explored.

There was a small, negative correlation between the two variables, $r = -.04$, $n = 3838$, $p < .01$ with not having an HIV test associated with higher HASD. HIV test alone is not a strong predictor of HASD ($r^2 = .002$)

All of the variables were found to have a significant association with HASD. Subsequently, all of the variables will be included in the multiple regression model.

**Regression Analysis (Research Questions 4-9)**

Prior to conducting the multiple regression analysis, the following assumptions were examined.

*Assumption 1: Sample size*

To enhance generalizability of the findings, the sample size must be adequate. According to Tabachnick and Fidell (2007, p. 123), $N > 50 + 8m$ (m equals the number of independent variables. With $N = 13,287$, this assumption is met because the sample size is large enough for generalizability of findings.

*Assumption 2: Multicollinearity and singularity*

Multicollinarity addresses the relationship between independent variables (Pallant, 2010). The relationship among the independent variables is weak ($r < .9$). However, all of the independent variables have a relationship with the dependent variables as evidenced by a bivariate analysis and can therefore be included in the model (Pallant, 2010). This assumption is met.

*Assumption 3: Outliers*

The limited response set and recoding of variables to categorical variables address outliers. This assumption is met.
Assumption 4: Normality, Linearity, Homoscedasticity

A Normal P-P Plot demonstrate that the points fail to lie in a straight line however there is no evidence to suggest that major deviations from normality occurred (Pallant, 2010). The limited amount of responses can limit dispersion of data. This assumption is not met. Failure to meet all of the assumptions does not invalidate the analysis, however this does weaken the model Tabanachick & Fidell, 2007). Findings are interpreted with caution.

A multiple regression was conducted to predict HASD and to determine the strong predictor of HASD with the following predictor variables: age, level of education, domestic partnership, country of residence, knowledge of HIV transmission, and HIV test, with HASD as the outcome variable. Dummy coded variables were created for the categorical variables (level of education, domestic partnership, country of residence, and HIV test). Age and knowledge of HIV transmission were retained as continuous variables.

The model produced an $R^2$ of .051, which was statistically significant, $F(9, 3364) = 19.951, p < .001$. Knowing the age, level of education, domestic partnership, country or residence and knowledge of HIV transmission can account for 5.1% of the variance in HASD among women who reside in Guyana, Trinidad and Tobago and Jamaica. The average HASD for a 30 year old woman who resides in Trinidad and Tobago with less than a secondary education who was not living with a partner and does not know her HIV status was 2.382.

Now, the predictive value of each independent variable will be examined.
Analysis of Research Question 4

Hypothesis

H₀: Age is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Hₐ: Age is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Age was negatively related to HASD ($B = -.004, p < .05$); therefore, when all other variables are controlled, as age increases a woman’s HASD will decrease by .004. It is appropriate to reject the H₀ and accept the Hₐ.

Analysis of Research Question 5

Hypothesis:

H₀: Level of education is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Hₐ: Level of education is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Having a secondary education was negatively related to HASD ($B = -.315, p < .001$). Having a post-secondary education was also negatively related to HASD ($B = -.587, p < .001$). Therefore, when all other variables are controlled, as level of education increases a woman’s HASD will decrease by .315 or .587 respectively. Level of education was the greatest contributor to the variance in HASD (secondary education $b = -.164$ and post-secondary education $b = .300$). It is appropriate to accept the Hₐ and reject the H₀.
Analysis of Research Question 6

Hypothesis:

H₀: Domestic partnership is not a predictive factor of HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Hₐ: Domestic partnership is a predictive factor of HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Living with a partner but not married was positively related to HASD ($B = .158$, $p < .01$); therefore, when all other variables are controlled as domestic partnership increases, a woman’s HASD will increase by .158 as compared to women who are not in a union. Married and living with a man was not statistically significant in this model ($p > .05$). It is appropriate to reject the H₀ and accept the Hₐ.

Analysis of Research Question 7

Hypothesis:

H₀: Country of residence is not a predictive factor of HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Hₐ: Country of residence is a predictive factor of HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Trinidad and Tobago served as the reference variable. Residing in Guyana was negatively related to HASD ($B = -.159$, $p < .01$); therefore when all other variables are controlled women who reside in Guyana will have a .159 increase in HASD over women who reside in Trinidad and Tobago.
Residing in Jamaica was negatively related to HASD ($B = -.190, p < .001$); therefore, when all other variables are controlled women who reside in Jamaica will have a .190 increase in HASD over women who reside in Trinidad and Tobago.

It is appropriate to reject the $H_0$ and accept the $H_A$.

**Analysis of Research Question 8**

**Hypothesis:**

$H_0$: Knowledge of HIV transmission is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

$H_A$: Knowledge of HIV transmission is a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Knowledge of HIV transmission was negatively related to HASD ($B = -.087, p < .001$); therefore, when all other variables are controlled, as knowledge of HIV transmission increases a woman’s HASD will decrease by .087. It is appropriate to reject the $H_0$ and accept the $H_A$.

**Analysis of Research Question 9**

**Hypothesis:**

$H_0$: HIV testing is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

$H_A$: HIV testing is not a predictive factor in HASD among women in Guyana, Trinidad and Tobago and Jamaica.

Having an HIV test and knowing the results did not have a statistically significant influence in this model ($p > .05$). It is appropriate to accept the $H_0$ and reject the $H_A$.

