EMERGING CHALLENGES AND POLICY PROJECTION ON HIV/AIDS IN INDIA AND SOUTH AFRICA
CHAPTER-V

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5.1 Introduction

The AIDS pandemic—unexpected, unexplained, unspeakably cruel—presents us with a tragedy we can barely comprehend, let alone manage ... AIDS leaves poor societies poorer still, and thus even more vulnerable to infection. It brings in its wake discrimination, prejudice, and often violations of human rights. The challenge cannot be met without resources. But donors can and must do more than that. They must adopt policies and priorities that meet the needs of the countries most affected. And they must raise awareness in their own countries that AIDS is not over. That AIDS is far more than a medical problem, that AIDS is a threat to an entire generation—indeed, a threat to human civilization as a whole.

HIV/AIDS is the most serious challenge and a daunting problem in the world today; it is becoming more and more complex. The global response to the epidemic has taken many forms and shape, the information and communication tools are the most important component of HIV/AIDS programmes. The strategic communication and information are therefore promising initiatives in the response against HIV/AIDS epidemic, because it combines a series of important elements and is designed to stimulate positive and measurable behavior change. Some of the important issues are: The importance of advocacy and community mobilisation; Comprehensive approaches to prevention and the use of communication in reducing stigma; Communication programmes for a wide range of specific audiences such as high-risk groups, which includes Commercial or Female sex worker (CSW/FSW), Truck drivers, Men having sex with Men (MSM), injecting drug users (IDUs) and migrant labours; The role of communication in support of clinical and social services; The care and support of orphans and other vulnerable children; and Selected communication approaches with considerable potential including entertainment-education, telephone hotlines, digital communication and print media.

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1 At a meeting convened by the UN Secretary-General, Kofi Annan, in December 1999.
5.2 The Emerging Challenges of HIV/AIDS in India

People living with HIV/AIDS in India are incredibly from various-diverse backgrounds, cultures and lifestyles. The vast majority of HIV/AIDS infections in India occur through heterosexual sex, and most of those who become infected do not fall under the category of high-risk groups, although members of such groups, including sex workers, truck drivers, men who have sex with men, injecting drug users and migrant workers, do face a proportionately higher risk of infection.³

In contrast to the common perception that HIV/AIDS affects only injecting drug users and gay men, the overwhelming majority of infections in India in fact occur through heterosexual sex. In large numbers of cases, women in monogamous relationships are becoming infected because their husbands have had a number of multiple sexual partners. Women currently account for about 39 per cent of HIV infections in India, and it is thought that this figure is rising.⁴

Another significant trend is that, most of the people becoming infected are in the sexually active and economically productive age group of 15 to 44. This means that most of the people who are living with HIV/AIDS are in the primetime of their working lives, many of them are the sole bread winner of the family. The HIV/AIDS people in India are from diverse backgrounds, many of them cannot be classified as a high-risk group. Nonetheless, it is possible to identify certain populations that face a proportionately greater risk than others. These high-risk groups includes: Commercial or Female sex worker (CSW/FSW); Truck drivers; Men having sex with Men (MSM); injecting drug users (IDUs) and migrant labours.⁵

⁵ Ibid., n.1.
5.2.1 Commercial Sex Workers

Commercial or Female sex workers are widespread in India, and occurs on a much larger scale than in many other countries. Women often get involved as a result of poverty, marital break-up, or because they are forced into it. Although sex work is not strictly illegal in India, associated activities such as running a brothel are. The government has plans to introduce stricter legislation regarding commercial sex in India, a move that has been opposed by the organised sex workers group, who claim that such legislation would just push the trade underground and make it harder to regulate. It would also make it more difficult to reach sex workers with information about HIV, at a time when misinformation about AIDS among this high-risk group would further push the seriousness of HIV/AIDS, for instance, in a recent study it was found that only about 42 per cent of sex workers believe that they can tell whether a client has HIV on the basis of their physical appearance.

Mumbai, which has the largest brothel-based sex industry in India, the HIV prevalence in Mumbai among its sex workers has not fallen below 44 per cent since 2000. Another area where sex workers are heavily affected by the epidemic is the city of Mysore, in South India’s Karnataka state. Around 26 per cent of sex workers in Mysore are living with HIV/AIDS, a situation that is unsurprising given that only 14 per cent of sex workers in the city use condoms consistently with their clients, and 91 per cent never use condoms during sex with their regular partners. In comparison, 80 – 90 per cent of sex workers in Tamil Nadu state report condom use, which correlates with a relatively low HIV prevalence of about 9 per cent.

