

THE ROLE OF MEDIA AND AIDS KNOWLEDGE IN ERADICATING THE
HIV/AIDS EPIDEMIC IN INDIA

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Smriti Agarwal

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Smriti Agarwal

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Abstract

This paper aims to understand the AIDS concern in India by analyzing two different relations. The first model studies the effect of media sources such as newspapers, radios and television on AIDS-related knowledge among Indian men and women using a two-stage hurdle model. The second model looks at the effect of AIDS-related knowledge on the sexual behavior of Indians using the Probit analysis. Both these relationships hint towards the possible problems faced by AIDS campaigns and government programs in combating the HIV epidemic in India. The effect of media in promoting AIDS education, even though statistically significant, is minimal. Moreover, the effect of AIDS knowledge on sexual behavior is very disturbing. Women have insignificant control over their sexual behavior despite their improved knowledge levels. Moreover, men's behavior is barely influenced by their knowledge levels. Thus, increasing AIDS knowledge among Indians is only one of the several crucial steps in controlling the HIV/AIDS epidemic. However, the success of AIDS campaigns and other programs also depend on factors such as improved education levels, better job conditions, enhanced livelihood, and additional resources for the country's healthcare.

KEYWORDS: (HIV/AIDS, India, Knowledge, Sexual Behavior, Media)

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Smriti Agarwal
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CHAPTER I

INTRODUCTION

Overview of the HIV/AIDS Epidemic in India

The HIV/AIDS epidemic, earlier prevalent in only a few countries and among selected groups of people, has brought serious concerns in the last few decades. The number of HIV positive individuals is increasing significantly all across the globe. Since the beginning of the epidemic, almost 60 million people have been infected with HIV and 25 million people have died of HIV-related causes¹. Absence of a curable treatment or an effective vaccine makes the HIV infection deadly and hence, its spread cannot be ignored. Previously thought of as a western health problem, HIV/AIDS was overlooked by most of the developing countries as a problem of homosexuals, drug users and westerners who engage in unsafe sexual practices. However, the emergence and spread of the HIV virus in several developing countries' populations in the last few decades has been responded with a lot of dismay and denial.

In several developing countries, the rise in HIV/AIDS cases is likely to have considerable economics, social, political and military implications. The impact will vary based on each government's response to control the infections' spread and the availability as well

¹ "UNAIDS Joint United Nations Programme on HIV/AIDS," Switzerland [cited 2010]. Available from http://data.unaids.org/pub/FactSheet/2009/20091124_FS_global_en.pdf.

as use of the country's resources in treating individuals². The HIV/AIDS epidemic affects the demography, health, economy and social fabric of developing countries much more drastically than that of developed countries. The demography affect includes lowering of life expectancy at birth; the adverse health affects incorporate an increase in death rate, child mortality rate, and growing number of orphans; the extreme economic affects are escalated by increased medical expenses, loss of labor supply, and market drop in productivity³.

Currently, the African continent has the maximum HIV positive cases, followed by Asia. In the next 10 years, however, Asia is believed to have more HIV cases than that of any other continent⁴. HIV has spread largely through heterosexual intercourse in most developing countries, including Sub-Saharan Africa, China, India, Thailand, and Cambodia. The epidemic has moved from urban to rural areas and from high-risk populations to low-risk populations. Among heterosexuals, key links to rising levels of HIV/AIDS cases are economic instability and associated poverty, substance use, gender inequality and low levels of literacy⁵.

² "The Next Wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India and China " in National Intelligence Council [database online]. USA [cited 2010]. Available from <http://fas.org/irp/nic/hiv-aids.html>.

³ Rimjhim M. Aggarwal and Jeffrey J. Rous, "Awareness and Quality of Knowledge regarding HIV/AIDS among Women in India," *Journal of Development Studies* 42, no. 3 (04 2006): 371-401.

⁴ "The Next Wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India and China " in National Intelligence Council [database online]. USA [cited 2010].

⁵ Jayati Ghosh, "A Geographical Perspective on HIV/AIDS in India," *Geographical Review* 92, no. 1 (Jan. 2002): 114-126.

In India, the first HIV infection was reported in 1986 in a commercial sex worker in Madras⁶, and since then the number has increased to over 2 million. When AIDS first emerged in India, it was dismissed as a curse on the unscrupulous people engaging in corrupt behavior. In a predominantly Hindu-society, AIDS was, and in some regions still is, considered the disease of the untouchables⁷ and hence, no actions were taken to combat the infection for a long period of time. Although rural India appeared to have a lower incidence of HIV/AIDS than did the country's urban area⁸, the rural prevalence rate is likely to be hidden because of the fear associated with AIDS. The high mobility of people between urban and rural areas is likely to increase HIV cases in India in the future.

It is predicted that the deaths from AIDS, if not controlled considerably, will reduce the economic potential of India and its world power⁹. If the disease begins to spread among the urban and educated individuals, the fewer number of skilled laborers is prone to have huge economic costs for India. Thus, the likely influence of HIV/AIDS on the country's progress and economic advancement has induced some AIDS policy programs and intervention campaigns in India. However, the impact of these programs has been negligible because of the campaigns' minimal and inaccurate understanding of the

⁶ M. S. Kumar, Shakuntala Mudaliar, and Desmond Daniels, "Community-Based Outreach HIV Intervention for Street-Recruited Drug Users in Madras, India," *Public Health Reports* 113 (06 1998): 58-66.

⁷ "Sex and the Poor," *The Economist*, October 25, 2008 2008,

⁸ Ghosh, *A Geographical Perspective on HIV/AIDS in India*, 114-126.

⁹ "When Silence is Not Golden- could AIDS Explode in India?" *The Economist*, April 17, 2004

disease and its modes of prevention/transmission. When the government realizes the extent of the problem, the catastrophe might be difficult to control – most responses might be ineffective. Therefore, there is an urgent call for modification in AIDS campaigns to correctly fit the current needs of the country's people¹⁰.

The extremely large population of India poses a high threat in terms of the rapid spread of HIV infection. In the future, India is estimated to have the maximum number of HIV infected individuals. It is estimated that the cumulative new HIV cases between 2000 and 2025 in India will be 30 million under a mild epidemic, 110 million in an intermediate epidemic and 140 million in a severe epidemic¹¹. Apart from the large population density, causes of the growing epidemic in India include stigma associated with infected people, cultural taboos against open discussion about sex, high levels of poverty and malnutrition in the poorest sectors, low literacy rate, lack of dedication and commitment to studying and controlling the disease, limited resources, high migration due to India's central location with respect to global trading and particularly, deficient communication between health officials, state governments and their communities¹².

The principal concern in terms of the current HIV wave is the AIDS stigma among Indians that restricts the lifestyle of infected individuals and hinders the prevention measures adopted by different organizations. The quality of life of AIDS patients is

¹⁰ "When Silence is Not Golden- could AIDS Explode in India?" *The Economist*, April 17, 2004

¹¹ Nicholas Eberstadt, "The Future of AIDS," *Foreign Affairs* 81, no. 6 (Nov 2002): 22-45.

¹² Keshavan Kodandapani, "AIDS in India: When Denial Kills," *Home Health Care Management & Practice* 20, no. 1 (12 2007): 21-26.

associated with education, income, occupation, family support and clinical categories of the patients. Overall, the measured Quality of Life Index (QOL) for HIV infected individuals was relatively poor with a mean score of 25.8 on a scale of 1-100¹³. Stigma and discrimination, changes in family functions and status, financial difficulties, fear of society, and helplessness are all a part of the HIV positive individual's life in India.

India's vast set of culturally diverse people that have different beliefs and behaviors has led to the struggle in HIV prevention. Over 24 different languages and many more dialects are spoken in the country¹⁴. Deep social continuities and legendary traditions tie groups of people together in utmost harmony. The importance and value of culture and religion in the lives of Indians results in difficulty of outside health workers to promote accurate and objective knowledge on AIDS, without allowing for any background assumptions. In addition to the cultural restraints, the existing social hierarchy in India bestows more power in men than in women, and thus men control the terms under which sexual exchange takes place, reducing the ability of women to negotiate safe sex¹⁵. In particular, Indian women are silent victims of the AIDS epidemic since they have no voice in decision making and priority setting for government and/or family goals - social norms put women at a lower status.

¹³ Naveet Wig et al., "The Impact of Hiv/aids on the Quality of Life: A Cross Sectional Study in North India," *Indian Journal of Medical Sciences* 60, no. 1 (01 2006): 3-12.

¹⁴ Suniti Solomon, Anirban Chakraborty, and Rochelle D'souza Yephthomi, "A Review of the HIV Epidemic in India," *AIDS Education & Prevention* 16 (06/02 2004): 155-169.

¹⁵ Ghosh, *A Geographical Perspective on HIV/AIDS in India*, 114-126.

The response to the HIV epidemic on the Indian subcontinent has been hampered by several factors, including societal stigma, lack of educational resources, lack of economic opportunities, and the competing priorities for a nation just growing and developing an infrastructure for education, industry and health¹⁶. Other pressing issues like the tension with Pakistan and political as well as religious conflicts have taken precedence over the AIDS problem in India. Furthermore other health-related issues like infant mortality and TB pose a superior health challenge compared to AIDS in India¹⁷.

The two main reasons for the high vulnerability of Indians to the HIV infection include poor knowledge about the disease and misconceived risk perceptions that results in unsafe sexual behavior, such as low use of condoms¹⁸. In developing countries, especially in India, which has an extremely low per capita income, most infected individuals cannot afford to pay for the expensive HIV treatment- antiretroviral drugs. Thus, prevention is the key step in controlling the infection in India and hence increasing awareness among individuals is highly important.

The Indian government's primitive primary health network is incapable of dealing with the complexity of the AIDS problem. In five states, more than 1% of the population is HIV positive: Andhra Pradesh, Maharashtra, Karnataka, Manipur and Nagaland. Tamil

¹⁶ Sonal R. Doshi and Bindi Gandhi, "Women in India: The Context and Impact of HIV/AIDS," *Journal of Human Behavior in the Social Environment* 17, no. 3 (07 2008): 413-442.

¹⁷ *The Next Wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India and China*

¹⁸ Pedro de Araujo, "Socio-Economic Status, HIV/AIDS Knowledge and Stigma, and Sexual Behavior in India," *SSRN eLibrary* (2008)

Nadu has been dropped of the list, with a prevalence of 0.6% in 2005-06¹⁹. Each state requires a different response based on the specific problem that pertains to its people. In most states, heterosexual transmission is the main cause of the infection in India. It is challenging to ensure safe sexual behavior in order to reduce heterosexual transmission. This is true especially within Indian marriages, due to the huge burden of underlying trust that is expected to be true for both, the wife and the husband.

The role of media in educating Indians on HIV/AIDS issues is uncertain. Media sources such as newspapers, radio and television constantly attempt to increase HIV/AIDS knowledge through advertisements, shows, and movies. Several government programs and AIDS organizations utilize media to convey AIDS information to citizens. However, at the same time, numerous newspaper, radio and television broadcasts increase misconceptions about AIDS by providing inaccurate or exaggerated AIDS information. Therefore, even though media has potential to educate people on HIV issues, the current impact of media on HIV education is indeterminate.

This paper aims to solve the misconceptions surrounding AIDS information in India by asking two different questions. First, does media affect the level of AIDS-related knowledge among Indian men and women? Second, does HIV/AIDS-related knowledge have any impact on the sexual behavior of Indian folks? India is attempting to control the spread of the deadly HIV virus in its population by introducing health campaigns, promoting contraceptive use, educating individuals and creating awareness in both rural and urban regions. The most convenient source to disseminate AIDS information, so that

¹⁹ "Not Half as Bad: AIDS in India," *The Economist*, July 21, 2007 2007,

it reaches the masses, is through media sources like newspapers, radio and television. However, the impact of campaigns, programs as well as media on the Indian inhabitants is uncertain. Thus, the two questions could be vital to the work of AIDS campaigns in India since majority of the campaigns aim to improve AIDS-related knowledge through media use. A two-stage hurdle model with a probit analysis in the first stage and an ordered probit analysis in the second is used to answer the first question. The binary response probit model is used to answer the second question. Several researches have looked at the relationship among AIDS-related knowledge, media use, education level and residence location of individuals. However, most of these studies are based on data available from the 1990s and they do not analyze the marginal effect of these relationships. Therefore, it is important to analyze to what extent have media sources such as television, radio and newspapers been successful in promoting objective knowledge on AIDS without creating any misconceptions in the current times.

Moreover, the effect of AIDS-related knowledge on sexual behavior has not been studied for India. In a study of 18 Sub-Saharan African countries, there is a negative correlation between higher knowledge levels and safer sexual behavior among males. The effect of knowledge showed opposing effects on African men's sexual behavior. Even though increased knowledge led to greater use of condoms, it also led to an increase in the number of sexual partners²⁰. This provides some evidence that knowledge campaigns have not been very successful in achieving their goals in Africa. This paper aims to

²⁰ Pedro de Araujo, Jayash Paudel and Smriti Agarwal “Does HIV/AIDS Related Knowledge Affect Men's Decision to Have Sexual Encounters with Commercial Sex Workers? Evidence from sub-Saharan Africa” Colorado College Economics Department Working Paper (2009)

conduct a similar study for India and examine the influence of increasing AIDS knowledge level on the sexual behavior of Indian men and women to evaluate the effectiveness of AIDS-related knowledge in encumbering the spread of the HIV/AIDS epidemic.

The remainder of this paper is structured in the following way. Chapter 2 looks at previous AIDS studies that discuss media's influence, AIDS knowledge levels, sexual behavior, campaigns, and other HIV/AIDS-related matters. This section will provide a comprehensive review and enable us to find possible answers for the two questions in concern. Chapter 3 describes the statistical methodology implemented in this paper. Chapter 4 gives the data source and explains the dependent, independent and control variables. This chapter provides information on the basic statistics of all variables and explains the difference in AIDS-related knowledge and sexual behavior between Indian men and women. Chapter 5 reports the interesting and relevant results, linking the outcomes to past studies. Finally, chapter 6 concludes the paper by providing a short summary of the results, discussing promising future studies and recommending policy solutions for the current AIDS problem in India.

CHAPTER II

RELATED LITERATURE

The two questions: what is the impact of media in improving AIDS-related knowledge and does improvement in AIDS-related knowledge result in safe sexual behavior are best understood and comprehended through the following discussion. The subsequent categories examine every subject that most likely affects the answers to the two queries proposed in this paper.

First and foremost, media's role in the Indian population is studied. This discussion is very important because one should be able to comprehend the likelihood of media in improving AIDS knowledge and sexual behavior based on media's past influence in other aspects. Secondly, the prevailing HIV/AIDS stigma in India is analyzed. The misconceptions associated about AIDS obstruct the spread of objective AIDS knowledge and the practice of safe sexual behavior. Thus, it is important to analyze the prevailing stigma and what steps were taken to reduce stigma in previous years. Next, the progress of HIV/AIDS knowledge among men and women is examined. This analysis is essential to perceive the outcomes of campaigns in increasing HIV knowledge previously. Also, the AIDS knowledge level among men and women are contrasted to scrutinize whether the actions of campaigns should vary based on their targeted group. Besides, current AIDS knowledge levels indicate if there is need for further AIDS education improvement

in India. The present and past sexual behaviors of Indian men and women are researched to predict if sexual behavior is responsible for the spread of HIV infection in India. Previous researches have indicated sexual behavior attributes that led to the spread of HIV among heterosexual couples in India. Also, the effect of knowledge on sexual behavior is anticipated. Factors like the social structure and women's status are responsible for existing behavioral trends among majority of Indians. High-risk HIV groups are carefully examined to analyze whether they have adequate AIDS knowledge and if yes, has knowledge among these groups resulted in less risky sexual behavior. Next, the spread of infection among low-risk group is evaluated to envision the future of AIDS in India and anticipate whether improved knowledge is likely to change the rising HIV cases. Finally, prevention programs and campaigns are discussed to review how much has been done to combat AIDS in India and what strategies have led to the success or failure of different campaigns. The key mission of most campaigns is to control risky sexual behavior by increasing knowledge among target groups; however, most campaigns fail to assess their performance in reaching goals.

Media's Role in the Indian Population

The swift advancement of technology in the last few decades has significantly improved the access and use of media in most developing countries. For instance, 30 million households in India added cable services in the 5-year span between 2001 and 2006¹. Particularly, the significantly increased use of television in rural India has caused

¹ Robert Jensen and Emily Oster, "The Power of TV: Cable Television and Women's Status in India," *Quarterly Journal of Economics* 124, no. 3 (08 2009): 1057-1094.

majority of the country's population to connect through news broadcasts and other programs shown on television. Media's far-reaching influence on the Indian populace is evident from the recent modernization of the country as well as people's emulation of what they perceive to be desirable behaviors and attitudes². Therefore, Indian television has the potential to churn any information to sensational news and affect the attitudes and behavior of most individuals, especially the young adults.

Regardless of the improvement in the livelihood of Indians brought through mass media technology, media's role in increasing HIV/AIDS knowledge has been very minimal. The cultural taboos associated with sex talk make an open conversation on HIV/AIDS transmission and prevention difficult. The conservative nature of Indian leaders like the Sushma Swaraj (health minister of India 2003), who dislike the idea of promoting condoms and impede TV advertisements because they might encourage sex³, is one of the causes of poor HIV/AIDS communication through television and other media sources. Apart from political constraints, the hope to increase knowledge among illiterate and poor people through media sources like newspapers and magazines is impossible. The challenge lies in training the ignorant adults, who have inadequate knowledge on simple health issues, no access to television and work long hours to support their families.

The impact of mass media in communicating AIDS-related knowledge is not completely understood. Different media sources have varying effects. Sources like newspapers and

² Kirk Johnson, "Media and Social Change: The Modernizing Influences of Television in Rural India," *Media, Culture & Society* 23, no. 2 (March 1 2001): 147-169.

³ Patralekha Chatterjee, "Spreading the Word about HIV/AIDS in India," *Lancet* 361, no. 9368 (05/03 2003): 1526.

radios are minimally used but television is used by majority of Indians. Thus, television broadcasts might be an effective medium to disseminate AIDS awareness⁴. However, the vague and incomplete AIDS information presented on television and other media sources due to the numerous political and social barriers has limited the quality of AIDS knowledge in the Indian population. The inadequacy of media's role in providing quality AIDS knowledge also stems from the indirect and non-verbal communication about sex and sex-related issues among peers and family members in India⁵.

Despite the several drawbacks, media extensively influences the social construction of HIV/AIDS in India. The severity, causes, solutions and beliefs of AIDS among most people are developed from what they observe or hear through media⁶. Lately, three AIDS-themed Indian movies attempts to change the general attitude towards HIV-infected individuals by removing misconceptions and AIDS-related stigma⁷ were highly recognized. In the future, media can play an important role in combating the spread of HIV infection in India. However, this requires increasing television access to the underclass as well as breaking social barriers to encourage open and direct conversations of AIDS issues.

⁴ S. Pallikadavath, C. Sreedharan, and R. W. Stones, "Sources of AIDS Awareness among Women in India," *AIDS Care* 18, no. 1 (01 2006): 44-48.

⁵ Helen Lambert and Kate Wood, "A Comparative Analysis of Communication about Sex, Health and Sexual Health in India and South Africa: Implications for HIV Prevention," *Culture, Health & Sexuality* 7, no. 6 (Nov 2005): 527-541.

⁶ Rebecca de Souza, "The Construction of HIV/AIDS in Indian Newspapers: A Frame Analysis," *Health Communication* 21, no. 3 (06 2007): 257-266.

⁷ Louise M. Bourgault, "AIDS Messages in Three AIDS-Themed Indian Movies: Eroding AIDS-Related Stigma in India and Beyond," *Critical Arts: A South-North Journal of Cultural & Media Studies* 23, no. 2 (07 2009): 171-189.

HIV/AIDS-Related Stigma in India

The preconception regarding HIV/AIDS infection is one of the major reasons for inaccurate AIDS knowledge among Indian people. In Hyderabad, the capital city of Andhra Pradesh-the state with the second highest reported HIV cases, 80.63% of the studied population had misconceptions about the mode of transmission or prevention of AIDS⁸. The main cause of AIDS fear and prejudice stems from ignorance and failure to speak about the disease. In a survey of 153 English-speaking adults in Calcutta, only half of the participants would have dinner or work with an infected friend and 50% believed that AIDS patients should be quarantined⁹. These numbers are very large, especially for individuals who have received some education in English. This stigma symbolizes the root of the extensive HIV/AIDS epidemic in India and brings forth concern about future augmentation of HIV cases.

The disgust towards and discrimination against HIV positive individuals has led people with the virus to conceal their conditions in order to avoid rejection from their community and workplace¹⁰. A study in four Indian states found that 70% of HIV positive individuals had experienced some form of discrimination and over 30% came from their own families or hospitals. For instance, a widowed woman, Rema T. Krishnan

⁸ R. T. Sudha, D. T. Vijay, and V. Lakshmi, "Awareness, Attitudes, and Beliefs of the General Public Towards Hiv/aids in Hyderabad, a Capital City from South India," *Indian Journal of Medical Sciences* 59, no. 7 (07 2005): 307-316.

⁹ S. B. Porter, "Public Knowledge and Attitudes about AIDS among Adults in Calutta, India," *AIDS Care* 5, no. 2 (03 1993): 169-176.