Table 18 summarizes the outcome of this regression analysis.
Table 18

*Multiple Regression Analysis*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardized B</th>
<th>Standardized Beta</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Age</td>
<td>-.004</td>
<td>-.041</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Knowledge of HIV Transmission</td>
<td>-.087</td>
<td>-.127</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>-.315</td>
<td>-.164</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Post Secondary Education</td>
<td>-.587</td>
<td>-.300</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Unmarried, living with a partner</td>
<td>.158</td>
<td>.070</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Married, living with a partner</td>
<td>.070</td>
<td>.034</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Residing in Guyana</td>
<td>-.159</td>
<td>-.077</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Residing in Jamaica</td>
<td>-.190</td>
<td>-.097</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>HIV Test</td>
<td>-.093</td>
<td>-.030</td>
<td>&gt;.05</td>
</tr>
</tbody>
</table>
Chapter 5
Discussion

This secondary data analysis study examined a cross national comparison of knowledge of HIV transmission, HIV test and HASD. Using a cross sectional design, this study also explored the predictive value of (a) age, (b) level of education, (c) domestic partnership, (d) country of residence, (e) knowledge of HIV transmission and (f) HIV test on HASD among a female sample of women who reside in Guyana, Trinidad and Tobago and Jamaica. Knowledge of HIV transmission, HIV test and HASD are UNAIDS key indicators that are selected by country leaders to measure the country’s progress towards addressing the HIV epidemic. In this study, an analysis of these indicators was done to examine HIV prevention efforts in each country. Brofennbrenner’s Ecological Systems Model (1979) served as the theoretical framework for attempting to explain the phenomenon of HASD among the sample. This chapter serves to summarize and discuss the findings of this study, as well as to discuss study strengths and limitations and implications for future research.

Discussion of Findings

HIV/AIDS Related Stigma and Discrimination (HASD)

Among this study sample, the overall level of HASD was low. A sizeable majority of participants in this study reported a willingness to disclose that a family member was diagnosed with HIV. The participants from this study sample also reported a willingness to care for the family member. This study finding supports findings published by Annan (2002) in which women were found to be less discriminatory of PLWH as they are often caregivers for the family. This finding also corresponds to other
previously published findings in which women were less likely to be perpetrators of HASD (Sambisa, Curtis & Mishra, 2010; Sorsdahl et al., 2011; Visser, 2012; Visser et al., 2009).

Differences in HASD among the study sample were statistically significant by age and country of residence. Between country comparisons demonstrated that participants from Trinidad and Tobago consistently had less HASD than participants from Guyana. In Jamaica, younger participants also had consistently lower HASD than participants from Guyana. It is fair to speculate that elements of a community, specifically economic and behavioral characteristics of the environment may have influenced the HASD in each group (Stephenson, 2009). Guyana is the poorest of the three countries examined in this study. Poverty level has been found to be associated with higher levels of HASD (Amuri et al., 2011). Therefore, it is fair to conclude that the socioeconomic status of the participants in Guyana may have contributed to members of that group having higher levels of HASD based off of previously published findings.

A within country comparison in Guyana revealed a significant pattern. When younger participants in Guyana are compared to older participants in Guyana, younger participants have lower HASD than older participants. Specifically, participants between the ages of 35 to 44 years had higher levels of stigma towards PLWH than participants between the ages of 15 to 24 years. This study finding may be explained by the history of the emergence of HIV in Guyana. Women between the ages of 35-44 years came of age at the height of the HIV epidemic during the 1980s when people were “dying from Slim disease” and a then, unknown illness (Deschamps, 1988; Parker & Aggleton, 2002). This finding may also be explained by HIV prevention campaigns missing an important
age demographic by focusing on young people between the ages of 15-24 years old (Deveaux et al., 2011; Reid et al., 2012). Archibald (2010) identified a similar pattern when exploring attitudes towards PLWH among adolescent and parent groups. The parent groups had higher levels of HASD than the adolescent groups.

**Knowledge of HIV Transmission**

Across the sample of women from Guyana, Trinidad and Tobago and Jamaica, participants were aware of HIV and have at least heard of the disease. In all three countries, the majority of women were able to correctly identify ways to prevent transmission of HIV, reject common myths about transmission of HIV and agree that a healthy looking person can have HIV. This demonstrated a high level of knowledge of HIV transmission in accordance with UNAIDS parameters for measurement of knowledge of HIV transmission (UNAIDS, 2011). Therefore, the majority of women can be categorized as having a high level of knowledge of HIV transmission.

Despite a high level of knowledge of HIV transmission, women in Guyana consistently scored lower than women in Trinidad and Tobago and Jamaica. This difference was determined to be statistically significant. This finding is perplexing as Guyana is a PEPFAR funded nation and the government provides substantial HIV prevention resources (Figueroa, 2008; Hubbard & Lee Rodgers, 2009). The expectation was that participants from Guyana would have higher scores than participants from the countries not funded by PEPFAR, Trinidad and Tobago and Jamaica. According to the Minister of Health of Guyana, the people of Guyana and Guyanese health officials experienced a dramatic improvement in managing the HIV epidemic within less than 10 years of receiving funding (BBC, 2006). It may be fair to speculate that this difference
may be attributed to confounding variables in personal characteristics of the sample and not a lack of HIV education resources. A similar pattern was identified in another published study that utilized a sample of Health Studies students enrolled in University of Guyana (Balfour et al., 2010). Despite women in Guyana having lower levels of education than women in Trinidad and Tobago and Jamaica, the study cited by Balfour and colleagues with university students reduces the ability to confidently associate low levels of education with knowledge gaps in HIV transmission. Norman and colleagues did identify an association between knowledge concerning HIV transmission and discriminatory attitudes towards PLWH. Women who had less knowledge of HIV transmission were found to be less sympathetic and had greater discriminatory attitudes towards PLWH (Norman, Abreau, Candelaria & Sala, 2009).

**HIV Test**

Although age and country of residence did not have a statistically significant effect on HASD, the descriptive findings from this data analysis are worthy of discussion. HIV testing is an important element of HIV prevention education (Mwamburi et al., 2005). With over 9,000 participants not providing information on their history of HIV testing in this secondary study, this finding was in accordance with UNAIDS (2011) reports that HIV testing is severely underutilized by inhabitants of developing nations. Guyana, Trinidad and Tobago and Jamaica are classified as developing nations by the World Bank (2004). The majority of women in this study sample opted to not provide a response in regards to history of HIV test, despite the question being prefaced with “I do not want to know the results” (UNICEF, 2005, p. 11). The profile of participants in this study, who did volunteer HIV test information, resembled that of participants identified
by Norman (2006) in most respects. The women in Norman’s study and this study who
did volunteer HIV test information were adult, females, and person with post-secondary
education. Where this study differs from the Norman study is the majority of respondents
were not in a union, however, in Norman’s study, the participants were married.

