

AN INTEGRATED APPROACH TO THE DETERMINANTS OF HIV CONTAGION
IN INDIA

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DEDICATION

For Ma and Baba: Thank you for helping me achieve and
for your love, encouragement, support, and faith.

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I hereby extend my heartfelt gratitude to individuals who have helped me achieve my dreams. I would like to thank my parents for providing me the courage to stay so far away and pursue my goals. I would like to extend my gratitude to Dr Philip Yang, in his role as a guide and a mentor. I have learned so much from his expertise, knowledge, and statistical training. I am grateful to Dr Lisa Zotarelli, Dr Abigail Tilton, and Dr Linda Marshall for being part of the immense support system throughout this process. My committee's support, patience, and teaching techniques have helped me appreciate the research process even more. I would like to thank Santanu, my husband, for being there for me in my academic journey for the last few years. I want to recognize my kith and kin that believed in me, and helped me transform an aspiration into actuality.

ABSTRACT

TANNI CHAUDHURI

AN INTEGRATED APPROACH TO THE DETERMINANTS OF HIV CONTAGION IN INDIA

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The AIDS explosion in India continues to be a serious concern (Irwin, Millen and Fallows 2003). Given the magnitude of AIDS cases in one of the most densely populated nations in the world, as well as the established gendered conduit to the infection, this dissertation studies HIV contagion in India by answering the following three research questions: (i) What are the factors that influence HIV infection in India? (ii) How does gender intersect with other variables to influence HIV infection? (iii) What are the similarities and differences between men and women in determinants of HIV contagion in India? Built upon existing models in the literature, this study proposes an integrated theoretical model to explain HIV infection in India. It argues that HIV contagion in India is determined by demographic determinants, socioeconomic status, behavioral factors, social-support, HIV awareness, and interaction between gender and some of the aforementioned factors.

The data for this study came from the National Family Health Survey-2, collected in 2005-06, which was a nationally representative sample consisting of approximately

198,754 respondents representing all states and regions of India. The sample included both men and women between the ages of 15 to 54. After filtering the sample in terms of HIV testing, the sample size was reduced to 105,657 individuals. The dependent variable for this analysis is HIV status, a binary variable indicating HIV positive or negative status as derived from the blood test results. The predictors in the study include age, gender, region of the country, religious affiliation, urban/nonurban location, marital status, literacy, wealth index, work status, scheduled caste or tribe affiliation, number of sex partners, condom usage, domestic violence, availing paid sex, attitudes towards individuals who live with AIDS, and basic knowledge of AIDS and other STDs. Logistic regression is the main method of data analysis.

Major findings include: (i) Gender, age, residence, region, Islamic affiliation, being divorced and widowed, literacy, work status, number of sex partners, and basic AIDS awareness significantly predict HIV in India in the pooled sample of men and women. (ii) Gender interacts with age, marital status (not married and widowed), number of sex partners, and AIDS awareness in impacting HIV differently for men and women. (iii) There are some distinct similarities and differences between men and women in how HIV is contracted. In addition, exposure to physical violence in a domestic setting is a special conduit to the HIV infection for women, but paid sex does not have a significant effect for men.

Overall, this research provides a comprehensive approach to analyzing HIV contagion in India and may help understand the determination process of HIV infection

in other parts of the world. The findings of this study may help the development of policies or programs that can control HIV and AIDS in India.

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CHAPTER I

INTRODUCTION

Since its formal inception in the early 1980s, the HIV pandemic is a global peril that has continued to take its toll on the denizens of numerous nations of the world. In 2007, there were 40 million people globally living with Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), in addition to the families of 20 million who have already expired (Marfatia, Sharma, and Modi 2007). The first documented evidence of AIDS occurred in the early 1980s in the United States (Harindra 2008). Discovered among young homosexual men (Mayer and Pizer 2000), the condition received its first outmoded label-“Gay Related Immune Deficiency” or GRID (Christensen 1990). Since then, consequent occurrences were reported among other populations, including injection drug users, homophiliacs, blood transfusion recipients, individuals from Central Africa, and infants born to mothers who have been diagnosed with AIDS (Mayer and Pizer 2000). The global appearance of HIV and AIDS constitutes an extensive peril to humankind. HIV and AIDS kill more people in the developing nations of the world than any other contagious diseases, accounting for 96 percent of all such cases (Weitz 2010). While HIV and AIDS are at an endemic status in the Caribbean and most of Africa, the near endemic status is imminent in South East Asia, particularly India (Wietz 2010). The HIV threat in India is by no means under control. Academic

enquiry into the detailing of determinants that leads to the condition is less than adequate and warrants more rigorous attention.

THE RESEARCH PROBLEM

The AIDS explosion in India had previously been forecasted to impact several millions by 2010 (Irwin, Millen and Fallows 2003). Although the official estimates were lower than the previous predictions, it was projected that in 2009, about 2.4 million individuals were living with the condition. This accounts for about .3 percent of the one billion population (Avert.org 2011). HIV is the cause of AIDS (Irwin et al. 2003). AIDS occurs at an advanced stage of the HIV infection leading to a failing immune system. The HIV virus attacks certain cells, designated as CD4 cells, which helps the human body fight against infections. The virus multiplies in the body, blending into the bloodstream, thus making the body more susceptible to certain kinds of infections (Irwin et al. 2003). The nature and type of these infections vary by regions in the world (Irwin et al. 2003). A HIV positive individual might be infected with the virus, but might progress much later to the more mature stage of AIDS. In the absence of active intervention, however, all HIV positive individuals will move on to the more mature stage. HIV is spread through unprotected sexual intercourse with a partner, sharing needles or other injections, or receiving blood transfusion or other blood products from an individual already infected (Irwin et al. 2003). The risk of the infection can be sharply reduced by using female or male condoms, the elimination of shared needles, or administering antiretroviral (ART)

drugs to a pregnant mother (to prevent transmission to the child) (Irwin et al. 2003). Screening of blood prior to transfusion also minimizes the risk.

Several characteristics define the contemporary appearance of the infection: prevalence among different population groups particularly women, variations by region, limitations to ART access, a lack of awareness of HIV status, in addition to profuse stigma and discrimination (Marfatia et al. 2007). As outlined by Ramasubban and Rishyasringa, “What is unique about HIV/AIDS in India is its combination of the medical nature of the disease (incurable), the main route of transmission (unprotected sex), the social exclusion spin offs (stigma, discrimination)” (2005:1), which is compounded by existing structural impediments, including poverty, paucity of formal and informal schooling, joblessness, transitory labor, and women’s subservient status in society (Ramasubban and Rishyasringa 2005).

Men are often the conduits of contagion, transmitting the disease from the vulnerable to the infected populations (Avert.org 2011). Of the estimated number of people who are living with HIV, 37 percent are women (Stephenson 2007). The spread of the infection affects women from all quarters (Ninan 2004). A report on HIV and AIDS in India describes how the contemporary face of HIV also includes adolescent single and married girls, married women from the reproductive age group, single women who are sexually active, sex workers, undergraduate and graduate students, pregnant women, as well as those who have survived sexual abuse and rape (Ninan 2004).

Given the overall extent of the AIDS scenario in a country of sprawling millions (where slight changes in percentages denote a mammoth number of cases), as well as the established prevalence of a gendered transit to the infection, this dissertation proposes to study the HIV contagion in India with an emphasis on the determination process and gender differences. This study seeks to answer the following research questions:

1. What are the factors that influence HIV infection in India?
2. How does gender intersect with other variables to influence HIV infection?
3. What are the similarities and differences between men and women in determinants of HIV contagion in India?

RESEARCH RATIONALE

The unique contributions of this study that set it apart from existing scholastic endeavors can be identified at the theoretical, methodological, and practical levels. First, differing from existing studies, this study incorporates demographic, socioeconomic, behavioral, social support, HIV knowledge, and gender variables into one comprehensive analytical model to explain HIV contagion in India. Existing research looks at the determinants of HIV infection primarily from the demographic and socio-economic perspectives (Marfatia et al. 2007; National AIDS Control Organization 2011; Ninan 2004; Sen 2008; Solomon, Chakroborty and Yephthomi 2004). Behavioral proclivity is also factored into the analysis, but is never been based on a nationwide sample (Friedman 1996; Thapa, Singh and Kaimal 2007; Varma 2010). Similarly, the discussion of HIV awareness is also limited to regional samples (Nyamathi et al. 2006). No studies have

incorporated all of the predictors included in this study simultaneously, to explain variation in HIV infection.

Another important contribution of this study is that it gives gender a prominent role in the analysis; and it also examines the effects of interaction between gender and other predictors, such as religion, condom usage, labor force participation, domestic violence, and stigma.

Third, instead of looking at HIV stigma as an aftermath of infection, this study treats stigma as an antecedent to HIV infection. To date, more studies have looked at the HIV stigma from the perspective of lived experience (Aggleton et al. 2001; Ambati et al. 1999; Bharat and Aggleton 1999; Herek and Glunt 1988) rather than estimating the preexisting effects of stigma on HIV infection.

Fourth, the data and methods of this research are superior to those of existing studies. While existing studies used localized samples, this research uses the latest nationally representative sample, which allows for the generalization of findings to the entire population. Unlike most existing studies, this research uses a multivariate technique and includes all of available important predictors, and therefore, a more accurate assessment of the independent and combined effects of the predictors is made possible.

Finally, findings of this research can potentially make substantive contributions to HIV prevention in India. The extensive analytical model proposed by this study represents an important stride in the practical identification of all the possible risk factors

associated with HIV. For instance, if condom usage continues to be a barrier in implementing a HIV-free lifestyle, more grassroots initiatives that educate men and women on safer sex habits need to be implemented. If men respond better to one-on-one counseling in comparison to AIDS messages in the media, then individualized mentoring has to be the new face of HIV education. Thus, for prevention to be realized, a thorough proficiency of the likely demographic groups, their economic status, social conduct, inhibitions towards HIV carriers or lack thereof, as well as the efficacy of infusing timely awareness through informal means and media-generated education needs to be appraised. This is an imperative in the wake of maximizing resources amidst financial limitations. The practical derivations from this academic enquiry can propose crucial intervention to limit HIV in the developing, as well as more developed nations.

Overall, a unique theoretical model, particular attention to gender and its intersecting effects with other variables, better data and analytical technique, and the practical implications of findings for prevention of HIV in the developing context, render this research distinct from published inquiries on the subject matter.

ORGANIZATION OF THE DISSERTATION

Chapter Two in the dissertation provides a brief overview of the literature on HIV and AIDS infection in India. Chapter Three outlines in detail, the integrated model proposed in this research. Chapter Four provides information on the data and methods. The major statistical findings for the study are provided in Chapter Five. Finally, Chapter Six summarizes answers to each of the research questions, puts into perspective the

theoretical and practical implications of the findings, and points to the directions for future research.

CHAPTER II

REVIEW OF THE LITERATURE

A review of the existing literature pertaining to HIV and AIDS in India shows the use of one or more of the following set of predictors in explaining HIV status: demographic model, socioeconomic model, HIV awareness model, behavioral model, and gender. However, seldom have all the above determinants been incorporated into one composite model in providing an all-embracing explanation of the HIV contagion. Furthermore, some important predictors, such as social support and social stigma, have been absent in the literature, as has been the intersectional effect of gender.

DEMOGRAPHIC MODEL

The demographic framework often uses religion, region, state, and urban/rural residence as predictors of HIV infection (Friedman 1996; Marfatia et al. 2007; Sen 2008). For instance, for regional variations, in addition to the high HIV prevalent zones of Andhra Pradesh, Goa, Manipur, Maharashtra and Karnataka (Sen 2008), additional vectors of infection recently identified include Madhya Pradesh, Uttar Pradesh, West Bengal, Orissa, Rajasthan and Bihar (National AIDS Control Organization 2011). Given the changing trend of the infection regionally, few studies have combined the new and older domains of HIV concentration into two or more groups, and compared it with relatively low risk zones. Additionally, the vulnerability of urban centers through migrant

work and the presence of intravenous drug users or sex work has also been noted (Friedman 1996; National AIDS Control Organization 2011). Nevertheless, comparing the urban segments with vast rural stretches where social isolation in recent years could have increased risk of infection, has not been adequately outlined.

India is a secular nation with a large number of Hindus. Yet, a substantive proportion of the Indian population also consists of Christians, Muslims, and Sikhs, among other religions (Census of India 2001). The probable linkage between religion and HIV is also absent from the current literature, although most religions have tenets or philosophies that look at HIV from specific perspectives (Brown 2007; Menski 2007; Morgan 2007; Nanji 2007; Nesbitt 2007).

SOCIOECONOMIC MODEL

Second, as far as economic determinants are concerned, both national expenditures on HIV, as well as individual-level socioeconomic status contributing to HIV, have received some attention. As described by Ramasubban and Rishyasringa (2005), in the wake of an endemic, HIV sometimes demonstrates a nation's stumbling block to direct its policies towards socio-economic sustenance and "healthy existence" for its denizens since the infection impacts those already in a relative state of economic destitution. Currently, India spends five percent of its health expenditure on HIV and AIDS, while the World Bank reports that the percentage needs to increase to at least seven percent by 2020, to grapple with the still growing epidemic (Avert.org 2011).

Abject poverty at the individual level also has an effect on HIV prevalence or risk (Dabbag, Torabi and Heiftje 2008; Solomon, Chakroborty and Yepthomi 2004). Historical backwardness in terms of group affiliations (Scheduled Caste/Tribe affiliation) plays an important role in the social stratification system in India. Even in the more developed nations, cumulative disadvantage across the lifespan, living in deprived neighborhoods, and the lived experience of social discrimination have contributed to health outcomes (Karlsen and Nazroo 2002). For instance, in the United States, a higher prevalence of sexually transmitted diseases among blacks comes from lack of health care access, unemployment, economic destitution, and a reluctance to seek treatment for STDs backed by fear of stigma (Cockerham 2010). In contrast, in India, while poverty has been found to be connected with HIV infection, analogous historical disadvantage resulting from the caste system has been sidelined.

Education is an important indicator of socio-economic status. In terms of years of schooling, both generic education and basic reading ability make a difference in contributing to HIV knowledge (Ramasubban and Rishyaspringa 2005). Yet, the distinction between formal schooling and basic reading ability has not been sufficiently addressed.

BEHAVIORAL MODEL

A third important explanation for HIV found in the literature pertains to human behavior. Behavioral dispositions that partially account for HIV and AIDS in India have addressed the importance of prostitution and its relationship to HIV (Friedman 1996;

Thapa, Singh and Kaimal 2008). Most of these pertain to the history, description, and risk of HIV within the profession, or its association with migrant labor and trucking (Thapa, Singh and Kaimal 2007). However, few studies have explored the frequency of sex outside marriage (including with sex workers) among household members classified as “generic” population (in contrast to “at-risk” population) (Herek and Glunt 1988). While the infrequency of condom usage connected with moral and ethical barriers continues to be a persistent concern pertaining to HIV (Farmer 1999; Seshu 2005; Thapa et al 2007; Varma 2009), intersecting condom usage with gender, as a precursor to HIV has not been explored.

HIV AWARENESS MODEL

Fourth, HIV awareness is also used by researchers to account for the HIV status in India (Kotecha and Patel 2001; Nyamathi et al. 2007; Subramaniam, Gupte and Ezhil 2007). The generic importance of HIV awareness in the developed context follows a historical trajectory: Goldstein (1990) discussed how the prime of the outbreak in the United States had experienced the conversion of the AIDS phenomenon into several different artifacts- novels, art, and music (thus more eclectic high culture) and then popular culture (televised drama, movies, comedy etc). While the media coverage of celebrities, including Rock Hudson and other important faces in American life, created more coverage in the American media, several characteristics defined the trend in HIV reporting: it being labeled as a sexually transmitted disease, sensationalism, and confinement of a vulnerable population, more attention to gay activism, in contrast to

intravenous usage and AIDS among women, discrimination against the Haitian population, and the re-iteration of infants as innocent victims (Nelkin 1991). Thus, media can generate awareness in a positive or negative manner, and in the process, at least acquaint the audience with topical exigency pertaining to HIV and AIDS. Similarly, in India, when health communication is packaged with entertainment for disseminating AIDS awareness, positive responses have been achieved. For instance, All India Radio came up with the concept of “Taru”--an upper caste girl from rural India set to empower the masses. The consequence? A stress on prevention of child marriages, more education, and communicating the importance of safe sex among high school girls (Kenendy et al. 2008).

Outside the media in the developed context, HIV and AIDS education works through implementing prevention programs in school, through health edification at urban centers deliberated by community groups, members of medical task forces, and government representatives, by the introduction of culturally sensitive messages, in making available counseling and testing programs, and through timely appraisal of risk management initiatives, etc (Fieldman and Miller 1998). In India, while the knowledge from media-generated awareness has been documented before (Varma 2010), looking at HIV knowledge and awareness from informal sources as supplementary sources of information has not been comparatively investigated.

SOCIAL SUPPORT MODEL

Fifth, no existing studies have used social support or lack thereof, to explain HIV infection in India. The idea of support for HIV, either through institutional or individual mechanisms, is important in curtailing prevalence. However, the existence of social support in the Indian situation can also be impeded by preexisting stigma about HIV and AIDS. Fife and Wright (2000), while associating the HIV virus with homosexuality and drug use, identify the condition as “behavior considered to be deviant, classified as sexually transmitted disease, is viewed as the responsibility of the individual, is thought to be acquired by way of immoral behavior, and is perceived as contagious and dangerous to the community” (52: 2000). The perceptions of blaming the carrier of HIV are not uncommon even when it comes to HIV at the institutional level. During the earlier stages of the epidemic in the United States, the Institute of Medicine’s HIV committee acknowledged the need for understanding and eradication of “fiscal and institutional barriers” (1988: 62) that impede successful HIV based programs. The fear of discrimination was assessed to be the major obstacle in the acceptance of health care initiatives and called for the introduction of a federal statute that inhibits AIDS based discrimination (Institute of Medicine 1988). In terms of the paucity of external support systems, sometimes empowerment had to be located from within--An ethnographic study of African American mothers living with HIV/AIDS discussed how strength and mutual support is mediated through hard life circumstances including living and mothering with HIV/AIDS (Shambley-Ebron and Boyle 2006).

In the Indian context, while the lived experience of HIV has been documented (Aggleton, Bharat and Tyler 2001; Bharat and Aggleton 1999; Sarkar 2010; Tarakeshwar et al. 2006) subsequent to infection, its impact on the infection has not been explored (which alludes to the fallacious comprehension of the condition as a disease of the “other”, including sex workers, drug users and additional at-risk populations, and their subsequent failure to adhere to necessary precautions). Similarly, the probable effect of social marginalization on subsequent HIV prevention among at-risk groups has not been addressed in-depth.

Finally, some of the social practices that are in place pertain strictly to women. Some existing studies (including those using the same data set to be considered for this dissertation) discuss gender differences in HIV infection, but they do so often within a limited context---in urban-rural variations in AIDS knowledge, trends and sources of knowledge among married women, generic prevalence of sexually transmitted infections, and correlations between literacy rates and STI infections (Varma 2010). Similarly, Silverman et al. (2008) looked at the relationship between domestic violence and HIV among married women, but not within a broader framework.

Another gap in the literature is that little research has used an intersectional approach to analyze how gender intersects with other predictors to influence HIV. The potential repressive aspects of religion, experiences with domestic violence, ambiguities in labor force participation, or the lack of negotiation in condom usage have not been addressed, simultaneously, as gender-specific precursors to HIV infection.