¹⁰ Wayne T. Steward et al., "HIV-Related Stigma: Adapting a Theoretical Framework for use in India," *Social Science & Medicine* 67, no. 8 (10 2008): 1225-1235.

and her two children, all HIV positive, were asked to leave their home and the two kids were denied education in the local public school because of the apprehension among parents and teachers¹¹. Thus, concealing HIV infection and avoiding getting tested for AIDS because of the prevalent stigma has resulted in increased number of HIV incidences. The stigma has prevented truthful communication about the logistics of the disease and hindered the improvement of good quality AIDS knowledge among individuals.

Although the AIDS stigma in India has been highly pervasive, if not altered India could experience a large multiplication in its HIV positive populace. Thus, the first step in getting rid of the stigma is to disseminate true facts about the disease in all regions and among all groups. People will have a higher tolerance for the disease and greater interest in its mode of transmission/prevention only when the problem is made evident. Each person should be compelled to analyze his/her own risks associated with the disease rather than thinking of it as a social phenomenon among the underclass and the destitute. The behavior towards HIV positive individuals needs to change. They should be given access to ample care without social stigma and to provisions to protect against violence¹². This will lower the concealment of HIV cases and convey the accurate representation of India's HIV condition. Only after the elimination of AIDS stigma, prevention strategies to combat AIDS can be successful.

¹¹ Joanna Slater, "In India, Stigma of AIDS Curbs Control of HIV," *Wall Street Journal - Eastern Edition* 244, no. 7 (07/12 2004): B1-B4.

¹² Keshavan Kodandapani, "AIDS in India: When Denial Kills," *Home Health Care Management & Practice* 20, no. 1 (12 2007): 21-26.

HIV/AIDS –Related Knowledge among Men

Educating individuals about the risks associated with AIDS as well as increasing knowledge on the modes of HIV transmission and prevention is believed to be the first and the most crucial step in battling the AIDS epidemic¹³. Thus, majority of HIV/AIDS campaigns and other prevention programs aim at increasing AIDS-related knowledge among all types of people in India, especially those living in rural areas because of their limited access to education from other sources like media.

The social norms and cultural traditions in India that are core to the living style of most people have persistently encouraged men to gain higher education, while women are expected to excel at domestic household work. The gender relations in India have hindered equal opportunity for both men and women. The overall HIV/AIDS knowledge tends to be higher in men compared to that of women because of the patriarchal societal-nature in India. However, the level of AIDS-related knowledge among men is also based on other factors such as media access, residence location, education level and wealth index¹⁴. AIDS knowledge varies significantly across different groups of men, ranging from those who have never heard of the disease to those that have complete and accurate knowledge about the disease.

¹³ Patralekha Chatterjee, "Spreading the Word about HIV/AIDS in India," *Lancet* 361, no. 9368 (05/03 2003): 1526.

¹⁴ Pedro de Araujo, "Socio-Economic Status, HIV/AIDS Knowledge and Stigma, and Sexual Behavior in India," *SSRN eLibrary* (2008)

While biologically women are at a higher risk of acquiring AIDS from men compared to the reverse situation¹⁵, women's vulnerability is a result of the risky behavior of their male partners and the prevailing gender norms, as well as greater substance use by men in India. Due to the superior power that resides in Indian men, only by convincing males and improving their attitudes and behaviors towards women, positive results in fighting AIDS are likely to be observed. Thus, the need to increase knowledge among males is vital in order to see significant changes in sexual behavior.

Men belonging to high-risk groups, such as migrant workers and truck drivers, have limited knowledge and pose maximum threat to the spread of the HIV virus. Other men may be aware of the disease, but as stated earlier knowledge varies based on socio-economic factors. India's health minister in 1998, Renuka Chaudhary had expressed her concern about the dangers associated with high-risk groups of men and said that lorry drivers and others must be made aware of the dangers of unsafe sex¹⁶ to combat the spread of the HIV virus from high-risk populations to the general public.

HIV/AIDS- Related Knowledge among Women

Social relations and gender dynamics, particularly in rural areas limit open discussions on HIV/AIDS related topics and discourage women from making independent choices. Thus, it is important to increase knowledge levels among women so that they have greater autonomy in making their own decisions and controlling their sexual life.

¹⁵ Purnima Mane and Peter Aggleton, "Gender and HIV/AIDS: What do Men have to do with it?" *Current Sociology* 49, no. 6 (11 2001): 23-37.

¹⁶ "India Wakes Up to AIDS," *Economist* 345, no. 8048 (12/20 1997): 50.

Although majority of Indian women had heard of AIDS, quality knowledge was extremely low in early 2000s. During 1998-2000, 70% of rural and 30% of urban ever-married women lacked AIDS awareness¹⁷. Also, even though 45% of the women had heard of AIDS, only 21% knew condoms as a mode of prevention¹⁸. Thus, the quality of AIDS-related knowledge has remained relatively poor among Indian women.

In India, it is expected that young, single women are virgins and ignorant of sexual matters¹⁹. The chastity of young women is seen as their most desirable virtue for purpose of marriages. As a result, most unmarried women lack knowledge on how to protect themselves from STDs and are incapable of gaining that knowledge after their marriage due to the suppressed role in their husbands' family. Thus, women, especially in rural areas who are obstructed from useful knowledge on sexual safety, are at high risk of acquiring HIV. Also, because of financial dependence, women have low bargaining power in sexual relationships and are unable to convince their spouses to use condoms, especially if their own knowledge about the disease is poor. Thus, to have a persuasive power in changing their husband's behavior, women need to have enhanced knowledge on AIDS.

¹⁷ Pallikadavath, Sreedharan, and Stones, *Sources of AIDS Awareness among Women in India*, 44-48.

¹⁸ Rimjhim M. Aggarwal and Jeffrey J. Rous, "Awareness and Quality of Knowledge regarding HIV/AIDS among Women in India," *Journal of Development Studies* 42, no. 3 (04 2006): 371-401.

¹⁹ Ann Hwang, "AIDS has Arrived in India and China." *World Watch* 14, no. 1 (Jan 2001): 12.

Women's knowledge of HIV/AIDS in India also differs based on the socioeconomic factors of each woman. Although media use such as television increases AIDS awareness among women, it does not significantly improve the quality of knowledge²⁰. Women's education level is one factor that is significantly associated with improved quality of AIDS-related knowledge²¹. Also, the number of sources from which women receive AIDS information is significantly related to the quality of knowledge²². Thus, emanating AIDS-related knowledge through a variety of diverse sources will help women understand the serious implications of risky sexual behavior and encourage them to take a stance in order to protect themselves.

It is imperative to raise attentiveness towards personal risk for HIV acquisition as well as tolerance and acceptance towards those who are infected. Lack of HIV prevention knowledge places rural Indian women among the high-risk groups. These women have shown to possess poor knowledge on AIDS prevention strategies even after counseling sessions²³. The lack of discussion about sexual health issues in rural areas is greatly responsible for the ineffectiveness of campaigns in increasing HIV/AIDS knowledge. The dissolution of marriages when HIV status is disclosed and the concealed tension

²⁰ Jayati Ghosh, Vandana Wadhwa, and Ezekiel Kalipeni, "Vulnerability to HIV/AIDS among Women of Reproductive Age in the Slums of Delhi and Hyderabad, India," *Social Science & Medicine* 68, no. 4 (02 2009): 638-642.

²¹ Rimjhim M. Aggarwal and Jeffrey J. Rous, "Awareness and Quality of Knowledge regarding HIV/AIDS among Women in India," *Journal of Development Studies* 42, no. 3 (04 2006): 371-401.

²² Deepti Gupta et al., "Effectiveness of Antenatal Group Hiv Voluntary Counseling and Testing Services in Rural India," *AIDS Education & Prevention* 19, no. 3 (06 2007): 187-197.

²³ Ibid.

between couples limits the discussion about HIV and its prevention modes. It is expected that the couples are faithful to one-another without any discussion on sexual matters and on personal perceptions of HIV risks.

Characteristics of Indian Men's Sexual Behavior

Sexual behavior among Indian men varies significantly across different cultural groups based on differences in religion, education level, location of residence, age and other communal factors. In the Indian society, the privileged authority of men gives them more freedom compared to women. Thus, in the broad-spectrum, men are more likely to engage in risky sexual behavior while women are suppose to show complete loyalty to one man. In fact, the historical depictions of Indian emperors and other male authorities have always portrayed the dignity and honor of men as associated with several wives and causal sex partners. Thus, to some extent, men in India are encouraged to have multiple sexual partners and produce a large number of children to ensure the continuity of their family's hierarchy²⁴.

Types of risky sexual behavior among Indian males include sex with multiple partners, sex with high-risk groups like commercial sex workers, extra-marital sex, pre-marital sex, and unprotected sex. The trouble of high substance use among Indian men escalates the problem of risky sexual behavior. The most common risk practices among men who scored high on substance abuse included having multiple sex partners, paying for sex and

²⁴ Bandana Purkayastha et al., "The Study of Gender in India: A Partial Review," *Gender and Society* 17, no. 4 (Aug. 2003): 503-524.

having unprotected sex²⁵. In India, extramarital sex is common among married males because of the wives helplessness in terms of financial dependency and the societal pressure on women to accept their husbands despite the husbands' negative actions. Premarital sex is high among male students in high school and colleges due to peer pressure and the need to fit in with others. Most married men engage in unprotected sex with their wives because of the instinctive, unspoken trust and loyalty among married couples. All these attitudes and behaviors of Indian men have heightened the spread of AIDS through heterosexual transmission in India.

Risky sexual behavior is seen more often amongst particular groups of men that show certain similar characteristics. The HIV prevalence among men attending an STD clinic in Pune in 2000 was 22.2%. Most of these cases were associated with men who were divorced or widowed, less educated, living away from the family, having multiple sexual partners and those who started to have sex at an early age. Condom use was higher among young men as compared to old men²⁶. Nearly most men engaging in extra-marital or pre-marital sex do so with sex workers, friends and/or neighbors. Most of these men amplify the HIV problem by virtually never using condoms. This situation is most repeated among lower-class urban people, who have dreams and aspirations to reach the top and are frustrated with their current work. Thus, these individuals should be one of the key targets to control the spread of HIV. Also, the indigent population needs to be

²⁵ Michael P. Carey, Prabha S. Chandra, and Kate B. Carey, "Predictors of HIV Risk among Men Seeking Treatment for Substance Abuse in India," *Archives of Sexual Behavior* 32, no. 4 (08 2003): 339-349.

²⁶ R. G. Brahme et al., "High-Risk Behaviour in Young Men Attending Sexually Transmitted Disease Clinics in Pune, India," *AIDS Care* 17, no. 3 (04 2005): 377-385.

targeted for HIV educational programs because risky behavior among the poor is linked to limited schooling and inadequate knowledge on HIV issues.

In a recent study, the results showed that condom use was greatest among highly educated and/or wealthier males. Also, the access to media led to an increase in condom use, but only in sexual encounters outside marriages²⁷. However, the use of condoms remained low within marriages due to the vitality in representing a faithful relationship. The study indicated that never married individuals use condoms 40% of the time. This is a relatively low number for individuals who are having sex with multiple causal partners. Thus, there is a high need to promote condom use in India, especially among young people who have multiple partners and other males who belong to high-risk groups. The conventional attitude of rural people limits the access and use of condoms in rural regions. Thus, condom use, which is one of the most convenient modes to prevent the spread of AIDS, is very minimal in India because of traditional customs, poor education and low media promotion.

Characteristics of Indian Women's Sexual Behavior

AIDS is becoming increasingly a women's disease, especially in developing countries like India and China, where women have far fewer social opportunities as compared to men. High levels of disparity in social and economic roles between men and women have led to greater feminization of the HIV/AIDS epidemic in India. In 2004, women comprised

²⁷ de Araujo, *Socio-Economic Status, HIV/AIDS Knowledge and Stigma, and Sexual Behavior in India*

39% of the total HIV cases²⁸. Factors that have contributed to the increasing number of HIV cases among women include early marriages of young girls, low literacy among females, limited female empowerment in expressing personal desires and accessing information related to sexual matters, and their minimal autonomy over economic resources. These factors have led to precarious socioeconomic condition for women and have hindered their ability to choose self-preferred sexual behaviors in practically all their relationships.

The majority of new cases of HIV/AIDS victims are women having sex with one partner or husband. Thus, most women have ensured safe sexual behavior on their part. In many of these situations, however, their partners and/or husbands are having sex with multiple partners, most of whom are sex workers and/or other females belonging to high-risk groups. The most vulnerable group of women who are incapable of controlling their sexual behavior are those that have minimal education, live in poverty, have not heard of HIV/AIDS or/and lack knowledge about the roots of HIV transmission and prevention²⁹. These factors compel women to engage in risky behavior either because of financial burden to support family or due to fear of being beaten by male partners. Thus, for the most part, sexual behavior of women in India is extensively controlled by men's preferences and outlook.

Sexual behavior of Indian women is highly under-reported in India and little is known about the risks associated with their actions. This is for the reason that HIV infection

²⁸ Hwang, *AIDS has Arrived in India and China*, 12.

²⁹ Keshavan Kodandapani, *AIDS in India: When Denial Kills*, 21-26.

among women is highly stigmatized in India. HIV infection for women is seen as a punishment for their sexual misbehavior and dishonest demeanor. Therefore, pre-marital and extra-marital sex among females is concealed due to the fear of rejection by society. A lady's virginity is regarded as an essential attribute for her marriage in India. Therefore, Indian families, too, choose to cover their daughters' and other women's sexual actions. Also, the idea of a Hindu woman to remain loyal to her husband under all circumstances has mostly retained its social force in contemporary India. The violation of marital fidelity is more punishable for women than for men³⁰. Thus, sexual behavior of Indian women might be safe or unsafe; nevertheless, it is difficult to design suitable prevention programs if information on women's behavior is unknown.

Finally, gender relations in India limit the ability of women to negotiate safe sex, even when AIDS knowledge exists. The decision to use condoms pertains mainly to males. Thus, it is expected that women's knowledge of AIDS will not have as much of an affect on sexual behavior as compared to the affect of men's knowledge on their sexual behavior. The limited availability of female condoms and other contraceptives in India further limits women's ability to control their sexual behavior. Hence, lack of information on women's sexual behavior, the predicted minimal affect of women's knowledge, and gender dynamics in India have led women's sexual behavior to resemble that of their male counterparts.

³⁰ Moni Nag, "Sexual Behaviour in India with Risk of HIV/AIDS Transmission," *Health Transition Review* 5 (1995): 293.

High-Risk HIV Infected Groups in India

The initiation of the spread of AIDS in India began with infection among high-risk groups. All these groups engaged in risky behavior in one way or another that resulted in the sudden multiplication of the HIV virus among their populations. Risky behavior among high-risk groups varied based specifically on their occupation and location. The four major high-risk groups are sex workers, drug users, migrant workers and truck drivers.

Sex Workers

In 2002, 30% to 60% of all prostitutes in India were infected with HIV³¹. Among the several problems faced by sex workers in India- lack of shelter, financial dependability, physical and mental health problems, inability to negotiate with customers and violence from police and criminals place them at high HIV risk³². Sex workers face large loses in income from using condoms because of preference among clients for condom-free sex. This is due to low HIV awareness among clients. Also, commercial sex is treated as a group event among college students and to use condom in front of peers is considered as a coward act³³. A loss of 44% in average earning per client due to condom use strongly

³¹ Keshavan Kodandapani, "AIDS in India: When Denial Kills," *Home Health Care Management & Practice* 20, no. 1 (12 2007): 21-26.

³² A. K. Jayasree, "Searching for Justice for Body and Self in a Coercive Environment: Sex Work in Kerala, India," *Reproductive Health Matters* 12, no. 23 (05 2004): 58-67.

³³ Sheena Asthana and Robert Oostvogels, "Community Participation in HIV Prevention: Problems and Prospects for Community-Based Strategies among Female Sex Workers in Madras," *Social Science & Medicine* 43, no. 2 (07 1996): 133-148.

disincentives sex workers from practicing safe sex³⁴. Exploitation and abuse from clients, police and brothel-owners give sex workers minimum independence to control their sexual activity.

In order to reduce the risks faced by sex workers, campaigns are encouraging sex workers to form collectives that will enable group-wide effort in improving sex workers' situation and mounting their power. These collective groups are self-governing unions that enable safety and do not drive competition among sex workers. For instance, sex workers' collectives in Karnataka promote safer sexual behavior by increasing HIV awareness and promoting condom use, hence empowering themselves³⁵. Time- constraints and unequal power relations reduce the effectiveness of educational campaigns among sex workers and thus the only successful approach in order to overcome clients' wishes is intervening as a combined force to achieve supremacy within their community.

Injection Drug Users

In the northeastern part of India, the extensive drug culture due to its close proximity to the South-East Asia's opium growing "Golden Triangle" has resulted in increased HIV incidences among males. The AIDS epidemic is driven by needle swapping drug-users in this area. The sharing and use of contaminated needles is liable for the high risk of HIV

³⁴ Vijayendra Rao, Indrani Gupta, and Michael Lokshin, "Sex Workers and the Cost of Safe Sex: The Compensating Differential for Condom use among Calcutta Prostitutes," *Journal of Development Economics* 71, no. 2 (08 2003): 585-603.

³⁵ S. S. Halli et al., "The Role of Collectives in STI and HIV/AIDS Prevention among Female Sex Workers in Karnataka, India," *AIDS Care* 18, no. 7 (10 2006): 739-749.

infection amongst northeastern Indian drug users³⁶. In Manipur, the worst affect state that has over 1.8% of its population as infected individuals, a long-running insurgency aggravates this affliction³⁷.

Migrant Workers

Migrant workers are perceived as a high-risk group because of their continuous movement and their momentary separations from family, both of which result in unsafe sexual behavior. The maximum risk is attributed to single male migrants, who live in support of sex workers while away from home. Among the Nasik tribal migrants, the use of drugs and other harmful substances has exacerbated unsafe sexual activity³⁸. The stress of hard physical work and absence of an entertainment source further intensifies risky sexual behavior among migrant workers. Also, huge prevalence of extra-marital and pre-marital sex among migrant tribal groups living in the slums of Bhubaneswar city, Orrisa, augmented with no condom use, puts these people at high risk. Thus, to change high behavioral risk among migrant workers, there is a need to improve their level of HIV/AIDS knowledge and provide additional resources to these groups.

³⁶ Hwang, *AIDS has Arrived in India and China.*, 12.

³⁷ "Not Half as Bad: AIDS in India," *The Economist*, July 21, 2007 2007,

³⁸ Annabelle Mooney and Srikant Sarangi, "An Ecological Framing of HIV Preventive Intervention: A Case Study of Non-Government Organizational Work in the Developing World," *Health: 9*, no. 3 (July 1 2005): 275-296.

Trucker Drivers

In an interview with 6000 long-distance truck drivers, nine out of ten married drivers described themselves as “sexually promiscuous”, i.e. having frequent and indiscriminate change of sexual partners. In 2002, 15% of all truck drivers were infected with HIV³⁹. The reasons for high HIV prevalence among truck drivers is similar to those mentioned for migrant workers. The high rate of unprotected sex with multiple partners has increased HIV transmission among truck drivers and their female partners. The effectiveness of intervention programs, most of which were educational campaigns, has been minimal among truck drivers, especially in sexual activity with non-marital partners⁴⁰. Thus, a different approach needs to be taken to reduce the risk of HIV infection among truck drivers and migrant workers. Perhaps, developing better living conditions with access to entertainment sources like sports and television might transform their risky behavior.

The Spread of HIV Infection among Low-Risk Groups

HIV incidences are considerably rising among married Indian women, even though 90% of these women have not engaged in unsafe sexual activities. Among married women attending STD clinics in Pune in 2000, HIV prevalence was 14% with no reported risk

³⁹ "The Next Wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India and China " in National Intelligence Council [database online]. USA [cited 2010]. Available from <http://fas.org/irp/nic/hiv-aids.html>.

⁴⁰ Deborah H. Cornman, Sarah J. Schmiede, and Angela Bryan, "An Information-Motivation-Behavioral Skills (IMB) Model-Based HIV Prevention Intervention for Truck Drivers in India," *Social Science & Medicine* 64, no. 8 (04 2007): 1572-1584.

behavior and sexual relationship only with husband⁴¹. Although there is a possibility of misreporting by married women, majority of the cases are due to men's risky behavior. The male clients of sex workers put their wives and other sex partners at risk. These men play a role of the bridge population, allowing the virus to spread from high-risk groups such as sex workers to the general population⁴². Thus, married women in monogamous relationships and their children, previously thought to be safe, are now emerging as vulnerable groups.

The reason for the vulnerability of married women to AIDS is the interconnection between domestic violence and HIV in the lives of these women⁴³. Most married women are unable to oppose their husbands in all matters, ranging from sexual activity to cooking. Married men having STDs are likely to transfer HIV infection to their wives and children. Also, young HIV-infected married men with high-risk behavior are much more likely to spread the HIV virus in low-risk groups because they have a longer span of sexually active life⁴⁴. Thus, the spread of HIV/AIDS among general people have threatened the entire population of India and increased concerns about the implications of this deadly disease.

⁴¹ Brahme et al., *High-Risk Behaviour in Young Men Attending Sexually Transmitted Disease Clinics in Pune, India*, 377-385.

⁴² Hwang, *AIDS has Arrived in India and China.*, 12.

⁴³ Sapna Desai, "HIV and Domestic Violence: Intersections in the Lives of Married Women in India," *Health and Human Rights* 8, no. 2, Emerging Issues in HIV/AIDS (2005): 140-168.

⁴⁴ Brahme et al., *High-Risk Behaviour in Young Men Attending Sexually Transmitted Disease Clinics in Pune, India*, 377-385.