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One way in which authorities are trying to tackle the epidemic among sex workers in Mysore is through a *smart card* scheme. Each sex workers are provided with these cards that contain their medical details, which must be presented at a health check up at least once every three months to remain valid. On the condition that these appointments are attended, the card can be used to get discounts for food and clothes in certain shops. As well as encouraging sex workers to look after their health, this initiative raises sex worker’s self-esteem by integrating them into mainstream culture. In turn this can help them to take a firmer stance on condom use when negotiating with their clients.\(^{11}\)

Another positive initiative, which is possibly the most successful of its kind in India, has been initiated in West Bengal called *Sonagachi project*, named after the district of central Kolkata (Calcutta) where it is based. This project was started in 1992, with the aim of reaching out to sex worker communities and helping them to overcome HIV on their own terms. Its approach is based around three R’s: Respect; Reliance and Recognition, which means respecting sex workers, relying on them to run the program, and recognising their professional and human rights.\(^{12}\) Sex workers have been trained to act as peer-educators, and sent to brothels to teach others about the nature and cause of HIV/AIDS, and the importance of using condoms with their clients. The campaign also addresses the social and practical barriers that prevent sex workers from using a condom. Madams and pimps are educated about the economic benefits of enforcing condom use in their brothels, and police have been persuaded to stop raiding brothels, because such raids often resulted in sex workers losing income, making them less likely to insist on condom use.\(^{13}\)

By helping to put sex workers in a position where they can respond to their own needs, the *Sonagachi project* has achieved impressive results. Between 1992 and 1995, condom use among sex workers rose from 27 per cent to 82 per cent. By the end of


year 2001, it increased to over 86 per cent. The project continues to have an impact, with HIV prevalence among sex workers in the area falling from 11 per cent in 2001 to less than 4 per cent by the end of the year 2004. The Sonagachi project has become internationally famous for its achievements, and the UN has recommended it as a ‘best practice’ model for other sex worker projects around the world.

5.2.2 Injecting Drug Users

Nationally, HIV prevalence among injecting drug users have been declined slightly from around 13 per cent in 2003 to about 10 per cent in 2005. However, transmission of HIV through injecting drug use is still a major driving factor in the spread of HIV/AIDS in India. This is particularly the case in the north-eastern states of India, such as Manipur, where the HIV prevalence among injecting drug users has been consistently high in recent years. Injecting drug use is also a major problem in urban areas of India, such as Mumbai, Kolkata and Chennai. The alarming levels of infection occurring through needle-sharing have an implication that extends beyond the networks of drug users, such as sex workers, truck drivers, high society party revellers and among the sexually active youths, which can result in infection being passed on to their partners and into the general population. Experts have argued that there needs to be more information aimed at both injecting drug users and their sexual partners.

The Indian government’s approach to drug use is based around law-enforcement and prosecution, with very little done in terms of treating drug users or helping them to

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15 UNAIDS, n.7.
18 Ibid.
stop using drugs. 'Harm reduction,' a method of HIV/AIDS prevention that has been successful in other countries, which acknowledges that drug use occurs and seeks ways to reduce HIV transmission, such prospective measures in the context has not been adopted in the government’s drug policies. However, some states like Manipur have adopted their own harm reduction policies and consider that ‘Harm reduction’ is the urgent, practicable and feasible HIV/AIDS prevention method among injecting drug users and their sex partners.

5.2.3 Truck Drivers

India has one of the largest road networks in the world, involving millions of drivers and helpers. Truck drivers spend long periods of time away from home, and it is a common practice for them to have relations with sex workers while on the road. About 24-34 per cent of truck drivers in various surveys have reported engaging in sex with commercial sex workers. Sometimes, this occurs at roadside ‘dhabas’, which act as both brothels and hotels for truck drivers. In other cases, drivers stop to pick up women from the road side for sex, and transport them to another area, from where somebody else will pick up. Both truck drivers and sex workers move from area to area, often unaware that they are infected with HIV. There is no other entertainment for truck drivers except day-in- and day-out driving. Hence when they stop, they drink, dine and have sex with women. Along with the migratory labours, the transmissions of HIV/AIDS from urban to rural areas are largely shared by the truck drivers in India.

There have been a number of impressive HIV/AIDS and STDs prevention projects aimed at truckers, most of which concerns about the benefit of condom use.