SUMMARY

Enumerating factors that determine HIV in India have received some academic consideration in recent years given the extent of the infection in the nation. Several studies have approached the condition from different dimensions, including demographic, socioeconomic, behavioral, gender, and HIV awareness perspectives. However, the usage of the existing models is limited in their theoretical approach by not accounting for all possible factors. Some of these studies are also restricted in design through the usage of a modest sample size or employment of basic statistical technique. In addition, the causal pathway from social support to HIV infection has not been proposed, and neither have all the determinants been integrated into one composite analytical paradigm. This dissertation seeks to fill these gaps in the literature.

CHAPTER III

AN INTEGRATED MODEL

This research proposes a comprehensive theoretical model that integrates the existing determinants found in the literature to explain HIV infection in India. The integrated model argues that HIV in India is determined by six categories of factors: demographic, socioeconomic, behavioral, social-support, HIV awareness, and gender (the intersection of gender with some of these variables to influence HIV infection). The remainder of this section elaborates these determinants and explains how they impact HIV status.

DEMOGRAPHIC DETERMINANTS

Demographic variables influence HIV infection because they affect the chances of contracting this virus. Important demographic predictors include, but are not limited to, region, urban/rural residence, religion, age, and marital status. The effect of each of these variables on the dependent variable is elucidated below.

Region

There has been a region-centric dimension to HIV occurrence in India, although the trends can change very fast given the diffusivity of HIV in geographic and social spaces. According to NACO estimates of 2006: "Twenty-six districts have been identified with high prevalence, largely in the states of Madhya Pradesh, Uttar Pradesh, West Bengal, Orissa, Rajasthan and Bihar," therefore, identifying new at stake regions of

the nation (National AIDS Control Organization 2011). Historically, the first instances of HIV was discovered in the state of Tamil Nadu, followed by subsequent discoveries among intravenous drug users in the northeastern states of Manipur, Mizoram and Nagaland (Marfatia et al. 2007). Based on HIV screening at antenatal and sexually transmitted disease (STD) clinics over the last few years, in addition to the aforementioned regions, Andhra Pradesh and Karnataka in the south and Goa (a major tourist destination) in the southwest, also report a high incidence. Recently, in states such as Manipur, Andhra Pradesh, Karnataka or Maharashtra, the statistics are higher (Sen 2008). The instance of Andhra Pradesh is particularly ironic given that it has five percent of the nation's "aggregate population," and yet accounts for one fifth of all the HIV cases. There are observable patterns of behavioral inhibition in the regions already affected. For instance, in Maharashtra alone, of those who live with the infection, 56 percent have not disclosed their status to the community (Sen 2008). Based on HIV testing in antenatal clinics (testing for pregnant women), in addition to the states of Andhra Pradesh, Karnataka, Manipur and Maharashtra, Tamil Nadu, Manipur and Nagaland, provinces including Goa, also demonstrate a higher occurrence in recent times. These region-centric variations are partially attributable to behavioral precursors including injection drug use in the north eastern states of Nagaland, Manipur and Mizoram, the practice of prostitution backed by some degree of social support in the devadasi belt in Karnataka and heterosexual modes of transmission in Andhra Pradesh or Maharashtra (Marfatia et al. 2007).

For this research the east will be used as a reference category for comparison with the remainder. Although literature suggests that the north eastern states of Manipur, Mizoram and Nagaland have a high prevalence of HIV, all of these are very sparsely populated and account for approximately between 0.22, .09 and .16 percent of the total population (Size, Growth Rate and Distribution of Population 2001). In addition in the data collection process for the survey for this research, of the six high risk states that were oversampled from different parts of the country, the eastern state of Nagaland could not be included because of local opposition to blood collection. With the recently emergent cases of infection in the northern states of Uttar Pradesh (also one of the most populated), or in northern cities including New Delhi and Chandigarh (National AIDS Control Organization 2011), along with the persistence of infection in parts of southern and western India, it can be assumed that the HIV infection rate in India in the east is lower in comparison to the north, west and south.

H₁: HIV infection is significantly higher among Indians living in other regions than those in the east.

Urban/Rural Residence

In addition to regional variations, levels of development associated with urban/rural spaces have exhibited an impact on HIV. A CDC (2010) study summarized the higher prevalence of HIV and AIDs among poor urban neighborhoods in the United States as almost 4 times the national average. This disparity could be partially linked to a paucity of adequate admittance to healthcare, and the high rates of imprisonment, in addition to substance abuse evidence (Avert.org 2011; Center of Disease Control 2010).

In India, there is a significant intravenous drug user population who live with HIV and AIDS in the bigger cities, including Chennai, Delhi, Mumbai, and Chandigarh (National AIDS Control Organization 2011). Additionally, Friedman (1996) noted that more than half of the sex workers in metropolises like Mumbai are infected with HIV. The red light districts in India are also a primary source of infection for the general population.

However, the social isolation of poor rural communities can also increase the vulnerability to infection, while the urban centers seem to offer a greater propensity for infection given the contact situation. It would be intriguing to explore the contemporary scenario in terms of where the higher incidences of HIV can be identified.

Irrespective of the sporadic spread of the infection to all parts of the nation, it is safe to presume that urban centers by virtue of their contact situation with migrant workers, sex workers, or intravenous drug users have a higher rate of HIV positive individuals.

H₂: HIV infection is significantly higher among Indians living in urban areas than those in rural areas.

Religion

A detailed breakup of the Indian demographic reveals that while 80 percent of the Indian demographic are Hindus, other religions include 13 percent Muslims, 2 percent Christians, and 2 percent Sikhs (Census of India 2001). Each religion is historically based on a few assumptions that can directly or indirectly impact HIV prevalence. Among Hindus, pre-marital chastity is of pivotal importance, and the discussion of sexuality is discouraged to an extent of being taboo (Menski 2007). The concern for sexuality usually

pertains to the female who is expected to be a virgin until the time of their marriage. While these standards are not adhered to strictly for men, women are often “blamed for male lapses of chastity” (Menski 2007: 14). Homosexuality is not overtly acknowledged; and the early reaction to HIV and AIDS was characterized by the disease emerging from any form of sexual liaison outside of marriage (Menski 2007). These moral codes are also observed in Sikhism, where to date in India and other parts of the West, there are two different ideologies that pertain to the socialization process of boys and girls; the threshold of tolerance being higher for boys (Nesbitt 2007). A percentage of migrant workers and long distance truckers identified as HIV carriers in South Asia are from within this religion. Yet, the cultural taboos associated with the discussion of sexuality, in conjunction with intense stigma, contribute to the inadequate assessment of the HIV threat, besides contributing to the misery of the HIV-positive widows (Nesbitt 2007).

In comparison, Buddhism stresses responsibility for human action and not being able to protect oneself or others from sexually transmitted disease as an individual failure. Homosexuality is viewed as unnatural since it does not lead to procreation (Morgan 2007). HIV and AIDS pose a challenge in predominantly Buddhist nations, like Thailand, where it was originally linked to the gay bars--although current prevalence reflects heterosexual modes of transmission. Based on the philosophy of ahimsa or extreme tolerance, the ethical challenge posed by Buddhism pertains to the usage of condoms that negates procreation or abortion of HIV- positive fetuses (Morgan 2007). Islam, on the other hand, restricts sexual relationships to married partners, forbids sex outside

marriage, and condemns homosexuality as an abomination (Nanji 2007). In recent years, the infection has spread to nations with a high Muslim population, including Senegal and Uganda. Based on an ethic of caring for the sick, Muslim organizations have been proactive in both catering to the needs of the infected population, as well as in disseminating the importance of prevention (Nanji 2007). Finally, in Christianity, premarital sex either denotes arbitrary sex prior to settling down with one person, or the expression of love between two consenting individuals prior to marital union (Brown 2007). A critical line of distinction is also maintained between homosexuality and homosexual acts, the former referring to attraction to the same sex, while the latter, strictly prohibited, refers to the corporeal manifestations of the same sex orientation (Brown 2007). In the context of HIV and AIDS, analogous to predominant ethical dilemmas of other religious traditions, Christianity is challenged with the moral implications of condom usage, children born with HIV, and contracting HIV from rape or extra marital activity (Brown 2007).

Thus, religious variations can partially account for different life outcomes, particularly if the tenets are integrated into the ritualistic part of individual existence. Most religious traditions therefore, denounce extra- and premarital liaisons and are even less accepting of homosexuality. The codes of conduct in most cases pertain to the female, while the religious inhibitions concerning sexuality which are already in place make it harder to dispel HIV-based misconceptions. However, in Western religions, including Christianity, the level of tolerance towards sexual freedom seems somewhat

higher than in the religious derivations from Hinduism or Islam. Yet, given that Hinduism is the majority religion in India, the influx of HIV is likely to be clustered among those who follow the tenet. The more repressed is sexual permissiveness in how religion is integrated into day-to-day lives, the higher the likelihood of closeted sexual behavior that includes usage of paid sex, refusal to wear condoms, etc.

H₃: HIV infection is significantly higher among Hindus than among non-Hindus.

In addition to the specified demographic variables, age and marital status will also be included in this analysis. Given the relative novel character of the medical condition, HIV is more likely to affect those who are in their early and middle adulthood in comparison to older adults. The young are more likely to be sexually adventurous in comparison to older adults.

H₄: Age is negatively associated with the likelihood of HIV contagion.

With the established prevalence of HIV in India among married men and women, and identified routes of transmission from married men to women, marital status is likely to be a threat for infection.

H₅: HIV infection is significantly higher among Indians who are married than among those who are not.

SOCIOECONOMIC DETERMINANTS

Health is not a given, and neither is it a birthright. Health can be defined as the absence of a disease and is allied with the concept of social normalcy and the ability to continue with everyday existence (Blaxter 2004). Like a disease that is more physiological or illness as the experiential component (Conrad 2001), disparities in health

statuses emerge from differences in life conditions. The Marxian/materialist approach to health stratification provides a structural clarification for differences in health statuses. Marx discussed how individual class positions are a function of inequality which has transcended historical societies, like hunting and food gathering, state property of antiquity, feudalism, and now capitalism (Giddins 1971). Marxian percepts on health stratification can be understood in two distinct ways. First, given the Marxian postulate, minimal wage earners are not in a specific situation to afford healthy lifestyles that are the key to physical and mental well-being (White 2009). In reality, the lack of resources among the non-capitalist class leads to persistent impediments in affording a healthy lifestyle. These include the inability to afford health insurance, medications, or expensive treatment. Second, the clustering of working classes in low-end professions exposes them to occupation hazards, injury, the stress process, and unhygienic and unsafe life processes.

The possibility of acquiring HIV infection would vary by life chances including disparities in living conditions and prospects. Those who are in relative situations of destitution are more likely to be susceptible to the HIV peril. This not only includes the economically impoverished, but also the educationally deprived and isolated. The following parameters--income, literacy, participation in paid labor outside home, and historical subjugation--provide an important framework for comprehending how socioeconomic disparity can impact HIV.

Wealth

There are certain aspects of poverty that increase vulnerability. For one, the lack of wealth and income in rural regions creates migration to urban centers. In sub-Saharan Africa, the migrant population in large cities does not work in environments conducive to economic stability, besides the necessity of leaving their families behind. This disruption in conjugal life through migration has been identified as one of the primary causes of AIDS infection. In Thailand, when farmers move to cities to look for jobs, leaving their women to take care of the families, women often take sex work as a quick respite from poverty (Dabbag et al. 2008). The high risk groups in India include analogous populations of migrant laborers and sex workers who are essentially underprivileged. In India, among some, there is indirect endorsement from the family if daughters enlist in the sex trade (Dabbag et al. 2008). Besides broader structural parameters of poverty among at-risk groups, disfavored social spaces also lead to halting effects in prevention. For instance, poor rural communities are immersed in ignorance, making it more difficult to dispel HIV-based myths (Solomon, Chakroborty and Yeptthomi 2004). The effects of poverty are also multiple, being associated with lower rates of education, literacy, lack of awareness, cultivation of stigma and misinformation that, in total, takes a toll on the future of the HIV contagion.

Thus, wealth which includes assets in the family (nature of household, possessions, savings) that in turn indicate economic status, has an indirect association with HIV. Lack of substantial wealth in the rural regions compels migrant labor and

forces population movement into urban centers, which puts individuals in a higher contact situation with HIV. Similarly, lower wealth index within the family pushes women into the sex trade and intensifies their risk of getting infected.

H₆: The higher the individual wealth index, the lower the probability of HIV infection.

Education

Education is another important yardstick that can determine life outcomes. According to the 2001 census data, India has a literacy rate of 64 percent with urban and rural variations (the urban centers scoring higher). Literacy rates for men (75 percent) are also higher than women (53 percent) (Census of India 2011). In India, ignorance and a knowledge gap leads to discrimination, lack of status disclosure, or in the ability to estimate risk in the absence of early physical manifestations of the condition (Sen 2008). Persistent knowledge gaps make it “harder to generate an understanding of the routes and reach of transmission and the ways and the means of countering them and of organizing medical and social care” (Sen 2008: 6). At this juncture, it is also important to establish the difference between literacy (fundamental reading and writing skills) and formalized education (levels including school, high school, college, post bachelors etc). As explained by Ramasubban and Rishyasringa (2005), both the paucity of official education and the prevalence of illiteracy fuel the spread of the epidemic.

H₇: The higher the level of literacy, the lower the probability of HIV infection.

Labor Force Participation

According to the 2001 census data, there were 402,234,724 individuals in the workforce in 2001, of which 51 percent are male and nearly 26 percent are females (Census of India 2011). The workforce is also comprised of main and marginal workers (Census of India 2011). Labor participation can have a twofold effect. First, income generation patterns which include long distance trucking, migrant work, or sex work are established conduits of infection. The clientele of female sex workers include low-level workers from manufacturing and trade industries, others separated from their families for a period of time, traders and patrons of transient markets, defense personnel, students, service providers of the red light districts, as well professional blood donors (Thapa et al. 2007). Thus, prevalence patterns can differ by the nature of labor. Of these patterns, truck drivers are more likely to visit with multiple sex workers in a week. Along the highways of rural regions, frequent visits to sex workers are also quite prevalent (Thapa et al. 2007). Thus, prevalence patterns would differ by the kind of vocation. Second, participation in the labor force propels the workforce outside the periphery of their homes, making them more visible, identifiable, and, therefore, more approachable to HIV education. Stephens and Dharmaraj (2005: 71) believe that “workplaces are institutional contexts where large and fairly stable concentrations of people form captive audiences for health education” including “HIV and AIDS prevention and management.” Taking into consideration the 40 percent of the Indian population who constitute the workforce minus the agricultural laborers, the target audience of urban personnel for HIV education

includes adolescents, children, women, and men as migrant workers. Thus, workplaces have been identified as a secure milieu for imparting awareness. Given receptivity and contact with these initiatives, participation in the workforce could fortify health statuses as well.

Given that health care initiatives have been imparted in formal work milieux and the likelihood of cultivating greater awareness among people through contact outside the home, it seems safe to presume that HIV infection will be less prevalent among those who work outside home.

H₈: HIV infection is significantly lower among Indians who work outside the home than those who do not.

Historical Subjugation

Different social groups based on their majority/minority group affiliation are clustered into various kinds of life experiences. These structural inequalities factor into overall health based criteria--life expectancy, mortality, morbidity, exposure to occupational hazards, and educational inequities that factor into health consciousness, or even disparities in treatment options (Cockerham 2010; Karlsen and Nazroo 2002; White 2009). In India, this translates into a historical disadvantage contributing to pre-existing status inequalities, including affiliation with the “Scheduled Caste,” “Scheduled Tribes” and “Other Backward Classes.” Scheduled Castes refers to the lower strata of the caste system, and historically, denote people who were construed as untouchables (although the contemporary occurrence of untouchability is relatively low) (Aharon 2005). Scheduled Tribes refer to populations who set themselves apart from the caste system and

often reside in secluded places including forests. These populations are also known as “Adivasis” or aboriginals (Aharon 2005). On the other hand, other backward classes are also drawn from the lower strata, but are not the Scheduled Castes (Aharon 2005). All these groups have been historically discriminated against and carry the burden of social disadvantage to present times (irrespective of recent social-political accommodations). This backlog in social progress might also have a bearing on health statuses, including HIV, among other indicators of socio-economic development. Given the paucity of literature on the subject, the relationship between historical subjugation and HIV has not been explored in depth—a deficiency which this study seeks to fulfil.

H₉: HIV infection is significantly higher among Indians in historically repressed groups than those in non-repressed groups.

BEHAVIORAL DETERMINANTS

Behavioral dispositions, including availing oneself of paid sex, irregularity in condom usage, and domestic violence contribute to the HIV syndrome; male visits to sex workers and female exposure to interpersonal violence augment the risk of prevalence. At the same time, disregard for (or an inability to enter into a dialogue about) safe sex practices renders both sexes vulnerable to the infection. As of now, the population most at-risk or vulnerable to HIV and AIDS in India includes sex workers, intravenous drug users, men who participate in same-sex relationships, truck drivers, and migrant workers (Avert.org 2011). Bourdieu’s concept of habitus provides a partial explanation for the

clustering of aberrant behavior among some fragments of the population, which accelerates the threat for HIV and AIDS.

Bourdieu's notion of habitus in explaining health outcomes through life choices, although allied to the Marxian postulate, moves beyond economic determinism. In Bourdieu's most celebrated work "Distinction" (1984), "habitus" is indicative of lifestyles aligned with respective class dispositions. It is often an outcome of the economic capital possessed by a particular social class and is preserved and contained among members of the privileged group. Habitus is a system of interconnected practices, which could be aligned to particular situations of life, including ascribed statuses, and are devised to generate and reproduce certain preexisting conditions of existence. McKinlay (2001) discussed culturally diffused ideas of health behavior that demonstrates idolized lifestyles and ways of living, which everyone who seeks membership in a society should strive for, including consumption of vitamins, mineral supplements, mouthwashes, painkillers, etc. This way those who are not cognizant adapters and followers of health-based habitus are naturally predisposed to getting infected with HIV and AIDS. And yet, habitus is not a simple choice of lifestyle. The pursuit of the "ideal" habitus is either shielded or unattainable to the already vulnerable segments.

This research examines prostitution, condom usage, and domestic violence as important behavioral precursors to HIV and AIDS. Given the lack of overt measures that record homosexuality, as well as the diffusion of same-sex behavior among men (who sometimes also have married partners) (Thapa, Singh and Kaimal 2008), examining

same-sex behavior as a precursor to HIV occurrence is beyond the scope of this research. Similarly, given the household nature of the data used for this research, drug usage as a probable antecedent can neither be reckoned with beyond what is specified in the literature (accounting for region centric and urban versus rural variations of HIV).

Paid Sex

Originally, the Immoral Trafficking Prevention Act in India was designed not to criminalize prostitution, but to prosecute activities that include maintenance of brothels, making a living from prostitution, or obtaining services (Thottiparambil 2005). Criminalization of prostitution and contradictions in legal enforcement actually interfere with health initiatives or make it difficult for health care workers to function in a perilous atmosphere (Thottiparambil 2005). Overall, prostitutes are an underclass themselves, comprising a largely isolated community. Articulating on the defiled status of sex workers in a predominantly Hindu society, which is still divided on the basis of caste and racial purity, Friedman (1996) explained how there are not plentiful options for those who want to escape the profession. This leads to two status impediments for women in the sex trade if diagnosed positive—the infamy of the profession, and the secondary indignity associated with HIV. Friedman (1996) also reported that the red light domains of Mumbai are also the main routes of infection to the general population. Most women in the sex trade work as indentured servants and the lifelong process of entrapment into the profession can be equated with slavery. At the time the report was published in 1996, the Human Rights Watch reported that more than half of the sex workers in Mumbai

were infected with HIV. Thus, India experienced dual crises with regards to sex trade--- both as a daunting human rights violation and an augmenting health peril (Friedman 1996).