In Guyana, Trinidad and Tobago and Jamaica, HIV testing is a mandatory test
administered during prenatal care therefore women are more likely than men to receive
an HIV test (Babalola, 2007; Sambisa, 2010). It is fair to speculate that this study sample
consisted of women of childbearing age, so the likelihood of them having received an
HIV test at least one time in their lives is highly plausible. A study conducted with
Anglophone Caribbean women who were also of reproductive age obtained the same
finding; a large percentage of women reported never having an HIV test (Baird,
Yearwood & Perrino, 2007). HASD, not believing one was at risk and sociocultural
practices were cited as reasons for not obtaining an HIV test (Baird et al, 2007).

Although a positive correlation between knowledge of HIV transmission and
likelihood to be tested for HIV has been established; the women in this secondary
analysis study sample were found to have high levels of knowledge of HIV transmission
and therefore should have been more likely to have had an HIV test (Hubbard & Lee
Rodgers, 2009; Hutchinson & Mahlelha, 2006; Norman, 2006; Roberts, 2005; ware,
Wyatt & Tugenberg, 2006; Zhao et al., 2011). This secondary study finding contradicts
findings from a study conducted by Andrews (2011) with youths from Guyana in which
high level of knowledge of HIV transmission was associated with increased odds of
reporting HIV testing. It is unclear whether the participants in this secondary analysis
study never had an HIV test or felt uncomfortable providing a response.
One plausible explanation for this finding is that in most developing nations, obtaining an HIV test and disclosing serostatus is associated with fear of social consequences (Parker & Aggleton, 2001). In the Caribbean region, fear was the primary reason cited for young Anglophone women to not have an HIV test done voluntarily (Baird, Yearwood & Perrino, 2007). Women reported being victims of verbal abuse, physical abuse and psychological abuse at the hands of male partners after disclosing their HIV status (Gardezi, 2008). In addition to fearing a partner’s reaction to news about serostatus, individuals feared that a positive test result could lead to HASD (Wolfe et al., 2006). Manifestations of HIV/AIDS related stigma and discrimination in wrongful termination, denial of employment opportunities, abandonment by family, physical violence, and exclusion from religious events is quite common (Anderson et al., 2008; BBC, 2004; Parker et al., 2004; Royes, 2007).

**Predictors of HASD**

Determining the predictability of multiple factors on a single phenomenon is fundamental to the ecological approach to addressing HASD. Among women in Guyana, Trinidad and Tobago and Jamaica, age, level of education, country of residence, and knowledge of HIV transmission were found to have significant predictive value in determining the variance in HASD. Level of education had the greatest predictive value followed by knowledge of HIV transmission. Utilizing Brofenbrenner’s Ecological Systems Model as a guide, variables within the microsystem (level of education) and the exosystem (knowledge of HIV transmission) exerted the strongest influence in predicting HASD among the study sample. As level of education and knowledge of HIV transmission increase, HASD should decrease.
This finding supports the positive correlation between level of education and knowledge of HIV transmission identified by Norman and Carr (2003). Now this secondary study takes those findings one step further in such that knowing that a participant has high levels of formal education and high levels of HIV knowledge is indicative of a decrease in HASD. In previous studies, age has been found to make a small yet significant contribution to the variability in HASD (Logie & Gadalla, 2009).

Domestic partnership and HIV test was not found to have statistically significant value in predicting HASD. Previous studies identified a correlation between marital status and HIV testing, as well as HIV testing and HASD (Babaloa, 2007; Turan et al., 2011; Wolfe et al., 2006). To date, no study has explored domestic partnership and HASD. The HIV test variable’s absence of statistical significance may be attributed to the number of missing values and limited number of items used to compute the variable.

**Strengths and Limitations of this Study**

Conducting HIV related research with the Anglophone Caribbean population can present a challenge (Nettleford, 2004). Tourist-dependent economies are protective of the image of the country and with good reason. Due to differences in information technology infrastructure, obtaining reports and publications are difficult. This UNICEF MICS3 dataset provided the opportunity to explore a culturally sensitive topic with a large sample without presenting an undue burden on participants. The use of a large secondary data set collected from a challenging population was crucial to the success of this study. The original study’s cross sectional study design permitted analysis of large amounts of data gathered from women between the ages of 15-49 years who reside in three countries. Secondary data provides the opportunity to efficiently use time and
financial resources (Tanenbaum, 1980). The data used in this study was converted to an
electronic file by data entry technicians in each country and stored in a central database
by UNICEF thus facilitating accessibility and data analysis (Boslaugh, 2007).

Despite the benefits, this study was not without limitations. Use of secondary
data limits the manipulation of conditions and variables that could significantly impact
findings (Boslaugh, 2007; Rogers et al., 2006). Surveys are prone to sampling error and
measurement error (UNICEF, 2005). The large sample size increases the risk of Type I
Error. Although the overall sample size was large, a disadvantage of secondary data is
the inability to control sample size or account for missing data (Boslaugh, 2007; Wang,
Seransk & Jinn, 1992). Also, while the fieldworkers (who collected the data) should
have received several days of training, there is no way to guarantee the quality of data
collection or know the impact of biases on the sample when analyzing the data from a
secondary source. This data failed to meet all of the assumptions necessary for multiple
regression. Tabanachick and Fidell (2007) advise that in instances where assumptions
are not met, data is to be interpreted with caution because while failure to meet the
assumptions does not invalidate data it will weaken the model.