23 Chandrasekaran P., Dallabetta G. et al. (2006), n.9.
24 It is a Hindi term for restaurants or fast food joints, usually in the road side; it is commonly used in Northern India.
Some of these project not only targets truck drivers but also other stakeholders such as gas station employees and migrant labours. A specific example from Mumbai is the AIDS Workplace Awareness campaign, which is mandatory and targets the drivers at the regional transport authority, where their licenses are renewed annually.26

Other campaigns have targeted the wives and partners of truck drivers, who often become infected when their partner returns home after a long absence. Yet as the testimony of one woman in Vijayawada demonstrates, my husband is a truck driver and I got HIV through him. I had never heard of HIV or condoms before that and because I can't read, I couldn't understand any of the posters or banners.27 Hence, it indicates that many a time these campaigns do not always manage to reach those at risk and need.

However, not all the campaign-efforts go waste; there are many instances and signs of successful HIV prevention campaigns among truck drivers. For example, a recent survey of truck drivers in Tamil Nadu, found that the proportion of drivers who reported engaging with commercial sex worker have declined from 14 per cent in 1996 to 2 per cent in 2003.28

5.2.4 Men Who Have Sex with Men (MSM)

Sex between men is highly stigmatised in India and is not openly talked about, making it easy for people to underestimate how commonly it occurs. Studies have shown that sexual activity between men is relatively common in both urban and rural areas of India, although it is illegal.29 In India or elsewhere, a large number of men who has men as sex partner consider themselves a heterosexual and has female partners at the same time. A study in Andhra Pradesh found that 42 per cent of men having sex with men in the sample were married, 50 per cent of them had sexual relations with women within the

26 Ibid.
29 Chandrasekaran P., Dallabetta G. et al. (2006), n.9.
past three months and just under half had not used a condom. Unprotected sex between men can present a high risk to any women that they may subsequently have sex with. The stigma surrounding men who have sex with men, and the fact that their lifestyles are criminalised, makes it hard for both the government and NGOs to reach them with information about HIV. Outreach workers and peer educators working with this high-risk group have frequently been harassed by police, and in some cases arrested. In 2001, four members of the Naz Foundation Trust (an Indian NGO that works with men having sex with men and other groups affected by HIV) were jailed for 47 days after police raided their offices.

I was arrested for promoting homosexuality. The leaflets we use for our outreach work were dubbed obscene. The police claimed that the replica of a penis used to demonstrate the proper use of condoms was actually a sex toy.

Since conditions are so restrictive, there is little information available to men having sex with men in India. Because many of them also have heterosexual relationships, there is a high chance that rising levels of infection among men having sex with men in India will aggravate the epidemic among the general population.

5.2.5 Migrant Workers

A large numbers of Indians have been either moving within India or to neighboring countries or overseas, in search of lucrative jobs or simple livelihood. In some parts of India, three out of four households includes a migrant person.

32 Arif Jafar, a Naz Foundation campaigner on HIV/AIDS in India, reacting to the police harassment during the campaign.
33 Ibid., n.30.
Being mobile in and of itself is not a risk factor for HIV infection. It is the situations encountered and the behaviours possibly engaged in during mobility or migration that increase vulnerability and risk regarding HIV/AIDS.  

In many cases, migration does not change an individual’s sexual behaviour, but leads them to take their established sexual behaviour to areas where there is a higher prevalence of HIV. For some, though, migration does change their sexual behaviour. Long working hours, months of isolation from their family and movement between areas increase the likelihood that an individual will become involved in some casual sexual relationships, which in turn may increase the risk of HIV transmission. Cultural and language barriers also make it hard for the migrant to access information and health services when they are away from their home and communities.

5.3 The Challenges of HIV/AIDS Prevention

The presence of several major languages and hundreds of different dialects in India has made the education of people about HIV/AIDS both complicated and daunting challenges. This means that, although some HIV/AIDS prevention and education can be done at the national level, many of the efforts are best carried out at the state and local level. Each state has its own AIDS prevention and control society, which carries out local initiatives through the guidance of NACO. Under the government’s National AIDS Control Programme, state AIDS control societies were granted funding for youth campaigns, blood safety checks, and HIV testing among other things. Various public platforms were used to raise HIV/AIDS awareness. Voluntary blood donation day, concerts, radio dramas, TV spots and popular HIV messages through movie actor were conveyed to the young children in schools. Teachers and peer educators were trained to


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teach about the subject, and students were educated through active learning sessions, including debates and role playing.\textsuperscript{37}