Prevention Programs and their Effectiveness

Two major challenges a) limited health care and b) cultural norms that discourage direct discussion of sexual behavior have hindered the successful implementation of AIDS prevention programs in India. In 2000, India spent only \$71 per person on health; of which four-fifths was in the private sector, indeed, on one measure government health spending was only \$4 per person. India only spends less than 1% of its GDP on health care⁴⁵. The low individual risk perceptions and negative attitude towards AIDS has led to ignorance about the disease and increased vulnerability.

In 1992, India's Ministry of Health and Family welfare established the NACO, National AIDS Control Organization to combat the HIV incidences by promoting HIV education and prevention programs⁴⁶. NACO plays an active role in increasing awareness about HIV/AIDS among the population and encourages behavioral changes by providing information, and promoting education and communication. The main objectives are raising awareness, knowledge and understanding of HIV/AIDS and promoting methods of prevention, such as safe sex through greater condom use, sterilization of needles and syringes, and avoidance of multiple partners⁴⁷. Thus, NACO has made an effort to monitor the disease trends and identify ways of avoiding the spread, but limited resources and political constraints have led to failure in their ability to increase prevention measures and provide antiretroviral drug treatment.

⁴⁵ "India Wakes Up to AIDS," *Economist* 345, no. 8048 (12/20 1997): 50.

⁴⁶ Hwang, *AIDS has Arrived in India and China.*, 12.

⁴⁷ Jayati Ghosh, "A Geographical Perspective on HIV/AIDS in India," *Geographical Review* 92, no. 1 (Jan. 2002): 114-126.

Disha Foundation, an NGO working in Nasik, Maharashtra frame HIV prevention programs to observe revolutionary changes by mapping and uprooting the sources of HIV/AIDS among migrant workers⁴⁸. Thus, their primary focus is to improve the quality of life in villages such that there is minimum migration. Thus, the foundation aims to avoid HIV from even becoming an issue. However, this effort is not recognized as HIV work because it does not use the government modeled intervention and hence cannot get government funds.

Condoms are distributed in India through three avenues: commercial sales, via central government agencies and via state government agencies. According to the Indian government, the use-effectiveness of Indian condoms is only 50% due to the condom's poor quality. However, the recent introduction of Kamasutra condom by an Australian Company Pacific Dunlop⁴⁹ along with their open advertising campaigns in India have led to increased effectiveness of good quality condom use.

The HIV problem is compounded by the refusal of those in power to accept the threat of AIDS epidemic in India; it has been fashionable cause among actors and socialites, but when discussion shifts from vague to explicit, from talk to action, difficulties assemble⁵⁰. Thus, combating social taboos will require political leaders to speak out in public forums.

⁴⁸ Mooney and Sarangi, *An Ecological Framing of HIV Preventive Intervention: A Case Study of Non-Government Organizational Work in the Developing World*, 275-296.

⁴⁹ Marika Vicziany, "HIV and AIDS in India: Love, Disease and Technology Transfer to the Kamasutra Condom," *Contemporary South Asia* 10, no. 1 (03 2001): 95-129.

⁵⁰ Chatterjee, *Spreading the Word about HIV/AIDS in India*, 1526.

Only effective social leadership will spread significant message to the masses⁵¹. The government needs to make AIDS a top priority; eradicate aversion towards advertising condoms, and especially boost spending on public health infrastructure. Also, focus on HIV positive individuals and improvement in their quality of life will change risky sexual behavior among those already infected. Finally and most importantly, the state and local government needs to take action based on each state's individual AIDS needs.

⁵¹ Prमित Mitra, "India at the Crossroads: Battling the HIV/AIDS Pandemic," *Washington Quarterly* 27, no. 4 (Autumn 2004): 95-107.

CHAPTER III

EMPIRICAL MODEL

Introduction

This paper aims to analyze two different queries, first: whether use of media, such as television, radio and newspapers results in improved quality of AIDS related knowledge and second: whether higher quality of AIDS related knowledge leads to safer sexual behavior. In the first question, knowledge is the dependent variable and in the second, sexual behavior is the dependent variable. Both these dependent variables are limited in their outcomes because of factors that determine knowledge and sexual behavior based on the third wave of the National Family Health Survey (NFHS-III) questions. Questions like can AIDS be prevented by having a single sexual partner determine if individuals have knowledge on AIDS transmission and prevention strategies, while questions like did you have sex with a commercial sex worker in the last 12 months determine the risk level of sexual behavior. Therefore, since both the dependent variables are determined from questions that have binary responses (yes and no), the use of a limited dependent variable econometric model is appropriate.

The choice of binary response model (BRM) for this study is the Probit model. It estimates the probability that the dependent variable, y is equal to 1 where y has only two possible values, 0 and 1, even though the simplest model for binary outcomes is the

Linear Probability model (LPM). The interpretation of LPM parameters is the same as that of the linear regression model, i.e. for a unit increase in one independent variable x_k , the expected change in the probability of $y=1$ or the event occurring is the same coefficient, β_k , ceteris paribus. Due to linearity of the model, a unit change in x always results in the same change in the probability, specifically the coefficient parameter β . Several problems associated with the LPM results in its limited use despite the simple, clear and easy estimation form. The major issue with the LPM is its linear nature. For instance, the change in probability of sexual behavior due to change in AIDS-related knowledge level is the same for a person that has not heard of AIDS and learns about one aspect of the infection and for a person that has knowledge on most of AIDS prevention modes and learns one other aspect of the infection. This is very unlikely. Thus, the linearity of the LPM gives unrealistic results. This is referred to as error in the model's functional form¹. Also, LPM's fitted probabilities can be less than 0 or greater than 1, and this problem is referred to as nonsensical prediction. Other errors and assumptions related to heteroscedasticity, normality, and other nonsensical predictions give erroneous results while using LPM. Thus, the LPM identifies problems associated with binary dependent variable calculations and motivates the justification for use of a different model, either a logit or a probit model, both of which overcome the shortcomings of the LPM. However, the disadvantage with other binary dependent variables models is that their coefficients are more difficult to interpret compared to that of LPM.

The methodology used to answer the two questions is explained in detail in this chapter. The effect of media use on HIV knowledge is determined through a two-stage Hurdle

¹ Ibid.

model. The first stage examines general awareness of AIDS through the binary response Probit model. The second stage computes an individual's quality of AIDS knowledge level through an Ordered Probit analysis. Conversely, the effect of AIDS knowledge on sexual behavior is computed only through the binary response probit model.

Additionally, the marginal effect for a change in one unit of the x-variable on the probability of the y-variable is approximated to analyze the magnitude of the effect of media on AIDS knowledge as well as the effect of AIDS knowledge on sexual behavior.

Hurdle Model

The Effect of Media Use on AIDS Knowledge

The media-knowledge relationship estimation is based on a Hurdle model. The Probit model is the first stage of the hurdle model that studies if an individual is aware of HIV or not. The second stage, i.e. the ordered probit estimation is computed only for individuals who have heard of AIDS. Therefore, after passing the first hurdle based on the individual's common understanding of AIDS, the next stage looks at the number of questions that individual answers correctly about the disease. Thus, the second stage determines the quality of AIDS-related knowledge among a group of people who are generally aware of the HIV infection. The probit and ordered probit models are explained as follows.

Binary Response Model (BRM): Probit Model

In most cases, it is reasonable to assume a non-linear function when the outcome of a regression is a probability. The rationale behind a non-linear function with probability

models is that the change in outcome with respect to a unit change in independent variable will have a diminishing return as the predicted probabilities approach 0 or 1. The probit and logit models are non-linear probability models that have very similar characteristics. The choice between probit and logit is mostly that of an individual's preference. Economists tend to favor the normality assumption of the error term, ϵ . Probit model assumes a normal distribution of the error term and hence it is more widely used in econometrics². The properties of normal distribution are advantageous since it leads to easier analysis of several specification problems. Hence this paper will use the probit binary response model for the hurdle model's first stage. Moreover, the methodology to answer the second question, the effect of AIDS knowledge on sexual behavior, is also the Binary Response Probit model.

In order to ensure that the predicted probabilities lie between 0 and 1 for all possible values of the independent variable, the use of a cumulative probability function is used. The probit probability model is associated with the cumulative normal probability distribution function³, unlike the logit model, which is based on the cumulative logistic probability distribution function. To easily derive and clearly understand the probit model, the notion of a latent dependent variable is helpful. However, it is important to note that the derivation, application and acceptance of the binary response model (BRM) are not dependent on the existence of an underlying latent variable. The BRM can also be

² Jeffrey M. Wooldridge, *Introductory Econometrics A Modern Approach*, 4th Edition, ed. (USA: South-Western Cengage Learning, 2009), 865.

³ Pindyck and Rubinfeld, *Econometric Models and Economic Forecasts*, 634.

derived without the use of latent variables but for simplicity, the probit model is explained using an unobserved latent variable in this paper⁴.

Suppose there is a continuous unobserved latent variable y^* ranging from $-\infty$ to ∞ that generates the observed binary variable y 's such that:

$$y_i = \begin{cases} 1 & \text{if } y_i^* > \tau \\ 0 & \text{if } y_i^* \leq \tau \end{cases}$$

where τ is the threshold or the critical cutoff value . Thus, if $y^* < \tau$, then $y = 0$ and if y^* crosses the threshold τ (i.e., $y^* > \tau$), then $y = 1$. For the derivation, we assume that the threshold, $\tau = 0$.

Also, the unobserved y^* is assumed to be explained linearly by the observed x 's through the structural model as follows:

$$y_i^* = \mathbf{x}_i\boldsymbol{\beta} + \varepsilon_i$$

The probit model assumes that ε and thus y^* are normally distributed random variables with mean 0 and variance σ^2 , i.e. $\varepsilon \sim N(0, \sigma^2)$, so that the probability that y^* is greater than y can be easily computed from the cumulative normal probability distribution function. Maximum-Likelihood Estimation⁵ is used to estimate the Probit model because the OLS estimator cannot be used since the y^* 's are unobserved.

⁴ Long, *Regression Models for Categorical and Limited Dependent Variables*, 297.

⁵ Christopher F. Baum, *An Introduction to Modern Econometrics using Stata* (USA: Stata Press, 2006), 341.

By our assumption $y = 1$, when $y^* > 0$. Therefore,

$$Pr(y = 1|\mathbf{x}) = Pr(y^* > 0|\mathbf{x})$$

Substituting in $y^* = \mathbf{x}\beta + \varepsilon$, it shows that,

$$Pr(y = 1|\mathbf{x}) = Pr(\mathbf{x}\beta + \varepsilon > 0|\mathbf{x})$$

Subtracting $\mathbf{x}\beta$ from both sides of the inequality, it follows:

$$Pr(y = 1|\mathbf{x}) = Pr(\varepsilon > -\mathbf{x}\beta|\mathbf{x})$$

As we know, the cdf represents the probability that ε is less than or equal to a certain value. Therefore, changing the direction of the inequality gives,

$$Pr(y = 1|\mathbf{x}) = Pr(\varepsilon \leq \mathbf{x}\beta|\mathbf{x})$$

because the normal distribution is symmetric about 0. Hence, the probability that $\varepsilon > -\mathbf{x}\beta$ is the same as the probability that $\varepsilon \leq \mathbf{x}\beta$.

The above equation is the cdf of the error distribution evaluated at $\mathbf{x}\beta$. Consequently⁶,

$$Pr(y = 1|\mathbf{x}) = F(\mathbf{x}\beta) = \int_{-\infty}^{\mathbf{x}\beta} \frac{1}{\sqrt{2\pi}} e^{-\frac{t^2}{2}} dt$$

⁶ Long, *Regression Models for Categorical and Limited Dependent Variables*, 297.

where F is the normal cdf for the probit model. Thus, the probability of an event occurring given x is the cumulative density function evaluated at $x\beta$. The cdf has an s-shaped curve and the pdf has a bell-shaped curve. The choice of the normal cdf ensures that all values for probability lie between 0 and 1. The cdf measures the probability by finding the area under the standard normal curve from $-\infty$ to y^* , therefore the probability of an event occurring increases with larger values of the index y^* .

Due to the complicated non-linear nature of the function F , the magnitude of the parameters β are not useful in determining the partial effects on probability when the independent variable, x_k is increased or decreased by an infinitely small unit⁷. However, the signs of the parameters β are useful in determining the direction of the partial effect on the change in probability. The parameters can be used to find the probability that the event occurs for given x values, however the helpfulness of the probit model's parameters are limited and they cannot be interpreted as clearly as the LPM parameters. Therefore, the marginal effect of a small change in one of the independent variables on the probability of an event is described after the Ordered Probit model section.

Ordered Probit Model:

The use of a probit model leads to a simplified assumption that either people possess complete knowledge on AIDS or they possess no knowledge on AIDS. However, this is rarely the case. Most people in India have partially correct knowledge on AIDS. As for sexual behavior, it is reasonable to assume that either people engage in risky behavior or they do not engage in risky behavior. To account for the misrepresentation of HIV/AIDS

⁷ Baum, *An Introduction to Modern Econometrics using Stata*, 341.

related knowledge as a binary variable, this paper uses the two-stage hurdle model to conduct a subsequent regression that examines different levels of AIDS knowledge. A knowledge variable that has more than two categories is constructed and the relationship between this new variable and media is assessed and compared to the probit model results.

The simplest way to transform the dependent variable, AIDS-related knowledge from binary to manifold outcomes is to specify it as a count variable and thus use the negative binomial model for the new computations⁸. For instance, AIDS knowledge level could be a count variable based on the number of question the individual answers correctly, weighing each question differently based on its value to HIV/AIDS prevention. In the negative binomial model, the knowledge variable would have a large concentration of observations around 0, which represents no knowledge of AIDS either because individuals have not heard of AIDS, or because they have heard of AIDS but do not know any modes of transmission or prevention. This larger concentration of observations around 0 compared to other outcomes distorts the results of the negative binomial model since the model is unable to explain the difference between no knowledge on AIDS matters and the quality of knowledge on AIDS matters⁹.

However based on the survey questions, it is easier to classify the limited dependent variable, knowledge as ordinal (ordered) rather than cardinal (count) because the knowledge index can be ordered from low to high with the following values: 1

⁸ Rimjhim M. Aggarwal and Jeffrey J. Rous, "Awareness and Quality of Knowledge regarding HIV/AIDS among Women in India," *Journal of Development Studies* 42, no. 3 (04 2006): 371-401.

⁹ Ibid.

representing have heard of the disease but do not know any of the asked modes of prevention, 2 representing knows only one mode of prevention or transmission, 3 representing knows 2 modes of prevention or transmission and so on. Thus, the more an individual knows about the disease, the higher up in the knowledge order he/she belongs. Consequently, the use of an ordered probit model is more efficient in explaining the queries and interpreting results when the knowledge variable has more than simply two categories and when the quality of AIDS-related knowledge is to be examined. When a variable is ordinal, its categories can be ranked from low to high, but the distance between adjacent categories are the same. Knowledge can be categorized as an ordinal variable because AIDS knowledge ranges from no knowledge to advanced knowledge of AIDS. McKelvey and Zavoina first introduced the Ordered Regression Models for the social sciences¹⁰. The derivation and estimation of the ordered probit model is very similar to that the binary probit model. In fact, the ordered probit model is an extension of the binary probit model. It begins by assuming a continuous underlying latent variable y^* and normal distribution for the error term. The difference is that there is more than a single threshold that results in more than two outcomes for the observed y 's.

The general formula for the ordered probit model is as follows:

$$Pr(y_i = m | \mathbf{x}_i) = F(\tau_m - \mathbf{x}_i\boldsymbol{\beta}) - F(\tau_{m-1} - \mathbf{x}_i\boldsymbol{\beta})$$

$$F(\tau_0 - \mathbf{x}\boldsymbol{\beta}) = F(-\infty - \mathbf{x}\boldsymbol{\beta}) = F(-\infty) = 0$$

$$F(\tau_J - \mathbf{x}\boldsymbol{\beta}) = F(\infty - \mathbf{x}\boldsymbol{\beta}) = F(\infty) = 1$$

where τ_0 is the lowest threshold and τ_j is the maximum threshold.

¹⁰ Pindyck and Rubinfeld, *Econometric Models and Economic Forecasts*, 634.

For instance, suppose the observed y 's are categorized into four groups, strongly agree=4, agree=3, disagree=2, and strongly disagree=1, then the formulas for the ordered probit model are:

$$\begin{aligned} Pr(y_i = 1|x_i) &= \Phi(\tau_1 - \alpha - \beta x_i) \\ Pr(y_i = 2|x_i) &= \Phi(\tau_2 - \alpha - \beta x_i) - \Phi(\tau_1 - \alpha - \beta x_i) \\ Pr(y_i = 3|x_i) &= \Phi(\tau_3 - \alpha - \beta x_i) - \Phi(\tau_2 - \alpha - \beta x_i) \\ Pr(y_i = 4|x_i) &= 1 - \Phi(\tau_3 - \alpha - \beta x_i) \end{aligned}$$

where τ_1 , τ_2 , and τ_3 are the cutoff points and $F(-\infty) = 0$ and $F(\infty) = 1$.

Some papers have used the ordered probit model to determine the significance and direction of the independent variable's effect on HIV-knowledge. However, no paper has studied the magnitude of the marginal effect of media on AIDS-related knowledge using an ordered probit model. This paper will investigate the magnitude of the coefficient along with the direction and significance of the ordered probit regressions to explain the extent to which media is useful in improving the quality of AIDS knowledge among Indians.

To study the magnitude of the coefficients, the marginal effect of media on AIDS knowledge needs to be calculated. The estimated parameters for the ordered probit model are similar to that of the binary probit model and hence the Average Partial Effect (APE) of media on the probability that the quality of AIDS knowledge is equal to a certain value is calculated. The marginal effect for all possible outcomes of the dependent variable is computed. The coefficient for outcome 1 is the coefficient that explains how likely will media use result in increased awareness of AIDS, and the coefficient for outcome 2 explains how likely will media use result in knowledge on at least one HIV transmission

or prevention mode and so on. Thus, the hurdle model and the ordered probit model are used in this paper as an extension to the binary probit regression to examine step-wise improvement in quality of AIDS knowledge through the use of media.

Marginal Effect: APE (Average Partial Effect)

A major issue in working with limited dependent variable models like the probit and ordered probit is the complexity in understanding the magnitude of the coefficients and the difficulty in calculating the marginal effects, which arises due to the nonlinear relationship of these models. In a linear regression model, the coefficient β_k measures the marginal effect (partial) $\partial y / \partial x_k$, and that effect is constant over the sample. However, in a binary-outcome relation such as the probit model, a change in one of the independent variables x_k does not generate a constant change in the $\Pr(y = 1 | x)$ because the normal cdf is a non-linear function of x . The choice of a normal distribution for the error term implies that the marginal effects vary continuously with each x_k .

There are two common methods for the calculation of marginal effect¹¹. The marginal effects at the mean (MEM) is one of the two known computational methods that estimates the marginal effect at fixed values, which are sample means, of the independent variables. The sample means used for the MEM computations are often nonexistent or essentially nonsensical observations, especially in the presence of dummy independent variables¹².

¹¹ Tamas Bartus, "Estimation of Marginal Effects using Margeff," *The Stata Journal* 5, no. 3 (2005): 309-329.

¹² Baum, *An Introduction to Modern Econometrics using Stata*, 341.

Therefore, the marginal effect for the probit and ordered probit model outcomes that have dummy variables is analyzed based on the other known computational method, the average partial effect (APE), also referred as the average marginal effect (AME). APE computes the individual partial effects across the entire sample, and then takes the average. This method is favored over the MEM since it provides a more realistic interpretation of the estimation results, especially in the presence of dummy variables. The APE of the i th explanatory variables, while the other explanatory variables are kept constant is:

$$AME_i = \frac{1}{n} \sum_{k=1}^n \{F(\beta x^k + \beta_i) - F(\beta x^k)\}$$

For continuous variables, the APE is calculated for an infinitely small change.

The more suitable computation in terms of the requirements of this paper is the APE estimation for dummy variables, which is given by

$$AME_i = \frac{1}{n} \sum_{k=1}^n \{F(\beta x^k | x_i^k = 1) - F(\beta x^k | x_i^k = 0)\}$$

The estimation of marginal effects using the above equation has its limitations because most of the dummy independent variables in this paper are not binary¹³. Average Partial Effect (APE) is the best approximation to study the marginal effect for a unit change in one of the independent variables on the probability of the limited dependent variable. The

¹³ Wooldridge, *Introductory Econometrics A Modern Approach*, 865.

APE for dummy variables with more than two categories for the ordered probit and binary probit models is computed by taking the average from a subset of the total observations. The marginal effect of each dummy category is estimated by conditioning the above formula for only observations that include the benchmark category and the category for which the marginal effect is being computed. All other categories of the same dummy variable that have values of 1 are dropped from the original set of observations. For instance, if MS1 -unmarried, MS2 -married and MS3 -divorced are three categories of the Marital status dummy variable, then to calculate the marginal effect of MS2 benchmarking it against MS1- all observations for which MS3 is equal to 1 are dropped for the APE calculation. Similarly to find the marginal effect of MS3 with MS1 as the benchmark, all observations with MS2 equal to 1 are dropped¹⁴. Therefore, the above approach is used to generate the marginal effect of media and all controls on AIDS knowledge as well as the effect of AIDS knowledge and all controls on sexual behavior¹⁵. Similarly, the marginal effect for the ordered probit model is calculated for each possible outcome of the dependent variable based on the estimated cutoff points between the outcomes. The marginal effect computations for the ordered probit model provides useful information by estimating the likely effect of media in improving AIDS knowledge from one level to the next for five consecutive HIV knowledge levels. Thus, the marginal effect approximation in the hurdle model's second stage analyzes the effect of media on AIDS knowledge by predicting the maximum level of HIV knowledge improvement as a result of media use among Indians.