**Future Study Implications**

To date, HIV interventions for Anglophone Caribbean women are virtually non-
existent. It is imperative that HIV prevention and intervention strategies factor in cultural
context of HIV risk behavior and the cultural context of barriers to such preventions
(Harris-Hastick & Modeste-Curwen, 2001; Hubbard & Lee Rogers, 2009; Hutchinson et
al., 2007; Morrison & Chen, 2005). Several HIV intervention programs designed for
European and North American populations have been used in Guyana, Trinidad and
Tobago and Jamaica, however the HIV prevalence rates continue to be a matter of concern (Baptiste et al., 2006; Voisin et al., 2006).

This study contributes to the literature by examining the predictive value of multiple factors on HASD among a sample of Anglophone Caribbean women who reside in Guyana, Trinidad and Tobago and Jamaica. Based on the findings, it is appropriate to state that among women from Guyana, Trinidad and Tobago and Jamaica, age, level of education, country of residence, and knowledge of HIV transmission can predict level of HASD. Using the model from this study, women over the age of 35 years from Guyana who have less than a secondary education are at the greatest risk for having HASD. This kind of information justifies the consideration of age, socioeconomic status, and level of education in the development of culturally tailored interventions. Although the findings are interpreted with caution, these findings suggest that utilization of an ecological framework to examine factors that influence HASD could be beneficial. The findings will be shared with the Ministries of Health for Guyana, Trinidad and Tobago and Jamaica.

The fourth iteration of the Multiple Indicators Cluster Survey started in 2010. For the first time men will be included in the sample. A secondary data analysis that compares data from the third iteration to data from the fourth iteration will provide insight as to (1) how each country is addressing the HIV epidemic, (2) demographic changes in knowledge of HIV transmission, HIV test and HASD and (3) additional predictors of HASD. Examining the effect of age and country on HASD again, however, among a sample 10 years later may help to identify whether each country is effectively utilizing HIV prevention resources. For example, if the same pattern emerges in which
women over the age of 35 years from Guyana with less than a secondary education continue to have higher levels of HASD and lower levels of knowledge of HIV transmission than (a) younger women and (b) women from Trinidad and Tobago and Jamaica, then HIV prevention programs are in dire need of reevaluation. An analysis of multiple language groups (i.e. Francophone, Spanish-speaking and Anglophone) and both genders (male and female) may help to discern if the outcomes found in this study are unique to Anglophone countries or are similar patterns experienced throughout the Caribbean.

Additionally, due to the poor performance (α < .7) of the HA Modules subscales, future studies are needed to examine the cultural interpretation of variables used in this study, specifically, AIDS, HIV, HIV/AIDS related stigma and discrimination, knowledge of HIV transmission and HIV test. To date, substantial variability exists in the approach utilized by researchers to measure HIV related stigma (Logie & Gadalla, 2009). One key observation made during this analysis was the use of the term “AIDS.” Coordinators of the MICS3 fail to make a distinction between HIV and AIDS. It is plausible that the use of the term, may contribute to the negative perception of HIV and PLWH. As all three countries have access to HIV prevention education resources, a qualitative study with a sample stratified by age and country may help to explain differences in scores that cannot be determined from quantitative studies alone.

**Summary**

The manifestation of HASD at societal, community and individual levels has promoted this phenomenon to a major public health concern (Heatherton et al., 2000; Parker & Aggleton, 2002). HASD is not limited to PLWH but extends to all individuals
with whom PLWH associate thereby causing HASD to be major barrier to HIV prevention and treatment efforts (Aggleton, 2005; Bogart et al., 2008; Earnshaw & Chaudoir, 2009; Herek, 1999; Holzemer & Uys, 2004; Rankin et al., 2005). In the Caribbean region, HASD is identified as a major contributor to HIV infection patterns among inhabitants (Figueroa, 2008; UNAIDS, 2010; UNAIDS, 2011). PLWH from this cultural group report experiencing severe abuse after disclosing their HIV status (Gardezi et al., 2008; Royes, 2007). Among women, HASD influences access to health care, treatment adherence, utilization of social support, as well as the occurrence of poor health outcomes (Clum, Clum & Ellen, 2009; Strebel, Crawford & Shefer, 2006; Visser, 2012).

This secondary data analysis identified differences in knowledge of HIV transmission and HASD among women who reside in Guyana, Trinidad and Tobago and Jamaica. Previous studies identified an association between HASD, knowledge of HIV transmission and HIV test (Hutchinson & Mahlelha, 2006; Roberts, 2005; Zhao et al., 2011). Women in Guyana had lower knowledge of HIV transmission and higher HASD than women in Trinidad and Tobago and Jamaica. Personal characteristics (age, level of education, and country of residence) and knowledge of HIV transmission were found to account for variance in HASD among the sample population. Domestic partnership and HIV test were not found to be significant contributors to the model designed in this study. The variables of HIV, knowledge of HIV transmission, and HIV test warrant further exploration within this population. In summary, a specific research trajectory would include 1) dissemination of study findings to the respective Ministries of Health of each country, (2) the design of a mixed method cross sectional study to examine these factors among samples that reside in the United States and Europe and ultimately the Caribbean
and (3) the conduction of a comparison study between MICS3 and MIC4 utilizing the same variables but including males in the sample. The development of interventions that not only factor in cultural differences but also gender, education, and socioeconomic differences may be significantly more effective in managing and reducing the HIV epidemic in the Caribbean region.
References


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Appendix A
QUESTIONNAIRE FOR INDIVIDUAL W

WOMEN’S INFORMATION PANEL

This module is to be administered to all women age 15 through 49 (see column HL6 of HH listing).
Fill in one form for each eligible woman
Fill in the cluster and household number, and the name and line number of the woman in the space below.
Fill in your name, number and the date.