A more recent article articulating the generic situation with prostitution described how adverse circumstances connected with poverty, disadvantaged background, early exposure to sexual abuse all lead to entry into the profession (Thapa et al. 2008). During the early 1990's, the lack of knowledge about AIDS and unprotected sex among the highway sex workers intensified the risk for AIDS. The authors claimed that there has been a covert trend in bracketing sex work as one of the vectors of transmission given its early association with HIV in cities, including Chennai and Mumbai. Notwithstanding, the risk of transmission from a single sexual act through heterosexual intercourse between one negative and one positive partner is still low in the developed nations. In the developing context, the risk multiplies with poor health and hygiene conditions, or the presence of a preexisting sexually transmitted infection or ulcer (Thapa et al 2007). As noted by the authors, "One billion population, a large number of FSWs, high prevalence of sexually transmitted infection (STIs), and low condom use make a potent combination for explosive growth of the HIV epidemic in India" (Thapa et al 2007:73).

H₁₀: The higher the number of lifetime sex partners, the higher the probability of infection.

Condom Usage

Irregularities in condom usage increases HIV transmission. With regards to the early onset of AIDS in the United States, Shields (1989) discussed how the outbreak of

the condition emerged as interplay of systematic failure between the gay community, political activists, as well as the medical community. One indirect outcome of labeling the gay community was sporadic and unsafe sex behavior from within that community and apparent lack of regard for AIDS. This can be partly understood with regards to the volatile political climate in the late 1970s and 1980s when the gay community struggled with gay rights and identity, now also battled AIDS-based ostracism (Shields 1989).

As reiterated by Farmer (1999), the relationship between condom usage and HIV prevalence is not very simple. Gender inequality obscures safe sex options and moreover, even HIV positive women might choose to conceive children and thus, methods of contraception might not be a viable option for many. In the Indian situation, given the established prevalence of HIV and AIDS among the affected groups, government endorsed initiatives include using sex workers as peer educators. Their current working strategies include peer education, collective discussion and self-evaluation, condom dissemination, and other approaches to buttress grass root empowerment (Seshu 2005). However, the persistent refusal of male clientele to use condoms continues to be a barrier in the implementation of safe sex habits (Thapa et al 2007). In the context of the household, as Varma (2009) noted, sexual intercourse is not a choice, but a means of securing women's fertile identity in the household—a very important yardstick for survival given the paucity of women's socio-economic self sufficiency.

H₁₁: Indians who use condom are less likely to contract HIV than those who do not.

SOCIAL SUPPORT OR LACK OF IT

The presence of social support is a unique addendum to this research. Rather than looking at stigma and discrimination post-infection, this research assumes the pervasiveness of stigma contributes to HIV. The dichotomous classification of the at-risk versus general population is central to comprehending the social support model, which retains a distinction between who is more likely and less likely to contract the virus. However, authors including Herek and Glunt (1988) believe that the very distinction between the general and at-risk population in itself is a manifestation of stigma which brackets the population that can be potentially marginalized.

Goffman identified three main kinds of stigma that exist in contemporary society: physical, conduct, and tribal (Goffman 1963). “Physical” stigma refers to the “abominations” of the body, the physical deformities. In contrast, “conduct” refers to the “blemishes of the individual character” (Goffman 1963: 4) which could be aligned to certain construed infirmities of human personality associated with traits like homosexuality or alcoholism (Goffman 1963). Tribal stigma is basically a negative generalization about the entire community, extended to include territories like nation and state, or all pervasive concepts like religion (Goffman 1963). Stigma against those diagnosed and labeled as HIV positive could have similar outcomes (Fife and Wright 2000): For one, it refers to the very physical expression of the disease, including conditions with which HIV could be associated. Second, the notion of conduct is built into the moral presuppositions with regard to how the disease is contracted—promiscuity

or unsafe sex practices. Third, there is also the possibility of associating HIV with a particular at-risk community (Fife and Wright 2000).

Next, the theoretical concept of shaming refers to the process of labeling initially intended to ensue adherence to social norms. Cullen and Agnew (2003) provided insight into Braithwaite's (1989) original concept--when shaming is stigmatizing, criminal behavior increases, and when shaming is reintegrative, criminal behavior decreases. Continuous stigmatizations lead to the formation of subcultures which promotes a learning environment for illegitimate opportunities (Cullen and Agnew 2003). Braithwaite's notions of shaming are two-fold. For one, shaming could actually reinforce norms and successfully reintegrate individuals into the community. Conversely, shaming could also stigmatize, ostracize, and/or isolate individuals. Stigmatized individuals are more likely to be drawn toward the delinquent subcultures and manufacture their own norms and rules, based on the rejection of the value system of mainstream society. In the context of HIV, the second implication can have important repercussions. When at-risk populations, including gay people, injection drug users, minorities or sex workers, are assigned the blame for an epidemic and marginalized, it also subtracts from successfully disseminating awareness, information, or strategies in connection to HIV/AIDS. These could include, for instance information on the dangers of safe sex practices, dangers of needle sharing, on substance abuse, or any behavior that could ideally undermine detrimental health outcomes.

AIDS Tolerance

In connection to HIV, stigma is “an incurable progressive condition” (Herek and Glunt 1988: 888), and people are often blamed for their own condition. Moreover, when the symptoms of the disease are visible to others, it is also likely to affect the person’s reputation (Herek and Glunt 1988). Overall, there has been a strong sense of moral verdict in connection to HIV in India. In a study that inquired into the social responses to the disease in India, 36 percent of the respondents felt that infected individuals should commit suicide; an equivalent percentage believed that infected people deserved their terminal fate; and about one fifth of the respondents linked the status of the infected population to God’s sense of justice (Ambati, Ambati and Rao 1997). The research was conducted among an erudite segment of the South Indian population (Ambati et al. 1997).

The stories of the Patils, Mures and Nimborhkars are the same in many respects. They are residents of India, are HIV positive, and fight discrimination connected to the lived experience (Sarkar 2010). For some, the coping strategies include adopting children from known social circles (since formal adoption policy warrants parents being in good physical condition), or having a formal discussion with weary neighbors. In other scenarios, the health status is kept secret (Sarkar 2010). In addition, all segments of the Indian population do not have comparable coping strategies when it comes to the lived experience of HIV/AIDS. The support networks for both married and unmarried women in comparison to men are far less and the fear of ostracism is far more (Aggleton and Bharat 1999). Women are granted shelter in the household as long as their partners are

alive. Once the husbands die, and if women are not economically independent, the concern for having a "shelter" becomes central to their lives (Aggleton and Bharat 1999). The authors described how HIV status among women leads to different kinds of obstacles, specifically for those from less affluent backgrounds (1999).

The preponderance of lack of support, stigma, and discrimination damages both the successful implementation of preventive checks and treatment options that can potentially curb future contamination. Rose Weitz (1989) in her work on "Uncertainty and the Lives of People with AIDS", conducted in 1986-87 (in the early days of AIDS in America) divulged few uncertainties, including the threat "Will I get AIDS" which carried an inbuilt assumption of already getting infected much prior to actual diagnosis (Weitz 1989). Some of the preconceptions about AIDS patients might produce detrimental mental health outcomes for those diagnosed positive. Research shows HIV positive people who experience unsupportive social interactions suffer from depressive symptoms (Ingram et al. 1999). Alonzo (1995) discussed several implications of the "at-risk" phase of stigma. Individuals are aware of their perceived risk even before the clinical evidence for the disease surfaces. Even prior to diagnosis, the perceived danger of stigma cannot be ignored. The fear of imminent stigma, which includes rejection by friends, family, partners and co-workers, might also interfere with testing decisions to preserve the "sanctity" of a stigma-free lifestyle (Alonzo 1995).

Stigma also operates at institutional levels. Aggleton, Bharat and Tyler (2001) discovered multiple processes of discrimination in hospitals and workplaces in India that

include delay in medical care, refusal to admit infected patients, loss of jobs in organizations, and the severing of primary ties with kith and kin, as some very manifest forms of stigma (Aggleton et al 2001). The sense of anxiety associated with discrimination is compounded when city hospitals are reluctant to extend maternity services to pregnant women who are HIV positive (Aggleton et al 2001). In the context of the United States, a survey administered among registered nurses and doctors revealed that doctors and nurses are more likely to consider children and medically acquired HIV patients as blameless (Mccan 1999). Between 13 and 24 percent of both doctors and nurses consider women who contract the disease as blameworthy, although overall, women are less likely than men to be held responsible for the disease (Mccan 1999). Institutional barriers are also likely to prevent timely screening and monitoring associated with reinforcing a healthy lifestyle. Those who construe known medical facilities to be forthcoming are likely to venture in that direction for routine health monitoring, including HIV (specifically since sexually transmitted infections are larger taboos in comparison to other ailments). Besides the institutional lack of initiative in dealing with HIV patients, any kind of inadequacy in securing sterilized needles for administering injections or usage of unscreened blood for transfusion will also increase HIV risk.

Overall, the existence of a lower threshold of tolerance for HIV and AIDS-infected individuals, a preexisting ambiance of stigma is likely to impede any successful implementation of preventive mechanisms that minimize risk. For instance, if AIDS is considered as a condition of the “marginalized others,” including homosexuals, sex

workers. or drug users, the threat close to the heterosexual household will not be acknowledged. This, in turn, intensifies the risk of prevalence by murky appraisal of factors, including safe sex practices that limit threat.

The attribution of HIV and AIDs as a disease of at-risk groups leads to failure in recognizing the threat closer to every household and intensifies the risk of contracting HIV.

H₁₂: Indians who exhibit stigma have a significantly higher probability of contracting HIV than those who do not.

HIV KNOWLEDGE

The persistence of proactive health initiatives in cultivating awareness and thorough knowledge of AIDS is pivotal to put in check the disease trajectory. These checks come into existence through two different mechanisms—both informal sources and media-cultivated education. Both these sources of knowledge are important and should be treated as complementary. For instance, in the absence of economic affordability of a radio or television at home, community educators would become the champions for health erudition. For those with basic media exposure, a composite package of informal and media education is a much needed and persistent reminder of HIV and AIDS-related information.

Several studies (Kotecha and Patel 2001; Nyamathi et al. 2007; Subramaniam et al. 2007) have reiterated the importance of awareness and knowledge specific to HIV/AIDS. Farmer (1999) reiterated the importance of culturally sensitive education that

can eventually ameliorate the vulnerable status of women in the wake of the AIDS endemic. Yet, awareness cannot be created out of individual proclivity alone, but it implies that institutional initiatives are made transparent and available. Media sponsored HIV and AIDS coverage is aligned to the process of agenda setting which entails a continuous competition among issues that are advocated by media professionals, the masses, and political advocates (Dearing and Kim 2008: 278). Historically, public responses to HIV/AIDS have been superseded by the more 'happening' issues of the epoch, including war, corporate scandals, etc (Dearing and Kim 2008).

In India, in creating AIDS awareness, education works in different ways and does not always involve formalized instruction. For instance, an AIDS awareness initiative in Calcutta involving children used comics as a visual verbal medium for eradicating stigma (Lahiri 2006). The comics, which were created by adolescents participating in a three-day workshop, were then displayed in a leading bookstore in the city (Lahiri 2006). Similarly, focus group discussions among a high-risk and generic clientele (transportation workers, men who engage in same-sex relationships, sex workers and intravenous drug users) on the usage of HIV vaccine trials demonstrated that participants from both urban and non-urban locales lacked knowledge of the HIV vaccination, but were aware of the general vaccination procedure (Nyamathi et al. 2007). This is associated with the childhood immunization processes and media messages that reiterate the importance of polio vaccination. Overall, in assessing the importance of education for women in predicting other health outcomes, including child mortality in India, Kravdal (2004), suggested that

it is simply not the individual level of education, but the knowledge base of the entire community in question that is pivotal in creating awareness and health based outcomes.

Over the years, there have been several approaches to disseminating HIV/AIDS awareness through the Indian media. The DCT initiative in Northern India integrated information on masturbation with safe sex techniques to raise HIV awareness (Lakhani et al. 2001). The novel approach includes inclusion of safe sex practices, masturbation, and risk preventions strategies with regards to HIV and AIDS on kites which are flown in large numbers during Gujarat's annual kite flying festival. The authors reported overall positive feedback from the community with regard to these messages (2001).

Media initiatives in India over the recent years include BBC's World Service Trust's Mass Media Program, which in partnership with Doordarshan (the government owned national television network), organized a nationwide campaign that reached approximately 22.1 million people, between the years 2001 and 2007 (New Media and Development Communication 2007). Some on-air televised programs born from the initiative include *Jasso Vijay* (Victory) and *Hath se Hath Mila* (Lets Join Hands), the former a detective primetime drama and the latter a reality show (New Media and Development Communication 2007). *Jasso Vijay* integrated HIV based themes into its main plot, while *Hath Se Hath Mila* recognized a youth leader each week working on the subject (New Media and Development Communication 2007). At the same time, the mainstream and very popular Indian film industry, otherwise referred to as Bollywood, introduced movies like *Phir Milenge* (We Shall Meet Again) and *My Brother Nikhil*,

which captured the lived experience of HIV and AIDS in India, with a popular and mainstream star cast.

One instance of the culturally sensitive media-generated awareness is the “Buladi” campaign in West Bengal, India. The campaign, launched on December 1st, 2004, World AIDS Day by West Bengal State AIDS Prevention and Control Society (WBSPACS-- the state chapter of National AIDS Control Organization), has a region-centric appeal (Biswas 2004). The thirty-something Buladi (‘di’ in Bengali is a universal mode of addressing an older woman/sister), is an approachable and friendly symbol, who is an easy answer to persistent gaps of HIV and AIDS-based perceptions (Mahapatra 2004). Her formal inception in the local media can be attributed to the creative genius of a six member team at Ogilvy and Mather (otherwise known as O&M in the domain of advertising). Buladi personalizes the legacy of feminization of HIV and AIDS—thus the figure is made to look common, amalgamate with the masses, and epitomizes the curiosity and imminent knowledge requirement which is imperative for women who are seemingly at a high risk.

Other media based efforts that are relatively gender neutral include the Thomson Foundation EU-India Media Initiative on HIV/AIDS, which incorporates several different modus operandi, the Indian chapter of the HIV and AIDS media manual and the availability of the manual in vernacular languages, and by allocating awards and organizing workshops and seminars.

H₁₃: The higher the level of basic HIV and STD awareness, the lower the probability of HIV infection.

GENDER AND INTERSECTIONAL EFFECTS

The causal pathways to HIV for men and women are likely to vary, being largely determined by a status quo that favors one gender over the other, and situates the less favored in a relatively defenseless position. In articulating the gendered peril of HIV/AIDS in India, Marfatia et al. note that, “Out of the estimated adults living with HIV, 38.4 percent were females. Women are less educated, more overworked, underpaid and financially dependent on men” (2007:2). While the prevalence is higher among men than women; women constitute a vulnerable and highly at-risk population (Marfatia et al. 2007; Ninan 2004). NACO further explains that the one million women who live with AIDS in India have probably experienced early initiation into wedlock, domestic violence, and sexual abuse.

Feminist theories provide a contextual understanding of these categorical variations through the lived experience of men and women. Feminist theories are female-centric in three respects--first, by virtue of its focus on women’s experiences, secondly, women are the subjects of the investigative process, and finally, because of its emphasis on critical activism in attempting to ameliorate the conditions for women (Ritzer 2000). Four clarifications provide an account of gender inequality in society: first; men and women are situated in society with a certain degree of inequality. Women are comparatively deprived of material resources as well as power and authority based

entitlements (Ritzer 2000). Second, this discrepancy in the social hierarchy is a result of social organization and not human nature. Third, the human variations between men and women have been overextended to partially justify the status quo. Finally, both men and women are likely to be amiable to the prospect of a more egalitarian future (Ritzer 2000).

The feminist thought process is not one composite body of knowledge—rather different ideologies in the form of liberal, radical, psychoanalytic, socialist, and multicultural discourses provide different perceptions of gender differences. Of these, the latter is particularly important to this research objective. Intersectionality acknowledges that women’s struggle and experiences vary in different intensities depending upon their social locations. Gender is not always the only indicator of status subjugation, but works with other obstacles known as vectors of oppression or matrices of domination, including “class, race, global location, sexual preference and age” (Ritzer 2000: 337). This tenet of thought provides a voice for “other” women (outside the Western and White paradigm) in voicing their experience and thereby cultivating the grounds for new forms of knowledge (Ritzer 2000).

On the other hand, the social construction of masculinity forbids men to admit to illness or comply medically. For men, health is individual and private (White 2009). Waldron (2001) enumerated a list of factors that explain men’s higher mortality prevalence than women. The author attributed this disparity to culturally cultivated influences that have encouraged men to display masculinity and partake in smoking, drinking, take up hazardous employment, as well as becoming involved in other risky

behaviors. Among men, this leads to higher mortality and higher incidences of infectious and parasitic diseases, fatal accidents, cardiac disorders, or cancer (Waldron 2001). For instance, men as truck drivers in India have been identified as one of the main carriers of the infection with a recent study confirming that as much as one third of long distance truckers have had paid sex away from their homes (Pandey et al. 2008). The truckers are the conduit of transmission to their married partners once they travel home (Who is Affected 2011). Similarly, another at-risk male specific cluster includes men who have sex with men (MSM). While the prevalence in this segment might not be alarmingly high, there are social barriers in place that prevents candidness among the population already stigmatized on the basis of their sexuality. In addition, many of MSM do not identify as gay and have female partners, if not married (Who is Affected 2011). According to the National AIDS Control Organization (NACO) in India, more men (.43 percent) are HIV positive than women (.29 percent)--“This means that for every 100 people living with HIV and AIDS (PLHAs), 61 are men and 39 women” (National AIDS Control Organization 2011).

Irrespective of the vulnerable status of women in the Indian social fabric, men have a higher likelihood of HIV infection:

H₁₄: Men are more likely to contract HIV than women.

The intersectional approach provides an account of the struggle associated with the structural-cultural-moral-ideological meaning of being a woman in India. Thus, the causal trajectory of the HIV syndrome is likely to be distinctive rather than typical for

men and women. This research examines the intersectional account between gender and religion, participation in labor force, condom usage, domestic violence, and attitudes towards those living with HIV and AIDS as pivotal for substantiating the augmented risk for women.

The feminist theoretical position alludes to the fact that women's experience with HIV is neither linear nor similar and varies by their diverse backgrounds. Gender is assumed to be one of the central predictors of differential life chances that, affect health-based outcomes. A recent report on gender and health inequality insists on treating gender not as a holistic concept, but locating it with other intersections of class, race, ethnicity, and sexual orientations (Bates et al. 2009). Since Indian women are varied in their life experience based on their urban/local, caste, religion, education, and class-based locations, multiple jeopardy/advantage becomes crucial in elucidating their paths to HIV transmission (potentially bracketing those for whom the threat might be higher). Farmer (1999) introduced the notion of structural violence or how different political economy of risk predisposes some women to a high risk of infection while others are relatively safeguarded from the threat. For instance, lack of negotiation in relationships, low awareness, sexual violence, and the lesser priority placed on women's health in India all account for their heightened risk (National AIDS Control Organization 2011). Outside the "generic population," for those forcibly trafficked into the sex trade, exploitative living circumstances accentuate the risk of sexual violence (Shaping Our Lives 2011).