¹⁴ Bartus, *Estimation of Marginal Effects using Margeff*, 309-329.

¹⁵ The *margeff* command, developed by Tamas Bartus, is used to calculate the APE for dummy variables with more than two categories on the statistical software, Stata.

CHAPTER IV

DATA AND DESCRIPTIVE STATISTICS

Data source

The data source for this paper is the 2005-06 National Family Health Survey (NFHS-3) released by the Ministry of Health and Family Welfare in New Delhi in 2007. The report offers the first-ever comprehensive picture of the health and well-being of India's men, women, and children. The dataset is available and obtained through the MESURE DHS website. NFHS-3, the third in the NFHS series of surveys provides information on population, health and nutrition in India and in each of its 29 states. NFHS-3 interviewed women age 15-49 and men age 15-54. The survey is based on a sample of households, which is representative at the national and state levels. NFHS-3 conducted interviews with almost 199,000 women and men throughout India and also tested more than 100,000 women and men for HIV¹.

For the first time, the survey measured HIV prevalence at the national level and for selected states (Andhra Pradesh, Karnataka, Maharashtra, Manipur, Tamil Nadu, and Uttar Pradesh). The NFHS-3 survey found an HIV prevalence rate of 0.28 percent for the population age 15-49. The important new information about HIV prevalence from NFHS-

¹ "Demographic and Health Surveys," USA [cited 2010]. Available from www.measuredhs.com.

3 has spurred the Government of India and international agencies to greatly reduce the official estimate of Indians living with HIV from more than 5 million persons to 2.47 million. This change has had a major impact on the global estimate of persons living with HIV². At the same time, the estimate of AIDS cases in India for upcoming decades causes concerns among the government and AIDS organizations.

The Demographic and Health Surveys have been asking questions about HIV/AIDS knowledge, attitudes and behaviors since 1988. Indicators include knowledge of HIV prevention methods, attitudes towards those living with AIDS, beliefs about AIDS transmission and experiences with higher-risk sex, including paid sex. The NFHS is divided into different categories –males, females, household, couples, children and several others based on the people interviewed. This paper analyzes AIDS-related knowledge and behavior of males and females, thus the variables for this paper are selected from the male and female recode files.

Media Use

The use of newspapers, radio and television in India has been increasing significantly in the past few decades because of recent innovations in the field of technology and India's evolving role in the world economy³. Based on the NFHS-3, the most used media source among both men and women in India is television. On average, 71.7% of Indian men and 64.7% of Indian women watch television at least once a week or more. This indicates the stretch of television access from urban to rural India. These numbers are presented in Table 2a at the end this paper. The lower use of television by women as compared to that

² Ibid.

³ Robert Jensen and Emily Oster, "The Power of TV: Cable Television and Women's Status in India," *Quarterly Journal of Economics* 124, no. 3 (08 2009): 1057-1094.

by men is possibly due to higher percentage of women living in rural areas (54.2%) as compared to the percentage of men living in rural areas (48.6%), where access to television is limited. Thus, television is a very important vehicle in disseminating knowledge and information on AIDS because of its consistent use among Indians. The use of other media sources such as radio and newspapers is considerable low compared to television use. For instance, only 58.3% of the men and 30.3% of the women read newspapers at least once a week or more. The lesser use of newspapers is due to the low literacy rate in India⁴. As compared to the number of men, only half as many women read newspapers frequently. Thus, from the difference in the use of newspapers between men and women, it is evident that on average women are less educated as compared to men. Thus, it is essential to educate women so that not only are they empowered and independent to make their own decisions but also are capable to break unequal gender power relations in India. Moreover, the use of radio is even lower than the use of newspapers for men and radio's use among women is similar to their use of newspapers. Thus, AIDS programming on radios are unable to reach the majority of people, however, it is vital to disseminate AIDS knowledge through radios because of its easy access and use among high-risk groups like truck drivers, migrant workers, and sex workers⁵. Thus, newspapers and radio broadcasting are powerful tools to reach the masses, but its current use is minimal because of low literacy constraints in India.

⁴ Helen Lambert and Kate Wood, "A Comparative Analysis of Communication about Sex, Health and Sexual Health in India and South Africa: Implications for HIV Prevention," *Culture, Health & Sexuality* 7, no. 6 (Nov 2005): 527-541.

⁵ A. K. Jayasree, "Searching for Justice for Body and Self in a Coercive Environment: Sex Work in Kerala, India," *Reproductive Health Matters* 12, no. 23 (05 2004): 58-67.

Knowledge on AIDS

Six variables are used to comprehend Indian men and women's knowledge on AIDS-related matters. A detailed description of these variables can be found in Table 1a in the tables section. The general awareness of AIDS is measured through EHA, knowledge on modes of AIDS transmission and prevention is measured through KCU and KSP, knowledge on AIDS-related stigma is found through KSF and HLP and finally, comprehensive knowledge on AIDS is measured through CKI. All these variables have binary outcomes of 0 and 1, with 0 representing no knowledge and 1 representing accurate knowledge. Based on the means of all these variables, women on average have very poor AIDS information as compared to men. While 88.8% of men have heard of AIDS, only 71.7% of women have ever heard of AIDS. Thus, around 30% of Indian women are unaware of AIDS and are more likely to acquire it compared to women who know about the disease, *ceteris paribus*. These numbers can be found in Table 2a in the tables section.

The poor knowledge of AIDS among women reduces their ability to convince men to engage in safe sexual practices⁶. For instance, only 64.2% of the women know that one can reduce chances of acquiring AIDS by using condoms. Hence, around 35% of the women cannot tell their partners to use condoms because they are unaware of the advantages of condom use. Moreover, comprehensive knowledge on AIDS is 48% among men and 39.6% among women. Thus, majority of the country does not completely understand the disease and has various misconceptions about AIDS. For instance, more than 20% of men and women think that sharing food with an infected person can transmit

⁶ S. Pallikadavath, C. Sreedharan, and R. W. Stones, "Sources of AIDS Awareness among Women in India," *AIDS Care* 18, no. 1 (01 2006): 44-48.

HIV. Thus, AIDS-related stigma still exists vastly in India. It is vital to demolish this stigma in order to observe any sought of success in reducing AIDS cases through campaigns and other government programs.

Sexual Behavior

Six determinants of sexual behavior among men and women are used for this study. A detailed description of all these variables is provided in Table 1a at the end of this paper. LIC, last intercourse used condom, variable is used to analyze the frequency of condom use in India. EMS, extra-marital sex signifies loyalty among married individuals while PMS, pre-marital sex determines the engagement of young unmarried individuals in sexual activity. ABT determines if an individual chose to avoid sex for a certain period, despite his/her marital status. RSP looks at the type of partner an individual had during last intercourse to determine the seriousness of sexual relationship. Lastly, TSP, each individual's lifetime number of sex partners is used to determine the threat of AIDS transmission through multiple partner networks. All the variables are binary with 0 representing safe sexual behavior and 1 representing risky sexual behavior. Based on the mean values of the six variables, there are several differences and similarities in the sexual behavior of men and women.

Despite men's high level of knowledge on condom use, on average 89.9% of the males did not use a condom during last intercourse. The number is even higher among women because of several factors including their inability to convince their partners and their minimum knowledge. These numbers are presented in Table 2a at the end of this paper. Thus, the safest and easiest way to protect oneself against AIDS is extremely low in India

due to limited condom access in rural areas and poor quality condoms produced in India⁷. Moreover, total lifetime number of sexual partners is greater than 1 for 46.2% of men and 26.2% of women. It is likely that more men engage in risky sexual behavior than women because of the patriarchal societal nature and the relentless pressure on women's faithfulness. This is also supported by the fact that 2.1% of men have sex with casual partners while only 0.12% of women engage in such relationships. However, there is a possibility of under-reporting by women due to fear of family and society⁸. Additionally, the percentage of unmarried individuals who have had sex is over 90% for both Indian men and women. This represents risky behavior among young people who are likely to engage in similar behavior in the future, thus, increasing the chances of a bigger AIDS epidemic in India.

Control Variables

To account for variation in AIDS-related knowledge and sexual behavior that might be due to differences in location, religion, age, marital status, state of residence, education level, wealth and work status, the probit regressions include several control variables. A complete description of these variables is available in Table 1b in the tables section. It is vital to include control variables in the model because of significant differences in AIDS-related knowledge and sexual behavior among individuals with varying socioeconomic as

⁷ Marika Vicziany, "HIV and AIDS in India: Love, Disease and Technology Transfer to the Kamasutra Condom," *Contemporary South Asia* 10, no. 1 (03 2001): 95-129.

⁸ S. B. Porter, "Public Knowledge and Attitudes about AIDS among Adults in Calutta, India," *AIDS Care* 5, no. 2 (03 1993): 169-176.

well as personal characteristics⁹. An additional control variable, AGE2 is the age of the respondent squared. It is believed that people are most promiscuous in mid age¹⁰ and this is best captured by the AGE2 variable. Apart from AGE and AGE2, all other controls are modified to dummy variables because of their non-continuous nature.

Based on mean values of the control variables, there is a lot of variation among Indian men and women. These variations can be studied from Table 2b in the tables section. For example, 14.4% of men and 32% of women do not have even primary education. This is very alarming, especially since AIDS-related knowledge and safe sexual behavior is positively correlated with increasing education levels. The majority of respondents were currently married: 60.4% of interviewed men were married and 70.7% of interviewed women were married. More women are married as compared to men probably because of the domestic role of women in India. Additionally, 83.5% of men said they were currently working while only 35.2% of women said they were currently working. Thus, it is vital to encourage work among women because financial independence will enable women to take control of their sexual lives¹¹.

The difference in the location of individuals' residence is important because of factors such as limited access to media sources such as television and limited availability of

⁹ Suniti Solomon, Anirban Chakraborty, and Rochelle D'souza Yepthomi, "A Review of the HIV Epidemic in India," *AIDS Education & Prevention* 16 (06/02 2004): 155-169.

¹⁰ Moni Nag, "Sexual Behaviour in India with Risk of HIV/AIDS Transmission," *Health Transition Review* 5 (1995): 293.

¹¹ S. Pallikadavath, C. Sreedharan, and R. W. Stones, "Sources of AIDS Awareness among Women in India," *AIDS Care* 18, no. 1 (01 2006): 44-48.

condoms in rural areas¹². On average, 45.6% of women and 51.4% of men live in urban areas. Thus, majority of women and around half of men live in rural areas. Civilizing the livelihood of rural residents might be an important and essential step in improving sexual behavior and AIDS knowledge in India¹³. The results for the effect of media on AIDS knowledge and AIDS knowledge on sexual behavior in the next chapter provides further evidence that it is imperative to comprehend the grounds for differences between Indian men and women and tackle these differences from their roots to combat the AIDS epidemic.

¹² Kirk Johnson, "Media and Social Change: The Modernizing Influences of Television in Rural India," *Media, Culture & Society* 23, no. 2 (March 1 2001): 147-169.

¹³ Jayati Ghosh, "A Geographical Perspective on HIV/AIDS in India," *Geographical Review* 92, no. 1 (Jan. 2002): 114-126.

CHAPTER V

RESULTS

On the whole, the results indicate that media has a positive and significant effect on increasing AIDS-related knowledge among Indian men and women. However, the magnitude of the coefficient shows that the marginal effect of reading newspapers, listening to radio or watching television on HIV knowledge levels is small. Likewise, the impact of AIDS-related knowledge on sexual behavior is significant but the magnitude and direction of the coefficient is displeasing. In several instances, knowledge of AIDS leads to risky sexual behavior. The opposing effect of knowledge on sexual behavior questions the success of AIDS campaigns and other governmental programs that aim to control the AIDS epidemic by increasing awareness and knowledge on AIDS matters in India.

The Role of Media in Increasing HIV/AIDS Knowledge

Newspapers

Despite the low literacy rate in India, newspapers have had a significant effect in increasing HIV/AIDS related knowledge based on the 2005-2006 national demographic health survey data results. According to the probit model, an increased use of newspapers improves HIV/AIDS knowledge among both men and women. The numbers to examine the effect of newspapers on AIDS-related knowledge is available in Tables 3a and 3b at

the end of this paper. The role of newspapers in promoting quality knowledge on HIV was limited till the early 2000s based on the previous wave of the NFHS data conducted at that time. Earlier, newspapers were successful in increasing HIV/AIDS stigma among educated individuals, but they did not provide any objective knowledge on modes of prevention and transmission¹. However, help from the government and campaigns in recent years have altered the function of newspapers in HIV/AIDS education. Thus, the effectiveness of newspapers in educating individuals on HIV has enhanced significantly since the late 1990s and early 2000s, possibly due to changing perceptions and removal of customary social barriers.

Among Indian men, newspapers have not only increased HIV/AIDS awareness, but also reduced stigma and improved the quality of HIV/AIDS knowledge. Based on the average partial effect estimations, men who read newspapers at least once a week are 6.7% more likely to hear about AIDS compared to men who read newspapers less than once a week. This number is a possible indication towards the detail that AIDS broadcasts are kept to a minimum in newspapers. Also, men who read the newspaper at least once a week are 6.5% more likely to know that condom use is a preventive strategy and 4.9% more likely to know that having few sexual partners reduces their chances of acquiring HIV. Thus, knowledge on modes of HIV transmission and prevention is improving through newspapers. Also, stigma associated with AIDS is now being removed by media sources like newspapers. This is evident from the data, which shows that men who read newspapers are more likely to know that healthy looking people can have AIDS and HIV is not transmitted by sharing food with infected individuals. In summary, men who read

¹ Rebecca de Souza, "The Construction of HIV/AIDS in Indian Newspapers: A Frame Analysis," *Health Communication* 21, no. 3 (06 2007): 257-266.

newspapers on a regular basis are likely to benefit by receiving accurate AIDS knowledge.

As for women, the effectiveness of newspapers in increasing HIV/AIDS awareness is higher compared to that of men. Women who read newspapers at least once a week are 9.0% more likely to hear of AIDS. Also, the increase in knowledge on modes of transmission and prevention from reading newspapers is higher among women. The higher numbers could be due to the recent focus of campaigns and media sources on Indian women as victims of the AIDS epidemic². Tragic stories of India women getting AIDS from their disloyal husband's and fighting the infection with no support from families have increased women's interest in learning about the disease and preventing themselves. However, newspaper's role in removing misconceptions about AIDS has been limited among women. Women who read newspapers at least once a week are only 5.6% more likely to know that a healthy looking person can have AIDS compared to other Indian women. Thus, steps taken to reduce HIV/AIDS stigma among Indian women might help to improve AIDS misconceptions brought through newspaper use, especially among those living in rural areas because the conservative attitude of rural women has lead to the minimal impact of contemporary newspapers in removing current misconceptions about AIDS³.

The effect of newspapers varies greatly across different states based on regional newspaper broadcasts, state government's responses and literacy rate. The effect of

² Sapna Desai, "HIV and Domestic Violence: Intersections in the Lives of Married Women in India," *Health and Human Rights* 8, no. 2, Emerging Issues in HIV/AIDS (2005): 140-168.

³ S. Pallikadavath, C. Sreedharan, and R. W. Stones, "Sources of AIDS Awareness among Women in India," *AIDS Care* 18, no. 1 (01 2006): 44-48.

newspapers is minimal not only because of its barely recent improvement in providing accurate and objective knowledge, but also because it targets only a small group of individuals, specifically those who know how to read and have access to newspapers.

Radio

For majority of India, where access to television is absent in most rural areas and where a significant proportion of individuals are illiterate, radio is the optimal media source for entertainment and to disseminate knowledge to the entire populace. The easy access to radio among all individuals, especially among those who belong to high-risk groups such as truck drivers and prostitutes, provides an opportunity to educate the whole country on HIV/AIDS issues and reduce HIV incidences in India⁴. However, the effect of radio in increasing HIV/AIDS knowledge is less than that of newspapers. The results for the effect of radio on AIDS knowledge are available in Tables 4a and 4b in the tables section. The information broadcasted on radio channels has positive effects in increasing knowledge and reducing AIDS stigma among both men and women, but the effect is minimal. The minimal effect of radio might be due to its low popularity in urban areas, where most individuals resort to watching television. However, radio broadcasting has the potential to educate the rural people, the illiterate and others who are at risk of acquiring HIV virus on sexual matters and HIV/AIDS issues; thus, bringing forth positive changes in the behavior of rural men and women. The positive effect of radio on rural people is probably due to the absence of any other association with the external world in

⁴ Patralekha Chatterjee, "Spreading the Word about HIV/AIDS in India," *Lancet* 361, no. 9368 (05/03 2003): 1526.

these regions. Thus, rural people attentively listen to radios as a source of entertainment and as a source of outside information⁵.

The effect of radio shows in increasing HIV awareness and knowledge among men is less than that of women. For instance, women who listen to radio at least once a week are 7.0% more likely to have heard of AIDS where as men who listen to radio at least once a week are only 3.7% more likely to have heard of AIDS. Similarly, women listening to radios are 4.8% more likely to know that having few sex partners reduces ones chances of acquiring HIV infection, but this number is merely 2.7% for men. Thus, current radio programs have been unsuccessful in targeting men, who are often the decision-makers in sexual relationships because of their financial strengths. However, the role of radio in dismantling HIV-related stigma is lower for women. Only 2.9% of women radio listeners are likely to know that a healthy looking person can have AIDS, while the number is 3.3% for men. This is similar to the effect of newspapers in reducing HIV stigma in India. It is more difficult to change previously held misconceptions about AIDS among women than among men. Also, 3.6% of the women who regularly listen to radios are likely to know that sharing food with an infected person does not transmit AIDS, while the number is 4.7% for men. These numbers are low for both men and women. Hence, it is essential to continue modifying HIV/AIDS knowledge dissemination programs broadcasted on radios, so that it reaches more people and improves HIV/AIDS knowledge, especially among rural and poor individuals because of limited access to television and newspapers among these groups.

⁵ Patralekha Chatterjee, "Spreading the Word about HIV/AIDS in India," *Lancet* 361, no. 9368 (05/03 2003): 1526.

Indian people's cultures and traditions vary widely across the nation. More than 50 different languages and dialects are spoken in the country⁶. Language barriers across different states and regions hinder the ability of radio programs in reaching individuals with different backgrounds and experiences. Thus, the success of radio campaigns depends on each state's individual response based on its specific HIV-related issue, brought forth in the language of its individuals. In the recent decade, the number of household with cars has increased considerably and since radios are mostly accessed during traveling, there is strong hope that radio shows will be useful in increasing HIV/AIDS knowledge among all Indians. Therefore, state governments and AIDS campaigns need to possibly redirect radio programming and change its course in order to increase radio's effectiveness in increasing objective AIDS knowledge.

Television

In the last few decades, increased modernization and globalization in India has acquainted Indians with the western culture and wrecked social barriers that hindered open communication in the past. The portrayal of women on television has shifted from the household goddess to working executive leaders. The talks and acts of sex are still limited on Indian television programs, but easy access to western shows has increased awareness about sex, condoms, STDs and AIDS among urban men and women. The influence of television on Indian people is evident from the emulations of dresses worn by actors among the general population and interactions between people that mostly

⁶ Jayati Ghosh, "A Geographical Perspective on HIV/AIDS in India," *Geographical Review* 92, no. 1 (Jan. 2002): 114-126.

revolves around top television shows and movies⁷. Thus, the spread of television in India has changed the whereabouts of the country with respect to gender roles, communication, education, community preference, and all other aspects that affects an individual's life. The probit results show that television does have an impact in increasing HIV/AIDS knowledge, but the impact has not been high. The statistical results for the effect of newspapers on AIDS knowledge are presented in Tables 5a and 5b at the end of this paper.

Television has proved to be the best media source in creating general awareness about HIV/AIDS. For instance, the likelihood of having heard of AIDS is 12.3% higher among women who watch television at least once a week compared to women who watch television less than once a week. For men, the likelihood percentage is 5.4%. Even though television has some affect in increasing general HIV awareness among men, comprehensive knowledge on AIDS prevention, transmission and stigma is likely to be 10% higher among Indian men who watch television at minimum once a week compared to other Indian men. Also, the comprehensive knowledge on AIDS is 7.4% higher among women who watch television on a regular basis. These numbers reflect on the probable success of AIDS campaigns in increasing quality of AIDS knowledge among both men and women by broadcasting AIDS facts and stories through television shows, movies and ads.

The role of television in eliminating HIV/AIDS stigma is still a challenge. Only 3.7% of the women and 5% of the men who watched television regularly were likely to know that a healthy looking person could have AIDS. Also, 6.8% of women and 5.7% of men

⁷ Robert Jensen and Emily Oster, "The Power of TV: Cable Television and Women's Status in India," *Quarterly Journal of Economics* 124, no. 3 (08 2009): 1057-1094.

television viewers were likely to know that AIDS cannot be transmitted by sharing food with an infected person. Even though these numbers are much better when compared to radio's success in reducing HIV stigma, there are low in absolute terms. The need to transform HIV/AIDS stigma in India stems from the concern of increasing HIV cases, mainly caused due to miscommunication about the infection. Television campaigns have been successful in promoting knowledge on condom use among both men and women. Women television watchers are 7.7% more likely to know that condom use helps in AIDS prevention. However, knowledge on the fact that few sexual partners reduce the chances of HIV infection is hardly promoted through television. Thus, either AIDS campaigns on television are not providing accurate information on AIDS or other television shows are depicting impressions that lead to incorrect knowledge on AIDS. Therefore, if the problem lies in AIDS advertisement and campaigns, they should be modified to provide accurate, complete and objective AIDS-related knowledge directly through true stories and official statistics. However, if the AIDS knowledge concern stems due to other television shows, these shows can perhaps be altered/restricted to provide accurate AIDS information to the general population. Both these measures are essential because of the high influence of television on Indian people.