<table>
<thead>
<tr>
<th>WM1. Cluster number:</th>
<th>WM2. Household number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________</td>
<td>_______________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WM3. Woman's Name:</th>
<th>WM4. Woman's Line Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________</td>
<td>_______________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WM5. Interviewer name and number:</th>
<th>WM6. Day/Month/Year of interview:</th>
</tr>
</thead>
<tbody>
<tr>
<td>__________________________________</td>
<td>________________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WM7. Result of women's interview</th>
<th>WM8. Date of birth:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed................................</td>
<td>Month ..................</td>
</tr>
<tr>
<td>Not at home................................</td>
<td>DK month ................</td>
</tr>
<tr>
<td>Refused..................................</td>
<td>Year ......................</td>
</tr>
<tr>
<td>Partly completed.....................</td>
<td>DK year ................</td>
</tr>
<tr>
<td>Incapacitated..........................</td>
<td>________________________</td>
</tr>
<tr>
<td>Other (specify)........................</td>
<td>9998</td>
</tr>
</tbody>
</table>

Repeat greeting if not already read to this woman:
WE ARE FROM (country-specific affiliation). WE ARE WORKING ON A PROJECT CONCERNED WITH FAMILY HEALTH AND EDUCATION. I WOULD LIKE TO TALK TO YOU ABOUT THIS. THE INTERVIEW WILL TAKE ABOUT (number) MINUTES. ALL THE INFORMATION WE OBTAIN WILL REMAIN STRICTLY CONFIDENTIAL AND YOUR ANSWERS WILL NEVER BE IDENTIFIED. ALSO, YOU ARE NOT OBLIGED TO ANSWER ANY QUESTION YOU DON’T WANT TO, AND YOU MAY WITHDRAW FROM THE INTERVIEW AT ANY TIME. MAY I START NOW?

If permission is given, begin the interview. If the woman does not agree to continue, thank her, complete WM7, and go to the next interview. Discuss this result with your supervisor for a future revisit.

<table>
<thead>
<tr>
<th>WM8. Date of birth:</th>
<th>WM9. Age (in completed years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Month ..................</td>
<td>________________________</td>
</tr>
<tr>
<td>DK month ................</td>
<td>98</td>
</tr>
<tr>
<td>Year ......................</td>
<td>________________________</td>
</tr>
<tr>
<td>DK year ................</td>
<td>9998</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WM9. How old were you at your last birthday?</th>
<th></th>
</tr>
</thead>
</table>
| WM10. HAVE YOU EVER ATTENDED SCHOOL? | Yes ................................................. 1  
No .................................................. 2 |
| WM11. WHAT IS THE HIGHEST LEVEL OF SCHOOL YOU ATTENDED: PRIMARY, SECONDARY, OR HIGHER? | Primary ........................................... 1  
Secondary ......................................... 2  
Higher ............................................. 3  
Non-standard curriculum ..................... 6 |
| WM12. WHAT IS THE HIGHEST GRADE YOU COMPLETED AT THAT LEVEL? | Grade .............................................. ___ ___ |

**WM13. Check WM11:**

- [ ] Secondary or higher. Go to Next Module
- [ ] Primary or non-standard curriculum. Continue with WM14

**WM14. NOW I WOULD LIKE YOU TO READ THIS SENTENCE TO ME.**

*Show sentences to respondent.*

*If respondent cannot read whole sentence, probe:*

*CAN YOU READ PART OF THE SENTENCE TO ME?*

*Example sentences for literacy test:*

1. The child is reading a book.
2. The rains came late this year.
3. Parents must care for their children.
4. Farming is hard work.

| Cannot read at all ............................. 1  
Able to read only parts of sentence .......... 2  
Able to read whole sentence .................. 3  
No sentence in required language ............. 4  
Blind/mute, visually/speech impaired ........ 5  |
**CHILD MORTALITY MODULE**

*This module is to be administered to all women age 15-49. All questions refer only to LIVE births.*

| CM1. **NOW I WOULD LIKE TO ASK ABOUT ALL THE BIRTHS YOU HAVE HAD DURING YOUR LIFE. HAVE YOU EVER GIVEN BIRTH?** | Yes.................................................... 1  
| | No..................................................... 2  
| If “No” probe by asking:  
| I MEAN, TO A CHILD WHO EVER BREATHED OR CRIED OR SHOWED OTHER SIGNS OF LIFE – EVEN IF HE OR SHE LIVED ONLY A FEW MINUTES OR HOURS? | Date of first birth  
| Day.................................................... __ __  
| DK day ................................................ 98  
| Month .................................................. __ __  
| DK month .............................................. 98  
| Year ................................................. __ __ __ __  
| DK year ................................................. 9999  
| CM2A. **WHAT WAS THE DATE OF YOUR FIRST BIRTH?** | Completed years since first birth ........ __ __  
| I MEAN THE VERY FIRST TIME YOU GAVE BIRTH, EVEN IF THE CHILD IS NO LONGER LIVING, OR WHOSE FATHER IS NOT YOUR CURRENT PARTNER. |  
| Skip to CM3 only if year of first birth is given. Otherwise, continue with CM2B.  
| CM2B. **H ow many years ago did you have your first birth?** | Yes.................................................... 1  
| No..................................................... 2  
| CM3. **Do you have any sons or daughters to whom you have given birth who are now living with you?** | Sons at home........................................ __ __  
| Daughters at home ................................__ __  
| CM4. **How many sons live with you?** |  
| How many daughters live with you? |  
| CM5. **Do you have any sons or daughters to whom you have given birth who are alive but DO NOT LIVE WITH you?** | Sons elsewhere ...................................... __ __  
| Daughters elsewhere ................................__ __  
| CM6. **How many sons are alive but do not live with you?** |  
| How many daughters are alive but do not live with you? |  
| CM7. **Have you ever given birth to a boy or girl who was born alive but later died?** | Boys dead............................................. __ __  
| Girls dead............................................ __ __  
| CM8. **How many boys have died?** |  
| How many girls have died? |  
| CM9. **Sum answers to CM4, CM6, and CM8.** | Sum...................................................... __ __  

**Note:**
- **CM1**: If a woman answers no, ask her if she means a child who ever breathed, cried, or showed other signs of life. If still no, probe further to understand why the child did not live.
- **CM2A**: The date of first birth should be recorded in the format DD/MM/YYYY.
- **CM2B**: Calculate the number of years since the first birth by subtracting the year of the first birth from the current year or the year of the last birth if the woman has given birth recently.
- **CM4, CM6, CM8**: Summarize the number of sons, daughters, boys, and girls who are alive and living with the woman or who are alive but do not live with her.
**CM10.** JUST TO MAKE SURE THAT I HAVE THIS RIGHT, YOU HAVE HAD IN TOTAL (total number) BIRTHS DURING YOUR LIFE. IS THIS CORRECT?