Under the National AIDS Control Programme, more than 2.5 billion dollars were spent on fighting HIV/AIDS by the end of the year 2006. Besides the government, the resource needed to fight the epidemic came from companies, non-governmental organisations and international agencies, such as the World Bank and the Bill and Melinda Gates Foundation.\textsuperscript{38}

In recent years the prevention campaign has largely focus on condom promotion. Government of India has already supported the installation of condom vending machines in colleges, dhabas (road-side restaurants), stations, gas stations and hospitals. More than 100,000 condom vending machines were installed by the end of the year 2007.\textsuperscript{39} With the support from the United States Agency for International Development (USAID), the government has recently initiated a campaign called \textit{Condom Bindas Boll}, in an effort to break the taboo that currently surrounds condom use in India, and to persuade people that they should not be embarrassed to buy them.\textsuperscript{40}

In one of the unique scheme, health activists in West Bengal have endeavoured to promote condom use through kite flying. Kite flying is a very popular spot of West Bengal before its biggest festival \textit{Durga Puja}. Colourful kites carry the HIV/AIDS message and condom use as a simple and instinctive act, because kite can fly high in the sky and will land at some distant places where activist cannot reach.\textsuperscript{41}

Such impressive initiative is an example of how HIV prevention campaigns can be tailored to suit the local realities and situations of India. It makes an important impact, particularly in rural areas where information and communications are often lacking.

\textsuperscript{39} Ibid.
Small scale campaigns like this are often run or supported by non-governmental organisations, which play a vital role in preventing HIV/AIDS infections throughout India. In some cases, members of high-risk groups have formed their own organisations to respond to the epidemic. The government has however funded a small number of national campaigns to spread awareness about HIV/AIDS to complement the local level initiatives. On World AIDS Day 2007 India flagged off its largest national campaign to date, in the form of a train, which will be visiting some 23 states and over 180 stations, during the course, it will offer education, counselling, exhibition on AIDS and symptomatic treatment.42

5.3.1 Challenges of Testing HIV/AIDS

The general consensus among those fighting AIDS worldwide is that HIV testing should be carried out voluntarily, with the consent of the individual concerned. This view has been supported by the Indian government and NACO, who have helped to establish hundreds of Voluntary Counselling and Testing (VCT) centres in India. By the end of the year 2005 there were more than 873 VCT centres in India, compared to just 62 in 1997.43 These centres tested over 225,600 people for HIV/AIDS during the year 2005.44

Although voluntary testing is officially supported in India, some states have tried to implement their own policies that make people to test HIV/AIDS against their will. In Goa, the state government recently planned to make HIV testing compulsory before marriage, and in Punjab it has been proposed that all people wishing to obtain or retain a driver’s license should be tested for HIV/AIDS.45 Neither of these plans has come to pass, but they have concerned activists, who argue that HIV testing should never be imposed on people against their wishes. Unfortunately, cases of people being tested

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without their consent or knowledge are common in Indian hospitals. In a study in 2002, it was suggested that over 95 per cent of patients listed for surgical procedures are tested against their will, often resulting in their surgery being cancelled.\textsuperscript{46} Hospital staff and health professionals, much like the rest of the Indian population, are often unaware of the facts about HIV/AIDS. This leads to unnecessary fears and, in some cases, causes them to stigmatise HIV positive people and discriminate against them, including testing them without their consent.\textsuperscript{47}

\section*{5.3.2 Challenges of Treatment of People Living With HIV/AIDS}

Highly Active Antiretroviral Therapy (HAART) is one of the important forms of treatment available for HIV/AIDS, that involves the use of Anti-Retroviral Drugs (ARVs), which significantly delays the progression from HIV to AIDS, this form of treatment are in use in developed countries since 1996. HAART comprises multiple anti HIV drugs and are prescribed to HIV positive people, even before they develop symptoms of AIDS, HAART methods includes at least one nucleoside analog,\textsuperscript{48} one protease inhibitor and either a second nucleoside analog called \textit{nucle} or a Non-Nucleoside Reverse Transcription Inhibitor (NNRTI).\textsuperscript{49}

Unfortunately, as the case in many developing countries, access to this mode of treatments are lacking in India, with only about 95,000 people (less than 15 per cent of those in need) receiving ARVs in India by the end of 2006.\textsuperscript{50} Some people manage to access the drugs through private health facilities, which dominate India’s healthcare sector, but the vast majority of people cannot afford to buy treatment privately. While the coverage of treatment remains unacceptably low, improvements are being made. The


\textsuperscript{47} Ibid.