The minimal impact of television in promoting HIV knowledge in the past is because of several factors, however, the two main reasons are- the extensive censorship of Indian television content and limited access to television, especially in rural areas⁸. The first problem of censorship is mostly solved by improved globalization. However, the second

⁸ Louise M. Bourgault, "AIDS Messages in Three AIDS-Themed Indian Movies: Eroding AIDS-Related Stigma in India and Beyond," *Critical Arts: A South-North Journal of Cultural & Media Studies* 23, no. 2 (07 2009): 171-189.

problem of limited access to television still exists. Most villagers in India are too poor to afford regular electricity and cable payments. Therefore, it would be in the best interest of the government to provide amenities such as electricity and water for rural Indians, most of who live way below the poverty line, in order to improve the country's AIDS situation. Television access will improve knowledge not only on AIDS, but also on other STDs, female feticide, changing perceptions of women, importance of education, and other factors that will ultimately lead to India's growth and success⁹.

The Effect of Media on Different Levels of AIDS-related Knowledge:

The Ordered probit regression explains the impact of media sources, such as newspaper, radio and television on the varying quality of AIDS knowledge. Based on the results, newspapers, radios and televisions have a positive and statistically significant impact in improving the quality of AIDS knowledge among Indian inhabitants. The statistics for the second stage hurdle model ordered probit outcome is presented in Table 12 at the end of this paper. Even though the probit results indicate the effect of media on overall AIDS knowledge, the ordered probit results explain the efficiency of media in increasing different levels of AIDS knowledge. The AIDS campaigns and advertisements on television, radio and newspaper are assumed to increase AIDS knowledge only up to a certain level due to limitations and restrictions on what can be depicted and portrayed through media¹⁰. Thus, the magnitude of the ordered probit results provide an estimation

⁹ Kirk Johnson, "Media and Social Change: The Modernizing Influences of Television in Rural India," *Media, Culture & Society* 23, no. 2 (March 1 2001): 147-169.

¹⁰ Helen Lambert and Kate Wood, "A Comparative Analysis of Communication about Sex, Health and Sexual Health in India and South Africa: Implications for HIV Prevention," *Culture, Health & Sexuality* 7, no. 6 (Nov 2005): 527-541.

of whether media notably improves the quality of AIDS knowledge, for levels ranging from having heard of AIDS to answering four questions about the infection correctly. The effect of media on AIDS knowledge diminishes as the knowledge outcome progresses from one correct answer to four correct answers about HIV transmission and prevention modes. For instance, men who read newspapers at least once a week are 3.64% likely to know about one HIV transmission or prevention mode where as these men are only 0.42% likely to know four facts about the HIV infection. Thus, the effect of media progressively diminishes when it comes to improving the quality of AIDS knowledge among Indian men. The same is true for Indian women. In fact, the marginal effect of newspapers, radios and televisions on AIDS knowledge is lower for women as compared to that of men. According to the probit results, television is the most efficient media source in disseminating AIDS knowledge, when compared to the effect of radios and newspapers. However, the ordered probit results show that newspaper is the most effective means to improve the quality of AIDS knowledge, when compared to televisions and radios. Thus, the effect of newspapers in increasing quality knowledge supports policies such as developing the educational system to lower the illiteracy rate so that more people are able to read and comprehend the content of newspapers.

It is evident that media has positive and significant effect in improving the quality of AIDS knowledge among Indian men and women, after controlling for education, wealth, location, marital status, work status, state, religion and age. However, the negative coefficient in the first row of Table 12 for the role of media in increasing general AIDS awareness but not providing any quality AIDS knowledge might seem peculiar. A possible justification for the negative coefficient is that AIDS portrayal on television

shows and ads always provide at least one accurate detail on AIDS and hence it is unlikely that media will increase general AIDS awareness but not provide a single true fact about the disease. Thus, the ordered probit analysis provides a deeper understanding on the impact of media on AIDS knowledge and offers some evidence that media has very minimal impact on people's higher AIDS knowledge levels. Therefore, AIDS organizations and governmental programs should either rethink the use of their resources in media campaigns or modify these campaigns to increase their effectiveness on Indians.

The Effect of HIV/AIDS Knowledge on Sexual Behavior

Condom Use

Based on previous studies, condoms have been used very minimally in India. The LIC variable is an approximation to analyze the use of condoms in India. Moreover, the few cases of condom use were a failure either because of poor condom quality or due to improper usage¹¹. Also, the access to condoms is limited in India, especially in rural areas where they are required the most. Another interesting detail with regards to condoms is that they are rarely used in marital relationships; the only purpose of condoms in marriages is to avoid pregnancy. Thus, problems with condom use in India have resulted in the spread of the HIV infection from high-risk groups to the general population. Ultimately, AIDS campaigns have not been successful in promoting condom use because of the government's conservative policies that view condom promotion as an

¹¹ Marika Vicziany, "HIV and AIDS in India: Love, Disease and Technology Transfer to the Kamasutra Condom," *Contemporary South Asia* 10, no. 1 (03 2001): 95-129.

encouragement to have more sex¹². Condom use is an easy first step to prevent the spread of AIDS and hence a focus on its promotion can help combat the AIDS epidemic in India.

In the past few years, condoms have been made increasingly available and their use has been encouraged in all AIDS affected countries including India. Rural people are taught how to use condoms and discussions about sex are facilitated. Thus, lately several people have been educated about the advantages of condom use. To examine whether knowledge affects sexual behavior, the results found that familiarity with the fact that condom use reduces ones chances of acquiring AIDS is likely to increase condom use only by 4.3% among males and 3.9% among females. Tables 6a and 6b provide the probit results to analyze the effect of AIDS knowledge on condom use. The number is lower for women because in most cases women are unable to convince their male partners to use condoms because of women's suppressed role. Knowledge about condoms is the factor that affects condom use most, apart from general awareness of AIDS. Men who have heard of AIDS are 4.3% more likely to use condoms and women familiar with AIDS are only 2.5% more likely to use condoms. Thus, just awareness of AIDS among men can help increase condom use. However, detailed knowledge on AIDS among women (CKI) only minimally increases the likelihood of condom use, merely by 2.1%.

One of the major problems with condom use is in commercial sex work. Sex workers are unable to persuade clients and face huge income losses in instances of condom use¹³.

¹² Kirk Johnson, "Media and Social Change: The Modernizing Influences of Television in Rural India," *Media, Culture & Society* 23, no. 2 (March 1 2001): 147-169.

¹³ Sheena Asthana and Robert Oostvogels, "Community Participation in HIV Prevention: Problems and Prospects for Community-Based Strategies among Female Sex Workers in Madras," *Social Science & Medicine* 43, no. 2 (07 1996): 133-148.

Even though sex workers might look perfectly healthy, several of them are likely to be HIV positive. Most of them fear getting tested because HIV positive results could ruin their living wage. Men who are aware that a healthy looking person can have AIDS are only 1.5% more likely to use condoms, while the number is 0.8% for women; both these numbers are low. If these men pay for sex and do not use condoms, they are likely to get infected and transmit the virus to their wives. Thus, married Indian men pose a threat to the spread of HIV infection from high-risk groups to the general population¹⁴.

Government support can reduce this threat by supporting sex workers and controlling the violence faced by them.

In conclusion, condom use is extremely low in India, particularly within marriages. Knowledge on AIDS prevention is not sufficient to promote condoms. Based on the probit results, increased education and higher wealth index significantly increases condom use among men and women. Therefore, providing higher education at a lower cost and improving the living standard in rural areas will involuntarily result in increased condom use. However, the effect of knowledge on condom usage is unlikely to vary.

Pre-Marital Sex

In India, pre-marital sex is more prevalent among males as compared to its prevalence among females based on the NFHS-III survey responses. Most of pre-marital sex is among college students who are pressured by friends and/or influenced by media sources like television¹⁵. The initiation of sex before marriage is an indication of risky sexual behavior in the future because men who have sex before marriage are most likely to

¹⁴ Nicholas Eberstadt, "The Future of AIDS," *Foreign Affairs* 81, no. 6 (Nov 2002): 22-45.

¹⁵ R. G. Brahme et al., "High-Risk Behaviour in Young Men Attending Sexually Transmitted Disease Clinics in Pune, India," *AIDS Care* 17, no. 3 (04 2005): 377-385

engage in extra-marital sex after their marriage. Most individuals who engage in pre-marital sex do not use condoms. This behavior heightens the spread of AIDS amid the younger generation, who are able to continuously transmit the infection because of their longer sexual life span¹⁶. Thus, pre-marital sex if not controlled poses enormous threat to a large AIDS epidemic.

Among women, knowledge on AIDS information does not significantly reduce ones chances of engaging in pre-marital sex. The result for the effect of AIDS knowledge on pre-marital sex is available in Table 7a and 7b in the tables section. Knowledge has less than 1% effect in changing behavior among unmarried women. In fact, knowledge on the fact that few sexual partners reduce ones chances of acquiring HIV virus has no significant effect on pre-marital sex decisions among Indian women. Thus, unmarried females are not impacted by AIDS knowledge in making this sexual behavior decision. Women engage in risky behavior despite their high levels of knowledge because of financial difficulties, pressure from men and limited autonomy. Thus, to reduce instances of pre-marital sex among women, power in society and financially independence is likely to change women's behavior.

As for men, knowledge on AIDS-related matters does have minimal impact on pre-marital sex decisions. Unmarried men who have heard of AIDS are 4.3% less likely to engage in pre-marital sex. This number is very large in comparison to women's data. Also, unmarried men who know that having few sex partners reduces an individual's chances of acquiring AIDS are 1.9% less likely to have sex before marriage. This number is low and is indicative of knowledge's minimal impact in changing sexual behavior

¹⁶ Purnima Mane and Peter Aggleton, "Gender and HIV/AIDS: What do Men have to do with it?" *Current Sociology* 49, no. 6 (11 2001): 23-37.

among unmarried men, who are generally aware of AIDS. Even after knowing that a healthy looking person can have AIDS, men are not less likely to engage in pre-marital sex. Thus, avoiding pre-marital sex is very difficult with changing cultural trends and rising freedom among the youth in current times¹⁷. Thus, the results suggest that campaigns focusing on young individuals need to be reassessed.

Pre-marital sex by itself is not a major concern to the spread of AIDS. However, unprotected pre-marital sex, i.e. sex without condom use, multiple partner pre-marital sex and pre-marital sex with high-risk groups like commercial sex workers are responsible for the HIV virus's breakthrough in India¹⁸. Therefore, government's approach to control the young generation's actions and reduce sexual activity among unmarried individuals is probably inefficient in controlling the spread of AIDS unless accompanied by programs that control unprotected sex, sex with multiple partners as well as sex with high-risk individuals.

Extra-Marital Sex

Sex outside marriage is a highly sensitive topic of discussion in India. In a predominantly Hindu country, sex is a subject associated with deep-rooted traditional taboos. These taboos constrain conversations about sex between husband and wife. For married women, faithfulness towards their husband is a vital necessity for the family to coexist¹⁹.

However, married men who cheat on their wives often get by because of the women's dependency on her husband to support herself and her children. Thus, even though some

¹⁷ R. G. Brahme et al., "High-Risk Behaviour in Young Men Attending Sexually Transmitted Disease Clinics in Pune, India," *AIDS Care* 17, no. 3 (04 2005): 377-385.

¹⁸ "India Wakes Up to AIDS," *Economist* 345, no. 8048 (12/20 1997): 50.

¹⁹ Sonal R. Doshi and Bindu Gandhi, "Women in India: The Context and Impact of HIV/AIDS," *Journal of Human Behavior in the Social Environment* 17, no. 3 (07 2008): 413-442.

married Indian women might engage in extra-marital sex, the number of these women is low. Therefore, the main concern in terms of extra-marital sex lies amongst disloyal husbands, who continually cheat on their wives without the fear of loosing their family. Married men who engage in extra-marital sex usually do so with casual and business acquaintances, strangers, and sex workers. These relationships form a wide precarious sexual network that leads to the rapid spread of the HIV virus from high-risk groups like sex worker to disloyal husbands and from these husbands to their wives and other acquaintances. Thus, extra-marital sex among men is responsible for the recent advancement of the HIV infection from high-risk groups to the general population²⁰. Thus, it is essential to diminish extra-marital sex among Indian men. However, reducing extra-marital sex in India is very difficult, especially because of the wives' helpless situation. Even though most men are aware of the HIV/AIDS risks associated with extra-marital sex, there is no alteration of behavior. Especially, actions of migrant workers and truck drivers, who repeatedly travel and engage in different types of risky sexual behavior, causes the highest possibility of HIV transmission²¹.

The effect of AIDS-related knowledge on extra-marital sex is very low. The results that explain the effect of knowledge on extra-marital sex are available in Tables 8a and 8b in the tables section. Married men who have heard of AIDS are 0.5% more likely to engage in extra-marital sex. This is distressing since knowledge on AIDS should diminish risky

²⁰ Jayati Ghosh, Vandana Wadhwa, and Ezekiel Kalipeni, "Vulnerability to HIV/AIDS among Women of Reproductive Age in the Slums of Delhi and Hyderabad, India," *Social Science & Medicine* 68, no. 4 (02 2009): 638-642.

²¹ Suchismita Mishra, Basanta Kumar Swain, and Bontha Veerraju Babu, "Sexual Risk Behaviour, Knowledge and Attitude Related to HIV Transmission: A Study among a Migrant Tribal Group Living in the Slums of Bhubaneswar City, Orissa, India," *Journal of Public Health* 16, no. 5 (10 2008): 331-337.

behavior. However, people who have heard of AIDS are likely to know more about the disease and its modes of transmission and prevention. Thus, they are perhaps more likely to engage in risky behavior without fear of getting infected. Also, knowledge on condom usage encourages extra-marital sex. Married men who know condoms reduce risks of AIDS transmission are 0.6% more likely to engage in extra-marital sex. This is possibly correct because married men with knowledge on condoms might believe that condom use can reduce the risks associated with extra-marital sex and hence they would engage in sex outside their marriages. All other knowledge variables have insignificant impact on extra-marital sex. Moreover, for women, all knowledge factors have insignificant effect on extra-marital relations. Thus, AIDS-related knowledge has not changed extra-marital sex behavior among both men and women.

Due to the unknown impact of AIDS knowledge on extra-marital sex, campaigns and programs that directly improve people's knowledge on AIDS issues do not reach the core of the HIV problem and hence, are unable to change the risky sexual behavior of married men. Therefore, AIDS programs and campaigns could be more beneficial if they tried to unearth and resolve the deep-rooted problems existent in the lives of most Indian people. Once the every day difficulties are resolved, these programs will be beneficial in wholly annihilating the AIDS epidemic in India. Therefore, there is evidence for government to support organizations that might not work directly with AIDS issues, but they unravel the fundamental problems faced by villagers and other rural inhabitants, thus precluding AIDS from even becoming an issue. An example of such an organization is the Disha

Foundation²² that aims to combat AIDS by providing basic livelihood amenities to villagers.

Abstinence from sex

It is expected that individuals who are aware of AIDS and have in-depth knowledge on its modes of transmission will abstain from sex in order to avoid being infected. Thus, it is essential to study the likelihood of men and women to abstain from having sex based on their knowledge on HIV/AIDS, regardless of their marital status. The choice of abstinence by women is highly dependent on the choice to abstain by men because of gender inequality issues in India. However, the more educated and independent a woman is, the more likely it is that her decision to abstain from sex is her own²³.

Among high risk-groups like migrant workers and truck drivers, lack of entertainment during travel, partition from family and frustration with work conditions results in their choice to engage in sexual activity with commercial sex workers and other casual acquaintances²⁴. Therefore, the choice of abstinence among high-risk groups and women is also dependent on factors other than their knowledge levels.

Based on the probit results, men are less likely to abstain from sex the superior their knowledge on AIDS. The statistical results that analyze the effect of AIDS knowledge on abstinence are presented in Tables 9a and 9b at the end of this paper. For instance, men

²² Annabelle Mooney and Srikant Sarangi, "An Ecological Framing of HIV Preventive Intervention: A Case Study of Non-Government Organizational Work in the Developing World," *Health*: 9, no. 3 (July 1 2005): 275-296.

²³ Ghosh, Wadhwa, and Kalipeni, *Vulnerability to HIV/AIDS among Women of Reproductive Age in the Slums of Delhi and Hyderabad, India*, 638-642.

²⁴ Suchismita Mishra, Basanta Kumar Swain, and Bontha Veerraju Babu, "Sexual Risk Behaviour, Knowledge and Attitude Related to HIV Transmission: A Study among a Migrant Tribal Group Living in the Slums of Bhubaneswar City, Orissa, India," *Journal of Public Health* 16, no. 5 (10 2008): 331-337.

who have comprehensive knowledge on AIDS are 0.6% more likely to have sex within the last year. This is very alarming and poses concern on whether AIDS campaigns should increase AIDS knowledge among individuals. One possible explanation for the positive correlation between knowledge and sex is that individuals who have comprehensive knowledge on AIDS are more likely to engage in sexual activity because they know that they can reduce their chances of acquiring AIDS by using condoms and having few or just one sexual partner. For instance, men who know that condom use reduces their chances of acquiring AIDS are 1.4% more likely to not abstain from sex and men who know that having few sexual partners reduces ones chances of acquiring the HIV virus are 1.3% more likely to not abstain from sex. Thus, the relationship between knowledge and abstinence among men indicates that controlling abstinence through knowledge is unlikely and hence AIDS programs and campaigns should focus either on changing other risky behavior among men or on controlling abstinence through means other than increasing AIDS-related knowledge.

As for women, comprehensive knowledge level has no significant effect on abstinence. However, knowledge on condom use decreases the likelihood of women abstaining from sex by 1.6%- very similar to the results for men. Thus, women's decision to abstain is negligibly related to their knowledge on AIDS. Hence, measures other than improving knowledge on AIDS are essential to understand and fight the risky behavior among women to reduce AIDS cases in India.

One key step to control all risky behaviors, including increased sexual activity is providing education and improving the livelihood of all people, especially those living in secluded areas with minimum access to basic amenities. This is evident from the results,

which shows increasing education level and rising wealth index are both correlated with increasing abstinence. Thus, abstinence from sex among all individuals is not realistic to expect and increasing knowledge level is not sufficient to control sex. It is essential to reach the core of the AIDS epidemic in India and get rid of the problem from its root. Only then will Indians be able to assure themselves that AIDS and other health concerns will not impede the country from constantly growing and developing.

Relationship with sex partners

A new variable that clarifies unsafe sexual behavior is the relationship between two individuals engaged in sexual activity. For this study, individuals were asked about the type of relationship with their last sex partner. An individual is safe from AIDS if sex is limited to spouse or fiancé and if the spouse does not have sex with anybody else. Therefore, the relationship an individual has with his/her sex partner determines if he/she is safe from AIDS, assuming that the spouse does not have sex with other people. Individuals who have sex with sex workers, relatives, casual partners, friends, colleagues, and strangers create a complex set of networks that leads to the exponential multiplication of the HIV virus²⁵, consequently, causing an epidemic. A massive trouble with high-risk group individuals, which essentially places them in the high-risk category, is their informal and short-term relationships with their sex partners. Migrant workers and truck drivers regularly travel to new locations and get together with strangers while away from family. They seek sources of amusement in midst of their tiresome and dangerous work. The absence of enjoyment facilities and the sorrow due to detachment from family leads to the risky sexual relations among truck drivers and

²⁵ Suniti Solomon, Anirban Chakraborty, and Rochelle D'souza Yephthomi, "A Review of the HIV Epidemic in India," *AIDS Education & Prevention* 16 (06/02 2004): 155-169.

migrant workers²⁶. Furthermore, the relationship commercial sex workers have with their clients is mostly unfamiliar first acquaintance. There is no stable and safe sex work and the only way to reduce chances of infection in this situation is the use of condoms. High-risk groups pose maximum threat to the rapid spread of the AIDS epidemic in India because the HIV virus is transferring to the general population through these groups. The regression results for both men and women show insignificant correlation between knowledge and the relationship an individual prefers with his/her sexual partner. Tables 10a and 10b show the effect of AIDS knowledge on relationship with sex partner. Despite comprehensive knowledge, AIDS-educated people do not prefer sex only with spouses. This is alarming since it suggests that most campaigns in India, which aim to increase AIDS knowledge, are unsuccessful in controlling risky sexual behavior. National AIDS Control Organization, one of the oldest associations established to combat HIV spread in India, is mainly concerned with raising awareness, knowledge and understanding of HIV/AIDS²⁷. However, these steps aimed at improving AIDS understanding have not changed sexual activity among Indians, which had caused and is continuing to cause a rise in HIV cases. Therefore, it is important to study the impact of AIDS campaigns in India and constantly modify these campaigns based on their success in changing people's behavior.

The RSP, Relationship with last Sex Partner, variable does not accurately portray the several different relationships an individual might be involved in. A person could have

²⁶ Michael P. Carey, Prabha S. Chandra, and Kate B. Carey, "Predictors of HIV Risk among Men Seeking Treatment for Substance Abuse in India," *Archives of Sexual Behavior* 32, no. 4 (08 2003): 339-349.