Overall, the relationship between gender and health disparity is not straightforward. Based on a historical process of patriarchy, women by and large are the less privileged gender. Their comparative lack of authority can be accentuated by additional structural inequities. Women's relative susceptibility to the HIV menace can be attributed to a plurality of factors, including the lack of ability to negotiate monogamy or safe sex practices, religious morality that restricts women's right to be heard or get actively involved in the generic process of sex education, prevalence of marital rape, sexual abuse, domestic violence, and inhibitions associated with acquiring better HIV consciousness.

First, religion can have slightly different implications for Indian women and men. Wadley refers to a peculiar tendency in articulating the status of women in India. On the one hand, women are respected and worshipped as fertile and benevolent, and on the other, they are seen as both aggressive and harmful (1977). Woman is the "shakti" or the power and also "prakriti" or nature. Any time a woman is construed as digressing from the conventional archetype of Indian femininity, she is condemned and looked down upon. This societal condemnation is somewhat indicative of the "sinful" designation in connection to women's HIV status. When connected to the specific status of women, this becomes a double standard in patriarchy, which might treasure and revere women in a philosophical prototype, but denounces any "moral" digression. The concern for sexuality usually pertains to females who are expected to be virgins until the time of their marriages. While these standards are not adhered to strictly for men, women are often

“blamed for male lapses of chastity” (Menski 2007:14). These moral codes are also observed in Sikhism, where to date in India and other parts of the West, there are two different ideologies that pertain to the socialization process of boys and girls, the threshold of tolerance being higher for boys (Nesbitt 2007). In Christianity as well, sex is meant for the purposes of procreation and needs to be contextualized only within the institution of marriage. Religious sanctions associated with morality, taboo pertaining to discussion of sexuality, condom usage, or inhibition towards premarital sex all contribute to the foggy assessment of the threat of HIV or curtail women’s negotiating capacity for safer sex habits.

H₁₅: The effect of religion on HIV infection varies significantly by gender.

Second, economic destitution creates multiple impediments for women. Farmer (2003) enumerated deepening poverty in conjunction with gender inequality, and political upheavals, as one of the predominant contributors to HIV and AIDS prevalence in poorer nations, including Haiti. As reported by UNAIDS (2010), “Fewer than half of countries report having a specific budget for HIV-related programs addressing women and girls.” Comparative lack of resources among women puts them at a higher risk of not being able to afford healthy lifestyles (White 2009). In this context, ameliorating their economic status through participation in paid labor for women in India poses a somewhat different and complex scenario. According to anthropologist Peggy Sanday (1973), the relationship between women’s participation in the production process and enhancement of women’s status might not be that simple. In societies where both are construed as

negative like slave labour or where men are paid more, labour might be a necessary, but not a sufficient condition to status improvement (Sanday 1973). On a more general level, Chibber (2002) reported a slow, yet accelerating rise in women's participation in the labor force, albeit a low-level of political involvement. This is partially attributable to women's roles in the family (Chibber 2002). The author maintained that active involvement in politics, including decisions to vote is contingent upon women's power to negotiate a space for herself, independent of her household (Chibber 2002).

Besides political avenues, globalization has also created new opportunities for women, specifically for those from the middle classes. A wife partaking in paid employment outside home is a distinct status marker for the upwardly mobile classes (Ganguly & Scrase 2003). The shifting images of traditionalism embedded in a patriarchal household, juxtaposed with that of the working women, create new dilemmas and paradoxes for women (Ganguly & Scrase 2003). Overall, as pointed by Ninan (2004), HIV affects women from all walks of life. Thus, participation in paid labor outside the home is not a necessary route to status recovery, although it can create avenues for cultivating individual and collective agency.

H₁₆: The effect of working outside home on HIV infection varies significantly by gender.

H₁₇: The effect of literacy on HIV infection varies significantly by gender.

Third, behavioral variations of condom usage ties to gendered moral codes. In terms of safe sex behavior, condom usage is not usually an option for all women who are

initiated into marriage at an early age. Abstinence and condom usage impede the moral connotations of being a woman in Indian society and the impropriety associated with sexual knowledge (Menski 2007). Women, specifically those from rural regions, are expected to be innocent, virgin, and fertile at the time of their marriage, without having the power to negotiate safe sex with their husbands. They get married during early adolescence and are coerced into sex lives with much older husbands (Varma 2010). If the husbands decide not to have any more children, women are sterilized as early as 24 years-old. This early initiation into sterilization further diminishes the importance of condom usage, since heterosexual intercourse for men primarily pertains to sexual pleasure (Varma 2010). In the process, the risk of HIV exposure for women persists into most of their adult life (Varma 2010). As reiterated by Farmer (1999), the relationship between condom usage and HIV prevalence is not very simple. Gender inequality obscures safe sex options; moreover, even HIV positive women might choose to conceive children and thus methods of contraception might not be a viable option for many.

H₁₈: The effect of condom usage on HIV infection varies significantly by gender.

H₁₉: The effect of number of sex partners on HIV infection varies significantly by gender.

Fourth, a distinct relationship between women as victims of domestic violence and HIV rates in India have been recently observed (Stephenson 2007). The generic definition of violence against women includes “any act of gender based violence that

results in, or is likely to result in, physical, sexual or psychological harm or suffering to women” (UN 1995). While in India, violence against women in the domestic setting typically represent dowry deaths, female infanticide (Gosselin 2010), and other social practices that also render women in a relative status of powerlessness and imparts ritualistic harm.

The findings from a study that explored the correlates of domestic violence among women who attended a voluntary counseling and testing center in Karnataka, India, found some association between domestic violence and seropositivity (Chandrasekharan et al. 2007). About 50 percent of women in the sample were HIV positive. The findings suggested 42 percent of the respondents from the study reported abuse, including physical and psychological, and to a much lesser extent, sexual. Among the women who reported experiencing violence of any kind, 67 percent stated that they were also seropositive (Chandrasekharan et al. 2007). Investigating the correlates of domestic violence and HIV status among women in a study from the Family and Health Survey (3) data set (the same to be used for this study) reveals that among married women, those who experienced any form of interpersonal violence (both physical and sexual) exhibited a higher risk for HIV prevalence (Silverman et al. 2008). The booklet titled, “Shaping Our Lives” published by NACO and catering to women, affirms three reasons substantiating the risk of violence as a conduit of HIV for women-- inability to bargain safe sex and violent retaliation from male partners, a history of rape and abuse, as

well as the presence of multiple sexual partners. This approach takes into consideration violence both inside and outside home.

H₂₀: Among Indian women, the higher exposure to domestic violence, the higher likelihood of contracting HIV.

Finally, lived experience of HIV puts women at a social disadvantage and yet there is little evidence documenting women's own attitudes towards HIV positive individuals. Elaborating on the lived experience, in contrast to men who are looked after by their families, HIV positive women supervise their own needs. Apprehension regarding a life which is largely uncertain is intensified for young widows, whose husbands have died from the disease. The distress is particularly worse for those from poor socioeconomic circumstances (Tarakeshwar et al. 2006). HIV positive status for women means that they are seen as lacking in integrity, and are identified as the carriers of the disease rather than the male partners (Aggleton et al. 2001). Thus, women are often the inequitable targets of AIDS stigma. It would be intriguing to examine the extent of women's attitudes contributing to this climate of discrimination when directed towards the generic AIDS population, as well as women who live with AIDS.

H₂₁: The effect of AIDS tolerance on HIV infection varies significantly by gender.

SUMMARY

There is a definite reason as to why the aforementioned specified integrated approach is important for this research initiate. Irrespective of primary, secondary or multiple predicaments that define vulnerability and the apparent terminal disease

trajectory, human instrumentality reduces risk factors by cultivating awareness through idiosyncratic mechanisms characteristic to the target population. The invocation of human agency in the middle of structural boundaries provides an important theoretical consideration for the integrated approach of this research. Conventional sociology regards structure as external to an individual. However, Giddens's articulation of the duality of structure treats structure and agency as a continuum (1984). Structure is contingent on action because action helps replicate the structure. At the same time, structure is equally dependent on action because action initiates from a structure that has been the formative outcome of preexisting structures. An agent is not the passive recipient of how social structure situates him/her, but is also one of the architects of social behavior (Cockerham 2000). While structures might be limiting in nature, they also enable. Reproduction does not entail the regeneration of social procedures in its exactness—there is some permissible degree of porosity and looseness (Giddens 1986).

The invocation of agency for this research can be comprehended in individual proclivity in attempting to learn and make use of the available resources that are already in place, irrespective of social origins. Agency, in the context of HIV and AIDS, implies human intervention irrespective of structural barriers. Thus, being sensitized to women's subservient status in most of India's patriarchal household cannot bring about a drastic metamorphosis of their status. Future social infrastructure is, therefore, a result of previous forms subject to alteration by deliberated human arbitration. The possibility of intervention does not minimize the importance of customary obstacles. Rather, it seeks to

operate from within and around the current social organization without soliciting the need for an instant and radical modification.

CHAPTER IV

DATA AND METHODS

SAMPLE

The data for this study came from the National Family Health Survey-2, collected in 2005-06. This nationally representative sample consisted of approximately 198,754 respondents representing all states and regions of India. The all male (IAMR51FL) and all female data (IAIR51FL) sets are comprised of information on demographic and socio-economic status, behavioral proclivity, stigma, HIV attitude/awareness in addition to providing a breadth of information on health status, lived experience, attitudes, etc. The male and female data sets were later merged. The HIV test results for blood drawn from individuals in the sample were obtained from a separate file (iaar51fl), and then copied into the merged data file. The sample included 124,385 women and 74,369 men aged 15 to 54 years-old. The data was weighted by state, urban/rural domains, as well as slum/non-slum locales within each city. After filtering the sample in terms of HIV testing, the sample size was reduced to 105,657 individuals.

VARIABLES AND MEASUREMENTS

Table 4.1 summarizes the description of the variables used in the analysis and their measurements.

Table 4.1. Definitions of Variables Included in Analysis from Domestic and Health Survey, 2005

Variables	Definitions
Dependent Variable	
HIV status	Positive (1) Negative (0)
Predictors	
Demographic Variables	
Gender	Dummy variable Male (1) Female (0-Reference category)
Age	Interval/Ratio
Region	Dummy variables North (1) South (1) West (1) East (0-Reference category)
Residence	Dummy variable Urban (1) Non urban (0-Reference category)
Religion	Dummy variables Christians (1) Muslims (1) Buddhists (1) Other religion (1) Hindus (0-Reference category)
Marital	Dummy variables Not married(1) Divorced and separated (1) Widowed(1) Married (0- Reference category)
Socioeconomic Variables	
Literacy	Ordinal variable Cannot read (0) Parts of sentence (1) Whole sentence (2)

Table 4.1 cont'd.

Variables	Definitions
Wealth Index	Ordinal variable Poorest (1) Poorer (2) Middle (3) Rich (4) Richest (5)
Work status	Dummy variable Work outside home (1) Do not work outside home (0- Reference category)
Scheduled Caste/Tribe	Dummy variable Scheduled Caste/Tribe/other backward classes (1) Otherwise (0-Reference category)
Behavioral Variables	
Number of partners	Interval/ Ratio
Condom usage	Dummy Variable Used condoms (1) Did not use condoms (0- Reference category)
Domestic Violence (Women only)	
Emotional Abuse	alpha= .70
	Ordinal variable Husband jealous if respondent talks with other men (1) Husband accuses respondent of unfaithfulness (1) Husband does not permit respondent to meet her girl friends (1) Husband tries to limit respondent's contact with family (1) Husband insists on knowing where respondent is (1) Husband doesn't trust respondent with money (1) Spouse has humiliated respondent (1) Spouse has threatened respondent with harm (1) Spouse has insulted or makes respondent feel bad (1) Ever any emotional violence (1)

Table 4.1 cont'd.

Variables	Definitions	
Physical Abuse	Ordinal variable Slapped Punched Kicked Strangle or burn Threatened with weapon Forced sex Force sexual acts Twisted arm or pulled hair Experienced less sever violence Severe Violence Sexual Violence	alpha= .82 Never = 0 Not in the last 12 Sometimes in the last months= 2 Frequently in the last 12 months = 3
Paid for sex (male only)	Paid for sex (1)	
Social Support variables		
AIDS Tolerance	Ordinal variable Male teacher with AIDS allowed to teach (1) Female teacher with AIDS allowed to teach(1) Buy vegetable from vendor with AIDS (1) Take care of relatives with AIDS (1)	alpha= .74
HIV/AIDS Awareness variables		
AIDS awareness	Dummy Variable Heard of AIDS (1)	

The dependent variable for this analysis is HIV status, which included a binary response to blood test results. The initial variable documenting blood test results included the following choices: (i) HIV-1 positive, (ii) HIV-2 positive (iii) HIV-1 and 2 positive (both of which denote different types of the HIV infection, with the former being more prevalent), and (iv) HIV negative. This variable was dichotomized to create two response choices: HIV positive (combining initial response choices one through three)

and HIV negative. A score of one was assigned to HIV positive status and zero denotes otherwise.

The demographic predictors in the study include gender, age, religiosity, urban/non urban location, age and marital status. Gender was measured as a dummy variable (male = 1, female = 0). For religion, “Hindus” was used as the reference category since it is the majority religion of the nation. The East among regions, urban residence and married were used as reference categories for the remainder of the dummy variables among demographic contributors. Age was the only continuous variable in this particular set of predictors.

The socioeconomic status indicators include literacy, wealth index, work status, and scheduled caste or tribe affiliation. The data set recorded literacy and wealth index as ordinal, while participation in paid labor outside the home and Scheduled Caste/Tribe based affiliations were coded as dummy variables.

The behavioral variables in the analysis were comprised of information on sex partners, condom usage, domestic violence and whether the respondent paid for sex. Number of sex partners was coded as a continuous, and condom usage was coded as a dummy variable. Domestic violence among women was included as a behavioral attribute in a separate model. Two different summated measures were created indicating physical and emotional exposure to violence. In addition, whether the male respondent paid for sex was recorded as a binary response.

In terms of social support, individual level tolerance included a summated measure compiling four exclusive items that detailed attitudes towards individuals who live with AIDS.

AIDS awareness was measured by two different measures. The first recorded whether the respondent is basically aware of AIDS. The second pertained to a summated measure of the knowledge of other STD's (sexually transmitted diseases). The last summated measure scored low on alpha. In lieu of the large number of missing values that were generated for other measures on HIV awareness (including media cultivated and informal sources), it was decided to retain this measure in the model.

To test the intersectional effects of gender and other predictors, cross-product terms were created between gender and each of the following variables: religion, region, marital status, residence, literacy, labor force participation, condom usage, number of partners, social support and HIV awareness. A few of these, including cross product terms between gender and residence, region and HIV awareness, were later additions that were not initiated by previously stated hypotheses.

DATA LIMITATIONS

This data set had a few limitations. The HIV blood samples were collected only for men and women between the ages of 15- 49 years-old and consequently eliminated younger children or older adults. All eligible men and women from few high-risk states in the sample were asked to provide a blood sample, whereas for the rest of the nation, the blood tests were conducted for less than half of the interviewees (National Family and

Health Survey 2011). In a high risk state, Nagaland, blood samples could not be collected due to local resistance. Second, this data set was limited in scope by being largely restricted to male and female respondents within the household and excluded other at-risk populations (including sex workers and intravenous drug users) who might have offered important addendum to the information. Third, because of a large number of missing values generated on a number of variables, they could not be incorporated into research (particulars of condom usage, institutional support for individuals seeking health care, attitude towards domestic violence, media cultivated and informal HIV awareness). For some key variables, including the individual level of AIDS tolerance, number of sex partners, experiential dimension of domestic violence and paid sex, the missing values had to be replaced with the mean value of the variables, which was not ideal, but one of the possible remedies under the given circumstances. The possibility of a slight margin of error in calculating the causal effects of the predictors on the dependent variables has to be taken into consideration (since mean substitution can typically alter the variation within the variable). Fourth, the secondary nature of the data restricts the analysis by the kind of questions that were posed (for instance. the limited number of measures on social support). The data set is realistically close to the current estimates, but the figures for HIV extensiveness keep changing. Finally, the quantitative nature of the data does not provide ample opportunity for an in-depth examination of the main determinants proposed for analysis.

METHODS OF DATA ANALYSIS

The analytical methods for this study include descriptive analysis of the variables, as well as bivariate and multivariate analyses of the predictors and the dependent variable.

The descriptive analysis provides a summary of the descriptive statistics of different demographic, socioeconomic, behavioral, social support and HIV awareness predictors, such as measures of central tendencies, percentages, and standard deviations. The bivariate analysis is comprised of a cross tabulation between predictors and focal variables of interest that characterizes the HIV positive groups in terms of the determinants. However, an association with itself is not the basis of causality.

Logistic regression is the main technique of analysis that was used in this research. Multivariate analysis helps in examining the combined and isolated effects of the predictor variables on the dependent variable. Thus, the isolated effects of the demographic, socioeconomic, behavioral, social support, and awareness measures were individually examined, in addition to looking at the combined effects of all the variables put together. Since my dependent variable had dichotomous choices, logistic regression is the most appropriate technique for analysis. Logistic regression assumes that the relationship between the predictors and focal variable of interest is non-linear. The Sigmoidal S shaped logistic curve does not extend beyond zero and one, constraining the extreme predicted values between the two numbers (Wright 1995). The predicted values can also be interpreted as probabilities. Thus, logistic regression predicts the probability

of a group being clustered into “zero” (HIV negative status) versus “one” (HIV positive status) (Wright 1995).

CHAPTER V

FINDINGS

This research aims to discover what factors affect HIV status in India, how gender interacts with other predictors leading to HIV infection, and what the similarities and differences are between men and women in the determinants of HIV contagion. To answer these research questions specifically, this chapter examines the descriptive characteristics of the sample, as well as the bivariate and multivariate relationships among the predictors and dependent variable. The predictors in the analysis include demographic, SES, behavioral, social support, and HIV awareness variables. The dependent variable used in analysis is HIV status. The results were weighted since there were six high risk states that were oversampled prior to HIV testing, and one Northern low risk state that was also oversampled. This brings down the overall HIV positive cases to 291.

DESCRIPTIVE ANALYSIS

Table 5.1 provides the descriptive summary for all the variables included in the analysis for all men and women from the Demographic Health Survey, 2005 for those who were tested for HIV.