- ☐ Yes. ⇒ Go to CM11
- ☐ No. ⇒ Check responses and make corrections before proceeding to CM11

**CM11.** OF THESE (total number) BIRTHS YOU HAVE HAD, WHEN DID YOU DELIVER THE LAST ONE (EVEN IF HE OR SHE HAS DIED)?

<table>
<thead>
<tr>
<th>Date of last birth</th>
<th>Day/Month/Year ..... __ <strong>/</strong> <strong>/</strong> __ __ __</th>
</tr>
</thead>
</table>

If day is not known, enter ‘98’ in space for day.

**CM12.** Check CM11: Did the woman’s last birth occur within the last 2 years, that is, since (day and month of interview in 2003)?

- ☐ No live birth in last 2 years. ⇒ Go to MARRIAGE/UNION module.
- ☐ Yes, live birth in last 2 years. ⇒ Continue with CM13

**CM13.** AT THE TIME YOU BECAME PREGNANT WITH (name), DID YOU WANT TO BECOME PREGNANT THEN, DID YOU WANT TO WAIT UNTIL LATER, OR DID YOU WANT NO (MORE) CHILDREN AT ALL?

| Then ............................................................ | 1 |
| Later ............................................................ | 2 |
| No more ....................................................... | 3 |

Name of child ________________________
**TETANUS TOXOID (TT) MODULE**

*This module is to be administered to all women with a live birth in the 2 years preceding date of interview.*

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes (card seen)</th>
<th>Yes (card not seen)</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT1. DO YOU HAVE A CARD OR OTHER DOCUMENT WITH YOUR OWN IMMUNIZATIONS LISTED?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>If a card is presented, use it to assist with answers to the following questions.</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT2. WHEN YOU WERE PREGNANT WITH YOUR LAST CHILD, DID YOU RECEIVE ANY INJECTION TO PREVENT HIM OR HER FROM GETTING TETANUS, THAT IS CONVULSIONS AFTER BIRTH (AN ANTI-TETANUS SHOT, AN INJECTION AT THE TOP OF THE ARM OR SHOULDER)?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT3. If yes: HOW MANY TIMES DID YOU RECEIVE THIS ANTI-TETANUS INJECTION DURING YOUR LAST PREGNANCY?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT4. How many TT doses during last pregnancy were reported in TT3?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>☐ At least two TT injections during last pregnancy. ⇒ Go to Next Module</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>☐ Fewer than two TT injections during last pregnancy. ⇔ Continue with TT5</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT5. DID YOU RECEIVE ANY TETANUS TOXOID INJECTION AT ANY TIME BEFORE YOUR LAST PREGNANCY?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT6. HOW MANY TIMES DID YOU RECEIVE IT?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT7. IN WHAT MONTH AND YEAR DID YOU RECEIVE THE LAST ANTI-TETANUS INJECTION BEFORE THAT LAST PREGNANCY?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>Skip to next module only if year of injection is given. Otherwise, continue with TT8.</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td>TT8. HOW MANY YEARS AGO DID YOU RECEIVE THE LAST ANTI-TETANUS INJECTION BEFORE THAT LAST PREGNANCY?</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
<td>..............................</td>
</tr>
<tr>
<td><strong>MATERNAL AND NEWBORN HEALTH MODULE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This module is to be administered to all women with a live birth in the 2 years preceding date of interview.  
Check child mortality module CM12 and record name of last-born child here ___________________.  
Use this child’s name in the following questions, where indicated.  

**MN1. IN THE FIRST TWO MONTHS AFTER YOUR LAST BIRTH [THE BIRTH OF name], DID YOU RECEIVE A VITAMIN A DOSE LIKE THIS?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Show 200,000 IU capsule or dispenser.

**MN2. DID YOU SEE ANYONE FOR ANTENATAL CARE FOR THIS PREGNANCY?**

If yes: **WHOM DID YOU SEE? ANYONE ELSE?**

Probe for the type of person seen and circle all answers given.

<table>
<thead>
<tr>
<th>Health professional:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor .................. A</td>
</tr>
<tr>
<td>Nurse/midwife .......... B</td>
</tr>
<tr>
<td>Auxiliary midwife ........ C</td>
</tr>
<tr>
<td>Other person</td>
</tr>
<tr>
<td>Traditional birth attendant .......... F</td>
</tr>
<tr>
<td>Community health worker .......... G</td>
</tr>
<tr>
<td>Relative/friend .......... H</td>
</tr>
<tr>
<td>Other (specify) ............ X</td>
</tr>
<tr>
<td>No one .................... Y</td>
</tr>
</tbody>
</table>

**MN3. AS PART OF YOUR ANTENATAL CARE, WERE ANY OF THE FOLLOWING DONE AT LEAST ONCE?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**MN3a. WERE YOU WEIGHED?**

**MN3b. WAS YOUR BLOOD PRESSURE MEASURED?**

**MN3c. DID YOU GIVE A URINE SAMPLE?**

**MN3d. DID YOU GIVE A BLOOD SAMPLE?**

<table>
<thead>
<tr>
<th>Weight</th>
<th>Blood pressure</th>
<th>Urine sample</th>
<th>Blood sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**MN4. DURING ANY OF THE ANTENATAL VISITS FOR THE PREGNANCY, WERE YOU GIVEN ANY INFORMATION OR COUNSELED ABOUT AIDS OR THE AIDS VIRUS?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**MN5. I DON’T WANT TO KNOW THE RESULTS, BUT WERE YOU TESTED FOR HIV/AIDS AS PART OF YOUR ANTENATAL CARE?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**MN6. I DON’T WANT TO KNOW THE RESULTS, BUT DID YOU GET THE RESULTS OF THE TEST?**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

**MN7. WHO ASSISTED WITH THE DELIVERY OF YOUR LAST CHILD (name)?**

**ANYONE ELSE?**

Probe for the type of person assisting and circle all answers given.