²⁷ Deepti Gupta et al., "Effectiveness of Antenatal Group Hiv Voluntary Counseling and Testing Services in Rural India," *AIDS Education & Prevention* 19, no. 3 (06 2007): 187-197.

had sex with a sex worker in his/her second to last sexual encounter. Thus, the RSP variable does not truly capture the relationships that lead to the risk of AIDS. A different variable that accounts for this error is the TSP, total number of sexual partners, variable. Folks who have more than one sexual partner are usually engaging in unsafe relationships. It is very unlikely for men or women to have more than a single spouse in India with a few exceptions²⁸. Thus, the TSP variable captures the risky sexual behaviors that cause the AIDS epidemic through multiple relationships.

Total Number of Sex Partners

The TSP, Total number of Sex Partners, variable indicates the lifetime total of sexual partners an individual has had. The spread of AIDS is very much caused due to sexual relationship with multiple partners. The likelihood of the transfer of the HIV virus from one human to another is amplified in a multiple sexual relations network²⁹. Thus, the TSP variable provides a good approximation of the extensive multiple partners sexual networks based on each individual's lifetime number of sexual partners. In India, most men and women engage in monogamous relationships, but the recent westernization of the country has caused changes in sexual behavior. The increasing number of extra-marital and pre-marital sex has led to growing numbers of sex partners, especially in urban areas³⁰. The majority of individuals who have more than a single sex partner belong to either high-risk groups like sex workers, truck drivers and migrant workers or

²⁸ Pramit Mitra, "India at the Crossroads: Battling the HIV/AIDS Pandemic," *Washington Quarterly* 27, no. 4 (Autumn 2004): 95-107.

²⁹ Epstein, Helen, "The Invisible Cure: Why We Are Losing the Fight Against AIDS in Africa," *Picador* 2008: 324

³⁰ Louise M. Bourgault, "AIDS Messages in Three AIDS-Themed Indian Movies: Eroding AIDS-Related Stigma in India and Beyond," *Critical Arts: A South-North Journal of Cultural & Media Studies* 23, no. 2 (07 2009): 171-189.

middle-class people living in urban areas³¹. Thus, AIDS campaigns in India could benefit by focusing on facilitating the decrease in number of sexual partners in urban areas and among high-risk groups.

A general awareness of AIDS is unlikely to change the number of sexual partners among people, since most might not know that ones chances of acquiring HIV is magnified by having multiple sexual partners. The regression results for the effect of AIDS knowledge on total number of sex partners is provided in Table 11a and 11b at the end of this paper. Based on the regressions, the insignificance of general AIDS awareness on number of sexual partners is true for women. However, the results show that men who have heard of AIDS are 2.1% more likely to have multiple sex partners. This correlation might be due to misconception about AIDS among men who believe that AIDS is a disease only possible among high-risk groups. Moreover, men who have only heard of AIDS are unlikely to change their sexual behavior, unless they are educated on its modes of transmission and prevention. Therefore, general awareness of AIDS is not going to decrease the number of sexual partners among Indian men and women.

Knowledge on the fact that having few sexual partners reduces ones chances of acquiring the HIV virus should have a positive and significant effect in decreasing the number of sexual partners among majority of people. However, the probit results support the expected correlation between knowledge on sex partner and an individual's total number of sex partners only for men. Men who know that few sex partners reduces ones chances of getting AIDS are 0.9% less likely to have multiple partners. This number is very low and thus increasing knowledge on AIDS does not create the impact that is needed to

³¹ Naveet Wig et al., "The Impact of Hiv/aids on the Quality of Life: A Cross Sectional Study in North India," *Indian Journal of Medical Sciences* 60, no. 1 (01 2006): 3-12.

transform the HIV situation in India. As for women, there is insignificant correlation between knowledge on sex partners and their lifetime number of sex partner. This indicates women's minimal role in controlling their sexual behavior. Thus, increasing AIDS-related knowledge in India is not sufficient to change sexual behavior and reduce the increasing HIV cases in the country.

Knowledge on the fact that condom use reduces ones chances of acquiring AIDS has significant but opposite effects on the lifetime number of sexual partners among men and women. For men, knowledge on condoms increases the likelihood of having multiple partners by 0.8%; for women, knowledge on condom use decreases the likelihood of having multiple partners by 0.2%. Though both these numbers are very small, the opposing effects of knowledge on condom use on the number of sex partners between men and women is worthy of note. The results suggest that men with knowledge on condoms are likely to have multiple sex partners because they believe that they can avoid getting AIDS by using condoms with their multiple partners while women who have knowledge on condoms but are unable to convince their partner to use them are likely to have few sex partners to avoid getting AIDS because of minimal condom usage by their partners. Thus, men and women have different needs. In order to get effective results, campaigns should to take this into account.

From the modeled regressions, knowledge on AIDS has low impact on reducing risky sexual behavior. For instance, men and women who know that healthy looking people can have AIDS are unlikely to have few sexual partners. Thus, the results suggest that the focus needs to shift from increasing knowledge to improving overall education and lifestyle in India. Therefore, knowledge is only the first step to changing the HIV

epidemic in India, but several other types of programs and actions should accompany knowledge improvements in order to effectively eradicate AIDS from India.

CHAPTER VI

CONCLUSION

Summary

The results exemplify the importance of analyzing the effect of media on improving AIDS-related knowledge as well as the effect of AIDS knowledge in changing sexual behavior. It is essential to analyze both these relationships in order to resolve the AIDS ambiguity in India and reduce the increasing HIV cases. Most AIDS campaigns and governmental programs focus on disseminating AIDS knowledge to combat the rising HIV cases¹. Thus, this paper aims to explore possible correlations between media use and AIDS knowledge, and knowledge and sexual behavior to examine the effectiveness of knowledge in combating AIDS. This paper also suggests that campaigns are possibly related to these correlations either directly because of media advertisements or indirectly because of their strategies to improve knowledge. On the whole, media and AIDS knowledge have had significant and positive effects in the last decade, but the magnitude of the effect is small. Therefore, a lot more needs to be done to fight the massive HIV/AIDS epidemic in India.

¹ Prमित Mitra, "India at the Crossroads: Battling the HIV/AIDS Pandemic," *Washington Quarterly* 27, no. 4 (Autumn 2004): 95-107. , Annabelle Mooney and Srikant Sarangi, "An Ecological Framing of HIV Preventive Intervention: A Case Study of Non-Government Organizational Work in the Developing World," *Health*: 9, no. 3 (July 1 2005): 275-296.

Based on the results, media sources such as television are helpful in improving AIDS-related knowledge among Indians. The effect of television is low in rural areas because of its absence in those places. Sources such as radio and newspapers have lower impact in educating individuals on AIDS prevention and transmission modes because of the low literacy rate in India. Moreover, the effect of media in removing AIDS-associated stigma is very low. Thus, AIDS stigma still exists, especially in rural areas and among uneducated poor Indians². The low effect of media on improving AIDS-related knowledge is also due to cultural taboos and conservative government actions, both of which obstruct the objective portrayal of AIDS through media. Thus, development of media sources such as television in rural areas and change in the conservative attitude of political leaders could possibly result in easy access to accurate AIDS information among all Indians through television, radio and newspapers.

The effect of AIDS knowledge on sexual behavior is very alarming. Though knowledge has some impact in changing sexual behavior, the relative effect is very low. Often, AIDS knowledge leads to more risky sexual behavior among Indians. The effect of knowledge on sexual behavior is insignificant for majority of Indian women due to gender issues and other constraints. Thus, it might be vital to educate and empower women so that they are financially independent to make their own decisions. As for men, knowledge considerably improves sexual behavior only for educated and wealthy individuals. Therefore, knowledge by itself is unlikely to cause improvements in sexual behavior. Perhaps, it is important to encourage education, improve lifestyle in rural regions,

² Wayne T. Steward et al., "HIV-Related Stigma: Adapting a Theoretical Framework for use in India," *Social Science & Medicine* 67, no. 8 (10 2008): 1225-1235.

provide safe jobs, and remove gender inequalities in order to witness positive effects of AIDS knowledge on the sexual behavior of Indian men and women³.

Potential Solutions

Based on the results, there is evidence that AIDS programs should change their actions and possibly focus on the root problems that have led to risky sexual behavior and increased HIV cases in India, such as gender and wealth inequality rather than only increasing knowledge. The results support that providing AIDS-related knowledge is not always effective unless accompanied by good-quality condom distribution programs in all parts of India, elimination of AIDS stigma among educated and uneducated individuals, improvement in the livelihood of rural Indians, creation of safe jobs for folks belonging to high-risk groups, and establishment of varied entertainment sources, especially in secluded areas⁴. One possible and simple way to reduce HIV incidences is to have open discussions about it and treat it as each and every household's problem. Also, the leaders of the country should initiate the discussion about sex and AIDS; only then will the problem be understood in its entirety by the whole country.

The optimal policy recommendation for the Indian government is to direct more resources to not only to AIDS care, education and awareness, but also to the overall health sector. 1% of India's GDP is a small amount for the entire country's health care. The corruption among political leaders and the inefficiency of the government programs reduces the resources available for over a billion people living in India. The valuable use

³ R. T. Sudha, D. T. Vijay, and V. Lakshmi, "Awareness, Attitudes, and Beliefs of the General Public Towards Hiv/aids in Hyderabad, a Capital City from South India," *Indian Journal of Medical Sciences* 59, no. 7 (07 2005): 307-316.

⁴ Nicholas Eberstadt, "The Future of AIDS," *Foreign Affairs* 81, no. 6 (Nov 2002): 22-45.

of resources is possible if each state creates plans specific to its particular AIDS-related problem and spends the state's funds to implement those plans. The efficient use of resources to combat AIDS in India is vital to the country's steady growth⁵. Most importantly, AIDS organizations should periodically and regularly evaluate the effectiveness of their different actions so that ineffective programs are stopped immediately and changes are implemented quickly. Regular assessment of campaigns will provide valuable results in combating AIDS and reducing the wastage of resources on unproductive plans, such as solely increasing AIDS knowledge without providing facilities. Hence, it seems as though the current role of the Indian state governments in AIDS-related issues is bare minimum and this should change in order to have successful outcomes.

Promising Future Studies

The results and conclusions drawn from this paper are based on the Probit and Ordered Probit Model due to the binary nature of most variables. It would be interesting to conduct the same study using a different binary model such as the Logit model and compare the results to the probit analysis presented in this paper. The new model would either further support the results of this paper, or provide different results that would bring forth discrepancies associated with the current analysis. Thus, conducting a similar study using a different model is very helpful in understanding the most accurate impact of knowledge on sexual behavior. This paper studied the effect of media on AIDS-related knowledge using the probit as well as the ordered probit model. The ordered-probit results verified that media has significant influence in educating individuals on AIDS-

⁵ Ann Hwang, "AIDS has Arrived in India and China." *World Watch* 14, no. 1 (Jan 2001): 12.

related matters. Thus, the effect of media on knowledge is well supported by this paper because of comparable results from two different models. However, the effect of knowledge on sexual behavior is indeterminate since it is based solely on the probit model.

Previous studies have looked at the effect of socioeconomic factors on AIDS knowledge and sexual behavior in India. In the future, analysis on the effect of media on sexual behavior will explain if media is able to amend risky sexual behavior without completely providing objective knowledge on AIDS. A useful extension to the results of this paper would be to explore the difference in the effect of knowledge campaigns on educated and uneducated individuals. It is very likely that knowledge campaigns prove to be highly effective among educated people where as have no long-term effect on uneducated folks. This will further support for improvements in the public educational system in India. Also, a study on the varying effect of knowledge on urban versus rural people will probably highlight the day-to-day difficulties faced by rural folks that make it difficult for them to change their risky sexual behavior. The AIDS problem is highly misunderstood in India because of misreported information and corruption in data processing. Therefore, a variety of different studies will more accurately unwrap the AIDS problem in India and provide effective solutions to eradicate the problem.

TABLE 1a: Description of Independent and Dependent Variables

Variable	Measures	Description
NWP	Frequency of reading newspaper	= 1 if respondent reads newspaper at least ones a week or more; = 0 otherwise
FLR	Frequency of listening to radio	= 1 if respondent listens to radio at least ones a week or more; = 0 otherwise
FWT	Frequency of watching television	= 1 if respondent watches television at least ones a week or more; = 0 otherwise
EHA	General awareness of AIDS	= 1 if respondent has ever heard of AIDS; = 0 otherwise
KCU	Knowledge on condoms	= 1 if respondent knows that one can reduce chances of aids by using condoms during sex; = 0 otherwise
KSP	Knowledge on sexual partners	= 1 if respondent knows that one can reduce chance of aids: have 1 sex partner with no other partner; = 0 otherwise
KSF	Knowledge on sharing food	= 1 if respondent knows that one cannot get aids by sharing food with person who has aids; = 0 otherwise
HLP	Healthy looking person	= 1 if respondent knows that a healthy person can have AIDS; = 0 otherwise
CKI	Comprehensive AIDS knowledge	= 1 if respondent has 1 on all the above four categories (KCU, KSP, KSF and HLP); = 0 otherwise
LIC	Last intercourse used condom	= 1 if respondent did not use a condom during last intercourse; = 0 if condom was used during last intercourse
EMS	Extra-marital sex	= 1 if number other than spouse had sex in the last 12 months > 0; = 0 otherwise (for married individuals only)
PMS	Pre-marital sex	= 1 if total lifetime number of sexual partners is > 1; = 0 otherwise (for never married individuals only)
ABT	Abstinence	= 1 if respondent has had intercourse in the last 12 months; = 0 otherwise
RSP	Relationship with sex partner	= 1 if respondent's last sex partner was not spouse, girlfriend or fiancé; = 0 otherwise
TSP	Total number of sex partners	= 1 if respondent's total lifetime number of sexual partners is > 1; = 0 otherwise

TABLE 1b: Description of Control Variables

Variable	Measures	Description
EDUC	Education level	Four categories: no education, primary, secondary and higher
WEALTH	Wealth Index	Five categories: poorest, poorer, middle, richer, and richest
RELIGION	Religion of correspondent	Eleven categories: Hindu, Muslim, Christian, Sikh, Buddhist/Neo-Buddhist, Jain, Jewish, Parsi/Zoroastrian, No religion, Donyi Polo, and Other
WORK	Current work status	Two categories: Respondent currently working or not
STATE	State of residence	29 States and Territories recorded
AGE	Age in years	Ages between 15 and 54
AGE2	Age ²	AGE variable squared
MS	Marital status	Three categories: never married, currently married and formerly married
LOC	Type of residence location	Two categories: urban or rural

Table 2a: Summary Statistics of Independent and Dependent Variables

VARIABLE	MEN			WOMEN		
	Obs	Mean	Std.Dev	Obs	Mean	Std.Dev
NWP	74304	0.58	0.49	124276	0.30	0.46
FLR	74356	0.47	0.50	124352	0.32	0.47
FWT	74360	0.72	0.45	124361	0.65	0.48
EHA	74362	0.89	0.32	124374	0.71	0.45
KCU	65940	0.84	0.37	88350	0.64	0.48
KSP	65987	0.88	0.33	88376	0.76	0.43
KSF	65969	0.77	0.42	88352	0.73	0.44
HLP	65993	0.77	0.42	88382	0.67	0.47
CKI	74309	0.48	0.50	88361	0.40	0.49
LIC	45328	0.90	0.30	84346	0.93	0.26
PMS	28486	0.92	0.26	30661	0.99	0.10
RSP	45326	0.02	0.14	84334	0.00	0.03
ABT	74369	0.67	0.47	124385	0.76	0.43
EMS	44884	0.01	0.12	87925	0.00	0.05
TSP	74369	0.46	0.50	124385	0.26	0.44

SOURCE

¹"Demographic and Health Surveys," USA, Available from www.measuredhs.com.

TABLE 2b: Summary Statistics of Control Variables

VARIABLE	MEN			WOMEN		
	Obs	Mean	Std.Dev	Obs	Mean	Std.Dev
AGE	74369	30.93	10.77	124385	29.16	9.49
LOC_1 (Urban)	74369	0.51	0.50	124385	0.46	0.50
EDUC_1 (No education)	74338	0.14	0.35	124373	0.32	0.47
EDUC_2 (Primary)	74338	0.15	0.36	124373	0.14	0.35
EDUC_3 (Secondary)	74338	0.55	0.50	124373	0.43	0.50
EDUC_4 (Higher)	74338	0.15	0.36	124373	0.10	0.31
WEALTH_1 (Poorest)	74369	0.10	0.29	124385	0.11	0.32
WEALTH_2 (Poorer)	74369	0.14	0.35	124385	0.14	0.35
WEALTH_3 (Middle)	74369	0.20	0.40	124385	0.19	0.39
WEALTH_4 (Richer)	74369	0.26	0.44	124385	0.24	0.43
WEALTH_5 (Richest)	74369	0.31	0.46	124385	0.31	0.46
MS_1 (Never married)	74369	0.38	0.49	124385	0.25	0.43
MS_2 (Currently married)	74369	0.60	0.49	124385	0.71	0.46
MS_3 (Formerly married)	74369	0.01	0.12	124385	0.05	0.21
RELIGION_1 (Hindu)	74355	0.74	0.44	124227	0.72	0.45
RELIGION_2 (Muslim)	74355	0.13	0.34	124227	0.13	0.34
RELIGION_3 (Christian)	74355	0.09	0.29	124227	0.09	0.28
WORK_1 (Not working)	74339	0.16	0.37	124122	0.65	0.48

SOURCE

¹“Demographic and Health Surveys,” USA, Available from www.measuredhs.com.

TABLE 3a: APE of Newspaper Reading on AIDS-Related Knowledge among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
NWP	0.0666	0.000	0.1242	0.000	0.0652	0.000	0.0490	0.000	0.0820	0.000	0.0733	0.000
EDUC_2	0.1226	0.000	0.0620	0.000	0.0458	0.000	0.0556	0.000	0.0303	0.000	0.0210	0.003
EDUC_3	0.2642	0.000	0.1719	0.000	0.1071	0.000	0.1103	0.000	0.1425	0.000	0.0762	0.000
EDUC_4	0.3911	0.000	0.3271	0.000	0.1535	0.000	0.1526	0.000	0.3294	0.000	0.1722	0.000
WEALTH_2	0.1233	0.000	0.0772	0.000	0.0364	0.000	0.0231	0.006	0.0603	0.000	0.0175	0.041
WEALTH_3	0.1978	0.000	0.1232	0.000	0.0593	0.000	0.0458	0.000	0.1058	0.000	0.0414	0.000
WEALTH_4	0.2520	0.000	0.1873	0.000	0.0909	0.000	0.0630	0.000	0.1816	0.000	0.0741	0.000
WEALTH_5	0.2990	0.000	0.2343	0.000	0.0965	0.000	0.0830	0.000	0.2190	0.000	0.1194	0.000
LOC_1	0.0329	0.000	0.0325	0.000	0.0109	0.001	0.0011	0.717	0.0212	0.000	0.0172	0.000
MS_2	0.0398	0.000	0.0032	0.438	0.0107	0.117	0.0174	0.008	-0.0228	0.002	0.0114	0.075
MS_3	-0.0632	0.004	-0.0096	0.382	0.0141	0.479	-0.0191	0.345	-0.0214	0.313	-0.0012	0.949
WORK_2	-0.0064	0.074	-0.0144	0.006	0.0077	0.078	0.0061	0.115	-0.0310	0.000	-0.0073	0.153
AGE	0.0062	0.000	0.0118	0.000	0.0092	0.000	0.0082	0.000	0.0036	0.002	0.0117	0.000
AGE2	-0.0001	0.000	-0.0002	0.000	-0.0002	0.000	-0.0001	0.000	-0.0001	0.000	-0.0002	0.000
Observations	74218		74162		65829		65876		65858		65882	
Wald Chi ²	9903.44	0.000	15551.47	0.000	5520.72	0.000	4727.89	0.000	8742.27	0.000	6132.96	0.000
Pseudo R ²	0.3536		0.1809		0.1009		0.1037		0.1482		0.0951	

Note: All the regressions included state and religion dummies; NWP is the independent variable and all the knowledge variables are dependent.