\textsuperscript{48} Also called DNA chain terminator.


government has started to expand access to ARVs in a number of areas, and the national number of ARV centres increased from 25 to around 70 in 2005 alone.51

NACO’s initial one year aim to provide second-line antiretroviral therapy to some 3,000 people in India who have become resistant to first-line drugs. Although it is positive initiatives, but many NGOs and charity workers have voiced concern over the small target number, stating that this figure only represents a tiny percentage of those in need of the drugs.52 *Time is of the essence to save these lives, and NACO’s announcement, although long awaited, is short on urgency and on the scale required.*53

There are also plans to improve the provision of Nevirapine to pregnant mothers with HIV, which can significantly reduce the risk that they will pass infection on to their new born child. It has been reported that, although treatment to prevent mother-to-child transmission is available, some women do not request it, because of the stigma surrounding the HIV/AIDS.54 The large scale of India’s epidemic, the diversity of its spread, and the country’s lack of finances and resources all present barriers to India’s HIV/AIDS programmes. Ironically, India is a major provider of cheap generic copies of ARVs to countries all over the world.55 *It is a sad irony that India is one of the biggest producers of the drugs that have transformed the lives of people with AIDS in wealthy countries. But for millions of Indians, access to these medicines is a distant dream.*56

HIV Treatment programmes in India have to overcome many challenges and obstacles, ranging from patient recruitment to procuring drugs. The following are some of the most significant issues.

51 Ibid.
53 Said Chinkhola Thangsing, M.D., Asia pacific Bureau Chief for the AIDS Healthcare Foundation, based in New Delhi, regarding the provision of ARV drugs by NACO.
56 Joanne Csete, Director of the HIV/AIDS programme at Human Rights Watch, pacifying the HIV/AIDS problem of India.
5.3.2.1 Counselling, Testing, and Treatment Awareness

Counselling and testing is the most important and the first step towards HIV/AIDS problems, it should be taken care and must be initiated judiciously if it had to provide other HIV/AIDS related services. If an individual lacks his or her HIV status or if they don’t know that they are infected, then it becomes difficult to initiate the treatment and care services. Many a time people seek help when they are already infected and seriously ill, a stage when there are fewer opportunities for cost-effective interventions.57

In addition to providing enough HIV counselling and testing facilities to meet demand, it is important to encourage people to use these services. Raising awareness about the benefits and availability of treatment and care services provides people with an incentive to learn their HIV status, and avail for the better treatment and care options there by helping to take off the HIV programmes. However, in many societies fear of stigma and discrimination remains a serious barrier to the testing and counselling services. To help overcome this problem, many countries are moving towards offering every patient an HIV test as a routine part of health care, regardless of symptoms.58

5.3.2.2 Helping People to Meet Programme Requirements

The criteria of patient selection are to determine who is the most likely and eligible to benefit from the ARV treatment. To come to the conclusion, patient must demonstrate that they are able to attend the treatment centre regularly and to adhere to daily medication prescribe by the HIV personnels. To meet the requirement of patient, transport and other infrastructures must be properly kept in line. The treatment programme may also need to help people to find the support they need to cope with the demands of treatment, whether it be from friends, family or support groups. Those who

58 Ibid.
have alcohol or other drug addictions, or depression, need to be helped to overcome their problems before they start treatment.  

5.3.2.3 Nutrition

In the absence of treatment, people with HIV are likely to remain with poor health and shorter lifetime than healthy or longer lifetime if they are provided with proper care and treatment, such as routine medication and an ample nutritious diet. The need for good nutrition also applies to those who are receiving treatment, especially because some of the drugs should be taken on a full stomach, and little is known about the effects of antiretroviral on malnourished people. A study in Singapore in 2006, found that malnourished people were less likely than others to benefit from the medication. Researchers in Malawi say that, severely malnourished patients were six times more likely to die in the first three months of treatment than those with a normal nutritional status.

Furthermore, if someone lacks an adequate food supply then they are less likely to be able to adhere to a daily treatment regimen. Hunger is a much more immediate problem than the threat of AIDS, and desperate people may even resort to selling their drugs to feed themselves and their families. For all of these reasons, nutritional support should be a key component of AIDS treatment programmes.