Table 5.1. Descriptive Statistics of Variables in the Sample, Domestic and Health Survey, 2005

Variables	Frequencies	Percent	Mean/Median	SD
Dependent variable				
HIV status			.002	.05
HIV negative (0)	102655	99.72		
HIV positive (1)	291	.28		
Predictors				
Age			30.06	10.12
Gender			.48	.50
Female (0)	53332	51.8		
Male (1)	49614	48.2		
Residence			.34	.47
Rural (0)	67890	65.9		
Urban (1)	35056	34.1		
Religion				
Buddhist	834	.8	.01	.09
Christian	2505	2.4	.02	.15
Hindu	83618	81.3	.81	.39
Muslim	13227	12.9	.13	.33
Other	2687	2.6	.02	.16
Region				
North	24192	23.5	.23	.42
South	23614	23.0	.23	.42
West	26743	26.0	.26	.01
East	28397	27.6	.27	.44
Marital status				
Divorced/separated	1171	1.1	.01	.10
Not married	27527	26.7	.27	.44
Widow	2198	2.1	.02	.14
Married/cohabitation	72050	70.0	.70	.45
Scheduled Caste/Tribe			.69	.46
Otherwise (0)	31228	30.3		
Scheduled Caste/Tribe/ Class (1)	71718	69.7		

Table 5.1. cont'd.

Variables SD	Frequencies	Percentage	Mean/Median
Literacy			2 .932
Cannot read at all (0)	34180	33.3	
Able to read only parts of sentence (1)	5392	5.3	
Able to read whole Sentence (2)	62960	61.4	
Wealth index			3 1.39
Poorest (1)	17042	16.6	
Poorer (2)	9330	18.8	
Middle (3)	21381	20.8	
Richer (4)	22010	21.4	
Richest (5)	23182	22.5	
Work status			.60 .49
No (0)	40648	39.5	
Yes (1)	62216	60.5	
No. of sex partners (lifetime)			1.23 1.58
Ever used any contraception			.50 .50
No (0)	51224	49.8	
Yes (1)	51722	50.2	
Emotional Abuse (Summated scale of 0-10 items) (Women only)			.71 .69
Physical Abuse (Summated scale of 0-10 items divided by 4) (Women only)			.16 .20
No	97882.4	95.1	
Not in the last year	4393	4.3	
Sometimes in the last year	581	0.6	
Often in the last year	90	0.1	
Paid for sex			.002 .03
No (0)	102788	99.8	
Yes (1)	158	.2	

Table 5.1. cont'd.

Variables	Frequencies	Percentage	Mean	SD
AIDS tolerance (Scale of 0 through 5)			3.32	.81
0	2573	2.5		
1	2868	2.8		
2	3315	3.2		
3	57173	55.5		
4	37018	36.0		
Heard of AIDS			.72	.97
No	28779	28.0		
Yes	74165	72.0		

The mean for the dependent variable HIV status (a dummy variable) was .002, which is a proportion and can be interpreted as a percentage after multiplying the number by 100. In other words, about .2 percent of the Indians for whom blood was collected were HIV positive, while 99.7 percent were HIV negative.

Among the demographic predictors, the sample provided a higher number of female respondents (51.8 percent) in comparison to men (48.2 percent). About 34.1 percent of the respondents were from the urban regions and the remaining 66 percent was from rural parts of the country. Among the religions, the highest proportion of Hindus (81.3 percent), the dominant religion in the nation, largely bypassed Muslims (13 percent) and Christians (2.4 percent). Other religious affiliations including Buddhists (0.8), or Sikhs, Jains, Dono Polo, Jewish and Parsi, classified as other religions (2.6), had a slight presence in the sample. Of the four regions in the country, 27.6 percent were from the East, followed by 26 percent from the West, 23 from the South and 23.5 from

the North. Given the household nature of the survey, most respondents (70 percent) were married, followed by those not married (26.7 percent). Only 1.1 percent of the sample represented divorced/separated, while 2.1 were widowed. As far as the socioeconomic status of the sample was concerned, 61.4 percent of respondents could read a complete sentence. Approximately 70 percent of the sample came from historically backward groups (scheduled caste, tribe or comparable segments). The accumulated mean wealth index of the sample tested for HIV was between the categories medium and high (3.15 on a scale of 5). About 61 percent of the sample worked outside of their homes.

In terms of behavior, the average number of lifetime sex partners reported was one. The respondents were evenly divided in terms of reporting condom usage. The experience of violence was administered among married women only. Women reported both a low level of exposure to emotional abuse (mean = .73 on a scale of 0-10), as well as physical abuse (.17 on a scale of 0-3). About 95 percent of women had not endured any physical violence from their spouses.

As far as social support was concerned, the average score for tolerance among the sample tested for HIV towards individuals living with HIV and AIDS was quite high (3.34 on a scale of 0-4, higher the score indicating higher tolerance). In terms of HIV awareness, approximately 72 percent of the sample was informed of AIDS.

Characteristics of the HIV Positive Population

Table 5.2 explores the characteristics of the HIV positive population (through cross tabulations for the HIV positive and negative groups).

Table 5.2. Characteristics of HIV Positive and Negative Indians, 2005

Variables	Percentage HIV Negative	Percentage HIV Positive
Age of respondent		
15-19	18.9	2.7
20-25	20.8	14.7
26-30	15.7	22.9
31-35	13.8	24.3
36-40	12.3	14.4
41-45	9.8	13.7
46 and up	8.8	7.2
N	(102655)	(292)
Gender		
Female	51.8	39.5
Male	48.2	60.5
N	(102654)	(291)
Region		
East	27.6	11.7
North	23.5	9.3
South	22.9	48.6
West	26.0	30.2
N	(102655)	(291)
Residence		
Rural	66.0	58.2
Urban	34.0	41.8
N	(102655)	(292)
Religion		
Buddhists	.8	1.4
Christian	2.4	3.4
Hindu	81.3	88.0
Muslim	12.9	5.5
Others	2.6	1.7
N	(102581)	(290)
Marital		
Divorced/separated	1.1	5.8
Married/cohab	70.0	73.9
Not married	26.8	10.7
Widow	2.1	9.6
N	(102655)	(290)
Literacy		
Cannot read at all	33.3	43.4
Able to read only parts of sentence	5.3	7.2
Able to read whole sentence	61.4	49.3
N	(102243)	(290)

Table 5.2. cont'd.

Variables	Percentage HIV Negative	Percentage HIV Positive
Wealth Index		
Poorest	16.6	15.9
Poorer	18.8	16.2
Middle	20.8	21.7
Richer	21.4	32.1
Richest	22.5	14.1
N	(102655)	(290)
Work status		
No	39.6	19.2
Yes	60.4	80.8
N	(102572)	(291)
Scheduled Caste/Tribe		
NON SCST	30.4	24.7
SCST	69.6	75.3
N	(102654)	(291)
Sexual behavior		
Number of partners		
1 partner	93.0	82.0
2-5 partners	6.6	16.0
6-10 partners	.4	2.1
11 and up	.1	.00
N	(102654)	(291)
Condom usage		
Used condoms		
No	49.8	39.0
Yes	50.2	61.0
N	(102655)	(292)
Domestic Violence		
(i) Emotional Abuse		
0	16.1	15.9
1	78.4	76.9
2	3.2	3.1
3 and up	2.4	4.1
Total	100	100
N	(102653)	(290)
(ii) Physical Abuse		
Never	95.1	92.0
Not in the last year	4.3	4.0
Sometimes in the last year	.4	3.7

Table 5.2. cont'd.

Variables		Percentage HIV Negative	Percentage HIV Positive
	Frequently in the last year	.1	00
	N	(102655)	(293)
Paid for sex	No	99.8	99.7
	Yes		0.6
	Total	100	100
	N	(102655)	(292)
AIDS tolerance	0	2.5	2.7
	1	2.8	1.7
	2	3.2	3.8
	3	55.5	58.3
	4	36.0	33.6
	Total	100	100
	N	(102655)	(292)
Heard of AIDS	No	28.0	16.8
	Yes	72.0	83.2
	Total	100	100
	N	(102653)	(291)

Among the demographic predictors, the highest age clustering of 31-35 years-old was reported among HIV positive individuals. Similarly, more men than women were HIV positive. In terms of regional variations, the South (48 percent) exceeded the rest of the country in reporting HIV cases, followed by West (30 percent), North (27 percent) and East (11 percent). Rural regions exhibited a higher percentage of HIV positive cases (58 percent) in comparison to the urban zone, as did Hindus (88 percent) in comparison to Muslims (5 percent) or Christians (3.4 percent). Similarly, those married reported a higher percentage of HIV positive cases (74 percent), in comparison to those who were separated or not married. In terms of literacy as an indicator of socioeconomic status,

about 50 percent of individuals who could read a complete sentence were HIV positive. There were 32 percent of respondents from the affluent segment of the society (richer than the middle classes) were HIV positive. Work status seemed to have an association with HIV, since 81 percent of the individuals working outside of their homes were diagnosed positive (which reaffirms the contact situation for HIV). Those who identified themselves as Scheduled Caste/Tribes reported a high percentage (75 percent) of cases.

Among the variables indicating behavior, those with 1 partner reported 82 percent of positive cases, followed by 16 percent of those who reported between 2-5 partners. About 61 percent of those who reported having used condoms in their lifetime were also HIV positive. About 77 percent of women who scored very low (1 on a scale of 1 to 10) on emotional violence were HIV positive. Similarly, not having experienced any spousal physical abuse was also reported by a high percentage of HIV positive women (92 percent). As far as the social support variables are concerned, a score of 3 on a scale 0-4 was reported for 58.3 percent of HIV positive individuals.

Finally, as far as HIV awareness was concerned, of those who knew of AIDS, 83.2 percent were HIV positive.

LOGISTIC REGRESSION ANALYSIS: THE POOLED SAMPLE

While the bivariate analysis revealed some associations between the predictors and HIV status, the findings are tentative because other predictors have not been

controlled. To test the net effects of the predictors on HIV infection, multivariate logistic regression analysis is required.

For logistic regression analysis, the effects of each set of predictors were tested sequentially by adding demographic, SES, behavioral, social support, and finally, HIV awareness predictors to the previous regression model. Initially, five different logistic models examined the sequential effects in the pooled sample of men and women. A number of models that include interaction terms between gender and key variables of interest were tested in the second set of regressions. Finally, ten different logistic models examined the similarities and differences in the determinants of HIV for men and women (dropping the gender variable). Two additional models tested the effects of domestic violence and paid sex on the female/male subsamples.

When running the logistic regression models, a large number of missing values were generated on a number of variables that could not be incorporated into research (details of condom usage, institutional support for individuals seeking health care, attitude towards domestic violence, media, and informal HIV awareness) among others. Meyers, Gamst and Guarinio (2006) suggested that it is advisable to drop variables with large missing values if they are not of central importance to the study, but if there are key variables with missing values, imputation methods qualify as the “most parsimonious missing value solution” (p.82).

Variables which were very important to the current analysis and central to the proposed theoretical model were retained (number of sex partners, tolerance towards

those living with AIDS, spousal emotional and physical abuse, and paid for sex). Since this research had multiple variables with missing values, using the EM option would have entailed saving the data multiple times. Instead, the EM and regression mean values generated by the summary of estimated means were compared to the univariate means (also generated by the missing value analysis function on SPSS). For the key variables with missing values that were retained, the regression/EM means were either the same as the univariate means or very close (only emotional abuse exhibited .07 variation between regression and univariate mean estimates on a scale of 0-10). The missing values were replaced by variable means values for each of the six variables, after comparison with the EM and regression values generated by “missing value analysis” in SPSS. Additionally, Tabachnick and Fidell (2007) also recommend using mean substituted variables along with dummy variables for the missing values, for each of the variables. Thus, for the number of sex partners, tolerance towards those living with AIDS, physical and emotional exposure to domestic violence, and paid for sex--dummy variables representing missing values were created (“number of sex partners 0”, “tolerance towards those living with AIDS 0,” etc). The missing values for sex partners and AIDS tolerance were included in the pooled analysis (Table 5.3), whereas those for domestic violence and paid sex were included in two separate models for female and male subsamples (Tables 5.6 and 5.7).

Table 5.3 provides the results of five logistic regression models predicting HIV status, a dichotomous variable with 1 indicating the respondent was HIV positive and 0 negative.

Table 5.3. Logistic Regression Models Predicting HIV for Indians, 2005

Predictors	Odds Ratio				
	1	2	3	4	5
Demographic variables					
Age	.99	0.98**	0.98**	0.98**	0.98**
Gender (Male=1)	2.19***	1.91***	1.87***	1.87***	1.68***
Residence (Urban= 1)	1.35**	1.54**	1.54***	1.51***	1.47***
Region (Reference=East)					
North	.95	1.43	1.37	1.36	1.34
South	4.82***	7.07***	7.01***	6.77***	6.24***
West	2.54***	3.45***	3.41***	3.39***	3.34***
Religion (Reference= Hindus)					
Buddhists	1.30	1.46	1.44	1.37	1.27
Christians	.91	1.08	1.07	1.06	1.06
Muslims	0.47***	0.34***	0.34***	0.34***	0.34***
Others	1.12	1.13	1.11	1.12	1.11
Marital Status (Reference= Married)					
Divorced/ separated	5.21***	4.80***	4.95***	4.94***	4.86***
Not married	0.29***	0.29***	.720	.707	.70
Widow	5.59***	5.26***	5.33***	5.30***	5.29***
Socioeconomic variables					
Literacy		0.77***	0.77***	0.73***	0.71***
Wealth Index		1.01	1.01	.99	.98
Work outside home (working =1)		1.66***	1.62***	1.61***	1.61***
Scheduled Caste/Tribe (SCST=1)		.79	.79	.79	.80
Behavioral variables					
Condom used (used=1)			1.07	1.05	1.03
No. of sex partners			1.04***	1.04***	1.04***
No. of sex partners missing			0.34**	0.35***	0.35**

Table 5.3 cont'd.

Predictors	Odds Ratio				
	1	2	3	4	5
Social Support					
AIDS tolerance (0-4 scale)				1.05	1.08
AIDS tolerance missing				0.73**	.93
HIV/AIDs knowledge					
Heard of AIDS					1.80**
Model Chi square	286.61	326.43	337.90	342.74	350.02
-2 Log likelihood	3712.22	3416.61	3405.91	3400.34	3393.05
N	102885	99207	99207	99207	99204

***p≤.01, **p≤.05, *p≤.10 (2 tailed test)

Model 1 takes into consideration the demographic predictors only. Several of the demographic predictors were significant. Men were approximately 2 times as likely as women to contract HIV, controlling for other variables. Indians from urban areas were 35 percent more likely (1-1.35 x100) (odds ratio greater than one) than those from the rural areas to be HIV positive. Among religious affiliations, the only significant category was for those affiliated to Islam. In comparison to Hindus, Muslims were 53 percent (1-.47 x100) less likely (odds ratio less than one) to be HIV positive, when controlling for other demographic predictors in the model. However, none of the other religious affiliations including Christians, Buddhists, and other religions significantly predicted HIV status. As far as regional variations are concerned, the odds of being HIV positive for Indians from the South and West were 4.8 times, and 2.5 times, as high as those from the East. In comparison, regional affiliation to the North did not predict HIV. Marital status also had

a significant effect on HIV. The odds of contracting HIV for those divorced/separated and widowed were 5.21 times, and 5.59 times, as high as those who were married. Those that have never been married were 71 percent less likely to be HIV positive than those who are married.

¹Model 2 incorporates the socioeconomic status of the respondents in addition to the demographic factors in predicting HIV among Indians. Two of the four socioeconomic indicators had a significant effect on HIV. As predicted, literacy (basic reading-writing skills) had a significant effect on HIV. Every level increase in basic reading-writing eligibility reduced the likelihood of contracting HIV by 23 percent. Contrary to my hypothesis, those who work outside home were approximately 1.6 times as likely to be HIV positive as those who did not work outside their homes. Being from Scheduled Caste/Tribe and wealth index did not have a significant effect on HIV when controlling for the demographic predictors. Effects of demographic variables remained very similar to those in Model 1 with one exception. Age became a significant predictor

¹ Recoding literacy as a dummy variable with categories can read parts of sentence, can read entire sentence (reference = cannot read at all), results in complete reading ability having a significant and negative relationship with HIV status. The overall results remain compatible with the pooled model (Table 5.5, Model 5) where literacy is coded as ordinal.

Additionally, recoding wealth index as a dummy variable with categories poorer, middle, richer, richest (Reference = poorest), results in the richest having a significant and negative relationship with HIV status. The overall results remain compatible with the pooled model (Table 5.5, Model 5) where wealth index is coded as ordinal.

of HIV status when socioeconomic factors are taken into consideration—every year increase in age reduces the chances of being HIV positive by 2 percent.

Model 3 integrates the behavioral model with the background characteristics. Of the two behavioral indicators incorporated in Model 3, one was significant. Every additional sex partner increased the odds of becoming HIV positive by 4 percent, controlling for background characteristics and other behavioral variables. However, the dummy variables indicating the missing value for number of sex partners was also significant. This suggests that the variables that were omitted for sex partners would be important in predicting the effect of sex partners on HIV. In comparison, the lifetime usage of condoms was not significant. The effects of the significant demographic and socioeconomic predictors and the dependent variable HIV were consistent between Models 2 and 3 except for the category of those that were not married, which no longer had a significant effect on HIV.

Model 4 specifically looks at the social support variable of AIDS tolerance while controlling for background characteristics and behavioral variables. However, AIDS tolerance did not have a significant effect on HIV. The dummy for the missing values for AIDS tolerance was also significant, indicating that the variable needs to be interpreted with caution. Because of the large standard errors/missing values, visit to health facility and conduciveness of medical facility/equipment/personnel could not be incorporated as indicators of institutional support.

Model 5 is the most elaborate of the logistic regression models presented so far and includes indicators for HIV awareness. Both formal and informal sources of media-generated awareness had to be omitted from the model because of large number of missing values. Basic knowledge of AIDS, counterintuitive to our proposed hypothesis, is positively and significantly associated with HIV status. This suggests a reciprocal effect whereby potential HIV status could be impacting awareness, rather than awareness determining low HIV likelihood.

A comparison of the odds ratios for the predictors revealed the category of South (among regional variations) for variables measured at the nominal level, and the number of sex partners for variables measured at interval/ratio level and literacy (as the only significant ordinal level predictor) had the greatest impact in predicting HIV. Overall, Model 5 which accounted for demographic, SES, behavioral variables, social support and HIV awareness fits the data the best comparing the Model Chi Squares of all 5 models for the pooled sample (Refer to Appendix A).

LOGISTIC REGRESSION ANALYSIS: INTERACTION EFFECTS

Table 5.4 shows the interaction effects between gender and key indicators of interest on HIV. Besides verifying the interaction effects propelled by existing hypotheses, the previously identified significant predictors extrapolated from the pooled analysis were also tested. Table 5.4 verifies whether the effects of the selected predictors (age, residence, region, religion, marital status, literacy, work status, number of partners,

condom usage, social support and HIV awareness) on the dependent variable HIV status varies by gender.

Table 5.4 Logistic Regression Models Predicting HIV for Indians with Selected Interaction Variables, 2005

Predictors	Odds Ratio				
	6	7	8	9	10
Demographic variables					
Age	0.95***	0.95***	0.96***	0.96***	0.96***
Male	.82	.67	.82	.97	1.36
Urban residence	1.82***	1.89***	1.86***	1.85***	1.78***
Region (Reference= East)					
North	1.83	1.82	1.77	1.77	1.74
South	9.60***	9.64***	9.70***	9.71***	9.07***
West	5.92***	5.97***	5.81***	5.81***	5.69***
Religion (Reference= Hindus)					
Buddhists	.60	.60	.64	.64	.61
Christians	.90	.92	.92	.92	.91
Muslims	.36**	.35**	.35**	.35	.35**
Others	.31	.32	.33	.33	.33
Marital status (reference = married)					
Divorced/ separated	5.25***	5.19***	4.88***	4.88***	4.77***
Not married	.31*	.33	.30*	.29*	.29*
Widow	8.54***	8.42***	8.22***	8.22***	8.19***
Socioeconomic variables					
Literacy	.71***	.65***	.64***	.64***	.61***
Wealth index	.98	.98	.99	.99	.99
Working outside home	1.63**	1.56**	1.54**	1.54**	1.54**
Scheduled Caste/Tribe	.81	.81	.80	.81	.80
Behavioral variables					
Used condoms	1.04	1.04	.84	.84	.82
No. of sex partners	1.04**	1.04**	1.33**	1.33**	1.34**
No. of sex partners Missing	.41**	.41**	.41**	.41**	.40**
Social support					
AIDS tolerance (scale 0-2)	1.08	1.08	1.09	1.10	1.12

Table 5.4 cont'd.