TABLE 3b: APE of Newspaper Reading on AIDS-Related Knowledge among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
NWP	0.0903	0.000	0.0841	0.000	0.0744	0.000	0.0633	0.000	0.0658	0.000	0.0561	0.000
EDUC_2	0.1747	0.000	0.0264	0.000	0.0638	0.000	0.0485	0.000	0.0510	0.000	0.0208	0.001
EDUC_3	0.3973	0.000	0.1144	0.000	0.1958	0.000	0.1275	0.000	0.1935	0.000	0.1150	0.000
EDUC_4	0.6600	0.000	0.2736	0.000	0.3481	0.000	0.1998	0.000	0.3925	0.000	0.2833	0.000
WEALTH_2	0.1171	0.000	0.0196	0.001	0.0282	0.003	0.0254	0.004	0.0335	0.001	0.0141	0.169
WEALTH_3	0.2324	0.000	0.0568	0.000	0.1086	0.000	0.0648	0.000	0.0941	0.000	0.0538	0.000
WEALTH_4	0.3423	0.000	0.0907	0.000	0.1478	0.000	0.0918	0.000	0.1567	0.000	0.0935	0.000
WEALTH_5	0.4236	0.000	0.1253	0.000	0.1889	0.000	0.1176	0.000	0.1959	0.000	0.1478	0.000
LOC_1	0.0510	0.000	0.0249	0.000	0.0195	0.000	-0.0004	0.889	0.0150	0.000	0.0175	0.000
MS_2	-0.0073	0.157	0.0109	0.000	0.0738	0.000	0.0460	0.000	-0.0361	0.000	0.0059	0.325
MS_3	-0.0158	0.044	0.0023	0.620	0.0482	0.000	0.0363	0.000	-0.0455	0.000	0.0092	0.394
WORK_2	0.0045	0.037	0.0116	0.001	0.0004	0.904	0.0065	0.034	-0.0046	0.142	0.0115	0.001
AGE	0.0111	0.000	0.0123	0.000	0.0175	0.000	0.0123	0.000	0.0082	0.000	-0.0002	0.870
AGE2	-0.0002	0.000	-0.0002	0.000	-0.0003	0.000	-0.0002	0.000	-0.0002	0.000	0.0000	0.562
Observations	123840		87988		87975		88000		87979		88009	
Wald Chi ²	33247.56	0.000	15830.54	0.000	12871.34	0.000	10444.51	0.000	12410.01	0.000	9012.92	0.000
Pseudo R ²	0.3989		0.1571		0.133		0.1216		0.1456		0.091	

Note: All the regressions included state and religion dummies; NWP is the independent variable and all the knowledge variables are dependent.

TABLE 4a: APE of Radio Listening on AIDS-Related Knowledge among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
FLR	0.0373	0.000	0.0686	0.000	0.0351	0.000	0.0274	0.000	0.0470	0.000	0.0329	0.000
EDUC_2	0.1635	0.000	0.0654	0.000	0.0729	0.000	0.0806	0.000	0.0538	0.000	0.0452	0.000
EDUC_3	0.3825	0.000	0.2052	0.000	0.1716	0.000	0.1654	0.000	0.2078	0.000	0.1348	0.000
EDUC_4	0.5399	0.000	0.3775	0.000	0.2298	0.000	0.2168	0.000	0.4154	0.000	0.2434	0.000
WEALTH_2	0.1340	0.000	0.0602	0.000	0.0428	0.000	0.0279	0.004	0.0598	0.000	0.0222	0.019
WEALTH_3	0.2288	0.000	0.1015	0.000	0.0729	0.000	0.0569	0.000	0.1081	0.000	0.0521	0.000
WEALTH_4	0.3065	0.000	0.1638	0.000	0.1151	0.000	0.0814	0.000	0.1912	0.000	0.0940	0.000
WEALTH_5	0.3868	0.000	0.2193	0.000	0.1304	0.000	0.1123	0.000	0.2433	0.000	0.1532	0.000
LOC_1	0.0360	0.000	0.0382	0.000	0.0137	0.000	0.0031	0.291	0.0251	0.000	0.0196	0.000
MS_2	0.0411	0.000	0.0010	0.726	0.0096	0.212	0.0177	0.019	-0.0224	0.001	0.0100	0.159
MS_3	-0.0673	0.001	-0.0103	0.179	0.0089	0.695	-0.0285	0.214	-0.0261	0.176	-0.0085	0.688
WORK_2	-0.0096	0.007	-0.0221	0.000	0.0038	0.383	0.0025	0.516	-0.0354	0.000	-0.0114	0.026
AGE	0.0070	0.000	0.0137	0.000	0.0103	0.000	0.0089	0.000	0.0048	0.000	0.0128	0.000
AGE2	-0.0001	0.000	-0.0002	0.000	-0.0002	0.000	-0.0001	0.000	-0.0001	0.000	-0.0002	0.000
Observations	74271		74215		65862		65909		65891		65915	
Wald Chi ²	10189.35	0.000	15087.98	0.000	5337.72	0.000	4594.86	0.000	8470.35	0.000	5930.24	0.000
Pseudo R ²	0.3475		0.177		0.0981		0.1012		0.1452		0.0919	

Note: All the regressions included state and religion dummies; FLR is the independent variable and all the knowledge variables are dependent.

TABLE 4b: APE of Radio Listening on AIDS-Related Knowledge among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
FLR	0.0698	0.000	0.0513	0.000	0.0528	0.000	0.0476	0.000	0.0362	0.000	0.0287	0.000
EDUC_2	0.1656	0.000	0.0260	0.000	0.0664	0.000	0.0551	0.000	0.0554	0.000	0.0252	0.000
EDUC_3	0.4199	0.000	0.1215	0.000	0.2174	0.000	0.1545	0.000	0.2183	0.000	0.1355	0.000
EDUC_4	0.7190	0.000	0.2975	0.000	0.3899	0.000	0.2400	0.000	0.4393	0.000	0.3185	0.000
WEALTH_2	0.0997	0.000	0.0155	0.002	0.0236	0.010	0.0238	0.012	0.0290	0.002	0.0114	0.261
WEALTH_3	0.2075	0.000	0.0475	0.000	0.1009	0.000	0.0651	0.000	0.0881	0.000	0.0515	0.000
WEALTH_4	0.3221	0.000	0.0811	0.000	0.1449	0.000	0.0994	0.000	0.1556	0.000	0.0951	0.000
WEALTH_5	0.4270	0.000	0.1228	0.000	0.1993	0.000	0.1373	0.000	0.2095	0.000	0.1606	0.000
LOC_1	0.0567	0.000	0.0317	0.000	0.0255	0.000	0.0047	0.143	0.0195	0.000	0.0212	0.000
MS_2	-0.0112	0.012	0.0062	0.004	0.0644	0.000	0.0435	0.000	-0.0402	0.000	0.0007	0.900
MS_3	-0.0169	0.013	-0.0003	0.931	0.0414	0.000	0.0345	0.001	-0.0482	0.000	0.0045	0.669
WORK_2	0.0034	0.114	0.0103	0.503	-0.0013	0.706	0.0051	0.100	-0.0056	0.075	0.0107	0.002
AGE	0.0118	0.000	0.0127	0.000	0.0178	0.000	0.0126	0.000	0.0086	0.000	0.0000	0.988
AGE2	-0.0002	0.000	-0.0002	0.000	-0.0003	0.000	-0.0002	0.000	-0.0002	0.000	0.0000	0.530
Observations	123913		88027		88014		88039		88018		88048	
Wald Chi ²	34095.69	0.000	15570	0.000	12831.65	0.000	10464.37	0.000	12330.29	0.000	8885.16	0.000
Pseudo R ²	0.4001		0.1548		0.1318		0.1209		0.1435		0.0897	

Note: All the regressions included state and religion dummies; FLR is the independent variable and all the knowledge variables are dependent.

TABLE 5a: APE of Television Watching on AIDS-Related Knowledge among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
FWT	0.0539	0.000	0.0999	0.000	0.0421	0.000	0.0292	0.000	0.0564	0.000	0.0501	0.000
EDUC_2	0.1567	0.000	0.0749	0.000	0.0686	0.000	0.0759	0.000	0.0553	0.000	0.0421	0.000
EDUC_3	0.3497	0.000	0.2253	0.000	0.1590	0.000	0.1537	0.000	0.2082	0.000	0.1251	0.000
EDUC_4	0.4745	0.000	0.4025	0.000	0.2127	0.000	0.2009	0.000	0.4077	0.000	0.2258	0.000
WEALTH_2	0.1220	0.000	0.0634	0.000	0.0370	0.000	0.0234	0.012	0.0564	0.000	0.0166	0.071
WEALTH_3	0.1952	0.000	0.0973	0.000	0.0580	0.000	0.0452	0.000	0.0952	0.000	0.0375	0.000
WEALTH_4	0.2488	0.000	0.1497	0.000	0.0910	0.000	0.0633	0.000	0.1677	0.000	0.0704	0.000
WEALTH_5	0.3117	0.000	0.1947	0.000	0.1002	0.000	0.0888	0.000	0.2092	0.000	0.1231	0.000
LOC_1	0.0286	0.000	0.0283	0.000	0.0095	0.004	0.0003	0.928	0.0187	0.000	0.0151	0.000
MS_2	0.0435	0.000	0.0009	0.809	0.0087	0.242	0.0161	0.025	-0.0239	0.001	0.0096	0.161
MS_3	-0.0631	0.004	-0.0107	0.260	0.0122	0.572	-0.0256	0.245	-0.0236	0.249	-0.0052	0.799
WORK_2	-0.0088	0.014	-0.0210	0.000	0.0047	0.290	0.0035	0.368	-0.0346	0.000	-0.0109	0.034
AGE	0.0074	0.000	0.0144	0.000	0.0105	0.000	0.0091	0.000	0.0051	0.000	0.0131	0.000
AGE2	-0.0001	0.000	-0.0002	0.000	-0.0002	0.000	-0.0001	0.000	-0.0001	0.000	-0.0002	0.000
Observations	74274		74218		65866		65913		65895		65919	
Wald Chi ²	10555.32	0.000	15097.64	0.000	5337.75	0.000	4596.55	0.000	8498.35	0.000	5956.17	0.000
Pseudo R ²	0.351		0.1782		0.0978		0.1005		0.1449		0.0925	

Note: All the regressions included state and religion dummies; FWT is the independent variable and all the knowledge variables are dependent.

TABLE 5b: APE of Television Watching on AIDS-Related Knowledge among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
FWT	0.1234	0.000	0.0741	0.000	0.0774	0.000	0.0469	0.000	0.0678	0.000	0.0371	0.000
EDUC_2	0.1764	0.000	0.0305	0.000	0.0695	0.000	0.0526	0.000	0.0566	0.000	0.0255	0.000
EDUC_3	0.4201	0.000	0.1375	0.000	0.2221	0.000	0.1452	0.000	0.2204	0.000	0.1356	0.000
EDUC_4	0.6690	0.000	0.3262	0.000	0.3905	0.000	0.2225	0.000	0.4319	0.000	0.3156	0.000
WEALTH_2	0.0961	0.000	0.0133	0.018	0.0163	0.092	0.0178	0.049	0.0211	0.033	0.0072	0.480
WEALTH_3	0.1792	0.000	0.0424	0.000	0.0832	0.000	0.0502	0.000	0.0682	0.000	0.0412	0.000
WEALTH_4	0.2561	0.000	0.0697	0.000	0.1137	0.000	0.0756	0.000	0.1217	0.000	0.0783	0.000
WEALTH_5	0.3334	0.000	0.1074	0.000	0.1608	0.000	0.1093	0.000	0.1670	0.000	0.1402	0.000
LOC_1	0.0387	0.000	0.0234	0.000	0.0163	0.000	-0.0023	0.469	0.0120	0.000	0.0166	0.000
MS_2	-0.0075	0.168	0.0066	0.008	0.0672	0.000	0.0398	0.000	-0.0423	0.000	-0.0001	0.988
MS_3	-0.0153	0.068	-0.0012	0.792	0.0425	0.000	0.0302	0.002	-0.0512	0.000	0.0033	0.757
WORK_2	0.0068	0.001	0.0129	0.000	0.0013	0.695	0.0070	0.022	-0.0035	0.260	0.0121	0.000
AGE	0.0117	0.000	0.0127	0.000	0.0179	0.000	0.0126	0.000	0.0087	0.000	0.0001	0.964
AGE2	-0.0002	0.000	-0.0002	0.000	-0.0003	0.000	-0.0002	0.000	-0.0002	0.000	0.0000	0.526
Observations	123922		88033		88020		88045		88024		88054	
Wald Chi ²	35628.56	0.000	15555.04	0.000	12858.74	0.000	10321.67	0.000	12422.6	0.000	8881.51	0.000
Pseudo R ²	0.4099		0.1552		0.1325		0.1198		0.1452		0.0898	

Note: All the regressions included state and religion dummies; FWT is the independent variable and all the knowledge variables are dependent.

TABLE 6a: APE of AIDS-Related Knowledge on Condom Use among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
LIC	-0.0433	0.000	-0.0242	0.000	-0.0431	0.000	-0.0266	0.000	-0.0164	0.000	-0.0147	0.000
EDUC_2	-0.0065	0.609	-0.0166	0.185	-0.0106	0.467	-0.0119	0.415	-0.0126	0.394	-0.0126	0.383
EDUC_3	-0.0837	0.000	-0.0926	0.000	-0.0804	0.000	-0.0858	0.000	-0.0865	0.000	-0.0871	0.000
EDUC_4	-0.1942	0.000	-0.1957	0.000	-0.1888	0.000	-0.1961	0.000	-0.1949	0.000	-0.1959	0.000
WEALTH_2	-0.0395	0.020	-0.0489	0.003	-0.0370	0.066	-0.0383	0.057	-0.0363	0.073	-0.0390	0.051
WEALTH_3	-0.0843	0.000	-0.0981	0.000	-0.0853	0.000	-0.0877	0.000	-0.0852	0.000	-0.0883	0.000
WEALTH_4	-0.1271	0.000	-0.1386	0.000	-0.1249	0.000	-0.1280	0.000	-0.1246	0.000	-0.1287	0.000
WEALTH_5	-0.1993	0.000	-0.2065	0.000	-0.1966	0.000	-0.2007	0.000	-0.1966	0.000	-0.2009	0.000
LOC_1	-0.0252	0.000	-0.0257	0.000	-0.0273	0.000	-0.0280	0.000	-0.0277	0.000	-0.0277	0.000
MS_2	0.2406	0.000	0.2300	0.000	0.2553	0.000	0.2538	0.000	0.2603	0.000	0.2516	0.000
MS_3	0.2433	0.000	0.2323	0.000	0.2598	0.000	0.2577	0.000	0.2654	0.000	0.2555	0.000
WORK_2	-0.0005	0.941	-0.0006	0.931	-0.0016	0.825	-0.0023	0.753	-0.0023	0.755	-0.0020	0.791
AGE	-0.0135	0.000	-0.0133	0.000	-0.0146	0.000	-0.0147	0.000	-0.0147	0.000	-0.0145	0.000
AGE2	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.0002	0.000	0.0002	0.000
Observations	45272		45246		39478		39502		39491		39506	
Wald Chi ²	4292.28	0.000	4367.85	0.000	3864.08	0.000	3826.83	0.000	3838.88	0.000	3827.2	0.000
Pseudo R ²	0.1904		0.1903		0.18		0.1775		0.1773		0.177	

Note: All the regressions included state and religion dummies; LIC is the dependent variable and all the knowledge variables are independent.

TABLE 6b: APE of AIDS-Related Knowledge on Condom Use among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
LIC	-0.0246	0.000	-0.0215	0.000	-0.0390	0.000	-0.0134	0.000	-0.0146	0.000	-0.0083	0.002
EDUC_2	-0.0205	0.001	-0.0223	0.027	-0.0198	0.047	-0.0226	0.020	-0.0227	0.023	-0.0237	0.016
EDUC_3	-0.0731	0.000	-0.0912	0.000	-0.0834	0.000	-0.0940	0.000	-0.0938	0.000	-0.0966	0.000
EDUC_4	-0.2127	0.000	-0.2391	0.000	-0.2304	0.000	-0.2499	0.000	-0.2490	0.000	-0.2528	0.000
WEALTH_2	-0.0168	0.070	0.0048	0.794	0.0058	0.753	0.0040	0.822	0.0049	0.788	0.0040	0.824
WEALTH_3	-0.0366	0.000	-0.0188	0.304	-0.0123	0.494	-0.0201	0.257	-0.0187	0.303	-0.0208	0.246
WEALTH_4	-0.0735	0.000	-0.0613	0.002	-0.0527	0.006	-0.0632	0.001	-0.0618	0.001	-0.0647	0.001
WEALTH_5	-0.1342	0.000	-0.1220	0.000	-0.1115	0.000	-0.1255	0.000	-0.1249	0.000	-0.1277	0.000
LOC_1	-0.0169	0.000	-0.0206	0.000	-0.0205	0.000	-0.0212	0.000	-0.0211	0.000	-0.0210	0.000
MS_2	0.1118	0.000	0.1693	0.000	0.1658	0.000	0.1592	0.000	0.1662	0.000	0.1622	0.000
MS_3	0.1254	0.000	0.1929	0.000	0.1905	0.000	0.1806	0.000	0.1891	0.000	0.1839	0.000
WORK_2	-0.0026	0.194	-0.0018	0.506	-0.0022	0.428	-0.0023	0.413	-0.0024	0.396	-0.0022	0.423
AGE	-0.0118	0.000	-0.0150	0.000	-0.0146	0.000	-0.0151	0.000	-0.0151	0.000	-0.0152	0.000
AGE2	0.0002	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000
Observations	84068		56768		56764		56778		56765		56779	
Wald Chi ²	5689.14	0.000	4282.96	0.000	4243.06	0.000	4185.36	0.000	4195.16	0.000	4200.38	0.000
Pseudo R ²	0.1704		0.1538		0.1577		0.1522		0.1524		0.152	

Note: All the regressions included state and religion dummies; LIC is the dependent variable and all the knowledge variables are independent.

TABLE 7a: APE of AIDS-Related Knowledge on Pre-Marital Sex among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
PMS	-0.0429	0.000	-0.0078	0.028	-0.0196	0.000	-0.0186	0.001	0.0013	0.770	-0.0040	0.331
EDUC_2	-0.0113	0.186	-0.0164	0.034	-0.0086	0.426	-0.0078	0.467	-0.0096	0.364	-0.0094	0.376
EDUC_3	-0.0062	0.406	-0.0152	0.027	0.0021	0.810	0.0025	0.779	-0.0009	0.921	-0.0002	0.979
EDUC_4	0.0072	0.339	-0.0016	0.813	0.0170	0.053	0.0172	0.050	0.0130	0.139	0.0145	0.097
WEALTH_2	0.0090	0.183	0.0032	0.596	0.0117	0.179	0.0115	0.188	0.0109	0.200	0.0111	0.197
WEALTH_3	0.0173	0.004	0.0090	0.092	0.0226	0.003	0.0226	0.003	0.0210	0.004	0.0216	0.003
WEALTH_4	0.0245	0.000	0.0155	0.002	0.0311	0.000	0.0310	0.000	0.0289	0.000	0.0298	0.000
WEALTH_5	0.0361	0.000	0.0262	0.000	0.0449	0.000	0.0449	0.000	0.0423	0.000	0.0435	0.000
LOC_1	0.0094	0.013	0.0084	0.027	0.0083	0.037	0.0086	0.030	0.0087	0.028	0.0088	0.026
WORK_2	-0.0306	0.000	-0.0299	0.000	-0.0292	0.000	-0.0292	0.000	-0.0292	0.000	-0.0291	0.000
AGE	-0.0215	0.000	-0.0221	0.000	-0.0216	0.000	-0.0217	0.000	-0.0220	0.000	-0.0220	0.000
AGE2	0.0003	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000	0.0003	0.000
Observations	28441		28413		26355		26376		26372		26379	
Wald Chi ²	1044.01	0.000	1000.44	0.000	1015.57	0.000	1012.29	0.000	1009.21	0.000	1009.96	0.000
Pseudo R ²	0.0667		0.0631		0.0675		0.0673		0.0663		0.0665	

Note: All the regressions included state and religion dummies; PMS is the dependent variable and all the knowledge variables are independent.

TABLE 7b: APE of AIDS-Related Knowledge on Pre-Marital Sex among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
PMS	-0.0045	0.044	-0.0001	0.969	-0.0041	0.023	-0.0020	0.285	-0.0015	0.428	0.0026	0.076
EDUC_2	0.0000	0.647	0.0000	0.233	0.0000	0.220	0.0000	0.207	0.0000	0.226	0.0000	0.263
EDUC_3	0.0000	0.219	0.0000	0.006	0.0000	0.003	0.0000	0.005	0.0000	0.005	0.0000	0.010
EDUC_4	0.0000	0.021	0.0000	0.002	0.0000	0.001	0.0000	0.002	0.0000	0.002	0.0000	0.004
WEALTH_2	0.0000	0.010	0.0000	0.009	0.0000	0.008	0.0000	0.011	0.0000	0.009	0.0000	0.010
WEALTH_3	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001
WEALTH_4	0.0000	0.000	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001
WEALTH_5	0.0000	0.000	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001	0.0000	0.001
LOC_1	0.0017	0.227	0.0014	0.353	0.0014	0.357	0.0013	0.367	0.0014	0.341	0.0014	0.359
WORK_2	-0.0029	0.058	-0.0016	0.328	-0.0015	0.351	-0.0015	0.339	-0.0016	0.319	-0.0015	0.348
AGE	-0.0045	0.000	-0.0040	0.000	-0.0040	0.000	-0.0040	0.000	-0.0040	0.000	-0.0041	0.000
AGE2	0.0001	0.000	0.0001	0.000	0.0001	0.000	0.0001	0.000	0.0001	0.000	0.0001	0.000
Observations	26619		21878		21876		21882		21875		21886	
Wald Chi ²												
Pseudo R ²	0.1954		0.2139		0.2165		0.2144		0.2142		0.2147	

Note: All the regressions included state and religion dummies; PMS is the dependent variable and all the knowledge variables are independent.