<table>
<thead>
<tr>
<th>Health professional:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor .................. A</td>
</tr>
<tr>
<td>Nurse/midwife .......... B</td>
</tr>
<tr>
<td>Auxiliary midwife ........ C</td>
</tr>
<tr>
<td>Other person</td>
</tr>
<tr>
<td>Traditional birth attendant .......... F</td>
</tr>
<tr>
<td>Community health worker .......... G</td>
</tr>
<tr>
<td>Relative/friend .......... H</td>
</tr>
<tr>
<td>Other (specify) ............ X</td>
</tr>
<tr>
<td>No one .................... Y</td>
</tr>
</tbody>
</table>
**MN8. WHERE DID YOU GIVE BIRTH TO (name)?**

If source is hospital, health center, or clinic, write the name of the place below. Probe to identify the type of source and circle the appropriate code.

<table>
<thead>
<tr>
<th>Source Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td></td>
</tr>
<tr>
<td>Your home</td>
<td>11</td>
</tr>
<tr>
<td>Other home</td>
<td>12</td>
</tr>
<tr>
<td>Public sector</td>
<td></td>
</tr>
<tr>
<td>Govt. hospital</td>
<td>21</td>
</tr>
<tr>
<td>Govt. clinic/health center</td>
<td>22</td>
</tr>
<tr>
<td>Other public (specify)</td>
<td>26</td>
</tr>
<tr>
<td>Private Medical Sector</td>
<td></td>
</tr>
<tr>
<td>Private hospital</td>
<td>31</td>
</tr>
<tr>
<td>Private clinic</td>
<td>32</td>
</tr>
<tr>
<td>Private maternity home</td>
<td>33</td>
</tr>
<tr>
<td>Other private medical (specify)</td>
<td>36</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>96</td>
</tr>
</tbody>
</table>

**MN9. WHEN YOUR LAST CHILD (name) WAS BORN, WAS HE/SHE VERY LARGE, LARGER THAN AVERAGE, AVERAGE, SMALLER THAN AVERAGE, OR VERY SMALL?**

<table>
<thead>
<tr>
<th>Size</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very large</td>
<td>1</td>
</tr>
<tr>
<td>Larger than average</td>
<td>2</td>
</tr>
<tr>
<td>Average</td>
<td>3</td>
</tr>
<tr>
<td>Smaller than average</td>
<td>4</td>
</tr>
<tr>
<td>Very small</td>
<td>5</td>
</tr>
<tr>
<td>DK</td>
<td>8</td>
</tr>
</tbody>
</table>

**MN10. WAS (name) WEIGHED AT BIRTH?**

<table>
<thead>
<tr>
<th>Weight Status</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>DK</td>
<td>8</td>
</tr>
</tbody>
</table>

**MN11. HOW MUCH DID (name) WEIGH?**

Record weight from health card, if available.

<table>
<thead>
<tr>
<th>Weight Source</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>From card</td>
<td></td>
</tr>
<tr>
<td>From recall</td>
<td></td>
</tr>
<tr>
<td>DK</td>
<td>99998</td>
</tr>
</tbody>
</table>

**MN12. DID YOU EVER BREASTFEED (name)?**

<table>
<thead>
<tr>
<th>Feeding Status</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
</tr>
</tbody>
</table>

**MN13. HOW LONG AFTER BIRTH DID YOU FIRST PUT (name) TO THE BREAST?**

If less than 1 hour, record ‘00’ hours. If less than 24 hours, record hours. Otherwise, record days.

<table>
<thead>
<tr>
<th>Duration</th>
<th>Code</th>
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<tbody>
<tr>
<td>Immediately</td>
<td>000</td>
</tr>
<tr>
<td>Hours</td>
<td>1</td>
</tr>
<tr>
<td>Days</td>
<td>2</td>
</tr>
<tr>
<td>DK</td>
<td>998</td>
</tr>
<tr>
<td><strong>MARRIAGE/UNION MODULE</strong></td>
<td></td>
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<tr>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>MA1. ARE YOU CURRENTLY MARRIED OR LIVING TOGETHER WITH A MAN AS IF MARRIED?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes, currently married ................................. 1</td>
<td></td>
</tr>
<tr>
<td>Yes, living with a man ................................... 2</td>
<td></td>
</tr>
<tr>
<td>No, not in union ........................................... 3</td>
<td></td>
</tr>
<tr>
<td><strong>MA2. HOW OLD WAS YOUR HUSBAND/PARTNER ON HIS LAST BIRTHDAY?</strong></td>
<td></td>
</tr>
<tr>
<td>Age in years ............................................. ___ ___</td>
<td></td>
</tr>
<tr>
<td>DK .......................................................... 98</td>
<td></td>
</tr>
<tr>
<td><strong>MA3. HAVE YOU EVER BEEN MARRIED OR LIVED TOGETHER WITH A MAN?</strong></td>
<td></td>
</tr>
<tr>
<td>Yes, formerly married ...................................... 1</td>
<td></td>
</tr>
<tr>
<td>Yes, formerly lived with a man ........................... 2</td>
<td></td>
</tr>
<tr>
<td>No ............................................................. 3</td>
<td></td>
</tr>
<tr>
<td><strong>MA4. WHAT IS YOUR MARITAL STATUS NOW: ARE YOU WIDOWED, DIVORCED OR SEPARATED?</strong></td>
<td></td>
</tr>
<tr>
<td>Widowed ...................................................... 1</td>
<td></td>
</tr>
<tr>
<td>Divorced ..................................................... 2</td>
<td></td>
</tr>
<tr>
<td>Separated .................................................... 3</td>
<td></td>
</tr>
<tr>
<td><strong>MA5. HAVE YOU BEEN MARRIED OR LIVED WITH A MAN ONLY ONCE OR MORE THAN ONCE?</strong></td>
<td></td>
</tr>
<tr>
<td>Only once ..................................................... 1</td>
<td></td>
</tr>
<tr>
<td>More than once .............................................. 2</td>
<td></td>
</tr>
<tr>
<td><strong>MA6. IN WHAT MONTH AND YEAR DID YOU FIRST MARRY OR START LIVING WITH A MAN AS IF MARRIED?</strong></td>
<td></td>
</tr>
<tr>
<td>Month ......................................................... ___ ___</td>
<td></td>
</tr>
<tr>
<td>DK month ..................................................... 98</td>
<td></td>
</tr>
<tr>
<td>Year ........................................................... ___ ___ ___ ___</td>
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<tr>
<td>DK year ........................................................ 9998</td>
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</tr>
</tbody>
</table>