Predictors	Odds Ratio				
	6	7	8	9	10
AIDS tolerance missing	.93	.94	.94	.93	.97
HIV awareness					
Heard of AIDS	1.79**	1.83**	1.85**	1.85**	2.55***
Gender and demographic variable interactions					
Male × Age	1.04***	1.05**	1.04***	1.04***	1.04**
Male × Residence	.70	.66	.66	.67	.71
Male × North	.66	.66	.68	.68	.71
Male × South	.51	.51	.51	.51	.58
Male × Buddhists	3.13	3.17	2.95	2.96	3.27
Male × Christians	1.30	1.26	1.28	1.28	1.29
Male × Muslims	.95	.97	.97	.97	.97
Male × Others	4.68	4.50	4.27	4.28	4.38
Male × Divorced /Separated	.94	.96	1.11	1.10	1.11
Male × Not Married	2.82*	2.66	3.25*	3.25*	3.28*
Male × Widowed	.11**	.11**	.12**	.12**	.11**
Gender and socioeconomic variable interactions					
Male × Literacy		1.15	1.15	1.15	1.25
Male × Work Status		1.10	1.13	1.12	1.12
Gender and behavioral variables interactions					
Male × Used Condoms			1.45	1.45	1.52
Male × No. Of Sex Partners			.76**	.76**	.76**
Gender and social support variable interactions					
Male × AIDS tolerance				.95	.95
Gender and HIV awareness variable interactions					
Male × Heard of AIDS					.52*
Model Chi Square	374.82	375.76	388.78	388.85	391.63
-2 Log Likelihood	3368.25	3367.31	3354.29	3354.23	3351.45
N	99204	99204	99204	99204	99204

p≤.01, **p≤.05, *p≤.10 (2 tailed test)

Model 6 shows the effects of interaction between gender and several demographic predictors on HIV, including age, residence, region, marital status, and religious affiliations. Findings suggest the effects of age, living in the West, unmarried status, and widowhood on HIV varies significantly by gender. The interaction terms between gender and residence, or gender and any of the religious affiliations were not significant.

Each year's increase in age posed a greater threat to men in terms of contracting HIV. Every additional sex partner increases the risk of HIV for males by 2 percent. [Exp (age + male × age)] (Odds ratio more than one). In comparison, every additional sex partner decreases the risk for women by .96 [Exp (age + female × age)] (Odds ratio less than one) (See Appendix E for computations). The regional variations projected a greater threat for women in the West. On average, the odds of women from the West in contracting HIV were 5.92, and for men were 2.44, in comparison to the reference category of women from the East. The HIV risk was also higher for men who were not married; the odds of men who were not married in contracting HIV were 1.12 and for women not married were .31, in comparison to the reference category of women who were married. Similarly, the risk for HIV was also higher among women who were widows--the odds for women who were widowed were 8.54, and men who were widowed were .92 to be HIV positive in comparison to the reference category of women who were married (refer to Appendix B).

Model 7 provides the interaction effects between gender and HIV by the inclusion of socio-economic predictors, including literacy levels and work status. None of the interaction terms between gender and literacy, or gender and work status were significant. Thus, the effect of literacy or work status on HIV did not vary by gender.

Model 8 introduces the interaction terms between number of sex partners and gender, and condom usage and gender. While gender \times condom usage did not yield significant results, HIV risk from every additional partner was higher for women. Every additional partner increased the odds of contracting HIV for men by 1.01 and for women by 1.34.

Model 9 accounts for the relationship between the aforementioned specified variables on HIV status after including the interaction effect between gender and attitude towards those living with AIDS. The effect of attitude towards those living with AIDS on HIV did not significantly differ by gender.

Model 10 introduces the last set of interaction terms between gender and HIV awareness, while taking into account the aforementioned specified variables. Men who have heard of AIDS are 34 percent more likely, and women who have heard of AIDS are 155 percent more likely, to be HIV positive. The significant interaction terms were comparable between Model 10 and the previous models except for the regional effect of West, which lost its significance, when all the variables were accounted for.

Thus, either hypothesis 15 (testing the effect of religious affiliations \times gender on HIV) or hypothesis 16 and 17 (examining whether the effect participation in labor force

or literacy levels on HIV varies by gender) could not be authenticated in any of the interaction models. Among behavior based interactions, hypothesis 18 anticipating the effect of condom usage on HIV infection varies by gender, could not be validated either. Similarly, the null for hypothesis 21 predicting the effect of AIDS tolerance \times gender on HIV infection could not be rejected. Hypothesis 19 which projected that the effect of the number of sex partners on HIV varied among men and women was the only valid hypothesis.

A comparison of Model Chi Squares for Models 6 through 10 for the interaction effects suggested that Model 8, accounting for demographic and behavioral interaction terms, fit the data the best among all interaction models (refer to Appendix B). Although the majority of the hypotheses originally proposed for testing interaction terms were not significant, the findings from testing the previous significant predictors turned out to be serendipitous. Thus, differences in how age, marital status and HIV awareness determine HIV status differently among men and women adds new dimensions to the existing research.

LOGISTIC REGRESSION ANALYSIS: COMPARING HIV DETERMINANTS BETWEEN MEN AND WOMEN

Research question three specifically enquired into the likely similarities and differences between men and women in the determinants of HIV status. Table 5.5 provides the findings for the demographic, socioeconomic, behavioral, social support and social awareness predictors among men and women by looking at each subsample only.

Table 5.5 Logistic Regression Models Predicting HIV among Indians by Gender, 2005

Predictors	Odds Ratio									
	Male					Female				
	11	12	13	14	15	16	17	18	19	20
Demographic variables										
Age	1.01	1.00	1.00	1.00	1.00	.96***	.95***	.95***	.95***	.95***
Urban (urban =1)	1.22	1.35	1.35	1.34	1.32	1.54**	1.91***	1.83***	1.75**	1.70**
Region (Reference = East)										
North	.87	1.33	1.27	1.26	1.24	1.26	1.80	1.70	1.70	1.68
South	3.63***	5.42***	5.48***	5.39***	5.16***	7.82***	11.28***	11.14***	10.36***	9.24***
West	1.87**	2.53***	2.49***	2.48***	2.46***	4.52***	6.01***	5.68***	5.59**	5.50***
Religion (Reference = Hindus)										
Buddhists	1.73	1.99	1.92	1.89	1.83	.71	.80	.85	.76	.66
Christians	.94	1.17	1.18	1.18	1.19	.89	.94	.93	.91	.90
Muslims	.61	.35**	.35**	.35**	.35**	.30**	.31**	.30**	.31**	.32**
Others	1.51	1.59	1.56	1.56	1.56	.32	.30	.30	.29	.29
Marital Status (Reference= Married)										
Divorced/										
Separated	5.09***	4.70***	5.16***	5.23***	5.27***	5.84***	5.30***	5.28***	5.06***	4.88***
Not married	.45***	.44***	.96	.95	.95	.11***	.13***	.71	.65	.66
Widow	.81	.87	.93	.94	.95	9.81***	8.54***	8.50***	8.35***	8.35***
Socioeconomic variables										
Literacy		.82*	.82*	.80**	.78**		.68***	.66***	.60***	.58***
Wealth index		.98	.98	.96	.95		1.07	1.11	1.07	1.05
Work outside home										
(working =1)		1.90	1.73	1.75	1.74		1.64**	1.62**	1.61**	1.59***
Scheduled Caste/Tribe (SCST= 1)		.94	.94	.94	.94		.62**	.61**	.61**	.62**

Table 5.5 (cont'd)

Predictors	Odds Ratio									
	Male					Female				
	11	12	13	14	15	16	17	18	19	20
Behavioral variables										
Ever used condoms			1.28	1.27	1.26			.87	.82	.81
No. of sex partners			1.02	1.02	1.01			1.32**	1.33**	1.34**
No. of sex partners missing			.42*	.42*	.42*			.16	.17	.17
Social support										
AIDS tolerance (0-4 scale)				1.05	1.06				1.10	1.10
AIDS tolerance missing				.85	.91				0.57**	1.12
HIV awareness										
Heard of AIDS					1.34					2.73**
Model Chi Square	106.02	126.83	133.55	134.56	135.67	196.78	216.11	233.51	239.27	246.29
-2 Log likelihood	2228.97	2021.31	2014.58	2013.57	2012.45	1449.72	1365.92	1348.51	1342.75	1335.73
N	50086	48429	48429	48429	48427	52799	50778	50778	50778	50777

***p≤.01 **p≤.05 *p≤.10 (2 tailed test)

Model 11 provides the effects of the demographic predictors on HIV among men—regional effects (South and West) and marital status (not married and divorced/separated) had a significant impact in predicting HIV. Similarly, Model 16 provides the effects of the demographic predictors among women—age, residence, regional effects (South and West), marital status, and Islamic affiliation had a significant impact in predicting HIV.

Both the odds for men from the Southern and Eastern region of the country were 3.63 times, and almost 2 times as likely as those from the East to be HIV positive. In comparison, the odds for women from the Southern and Eastern region of the country were almost 8 times, and 4.5 times as likely as those from the East to be HIV positive. Among men, in comparison to the reference category of those married, those divorced/separated were 5 times as likely to be HIV positive. Those not married were 55 percent less likely to be HIV positive. Among women, those who were divorced were almost 6 times, and those widowed were almost 10 times as likely as those married to be HIV positive. Analogous to their male counterparts, single women were 89 percent less likely to be HIV positive.

Additionally, among women, every year increase in age decreased the odds of becoming HIV positive by 4 percent. Women from urban residences were 1.54 times as likely as women from rural residences to be HIV positive. Islamic affiliation had a negative and significant association for women - Muslim women were 70 percent less likely than Hindu women to be HIV positive.

²The mediating effects of socioeconomic status were accounted for in the separate subsamples in Models 12 and 17. The findings from Model 12 for men suggest literacy was significant in predicting HIV. Among women in Model 17, Scheduled Caste/Tribe origins, work status, and literacy were significant in predicting HIV. Every level increase in basic reading/writing capacity decreased the odds of HIV among men by 18 percent and among women by 32 percent. The odds of women from disadvantaged backgrounds were 38 percent less than women from privileged backgrounds to be HIV positive (for men, social origins of Scheduled Caste/Tribe based affiliation was not significant).

Additionally, among women those who worked outside their homes were 1.64 times as likely as those who did not to be HIV positive. For men, the significant demographic

² Among men, recoding literacy as a dummy variable (Reference = cannot read at all), results in complete reading ability having a significant and negative relationship with HIV status. The overall results remain compatible with the male only model (Table 5.5, Model 15) where literacy is coded as ordinal. Among women, recoding literacy as a dummy variable also results in complete reading ability having a significant and negative relationship with HIV status. The overall results are compatible with the female only model (Table 5.5, Model 20) where literacy is coded as ordinal.

Among men, recoding wealth index as a dummy variable (Reference = poorest), does not result in a significant relationship between any of the categories for wealth index and HIV status. The overall results remain compatible with the male only model (Table 5.5, Model 15) where wealth index is coded as ordinal. Among women, recoding wealth index as a dummy variable does not demonstrate a significant relationship with any of the categories either. The overall results are compatible with the female only model (Table 5.5, Model 20).

factors were comparable between Models 11 and 12. In addition, Islamic affiliation was now significant. Like their women counterparts, Muslim men were 65 percent less likely than Hindu men to be HIV positive.

Model 13 and 18 depicts the effects of behavioral attributes for men and women respectively. None of the variables had a significant effect in predicting HIV for men, other than the missing values for the number of sex partners. For women, in comparison, the number of sex partners yielded significant results. Every additional sex partner increased the odds of contracting HIV by 32 percent. Among both men and women, significant predictors were comparable with previous models except for the category of 'not married,' which were no longer significant. Adding social support variables in Model 14 for men, and in Model 18 for women, did not yield any new significant predictor (except the missing values for AIDS tolerance among women) in either of the subsamples.

Adding HIV awareness to the male only subsample in Model 15 did not yield any new significant predictors. Model 20 takes into account HIV awareness for women. Among women, basic knowledge of AIDS was positively and significantly associated with being HIV positive, which is both counterintuitive and analogous to the findings from the pooled samples. The previously identified significant predictors in the female subsample remained significant when awareness variables were introduced (except for the missing values for AIDS stigma, which was no longer significant once HIV awareness was accounted for).

For the male only sample, a comparison of Model Chi Squares suggests the best fitting model is Model 12 which accounts for demographic and socioeconomic variations in predicting HIV (refer to Appendix C). The odds ratios for the nominal level predictors revealed that being divorced had the greatest effect in predicting HIV. However, it is important to be cognizant of the fact that those divorced/separated had a slight presence in the sample. The only significant predictor measured at the ordinal level was literacy (none of the interval-ratio level predictors were significant).

For the female only sample, the best fitting model is Model 20 which accounts for demographic, socioeconomic, behavioral, social support, and HIV awareness predictors in determining HIV (refer to Appendix D). A comparison of the odds ratio for the dummy variable yielded widows as a category for marital status as having the largest effect in predicting HIV, although the effects (comparable to men who were divorced) can be determined by their small proportion in the sample. Among the interval/ratio predictors, number of sex partners had the maximum impact (literacy as specified for the male only subsample was the only other significant predictor which was measured at the ordinal level).

Table 5.6. Logistic Regression Models Predicting the Effects of Domestic Violence on HIV for Women, 2005

Predictors	Odds Ratio
Demographic variables	
Age	0.96***
Urban residence (urban =1)	1.61**
Region (Reference= East)	
North	1.86
South	10.38***
West	5.86***
Religion (Reference = Hindus)	
Buddhists	.73
Christians	.84
Muslims	.31**
Others	.31
Marital Status (Reference = Married)	
Divorced/separated	3.74***
Not married	.85
Widow	9.97***
Socioeconomic variables	
Literacy	0.60***
Wealth index	1.10
Working outside home (working =1)	1.46*
Scheduled Caste/Tribe (SCST= 1)	0.65*
Behavioral variables	
Used Condoms	.78
No. of sex partners	1.35**
No. of sex partners missing	.18
Emotional abuse (0-10 scale)	1.11
Emotional abuse missing	.71
Physical abuse (0-3 scale)	2.29***
Physical abuse missing	1.01
Social support	
AIDS tolerance (0-4 scale)	1.12
AIDS tolerance missing	1.15
HIV awareness	
Heard of AIDS	2.68**
Model Chi Square	276.29
-2 Log likelihood	1305.73
N	50777

***p≤.01, **p≤.05, *p≤.10 (2 tailed test)

Table 5.6 examined the effects of domestic violence (physical and emotional) on women. The domestic violence questions were administered among women only. As far as physical violence perpetrated in domestic settings was concerned, every level increase in the scale demonstrating exposure to physical abuse increased the odds of being HIV positive by 129 percent. However, experience with emotional violence did not have a significant effect on HIV. Hypothesis 20 which projected that among women, the higher the exposure to domestic violence, the higher the likelihood of contracting HIV, therefore, is partially validated.

Table 5.7. Logistic Regression Models Predicting the Effects of Paid Sex on HIV for Men, 2005

Predictors	Odds Ratio
Demographic variables	
Age	.99
Urban residence (urban =1)	1.32
Region (Reference = East)	
North	1.26
South	5.15***
West	2.49***
Religion (Reference = Hindus)	
Buddhists	1.78
Christians	1.20
Muslims	0.36**
Others	1.57
Marital status (Reference = Married)	
Divorced/separated	3.11**
Not married	.63
Widow	.54
Socioeconomic variables	
Literacy	.78**
Wealth index	.95
Working outside home (working =1)	1.81
Scheduled Caste/Tribe (SCST =1)	.94

Table 5.7. Logistic Regression Models Predicting the Effects of Paid Sex on HIV for Men, 2005

Predictors	Odds Ratio
Behavioral variables	
Ever used condoms	1.31
No. of sex partners	1.01
No. of sex partners missing	0.33**
Paid for sex	.84
Paid for sex missing	1.97**
Social support	
AIDS tolerance (scale 0-2)	1.06
AIDS tolerance missing	.91
HIV awareness	
Heard of AIDS	1.35
Model Chi Square	140.23
-2 Log likelihood	2007.90
N	48427

*** $p \leq .01$, ** $p \leq .05$, * $p \leq .10$ (2 tailed test)

Table 5.7 demonstrates the effects of paid sex on HIV for men--the questions were not administered among women. While paid sex as a behavioral variable was not significant, the missing values for the variable were significant, indicating that the findings are tentative and call for further examination.

SUMMARY

Univariate analysis

Generally, the sample included almost an equal number of men and women (although women slightly outnumbered men). The average age of the respondents was about 30 years-old. Most individuals in the sample were Hindus who reported being

married and represented all four regions of the country (the East slightly outnumbered the remainder). The majority of individuals in the sample who reported having basic literacy skills were economically affluent (from middle and upper classes) and worked outside home. Those from the historically repressed segments outnumbered the advantaged. The sample on an average reported one partner allegiance and was evenly split between using condoms/not having used it. The average scores for experience of domestic violence among women for physical/emotional violence were low. The sample exhibited a high level of tolerance for those living with AIDS. Basic knowledge of AIDS among the population was also moderately high.

Characteristics of HIV positive population

Young adults, and more men than women, reported being HIV positive. The Southern region of the nation reported the highest percentage of HIV positive cases; and the rural regions outnumbered the urban regions. Among religious denominations, Hindus reported the highest percentage of cases. Similarly, those who were married in comparison to other marital categories exhibited higher percentage of HIV positive cases. High literacy credentials were reported in about 50 percent of the HIV positive individuals; wealth index estimates included 68 percent of HIV positive individuals coming from the middle and higher classes. Work statuses among the positive individuals included mostly working outside of their homes. Scheduled Caste/Tribe based origins seemed to have an association with those diagnosed as positive. The number of sex partners mostly reported by HIV positive individuals was one, while approximately 60

percent reported using condoms. AIDS tolerance among the HIV positive population was also high. The association between physical/emotional violence and HIV among married women was not that high. Finally, AIDS awareness was high in the positive population.