TABLE 8a: APE of AIDS-Related Knowledge on Extra-Marital Sex among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
EMS	0.0054	0.010	0.0021	0.106	0.0060	0.002	0.0007	0.731	-0.0005	0.710	0.0018	0.215
EDUC_2	0.0025	0.277	0.0033	0.140	0.0037	0.147	0.0036	0.138	0.0036	0.129	0.0035	0.145
EDUC_3	-0.0022	0.196	-0.0012	0.466	-0.0023	0.180	-0.0016	0.317	-0.0015	0.367	-0.0018	0.254
EDUC_4	-0.0033	0.133	-0.0024	0.258	-0.0032	0.133	-0.0024	0.234	-0.0021	0.300	-0.0027	0.189
WEALTH_2	0.0035	0.239	0.0041	0.145	0.0031	0.332	0.0034	0.276	0.0034	0.271	0.0035	0.269
WEALTH_3	0.0050	0.110	0.0058	0.054	0.0047	0.160	0.0050	0.124	0.0050	0.119	0.0050	0.125
WEALTH_4	0.0023	0.434	0.0033	0.258	0.0020	0.508	0.0024	0.408	0.0026	0.384	0.0024	0.416
WEALTH_5	0.0021	0.513	0.0027	0.384	0.0015	0.632	0.0022	0.485	0.0022	0.479	0.0020	0.534
LOC_1	-0.0019	0.112	-0.0017	0.156	-0.0023	0.068	-0.0022	0.090	-0.0022	0.092	-0.0022	0.082
WORK_2	-0.0064	0.013	-0.0064	0.013	-0.0060	0.044	-0.0060	0.046	-0.0060	0.047	-0.0061	0.042
AGE	-0.0019	0.000	-0.0019	0.000	-0.0016	0.004	-0.0016	0.005	-0.0016	0.005	-0.0016	0.005
AGE2	0.0000	0.010	0.0000	0.009	0.0000	0.071	0.0000	0.096	0.0000	0.090	0.0000	0.087
Observations	44828		44804		38785		38811		38798		38814	
Wald Chi ²	319.84	0.000	314.62	0.000	301.75	0.000	300.81	0.000	299.87	0.000	301.34	0.000
Pseudo R ²	0.0477		0.0463		0.0506		0.0482		0.0482		0.0484	

Note: All the regressions included state and religion dummies; EMS is the dependent variable and all the knowledge variables are independent.

TABLE 8b: APE of AIDS-Related Knowledge on Extra-Marital Sex among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
EMS	-0.0005	0.247	-0.0001	0.766	-0.0004	0.362	-0.0004	0.362	0.0004	0.463	-0.0005	0.234
EDUC_2	-0.0002	0.083	-0.0001	0.248	-0.0001	0.264	-0.0001	0.263	-0.0001	0.232	-0.0001	0.261
EDUC_3	-0.0002	0.056	-0.0001	0.156	-0.0001	0.205	-0.0001	0.190	-0.0002	0.097	-0.0001	0.192
EDUC_4	-0.0002	0.255	-0.0001	0.387	-0.0001	0.459	-0.0001	0.423	-0.0002	0.243	-0.0001	0.462
WEALTH_2	0.0000	0.941	0.0003	0.531	0.0003	0.531	0.0003	0.522	0.0004	0.532	0.0003	0.527
WEALTH_3	-0.0001	0.539	0.0002	0.626	0.0002	0.623	0.0002	0.611	0.0002	0.639	0.0002	0.617
WEALTH_4	0.0001	0.754	0.0005	0.400	0.0005	0.397	0.0005	0.385	0.0005	0.415	0.0005	0.391
WEALTH_5	0.0003	0.370	0.0008	0.320	0.0008	0.318	0.0008	0.303	0.0008	0.334	0.0008	0.312
LOC_1	0.0009	0.050	0.0006	0.235	0.0006	0.228	0.0006	0.239	0.0006	0.241	0.0006	0.234
WORK_2	0.0005	0.218	0.0009	0.098	0.0009	0.098	0.0009	0.099	0.0009	0.103	0.0010	0.095
AGE	0.0000	0.977	0.0002	0.441	0.0002	0.434	0.0002	0.438	0.0001	0.458	0.0001	0.451
AGE2	0.0000	0.903	0.0000	0.489	0.0000	0.480	0.0000	0.486	0.0000	0.511	0.0000	0.500
Observations	87357		56974		56971		56981		56972		56984	
Wald Chi ²	144.28	0.000	101.16	0.000	102.58	0.000	111.6	0.000	99.46	0.000	103.27	0.000
Pseudo R ²	0.0507		0.0507		0.051		0.0511		0.051		0.0513	

Note: All the regressions included state and religion dummies; EMS is the dependent variable and all the knowledge variables are independent.

TABLE 9a: APE of AIDS-Related Knowledge on Abstinence among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
ABT	0.0330	0.000	0.0062	0.000	0.0139	0.000	0.0125	0.000	-0.0031	0.160	0.0063	0.003
EDUC_2	0.0223	0.127	0.0410	0.003	0.0090	0.609	0.0087	0.621	0.0140	0.421	0.0121	0.494
EDUC_3	0.0080	0.533	0.0377	0.002	-0.0148	0.319	-0.0142	0.342	-0.0040	0.791	-0.0097	0.517
EDUC_4	-0.0327	0.016	-0.0038	0.763	-0.0598	0.000	-0.0583	0.000	-0.0457	0.003	-0.0551	0.000
WEALTH_2	-0.0251	0.055	-0.0075	0.533	-0.0316	0.050	-0.0304	0.059	-0.0276	0.080	-0.0310	0.053
WEALTH_3	-0.0576	0.000	-0.0327	0.003	-0.0720	0.000	-0.0709	0.000	-0.0657	0.000	-0.0707	0.000
WEALTH_4	-0.0770	0.000	-0.0507	0.000	-0.0940	0.000	-0.0927	0.000	-0.0859	0.000	-0.0925	0.000
WEALTH_5	-0.1065	0.000	-0.0782	0.000	-0.1263	0.000	-0.1251	0.000	-0.1173	0.000	-0.1252	0.000
LOC_1	-0.0032	0.083	-0.0024	0.190	-0.0033	0.102	-0.0033	0.098	-0.0034	0.093	-0.0036	0.075
MS_2	0.7582	0.000	0.8053	0.000	0.7146	0.000	0.7158	0.000	0.7289	0.000	0.7187	0.000
MS_3	0.7404	0.000	0.7777	0.000	0.7027	0.000	0.7043	0.000	0.7159	0.000	0.7064	0.000
WORK_2	0.0171	0.000	0.0168	0.000	0.0172	0.000	0.0172	0.000	0.0171	0.000	0.0172	0.000
AGE	0.0142	0.000	0.0144	0.000	0.0153	0.000	0.0153	0.000	0.0155	0.000	0.0154	0.000
AGE2	-0.0002	0.000	-0.0002	0.000	-0.0002	0.000	-0.0002	0.000	-0.0002	0.000	-0.0002	0.000
Observations	74283		74230		65874		65921		65903		65927	
Wald Chi ²	6328.75	0.000	6431.6	0.000	5980.29	0.000	6044.17	0.000	5997.55	0.000	5994.62	0.000
Pseudo R ²	0.7859		0.7845		0.7765		0.7763		0.776		0.7761	

Note: All the regressions included state and religion dummies; ABT is the dependent variable and all the knowledge variables are independent.

TABLE 9b: APE of AIDS-Related Knowledge on Abstinence among Women

Women												
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
ABT	0.0018	0.001	0.0003	0.532	0.0016	0.002	0.0006	0.249	0.0005	0.360	-0.0008	0.084
EDUC_2	0.0025	0.388	-0.0020	0.635	-0.0026	0.583	-0.0022	0.607	-0.0021	0.631	-0.0017	0.668
EDUC_3	-0.0028	0.127	-0.0059	0.052	-0.0076	0.019	-0.0061	0.043	-0.0062	0.048	-0.0050	0.084
EDUC_4	-0.0055	0.002	-0.0085	0.006	-0.0105	0.001	-0.0086	0.005	-0.0088	0.006	-0.0070	0.019
WEALTH_2	0.0007	0.846	-0.0054	0.309	-0.0062	0.295	-0.0053	0.318	-0.0056	0.301	-0.0050	0.311
WEALTH_3	-0.0029	0.287	-0.0081	0.058	-0.0094	0.043	-0.0080	0.060	-0.0083	0.055	-0.0073	0.070
WEALTH_4	-0.0057	0.008	-0.0119	0.000	-0.0137	0.000	-0.0118	0.000	-0.0122	0.000	-0.0108	0.001
WEALTH_5	-0.0071	0.000	-0.0133	0.000	-0.0152	0.000	-0.0131	0.000	-0.0136	0.000	-0.0120	0.000
LOC_1	-0.0005	0.173	-0.0003	0.456	-0.0003	0.480	-0.0003	0.477	-0.0003	0.447	-0.0003	0.468
MS_2	0.9863	0.000	0.9820	0.000	0.9799	0.000	0.9822	0.000	0.9816	0.000	0.9834	0.000
MS_3	0.9471	0.000	0.9659	0.000	0.9653	0.000	0.9659	0.000	0.9660	0.000	0.9658	0.000
WORK_2	0.0008	0.035	0.0003	0.502	0.0003	0.541	0.0003	0.513	0.0003	0.496	0.0003	0.514
AGE	0.0013	0.000	0.0013	0.000	0.0013	0.000	0.0013	0.000	0.0013	0.000	0.0013	0.000
AGE2	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.0000	0.000	0.0000	0.000
Observations	123946		88048		88038		88063		88039		88069	
Wald Chi ²	14004.47	0.000	8290.74	0.000	8203.98	0.000	8284.59	0.000	8304.73	0.000	8303.19	0.000
Pseudo R ²	0.9696		0.9716		0.9717		0.9716		0.9716		0.9716	

Note: All the regressions included state and religion dummies; ABT is the dependent variable and all the knowledge variables are independent.

TABLE 10a: APE of AIDS-Related Knowledge on Sexual Relationships among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
RSP	-0.0014	0.435	0.0007	0.562	0.0024	0.151	0.0014	0.470	-0.0002	0.875	0.0000	0.990
EDUC_2	-0.0556	0.037	-0.0595	0.024	-0.0409	0.215	-0.0395	0.228	-0.0379	0.248	-0.0380	0.247
EDUC_3	-0.0506	0.049	-0.0569	0.023	-0.0462	0.130	-0.0435	0.152	-0.0402	0.186	-0.0407	0.180
EDUC_4	-0.1682	0.000	-0.1769	0.000	-0.1601	0.000	-0.1573	0.000	-0.1535	0.000	-0.1555	0.000
WEALTH_2	-0.0276	0.344	-0.0313	0.278	-0.0016	0.966	-0.0009	0.981	0.0003	0.995	-0.0001	0.999
WEALTH_3	-0.0237	0.434	-0.0288	0.329	-0.0152	0.691	-0.0136	0.723	-0.0119	0.758	-0.0123	0.749
WEALTH_4	-0.0582	0.088	-0.0637	0.056	-0.0596	0.149	-0.0571	0.167	-0.0556	0.183	-0.0559	0.176
WEALTH_5	-0.0654	0.090	-0.0729	0.058	-0.0612	0.176	-0.0583	0.197	-0.0564	0.219	-0.0571	0.207
LOC_1	0.0005	0.695	0.0005	0.723	-0.0003	0.819	-0.0004	0.778	-0.0003	0.801	-0.0004	0.782
MS_2	-0.6957	0.000	-0.7044	0.000	-0.6236	0.000	-0.6224	0.000	-0.6197	0.000	-0.6204	0.000
MS_3	-0.2835	0.000	-0.2796	0.000	-0.2940	0.000	-0.2957	0.000	-0.2956	0.000	-0.2956	0.000
WORK_2	0.0001	0.970	0.0000	0.984	0.0011	0.546	0.0012	0.523	0.0012	0.529	0.0012	0.536
AGE	0.0013	0.001	0.0013	0.001	0.0012	0.008	0.0012	0.007	0.0012	0.007	0.0012	0.008
AGE2	0.0000	0.002	0.0000	0.003	0.0000	0.015	0.0000	0.013	0.0000	0.013	0.0000	0.014
Observations	45270		45244		39478		39501		39490		39505	
Wald Chi ²	3607.72	0.000	3594.98	0.000	3174.8	0.000	3185.47	0.000	3181.09	0.000	3187.12	0.000
Pseudo R ²	0.5734		0.5731		0.572		0.572		0.5719		0.5717	

Note: All the regressions included state and religion dummies; RSP is the dependent variable and all the knowledge variables are independent.

TABLE 10b: APE of AIDS-Related Knowledge on Sexual Relationships among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
RSP	-0.0001	0.699	-0.0002	0.583	-0.0003	0.343	0.0005	0.166	-0.0001	0.643	0.0010	0.024
EDUC_2	0.0000	0.058	0.0000	0.146	0.0000	0.153	0.0000	0.125	0.0000	0.151	0.0000	0.170
EDUC_3	0.0000	0.176	0.0000	0.439	0.0000	0.479	0.0000	0.231	0.0000	0.442	0.0000	0.219
EDUC_4	0.0000	0.007	0.0000	0.026	0.0000	0.025	0.0000	0.028	0.0000	0.026	0.0000	0.016
WEALTH_2	0.0000	0.661	0.0000	0.231	0.0000	0.221	0.0000	0.207	0.0000	0.242	0.0000	0.114
WEALTH_3	0.0000	0.979	0.0000	0.058	0.0000	0.057	0.0000	0.056	0.0000	0.058	0.0000	0.035
WEALTH_4	0.0000	0.105	0.0000	0.021	0.0000	0.021	0.0000	0.030	0.0000	0.022	0.0000	0.019
WEALTH_5	0.0000	0.273	0.0000	0.019	0.0000	0.020	0.0000	0.026	0.0000	0.020	0.0000	0.016
LOC_1	0.0002	0.491	0.0007	0.148	0.0008	0.145	0.0008	0.154	0.0007	0.165	0.0007	0.175
MS_2	0.0000	0.006	0.0000	0.021	0.0000	0.020	0.0000	0.030	0.0000	0.022	0.0000	0.020
MS_3	0.0000	0.006	0.0000	0.020	0.0000	0.019	0.0000	0.029	0.0000	0.020	0.0000	0.018
WORK_2	0.0008	0.013	0.0011	0.026	0.0011	0.026	0.0011	0.025	0.0011	0.026	0.0011	0.023
AGE	0.0001	0.189	0.0002	0.203	0.0002	0.198	0.0002	0.242	0.0002	0.205	0.0002	0.201
AGE2	0.0000	0.185	0.0000	0.219	0.0000	0.211	0.0000	0.258	0.0000	0.218	0.0000	0.212
Observations	79336		42715		42713		42719		42712		42719	
Wald Chi ²												
Pseudo R ²	0.394		0.4538		0.4545		0.456		0.4537		0.4627	

Note: All the regressions included state and religion dummies; RSP is the dependent variable and all the knowledge variables are independent.

TABLE 11a: APE of AIDS-Related Knowledge on Number of Sexual Partners among Men

	Men											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
TSP	0.0207	0.000	0.0028	0.317	0.0085	0.020	-0.0090	0.027	-0.0020	0.556	0.0049	0.132
EDUC_2	0.0051	0.168	0.0079	0.036	0.0041	0.362	0.0052	0.262	0.0048	0.298	0.0044	0.329
EDUC_3	-0.0098	0.010	-0.0060	0.112	-0.0118	0.009	-0.0098	0.031	-0.0105	0.021	-0.0114	0.011
EDUC_4	-0.0304	0.000	-0.0273	0.000	-0.0330	0.000	-0.0304	0.000	-0.0312	0.000	-0.0326	0.000
WEALTH_2	-0.0036	0.446	-0.0014	0.772	-0.0028	0.644	-0.0020	0.748	-0.0022	0.712	-0.0024	0.695
WEALTH_3	-0.0066	0.169	-0.0033	0.493	-0.0059	0.313	-0.0047	0.428	-0.0051	0.390	-0.0054	0.358
WEALTH_4	-0.0140	0.008	-0.0106	0.044	-0.0136	0.030	-0.0121	0.055	-0.0124	0.050	-0.0130	0.038
WEALTH_5	-0.0228	0.000	-0.0196	0.001	-0.0227	0.001	-0.0213	0.003	-0.0217	0.002	-0.0224	0.001
LOC_1	-0.0106	0.001	-0.0099	0.002	-0.0118	0.000	-0.0115	0.000	-0.0113	0.001	-0.0116	0.000
MS_2	-0.7197	0.000	-0.7217	0.000	-0.7139	0.000	-0.7146	0.000	-0.7146	0.000	-0.7141	0.000
MS_3	-0.6548	0.000	-0.6604	0.000	-0.6563	0.000	-0.6580	0.000	-0.6573	0.000	-0.6565	0.000
WORK_2	-0.0620	0.000	-0.0620	0.000	-0.0663	0.000	-0.0665	0.000	-0.0666	0.000	-0.0664	0.000
AGE	-0.0082	0.000	-0.0082	0.000	-0.0077	0.000	-0.0076	0.000	-0.0076	0.000	-0.0077	0.000
AGE2	0.0001	0.000	0.0001	0.000	0.0001	0.000	0.0001	0.000	0.0001	0.000	0.0001	0.000
Observations	74283		74230		65874		65921		65903		65927	
Wald Chi ²	32359.66	0.000	32345.66	0.000	29028.76	0.000	29056.37	0.000	29023.27	0.000	29033.58	0.000
Pseudo R ²	0.4517		0.4516		0.4531		0.4529		0.4529		0.4529	

Note: All the regressions included state and religion dummies; TSP is the dependent variable and all the knowledge variables are independent.

TABLE 11b: APE of AIDS-Related Knowledge on Number of Sexual Partners among Women

	Women											
	EHA		CKI		KCU		KSP		KSF		HLP	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
TSP	-0.0002	0.830	-0.0019	0.049	-0.0023	0.021	-0.0013	0.230	-0.0004	0.683	0.0014	0.150
EDUC_2	-0.0007	0.034	-0.0012	0.071	-0.0012	0.080	-0.0012	0.069	-0.0013	0.060	-0.0012	0.059
EDUC_3	-0.0019	0.000	-0.0029	0.000	-0.0029	0.000	-0.0029	0.000	-0.0030	0.000	-0.0030	0.000
EDUC_4	-0.0029	0.000	-0.0041	0.000	-0.0041	0.000	-0.0042	0.000	-0.0043	0.000	-0.0045	0.000
WEALTH_2	-0.0006	0.102	0.0004	0.646	0.0004	0.636	0.0004	0.642	0.0004	0.649	0.0004	0.672
WEALTH_3	-0.0014	0.003	-0.0007	0.521	-0.0006	0.548	-0.0007	0.511	-0.0007	0.499	-0.0007	0.464
WEALTH_4	-0.0028	0.000	-0.0020	0.109	-0.0019	0.113	-0.0019	0.103	-0.0020	0.099	-0.0020	0.086
WEALTH_5	-0.0044	0.000	-0.0035	0.021	-0.0035	0.022	-0.0035	0.019	-0.0036	0.018	-0.0036	0.015
LOC_1	0.0052	0.000	0.0040	0.001	0.0040	0.001	0.0039	0.001	0.0039	0.001	0.0039	0.001
MS_2	-0.9538	0.000	-0.9626	0.000	-0.9625	0.000	-0.9619	0.000	-0.9620	0.000	-0.9612	0.000
MS_3	-0.9038	0.000	-0.9196	0.000	-0.9198	0.000	-0.9179	0.000	-0.9181	0.000	-0.9165	0.000
WORK_2	0.0009	0.334	0.0023	0.035	0.0023	0.037	0.0023	0.035	0.0023	0.035	0.0023	0.035
AGE	-0.0005	0.144	-0.0012	0.002	-0.0012	0.003	-0.0012	0.002	-0.0013	0.002	-0.0013	0.002
AGE2	0.0000	0.127	0.0000	0.004	0.0000	0.004	0.0000	0.004	0.0000	0.003	0.0000	0.003
Observations	123946		88048		88038		88063		88039		88069	
Wald Chi ²	37709.84	0.000	30481.75	0.000	30496.98	0.000	30504.73	0.000	30508.18	0.000	30526.46	0.000
Pseudo R ²	0.8342		0.8603		0.8604		0.8603		0.8604		0.8604	

Note: All the regressions included state and religion dummies; TSP is the dependent variable and all the knowledge variables are independent.

TABLE 12: Ordered Probit Results Explaining the Marginal Effect of Media on Quality of AIDS Knowledge

	Men						Women					
	NWP		FLR		FWT		NWP		FLR		FWT	
	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val	Coeff.	P-val
CKI2	0.3377	0.00	0.1871	0.00	0.2307	0.00	0.2656	0.00	0.1717	0.00	0.2312	0.00
CKI2=1	-0.0971	0.00	-0.035	0.00	-0.0474	0.00	-0.0409	0.00	-0.021	0.00	-0.0316	0.00
CKI2=2	0.0364	0.00	0.0173	0.00	0.0226	0.00	0.0245	0.00	0.0132	0.00	0.0194	0.00
CKI2=3	0.0359	0.00	0.012	0.00	0.0165	0.00	0.0113	0.00	0.0056	0.00	0.0086	0.00
CKI2=4	0.0205	0.00	0.005	0.00	0.0072	0.00	0.0043	0.00	0.002	0.00	0.0031	0.00
CKI2=5	0.0042	0.00	0.0007	0.00	0.0011	0.00	0.0007	0.00	0.0003	0.00	0.0005	0.00
Observations	65793		65826		65830		87915		87954		87960	
Wald Chi ²	32313.87	0.00	28935.28	0.00	27125.8	0.00	24973.04	0.00	24772.64	0.00	24774.23	0.00
Pseudo R ²	0.0953		0.0924		0.0924		0.1036		0.1021		0.1024	

Note: Coefficient for CKI2 is not the marginal effect while the coefficients for the outcomes (CKI2 = 1, 2, 3, 4, 5) are marginal effects; all the control variables were included in the regression.

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