**MA7. Check MA6:**

- ☐ Both month and year of marriage/union known? ⇒ Go to Next Module
- ☐ Either month or year of marriage/union not known? ⇒ Continue with MA8

<p>| <strong>MA8. HOW OLD WERE YOU WHEN YOU STARTED LIVING WITH YOUR FIRST HUSBAND/PARTNER?</strong> |
| Age in years ................................................ ___ ___ |</p>
<table>
<thead>
<tr>
<th>CONTRACEPTION MODULE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CP1.</strong> I WOULD LIKE TO TALK WITH YOU ABOUT ANOTHER SUBJECT — FAMILY PLANNING — AND YOUR REPRODUCTIVE HEALTH. ARE YOU PREGNANT NOW?</td>
</tr>
<tr>
<td>Yes, currently pregnant............................... 1</td>
</tr>
<tr>
<td>No....................................................... 2</td>
</tr>
<tr>
<td>Unsure or DK ........................................... 8</td>
</tr>
<tr>
<td><strong>CP2.</strong> SOME PEOPLE USE VARIOUS WAYS OR METHODS TO DELAY OR AVOID A PREGNANCY. ARE YOU CURRENTLY DOING SOMETHING OR USING ANY METHOD TO DELAY OR AVOID GETTING PREGNANT?</td>
</tr>
<tr>
<td>Yes....................................................... 1</td>
</tr>
<tr>
<td>No....................................................... 2</td>
</tr>
</tbody>
</table>
| **CP3.** WHICH METHOD ARE YOU USING?  
*Do not prompt.*  
*If more than one method is mentioned, circle each one.* |
<p>| Female sterilization .................................. A |
| Male sterilization .................................... B |
| Pill ..................................................... C |
| IUD ................................................... D |
| Injections ............................................ E |
| Implants ............................................. F |
| Condom ............................................... G |
| Female condom ...................................... H |
| Diaphragm ............................................. I |
| Foam/jelly ........................................... J |
| Lactational amenorrhoea method (LAM)............... K |
| Periodic abstinence .................................. L |
| Withdrawal .......................................... M |
| Other (<em>specify</em>) ..................................... X |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA1. Now I would like to talk with you about something else.</td>
<td></td>
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<tr>
<td>Have you ever heard of the virus HIV or an illness called AIDS?</td>
<td></td>
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<tr>
<td>HA2. Can people protect themselves from getting infected with the AIDS virus by having one sex partner who is not infected and also has no other partners?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA3. Can people get infected with the AIDS virus because of witchcraft or other supernatural means?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HA4. Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?</td>
<td></td>
<td></td>
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<tr>
<td>HA5. Can people get the AIDS virus from mosquito bites?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA6. Can people reduce their chance of getting infected with the AIDS virus by not having sex at all?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HA7. Can people get the AIDS virus by sharing food with a person who has AIDS?</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HA7A. Can people get the AIDS virus by getting injections with a needle that was already used by someone else?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA8. Is it possible for a healthy-looking person to have the AIDS virus?</td>
<td></td>
<td></td>
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<tr>
<td>HA9. Can the AIDS virus be transmitted from a mother to a baby?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA9A. During pregnancy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA9B. During delivery?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA9C. By breastfeeding?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA10. If a female teacher has the AIDS virus but is not sick, should she be allowed to continue teaching in school?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA11. Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had the AIDS virus?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA12. If a member of your family became infected with the AIDS virus, would you want it to remain a secret?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HA13. If a member of your family became sick with the AIDS virus, would you be willing to care for him or her in your household?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
HA14. Check MN5: Tested for HIV during antenatal care?

☐ Yes. ⇒ Go to HA18A

☐ No. ⇒ Continue with HA15

<table>
<thead>
<tr>
<th>HA15. I do not want to know the results, but have you ever been tested to see if you have HIV, the virus that causes AIDS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ................................................................................. 1</td>
</tr>
<tr>
<td>No ................................................................................ 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HA16. I do not want you to tell me the results of the test, but have you been told the results?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ................................................................................. 1</td>
</tr>
<tr>
<td>No ................................................................................ 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HA17. Did you, yourself, ask for the test, was it offered to you and you accepted, or was it required?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asked for the test ................................................................ 1</td>
</tr>
<tr>
<td>Offered and accepted ..................................................... 2</td>
</tr>
<tr>
<td>Required ............................................................................ 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HA18. At this time, do you know of a place where you can go to get such a test to see if you have the AIDS virus?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ................................................................................. 1</td>
</tr>
<tr>
<td>No ................................................................................ 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HA18A. If tested for HIV during antenatal care: Other than at the antenatal clinic, do you know of a place where you can go to get a test to see if you have the AIDS virus?</th>
</tr>
</thead>
</table>

Follow instructions in your Interviewer’s Manual.