Pooled Model

The effects of demographic, socioeconomic, behavioral, social support, and HIV awareness predictors on HIV status was first tested on a pooled sample of men and women. Age, gender, residence, Islam as a religious affiliation, the regional effects of South and West in comparison to the East, and the marital status of divorced/separated had a significant effect on HIV. Hypothesis 1 through 4 and hypothesis 14 received partial/complete validation. Men were approximately 1.7 times as likely as women to be HIV positive, whereas respondents from urban centers were 47 percent more likely than those from rural areas to be HIV positive. The null for both hypothesis 14 and hypothesis 2 therefore, could be rejected. The odds of those from the Southern and Western regions of the nations are almost 6 times, and 3 times as likely as those from the East to be HIV positive. Thus, hypothesis 1 which predicted that the eastern region had significantly lower HIV cases than the other regions of the nation, received partial validation (the North in comparison was not significant in predicting HIV). In comparison to Hindus, those who are affiliated with Islam were 66 percent less likely to be HIV positive—hypothesis 3 which predicted that Hindus have a higher likelihood of contraction than non-Hindus thus received partial validation (since the other religious categories did not yield significant results). Every additional year increase in age reduced the odds of being

HIV positive by 2 percent—thus hypothesis 4 was validated. The odds of those who are divorced/separated were almost 5 times and those widowed were 5.3 times as likely as those who were married to be HIV positive. However, hypothesis 5 pertaining to marital status overall, could not be validated since the direction of the findings for divorced/separated/widowed were opposite to the original direction of the hypothesis, which will be addressed in the concluding chapter (HIV infection is significantly higher among Indians who are married or in a relationship than those who are not).

Among the socioeconomic predictors, both literacy and work status continued to have a significant impact in predicting HIV. While every level increase in basic reading/writing skills reduced the odds of being HIV by 29 percent, while working outside of the house increased the odds of being HIV positive by 61 percent. Hypothesis 7 thus was authenticated, while the null for hypothesis 8 could not be rejected since the direction of the proposed hypothesis pertaining to work status was opposite (H_8 : HIV infection is significantly lower among Indians who work than those who do not). Hypothesis 6 and 9, predicting the relationship between wealth index and HIV, and Scheduled Caste/Tribe based origins and HIV status could not be substantiated.

Among behavioral predictors, the number of sex partners shared a significant relationship with HIV status. Every additional sex partner increased the odds of being HIV positive by 4 percent—hypothesis 10 was, therefore, true. In comparison, hypothesis 11 pertaining to condom usage, lacked support.

Hypothesis 12, speculating on the relationship between social support and HIV, was not supported. When all the variables were accounted for, the dummy for missing cases for tolerance was also not significant. As far as HIV awareness is concerned, hypotheses 13 could not be proven. Although HIV awareness had a significant effect on HIV, it was opposite to the direction of the proposed hypothesis (H₁₃: The higher the level of basic HIV and STD awareness, the lower the probability of HIV infection).

Thus, seven of the original 14 proposed hypotheses pertaining to factors which impact HIV in India for both men and women received partial or complete validation. For three of the significant predictors (marital categories of divorced/separated, work status and HIV awareness), the nature of the findings were contrary to the direction of the proposed hypothesis. Combined, age, gender, regional variations, residence, Islamic affiliation, marital status, literacy, work status, number of sex partners, and AIDS awareness accounted for the variations in HIV status among Indians.

Interaction Effects

Hypotheses 15 through 21 (besides hypothesis 20 pertaining to domestic violence) tested the interaction effects of gender on HIV by key variables of interest. None of the hypothesis that predicted the effect of religious affiliation, labor force participation, literacy levels, condom usage, and tolerance towards AIDS patients on HIV varied by gender could be validated. However, hypothesis 19 which proposed that the effect of number of sexual partners in lifetime on HIV varies by gender was supported. Besides the interaction terms guided by the original hypotheses, the effect of age, marital status

(for widows and those not married) and HIV awareness on HIV status significantly differed among men and women. Thus, put together, the effects of age, marital status of not being married and widowed, number of sex partners, and HIV awareness on HIV, significantly varied by gender of the respondent.

Comparing Male and Female Subsamples

When all of the aforementioned specified predictors for the pooled sample were tested on a separate subsample of men and women among demographic predictors for both-- regional effects of South and West (higher likelihood than those in the East), religious affiliation of Islam (lower likelihood than Hindu men and women) and marital status (higher likelihood for those divorced) were significantly associated with HIV. In comparison among women, the negative association between age and HIV, and the positive association with urban residence and HIV status, could also be observed. Additionally, in comparison to married women, women who were widowed also had a higher likelihood for contracting HIV (for men, age, residence, and widowhood were not significant).

In terms of socioeconomic status, in the separate subsample for men and women, the only common significant predictor was literacy. For both men and women, higher literacy was negatively associated with HIV. In the separate subsamples, among women, working outside home cultivated higher chances of getting infected. Women who identified with backward groups had a lower likelihood of getting infected.

In the behavioral model, there was no common significant predictor. Among

women, the higher number of sex partners, and higher exposure to physical violence (Table 5.6) increased the likelihood of being HIV positive.

The social support variable was not significant for either of the subsamples. None of the HIV awareness variables were significant among men. Among women, knowledge of HIV was positively associated with their HIV status.

Thus, when all of the theoretical models were accounted for, for both the subsamples, the regional variations of South and West, being divorced, and literacy levels significantly predicted HIV status. In addition to the common significant predictors, work status, age, the number of sex partners, exposure to physical violence in a domestic setting, and HIV awareness among women significantly predicted HIV.

CHAPTER VI

CONCLUSION

This research examines determinants of HIV in India and the similarities/dissimilarities between men and women in contracting HIV. Twenty different logistic regression models were run in order to answer the three main research questions. The last chapter puts into perspective the findings derived from the statistical investigation.

SUMMARY OF THE FINDINGS

The summary of the major findings in this study is organized in terms of the following three research questions: (i) What are the factors that determine HIV in India? (ii) How does gender interact with other variables in causing HIV? (iii) What are the similarities and differences between men and women in determinants of HIV contagion in India?

Determinants of HIV Infection in India

Research question one examined the factors that are likely to influence HIV in India in a pooled sample of men and women. In incorporating existing literature on the subject, this research devised an integrated research model on the subject matter that combined demographic, socioeconomic, social support, theoretical, and HIV awareness as likely determinants of HIV.

Among the demographic factors, when all of the other variables were controlled for age, gender, residence, the western and southern regions (in comparison to the East), Islamic affiliation, and marital status significantly predicted HIV positive status. Men had a higher risk of contracting HIV than women. However, gender is a focal variable of interest in the current study and interacted with other predictors in causing HIV. The HIV trajectory for men and women were both similar and different in many ways, which will be addressed in answering research questions two and three.

Age as the next significant variable, alludes to the life course perspective whereby the risk for HIV declines with ascendancy from young to middle adulthood for both men and women. Third, urban residence was a new arena for contracting HIV. This typically is the scenario when individuals from varied backgrounds (including migrant laborers and sex workers) are clustered into one social space. Thus, the potential contact situation in urban centers turned out to be a new breeding ground for HIV in comparison to the sparsely populated rural regions.

For this research, there were some states in the East and the South that were oversampled, in comparison to the rest of the nation. The eastern region had the maximum number of blood samples collected and was used as a reference category. When weighting for these states, the historically high prevalent regions of the South and the West still surpassed the East in prevalence. As observed earlier, it is important to reiterate that one of the high prevalent states in the East (Nagaland) did not allow the collection of blood samples. The East accounted for 11 percent of positive cases, 9

percent were from the North, 49 percent were from the South, and 30 percent were from the West. While reckoning the potential HIV positive cases from Nagaland (which is not a densely populated state) and which could not be included in current analysis, the historically high prevalent regions of the South continues to be a peril, in addition to newly emergent zones like Maharashtra in the West. The augmented risk for the Western regions can partially be attributed to the hazard associated with urban centers like Mumbai in Maharashtra.

In terms of religious affiliation, those affiliated with Islam were at a significantly lower risk than Hindus in acquiring HIV. This can be traced back to the prohibitive ordain in Islam associated with pre and extramarital sex, as well as homosexuality. The extensiveness of HIV among Muslims in India was much less in comparison to states with comparable religious organization, like Uganda or in Senegal where Islam is the predominant religion.

An interesting dimension that emerged with this research includes the category for divorced and widowed in being at a significantly higher risk than those who were married. However, the categories for divorced/separated/widowed need to be looked upon carefully—first, marital dissolution can be the consequence of one of the partners being diagnosed positive. Second, the current status of widowhood could also result from one of the spouses dying from AIDS. Under such circumstances, those divorced/separated/widowed should not be treated too differently from those married. Conversely, sexually dis-inhibitive conduct can be practiced among the martially

estranged since they are no longer bound to the social institution of marriage. At this point, the conclusions are tentative and can be further ascertained by either adding close-ended questions to the existing questionnaire pertaining to sexual conduct, or supplementing with qualitative probes.

Among socioeconomic factors, strengthening basic reading/writing skills was crucial in eradicating HIV—this is important because results from our cross tabulations reveal that about 43 percent of those who were positive also had serious learning challenges. Second, working outside home does not essentially cultivate health consciousness—it potentially increases the risk through the contact situation with other HIV positive individuals. The other socioeconomic indicators, including wealth index or scheduled tribe/caste based origins, did not have a significant bearing on the likelihood of HIV infection.

Among behavioral indicators, more sex partners increased the threat of HIV. As predicted, a higher the number of sex partners meant higher exposure to other potentially infected individuals (although the missing values for this variable was significant and the conclusions are indefinite). A higher number of sex partners could also mediate a lack of sexual reserve and potential participation in risky practices. In comparison, condom usage among the behavioral variables was not significant for the pooled sample.

The social support model originally proposed did not receive any support from the current research.

Finally, one of the HIV awareness predictors was significant in predicting HIV likelihood—basic HIV awareness. Rather than awareness determining HIV status, it seemed those who were positive had a higher knowledge of AIDS. This also warrants immediate attention since it appears awareness occurred subsequent to the knowledge of infected status (and according to the current analysis did not significantly limit the risk of infection)

Combined, age, residence, gender, region, Islam, marital status among demographic factors, literacy and work status among socioeconomic predictors, number of sex partners among behavioral factors, and basic knowledge of AIDS significantly predicts HIV in India in a pooled sample of men and women.

Effects of Intersection between Gender and Other Variables on HIV Infection

One of the main queries in this research pertained to examining how gender interacted with certain key variables of interest in navigating the direction of HIV based outcomes. As explained in the findings section for interaction variables, besides verifying interaction terms in testing existing hypotheses, a few other effects were also explored based on the findings from the pooled analysis.

Among demographic predictors, the effects of religious affiliation on HIV did not significantly differ by gender of the respondent (as originally proposed). However, gender significantly interacted with both age and marital status (both of these variables were included later). Among women, every year increase in age diminishes their chances of HIV likelihood in comparison to men. As the separate analysis for

male/female subsamples suggested, the effect of age on HIV for women was significant and negative. For younger women, the threat of HIV was apparently higher (which can be connected to their highly fertile years), and decelerates with the aging process associated with young and middle adulthood.

Marital status interacts with gender in cultivating the different likelihood for men and women. In comparison to the reference category of those that were married, single men had a higher likelihood of contracting HIV. Widowhood and higher chances of HIV allude to the women who might have lost their spouses to HIV, and in the process, became infected.

None of the effects of the socioeconomic variables on HIV significantly differed by gender.

Among behavioural attributes, gender interacted with the number of sex partners in predicting HIV. Every additional sex partner significantly generated greater risk for women in comparison to men. This is because women in the Indian context in general have fewer negotiation skills in requiring safe sex behaviour from their partners. The failure to be safe is likely to foster a greater threat of HIV infection for women. The effect of gender on HIV by condom usage was not significant.

The null hypothesis that examined the interaction effect between gender and attitude towards those living with AIDS on the dependent variable HIV status, could not be rejected.

Finally, among HIV awareness variables, the effect of HIV awareness was positive and higher for women. Thus, women who were aware of HIV were more likely to be positive, which brings up an important question as to why awareness is not decreasing HIV among women. Part of this can be attributed to the fact that an understanding of the HIV peril is probably subsequent to the infected status rather than preceding it. This calls for the urgent necessity of cultivating timely HIV consciousness among women prior to the damage.

Overall, the effect of gender on HIV was moderated by age, marital status (not married and widowed), number of sex partners, and HIV awareness. The findings provide a new direction to the research beyond that proposed by the original research hypothesis.

Similarities and Differences between Men and Women in Determinants of HIV

Contagion

The final research question for this dissertation looked at the similarities and differences between men and women in factors that impact HIV. To answer this question, all of the original proposed variables derived from demographic, socioeconomic, behavioral, social support, and HIV awareness indicators were tested separately on the subsamples of men and women.

Overall, among men, the regional effects of the South and the West, marital status (divorced), and Islamic affiliation significantly predicted HIV, while for women, the additional variables included age, residence and marital status (both widowhood and

divorced/separated). Age was not significant for men. In comparison among women, age significantly reduces HIV likelihood controlling for all other variables. Thus, for women, the decelerating impact of age on HIV with the chronological aging process was reiterated analogous to the interaction models. Among both the subsamples, the regional variations of the West and the South (higher likelihood than East) persisted controlling for all indicators. Although residence (urban/rural) was not significant for males, among women, urban spaces posed a greater peril. As far as marital status was concerned, both divorced/separated men and women had a higher threat for HIV. Among women, the risk continued for widows. Finally, in terms of religious membership, both men and women affiliated with Islam were at a much less risk of contracting HIV than Hindu men and women (comparable to the pooled analysis). Among both subsamples, other religious denominations failed to foretell health statuses connected to HIV.

Among SES indicators, literacy significantly predicted HIV likelihood for both men and women by reducing the chances of getting infected. Work status increased the likelihood of HIV threat for women. For the first time, Scheduled Caste/Tribe based affiliations were associated with HIV, although restricted to the subsample for women. Women from historically disadvantaged backgrounds demonstrated a significantly less possibility for contracting HIV. Comparable to previous models, wealth index was not significant for the subsamples.

Among behavioral variables, the number of sex partners heightened the risk of HIV for women—for men it was not significant (analogous to the interaction models

where the risk assessed for women were higher). Condom usage, analogous to the pooled models, was not significant.

There were two separate variables that were administered in the female subsample for behavioral variables. These include married women's experience with physical/emotional abuse (significant). Among women, exposure to physical violence significantly increased the chances of contracting HIV. This was an important finding and warrants immediate attention.

Among men, the question on availing themselves of paid sex (administered among men only) did not yield any significant results, although the missing value variable was significant (indicating that this variable needs to be investigated further).

For both the male/female subsample, the social support indicator (attitude towards those living with AIDS) was not significant. Among HIV awareness predictors, the only significant variable was the positive association between HIV awareness and HIV status for women. For men none of the HIV awareness variables were significant.

In general, there were definite ways in which the HIV trajectory for men and women were similar. These included the regional variations of the West and South in comparison to the East, being divorced/separated, Islamic affiliation, and literacy. Men and women report a similar trend of not being affected in their HIV status by religious denominations other than Islam, wealth index, condom usage, and attitude towards those living with AIDS.

There are also some ways by which men and women are not alike in their HIV trajectory. For women, the negative impact of age and the positive impact of urban residence, widowhood, working outside home, number of sex partners, experience of domestic violence, and basic knowledge of AIDS were additional significant conduits to HIV infection.

IMPLICATIONS OF THE FINDINGS

Theoretical Implications

This research proposed an integrated model in outlining the likely precursors to HIV. This incorporates the sequential effects of demographic, SES, behavioral, social support, and awareness predictors on HIV. The theoretical implications of this research were derived from the statistical analysis in the preceding section.

Existing research has identified previous and recently emergent high risk regions in the nation (National AIDS Control Organization 2011, Marfatia et al. 2007, Sen 2008). While incorporating these high and low risk states within the geographic clusters, this research has established the regional variations within the North, South, and West, in relation to the East. This research contributes to established literature by affirming that the West and the South continue to be at a greater threat than the East (irrespective of the presence of high risk zones in all 4 geographic clusters). Second, consistent with the findings of Avert.org (2011) and the Center of Disease Control (2010) in the United States, HIV risk in the urban centers is a consideration (specifically for women). As early as 1996, Friedman addressed the HIV peril in urban centers including Mumbai. A decade later, the regional variations in the nation still point towards the West where Mumbai is

situated. The risk is specifically higher among women--part of this can be attributed to occupational status and relatively less socially vigilant lives for urban young women who are likely to engage in pre/extra marital sex (in comparison to those who reside in more close knit and conservative social environments). Third, while other religious affiliations in comparison to Hindus fail to show any likely variation in HIV rates, consistent with the findings of Nanji (2007), the restrictive sexual protocols associated with Islam has successfully kept HIV among Indian Muslims at a low rate in comparison to Hindus. One prevalent theoretical finding pertaining to demographic status is associated with the higher likelihood of HIV with those who are martially estranged. Although Braithwaite's (1989) ideas of disintegrative shaming was applied to analyze social stigma towards individuals living with AIDS, divorced men and women, given the taboo against marital dissolution, can be regarded as victims of primary shaming within Indian society. With social stigma already in effect, other behavioral inhibitions might surface, including indulgence in multiple sex partners or lack of responsible decision making with regard to inculcating safe sex behavior. The behavior and background of this particular demographic also calls for more proximate scrutiny.

This research also demonstrated a higher likelihood for widows in being HIV positive—specifically women. Aggleton and Bharat's (1999) research demonstrates that women caring for their dying husbands are given shelter in their houses while the spouses were alive—thus, an ethic of caring unknowingly brought people in close proximity to the HIV threat. However, in general, there might be individuals who exhibit generic

kindness for HIV patients without being privy to the infected status of their kith and kin. Tarakeshwar et al (2006) reports on the different HIV treatment trails for men and women. Typically, when men are diagnosed with symptoms, they are tested for HIV. Women enter the health care system as a consequence of their husband's infection. Their research also demonstrates that married women had mixed feelings about their relationships while caring for their ailing husbands and receiving no support from their in-laws (Tarakeshwar et al. 2006). This ethic of caring for spouses battling HIV might pose a greater threat for women.

As specified in the current literature on the subject, health is not a given based on biological criterion of well-being, but tied to social statuses. Deriving from the Marxian postulate, White (2009) explains how better economic affordability impacts life choices, health hazards, treatments option, and susceptibility to life conditions that can enhance health-related risk. Among the socioeconomic indicators in this research, literacy, work status and Scheduled Caste/Tribe based affiliations have emerged as significant.

This research brought into view a unique association between work status and HIV—working outside of home enhances the chances of contracting HIV. In previous research, workplaces have been identified as one of the central domains for targeting HIV education (Stephens and Dharmaraj 2005). This still seems to be the need of the hour. Thus, disseminating HIV awareness where conglomerates of white collar or manual workers can be singled out remains cardinaly important, given the higher prevalence among the working population overall. Second, in addition to the importance of generic

education for curtailing HIV in India, as highlighted by Sen (2008) and Ramasubban and Rishyasringa (2005), HIV specific literacy seems to be the need of the hour (more so because among women, HIV awareness seems to be associated with their positive status, when in fact it should ideally curtail the infection). In contrast to the findings of Kotecha and Patel (2001), Nyamathi et al. (2007), and Subramaniam et al. (2007), HIV specific knowledge is not helping limit HIV in India.

Overall, repressed life conditions increases the chances of ill health (Cockerham 2010; Karlsen and Nazroo 2002; White 2009). Yet, current research failed to highlight HIV extensiveness among groups identified as Scheduled Caste/Tribes. Nevertheless, the association between Scheduled Caste/Tribe based orientation and HIV observed in this research is also intriguing. Overall, women from these groups are at less risk in contracting HIV than their privileged partners, controlling for other indicators. In contrast to pre-independent India and its subsequent aftermath, the scheduled tribe/caste based groups are more diffused within the society. Their overall life condition might not be strictly aligned to their ascribed statuses. Thus, socioeconomic contributors to HIV cannot be comprehended by looking at individual pointers in isolation from other factors that determine life chances.

In articulating the behavioral model for this research, Bourdieu's notion of habitus connected to class dispositions, ascribed statuses, and in generating health behavior was taken into consideration. Among behavioral attributes, the number of lifetime sex partners, and exposure to domestic violence were identified as significant. In this context,

while any likely association between availing oneself of paid sex and HIV as proposed by Friedman (1996) and Thapa et al. (2008) was not significant (examined only among the male subsample), this research suggests that in general, a higher number of sex partners is significantly associated with HIV. In addition, the threat from the number of sex partners is also different for men and women—for women the threat is higher for every additional partner. This too adds a new direction to our theoretical findings. In comparison, the frequently discussed importance of condom usage in literature (Friedman 1996., Thapa et al. 2008., Farmer 1999., Seshu 2005 & Varma 2009) was not validated by current research.

The implication for an experiential dimension to domestic violence—the final significant predictor from the behavioral model, will be addressed when the theoretical implications for gender is put into perspective.

In connection to the social support model, Goffman's (1963) definitions of physical, moral, tribal stigma and Braithwaite's (1989) ideas of disintegrative shaming have been discussed in connection to HIV based ostracism. However, the current analysis reveals no likely association between social stigma and HIV as a consequence.

Overall, there are several gender based implications for this research. First, as outlined by Ritzer (2000) in his discussion on multicultural feminism, women's experiences with HIV are variant—thus levels of literacy make a difference as much as a sexually liberated lifestyle in the urban centers. Second, men and women are impacted differently by HIV—for men the risk is higher. Waldron (2001) had enumerated several

factors that contribute to health risks for men, including the dangerous display of masculinity. Being aggressive or adamant during sexual exchange, violence in conjugal life, and the refusal to incorporate safe sex habits can be regarded as a part of the demonstration of stereotypical tenets of masculinity.

Third, the cultural impediments associated with condom usage and women's fertility, sterilization, patriarchal expectations (Varma 2010 and Menski 2007), and higher subsequent threat for infection was validated by two of the current research findings. For one, women's threat for HIV seemed to decrease with the aging process beyond the early child bearing years. In addition, their vulnerability increased with every additional partner in comparison to men (with probable lack of assertiveness in negotiating safer sex).

Farmer's (1999) research had discussed the notion of structural violence in specifying how different political economies are predisposed to different life conditions for women. The importance of such precipitating factors includes the significance of literacy for women and higher menace associated with domestic violence. In concurrence to the scholarly evidence summarized by Stephenson (2007), Gosselin (2010) and Chandrasekharan et al. (2007), women's vulnerable status associated with domestic violence compounds into other kinds of danger. Similar to the findings of Silverman et al. (2008), the findings from the current data suggest the likelihood of domestic violence in leading to HIV.

This research established the importance of ascribed statuses working in conjunction with some of the achieved statuses, as well as behavioral attributes, in providing the utmost explanation for HIV infection. In the process, the findings provide a more integrated and holistic approach at looking at HIV in comparison to treating the indicators in isolation from one another.

Practical Implications

An important consideration for the current research project was the invocation of agency amidst strict structural boundaries. In other words, consequent to a realistic appraisal of the socio-economic-cultural fabric of India in the context of HIV infection, the required course of action to inhibit the virus needs to be particularly delineated. Irwin et al. (2003) discussed two approaches that define the current prospect of AIDS/HIV care in the global parlance: prevention versus treatment. Recent intervention in HIV care in more developed nations like the United States includes highly active antiretroviral therapy (HAART) or drugs including AZT (the latter prevents the transmission of HIV from the mother to the child). Yet, the proponents of the prevention model argue, acquiring these cost-sensitive medical treatments might not be an option for millions in the more destitute parts of the world (Irwin et al. 2003). Prevention entails a complicated scenario—the efforts are not in isolation from social and economic interests which include poverty, class differences, racism, and inequity in gender based authority. The authors argue that prevention and treatment are not mutually exclusive and the

availability of treatment options, supports prevention (Irwin et al. 2003).

This analytical derivative from the demographic, socioeconomic, behavioral, social support, and HIV awareness predictors specified in this study represents one such symbiotic effort between prevention and treatment. Overall, in India, HIV is no longer a disease only among the impoverished and absolutely ignorant; its character is more complex in recent times. For prevention to be realized, a thorough proficiency of the likely demographic groups, their economic status, social conduct, preexisting support networks or lack thereof, as well as the efficacy of infusing timely awareness through informal and media-generated education must be appraised. This is an imperative in the wake of maximizing resources amidst financial limitations.

This study has been revealing in many aspects—for one, HIV is gradually sprawling into the urban areas and those who are employed outside homes. The regional variations in the threat also helps in channelizing health resources better—with a knowledge of high risk regions already in place, zones in greater peril need better attention. According to the findings, more proactive measures to curtail HIV need to be initiated all over the South and in parts of the West, including bigger cities like Mumbai.

There are two other important research findings that are likely to alter the course of HIV infection in near future. First, the gender specific route to transmission is once more established, second, education seems to be an essential conduit for eradication. And yet, given the versatile fabric of Indian society, there is no generic approach to HIV education. The relationship between HIV awareness and HIV status is counterintuitive,

since those who are positive are more likely to be aware. Thus, timelier educational initiatives need to be introduced that is complementary to generic education credentials of the masses. One such initiative should include HIV education programs within the school systems.

Inculcating knowledge and awareness and subsequent prevention cannot be attained by one umbrella initiative. Literacy seems to be an imminent calling for enhancing the overall well-being for a nation—more health-related information should be integrated within existing literacy programs, including the introduction of sex education among adolescents in rural areas. The rural regions should be kept in mind when sex education efforts are worked out, given the early initiation of women into wedlock. Since working outside home is contributing to HIV contraction, health education should be proactively pursued in all types of professional milieus. Accordingly, the nature and language of the initiatives needs to be modified to address the specifics of each profession in question. For instance, the framework developed for educating urban women residing in Mumbai can be mirrored among women residing in other metropolises.

The results of our cross tabulations also demonstrate a funneling effect between knowledge of condoms, access, lifetime usage, and usage in last intercourse. Thus, there seems to be latitude between generic awareness and actual incorporation of safe sex habits in day to day lives. Given the overall threat associated with higher number of sex partners, health education should focus on emphasizing the dangers associated with

maintaining a gap between simple comprehension of safer sex and actual integration of these habits into everyday usage.

One very specific finding from this research pertains to domestic violence and the higher likelihood of HIV. Physical violence can be manifest through sexual aggression, rape, refusal to use condoms, that in turn, accelerate the threat of HIV for the woman in the relationship. Overall, experiencing violence indicated a broader cycle of violence that was a precursor to HIV—among men, refusal to engage in safe sex and partaking in violent behavior during sexual exchange also heightens their own risk for HIV (specifically if the source of infection was a positive female partner). The cycle seemed to be perpetuated when men become the new carriers. Thus, existing anti-domestic violence initiatives, organizations, or advocates need to include HIV as one of the consequences of family violence. Men also need to be mentored on the malicious cycle of hostility which, in the end, is no one's gain.

As apparent from the ethic of caring for individuals with AIDS, which is predisposing to a cycle of infection, the risk closer to home needs to be addressed. Such initiatives call for more one on one counseling. Media conduits, like radio, are pivotal for spreading the word—many people still do not have regular access to television or do not read newspapers in detail (in addition, literacy challenges can also impede media readership). Similarly, more trained health personnel who can relate to the disparate existence of the masses have to be the new messengers of a HIV-free lifestyle.

Given the patriarchal inertia in Indian society, more men need to assume the role of health/community leaders when advising other men.

FUTURE RESEARCH

The limitations of the current research also set up the foundation for building on the current data repository. A triangulated approach of qualitative probes that details high risk behavior would be an important addendum to the current research design. Second, the survey should be extended to populations identified to be at a higher risk. Third, this study does not include older adults or children beyond fertile years—that should provide a more holistic approach to the life course perspective. There needs to be more data that captures social support (both at the individual and institutional level). A more recent version of the data will also provide an update of the AIDS situation in India.

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Appendix A

Chi Square Test of Significance for Pooled Models

Comparing the best fitting model among the five different models specified include the computation of the model fit statistic:

$\chi^2_p = \chi^2 - \chi^1$, where $\chi^2 =$ Model Chi Square (2) and $\chi^1 =$ Model Chi Square (1).

(i) Comparing the better fitting model between Models 2 and 1:

Obtained Chi Square = $326.43 - 286.61 = 39.82$, for $df_2 - df_1 = 17 - 13 = 4$ degrees of freedom. The critical Chi Square at 4 degrees of freedom (at $p \leq .05$) = 9.49.

Since the obtained Chi Square is higher than the critical Chi Square, we can conclude that Model 2 is a better fitting model than Model 1.

(ii) Comparing Models 3 and 2:

The obtained Chi Square : $337.90 - 326.43 = 11.47$. The corresponding critical Chi Square for $df_3 - df_2 = 20 - 17 = 3$ degrees of freedom is 7.81. Since the critical Chi Square is in the area of rejection, Model 3 is an improvement on Model 2.

(iii) Comparing Models 4 and 3 :

Comparing the obtained Chi Square of $342.74 - 337.90 = 4.84$ to the critical Chi Square of 5.99 at $df_4 - df_3 = 22 - 20 = 2$ degrees of freedom, the obtained Chi Square is in the area of rejection. Thus Model 4 is not an improvement over Model 3.

(iv) Model 5 and Model 4:

The obtained Chi Square is 7.28 ($350.02 - 342.74$). The critical square in comparison for $df_5 - df_4 = 23 - 22 = 1$ degrees of freedom is 3.84. Thus Model V is an improvement over Model IV either. Overall Model 5, accounting for demographic, SES,

behavioral variables, social support and HIV awareness fits the data the best comparing the Model Chi Squares of all 5 models for the pooled sample.

Appendix B

Chi Square Test of Significance for Interaction Models

Comparing the best fitting model among the different interaction models includes the computation of the model fit statistic:

$x^2_p = x^2 - x^1$, where x^2 = Model Chi Square (2) and x^1 = Model Chi Square (1).

(i) Comparing the better fitting model between models 7 and 6:

Obtained Chi Square = $375.76 - 374.82 = 94$, for $df_2 - df_1 = 37 - 35 = 2$ degrees of freedom. Critical Chi Square at 2 degrees of freedom ($p \leq .05$) = 5.99. The obtained Chi Square is within the area of rejection (since Critical Chi Square > Obtained Chi Square). Model 7 is thus not an improvement over Model 6.

(ii) Comparing models 8 and 7 :

The obtained Chi Square = 13.02, for $df_2 - df_1 = 39 - 37 = 2$ degrees of freedom. The corresponding critical Chi Square at 2 degrees of freedom ($p \leq .05$) = 5.99. Since the obtained Chi Square is larger than the critical Chi Square, Model 8 is significantly better than Model 7, accounting for the behavioral interaction terms.

(iii) Comparing models 9 and 8:

The obtained Chi Square = .07, for $40 - 39 = 1$ degrees of freedom. Critical Chi Square at 1 degrees of freedom ($p \leq .05$) = 3.84. Thus the obtained Chi Square is within the area of rejection. Thus Model 9 is thus not an improvement over Model 8.

(iv) Comparing models 10 and 9:

The obtained Chi Square = 2.78, for $41 - 40 = 1$ degrees of freedom. Critical Chi Square at 1 degrees of freedom ($p \leq .05$) = 3.84. Thus the obtained Chi Square is within the area of rejection. Thus Model 10 is thus not an improvement over Model 9.

Appendix C

Chi Square Test of Significance for Male Subsample

Comparing the better fitting models between:

(i) Models 12 and 11:

Obtained Chi Square = $126.83 - 106.2 = 20.81$ for $df_2 - df_1 = 16 - 12 = 4$ degrees of freedom. Critical Chi Square at 4 degrees of freedom ($p \leq .05$) = 9.49. Thus Model 12 fits the data better than Model 11.

(ii) Models 13 and 12:

The obtained Chi Square comparing Models 13 and 12 for $19 - 16 = 3$ degrees of freedom: $133.55 - 126.83 = 6.72$. Corresponding critical Chi Square for 3 degrees of freedom ($p \leq .05$) = 7.81. Thus model 13 is also not an improvement over Model 12.

(iii) Models 14 and 13:

The obtained Chi Square comparing Models 14 and 13 for $21 - 19 = 2$ degrees of freedom: $134.56 - 133.55 = 1.01$ which is in the area of rejection for critical Chi Square = 5.99. Thus Model 14 does not fit the data better than Model 13.

(iv) Models 15 and 14:

The obtained Chi Square comparing Models 15 and 14 for $22 - 21 = 1$ degree of freedom: $135.67 - 134.56 = 1.11$, which is also in the area of rejection for critical Chi Square = 3.84. Thus for the male only sample, the best fitting model is Model 12 which accounts for demographic and socioeconomic variations in predicting HIV.

Appendix D

Chi Square Test of Significance for Female Subsample

Comparing the better fitting models between:

(i) Models 17 and 16:

Obtained Chi Square = $216.23 - 196.78 = 19.55$ for $df_2 - df_1 = 16 - 12 = 4$ degrees of freedom. Critical Chi Square at 4 degrees of freedom ($p \leq .05$) = 9.49. Thus Model 17 fits the data better than Model 16.

(ii) Models 18 and 17:

The obtained Chi Square comparing Models 17 and 18 for $19 - 16 = 3$ degrees of freedom: $233.51 - 216.11 = 17.4$. Corresponding critical Chi Square for 3 degrees of freedom = 7.81. Thus the critical Chi Square is in the critical area of rejection—Model 18 is an improvement over Model 17.

(iii) Models 19 and 18:

The obtained Chi Square comparing Models 18 and 19 for $21 - 19 = 2$ degree of freedom: $239.27 - 233.51 = 5.76$ which is lower than the corresponding critical Chi Square = 5.99. Thus Model 19 is not an improvement over 18.

(iv) Models 20 and 19:

The obtained Chi Square comparing Models 19 and 20 for $22 - 21 = 1$ degrees of freedom: $246.29 - 239.27 = 7.02$ which is greater than the corresponding critical Chi Square value of 3.84. Thus for the female only sample, the best fitting model is Model 20 which accounts for demographic, socioeconomic, behavioral, social support and HIV awareness in predicting HIV.

Appendix E

Interaction Effects of Key Variables of Interest and Gender on HIV

Gender and Demographic Interactions

(i) The effect of age on HIV for men and women can be computed as follows:

Based on Model 6 of Table 5.4, the formula for male should be

$$- 0.046 \text{ age} + .048 \text{ male} \times \text{age}$$

$$= - 0.046 \text{ age} + .048 (1) \text{ age} = .002 \text{ age}$$

$$\exp (.002) \text{ age} = 1.002;$$

The odds ratio (1.002) indicates that for each additional year, the risk for HIV among men will increase by .2 percent.

Based on Model 6 of Table 5.4, the formula for female should be:

$$- 0.046 \text{ age} + .048 \text{ female} \times \text{age}$$

$$= - 0.046 \text{ age} + .048 (0) \text{ age} = - 0.046 \text{ age}$$

$$\exp (- 0.046) \text{ age} = .96 \text{ age}$$

This can be interpreted as every additional year, decreases the risk for HIV among women by 4 percent

(ii) The effect of region (west) on HIV for men and women:

The formula for male should be:

$$1.779\text{West} + (-.885) \text{ male} \times \text{West}$$

$$= 1.779\text{West} - .885(1) \times \text{West}$$

$$= .894 \text{ West}$$

$$\text{Exp} (.896)\text{West} = 2.44\text{West}$$

This means that men in the West are 2.44 times as likely as female in the East to contract HIV.

The formula for female should be:

$$\begin{aligned} & 1.779\text{West} + (-.885) \text{ female} \times \text{West} \\ & = 1.779\text{West} - .885(0) \times \text{West} \\ & = 1.779 \text{ west} \end{aligned}$$

$$\text{Exp} (1.779) \text{ west} = 5.92 \text{ West.}$$

This means that women in the West are 5.92 times as likely as women in the East to contract HIV.

(iii) Marital status (Model 6, Table 5.4):

A. Not married:

The effect of marital status (not married) on HIV for men:

$$\begin{aligned} & -1.159 \text{ marital} + (1.038) \text{ male} \times \text{marital} \\ & = -1.159 \text{ marital} + (1.038) (1) \text{ marital} = -0.12 \text{ marital} \\ & \text{Exp} (-0.12) \text{ marital} = 1.12 \text{ marital} \end{aligned}$$

This means that men who are not married are 1.12 times as likely as women who are married to contract HIV.

The effect of marital status (not married) on HIV for women:

$$\begin{aligned} & -1.159 \text{ marital} + (1.038) \text{ female} \times \text{marital} \\ & = -1.159 \text{ marital} + (1.038) (0) \text{ marital} = -1.157 \text{ marital} \\ & \text{Exp} (-1.159) \text{ marital} = .31 \text{ marital} \end{aligned}$$

This means that women who are not married are .31 times as likely as women who are married to contract HIV.

B. Widowed:

The odds of men who are widowed in contracting HIV:

$$2.145 \text{ widowed} + (-2.219) \text{ male} \times \text{widowed}$$

$$= 2.145 \text{ widowed} + (-2.219) (1) \text{ widowed} = -.074 \text{ widowed}$$

$$\text{Exp} (-.074) \text{ widowed} = 0.92 \text{ widowed}$$

Men who are widowed are .92 times as likely as female who are married to contract HIV.

The effect of marital status (widowhood) on HIV for women:

$$2.145 \text{ widowed} + (-2.219) \text{ female} \times \text{widowed}$$

$$= 2.145 \text{ widowed} + (-2.219) (0) \text{ widowed} = 2.147 \text{ widowed}$$

$$\text{Exp} (2.145) \text{ widowed} = 8.54 \text{ widowed}$$

Women who are widowed are 8.54 times as likely as women who are married to contract HIV.

Gender and Behavior Interactions

Based on Model 7 from table 5.4, the effect of number of partners on HIV for men and women can be computed as follows:

Male:

$$.289 \text{ partners} + (-.274) \text{ male} \times \text{partners}$$

$$= .289 \text{ partners} + (-.274) (1) \text{ partners}$$

= .015 partners,

Exp (.015) partners = 1.01 partners

Female:

.289 partners + (-.274) female × partners

= .289 partners + (-.274) (0) partners

= .289 partners

Exp (.289) partners = 1.34 partners.

Every additional partner increased the odds of contracting HIV for men by 1.01 and for female by 1.34.

Gender and HIV Awareness Interactions

The effect of gender on HIV by knowhow of AIDS:

Men:

.938 heard of AIDS + (-.645) male × heard of AIDS

= .938 heard of AIDS + (-.645) (1) heard of AIDS

= .293 heard of AIDS

Exp (.293) heard of AIDS = 1.34 heard of AIDS

Women:

.938 heard of AIDS + (-.645) female × heard of AIDS

.938 heard of AIDS + (-.645) (0) heard of AIDS

Exp (.938) heard of AIDS = 2.55 heard of AIDS

Men who have heard of AIDS are 34 percent more likely to be HIV positive
whereas women who have heard of AIDS are 155 percent more likely to be HIV positive.