* DSACS is Delhi State AIDS Control Society.
62 Ibid.
5.3.2.4 Treatment for Other Infections

By the time a person reaches the stage of HIV infection, it is found that most of them are already suffering from opportunistic infections, such as tuberculosis and candidiasis. This is because of either the lack of awareness or because the treatment options are unavailable. Treatment centres must therefore facilitate the accessibility to provide medication for people in desperate need as well as the underlying HIV infection. They must also make patients aware about the possible harmful interactions between antiretroviral and other pharmaceutical drugs as well as alternative therapies. For example, some substances can lower the rate, at which antiretroviral chemicals are absorbed by the body, and so reduce their effectiveness. Conversely, the antiretroviral drug efavirenz can reduce the concentrations of rifabutin drug mend for tuberculosis, which means the dose of rifabutin may need to be increased.63

5.3.2.5 Infrastructure

The success of HIV programmes are base on the sound deliverance of necessary infrastructures and its availability in the treatment centres. Offices, consulting and waiting as well as secure storage for valuable drugs must be ensured. They also require basic facilities to test for anaemia, pregnancy, renal function, white blood cell counts and other factors that may affect treatment.64

In developed countries, decisions about when to start treatment are based on the results of clinical tests called the CD4 test and the viral load test. Ideally these tests should be used and made available everywhere, but in India and many parts of the world they are currently unavailable, as they require expensive equipment, electricity and trained technicians. In theory, decisions about when to start treatment may be based on

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symptoms alone. However in practice some treatment programmes requires to provide medication only to the people who shows the result of CD4 count test.65

5.3.2.6 Reliable Supply Chains

Antiretroviral drugs will not be effective if a person on course misses even a single day. It is therefore essential to maintain an uninterrupted supply of medication, from the source (factories where these drugs are produced) to the consumption end (patients who need these drugs). The maintenance of uninterrupted supply of medicines presents difficulties, because not only in India and South Africa but also in many other countries the distribution systems are weak and unreliable. Transport and communication networks are also poorly developed in these countries.66

The international agencies are particularly concern about such weak infrastructure development, organisations such as AIDS Medicines and Diagnostics Service (AMDS), United States Agency for International Development (USAID), the Clinton Foundation and various other non-governmental organisations have vehemently contributed to remedy such situations. AMDS collects and distributes information about drug pricing and supply chains, as well as it provides technical assistance to the supply chain managers. In September 2005, PEPFAR awarded a contract for supply chain management to a consortium led by John Snow International and Management Sciences for Health. Their system is intended to handle a wide range of HIV/AIDS related products, including drugs and laboratory equipment, for US-funded projects around the world including India and South Africa. Several members of the PEPFAR supply chain consortium also participate in the AMDS.67

65 Ibid
Many developing countries in the world have an acute shortage of trained health workers, this is particularly true in the case of South Africa and India which are largely affected by AIDS and pose a major challenge to the governments' HIV/AIDS programmes. Shortages of trained HIV personnel are one of the most serious problems facing antiretroviral treatment programmes in these countries. One of the reasons for the paucity of health workers in poor countries is the international poaching of doctors and nurses by Europe and North America. Skilled professionals are lured abroad by better working conditions and much better pay. This migration satisfies the needs of the rich countries, but drains resources from nations that can ill afford to lose the workers they have spent so much money training. This is particularly true in the case of India where brain drain is rampant till recently. Rates of health worker migration range from 8 per cent to as high as 60 per cent in some African countries.68

AIDS itself is also responsible for the shortages of health workers in these countries. In some of the worst affected countries, doctors and nurses who treat AIDS patients are dying themselves at such a fast rate that various training colleges struggle to produce enough replacements. This is true in the case of Botswana (a Southern African country), which has lost approximately 17 per cent of its HIV personnel due to AIDS during the period between 1999 and 2005.69

In response to such shortages, many countries are working hard to expand recruitment and training schemes. Some have also sought to ease the shortage of health workers by recruiting doctors and nurses from abroad, against the usual flow of worker migration or it can be appropriately called reverse brain drain. But there are also difficulties that props up if the hired foreign workers do not know the local languages, or are not able to adapt to the local way of life.70

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70 Ibid.
Hence, the only solutions left are to follow the alternatives, such as shifting the routine tasks of AIDS care from more specialised to less specialised staff. Doctors on the other hand can ease their workload by transferring duties to non-physician clinicians; clinicians can shift tasks to nurses or midwives; and the less technical jobs can be handed over to counsellors or community health workers. With sufficient organisation, one treatment specialist can oversee thousands of doctors, who in turn can supervise tens of thousands of clinical officers, nurses, community health workers and informal assistants. This task shifting approach has been quite successful in countries like Botswana and Mozambique. However, it has been argued that such approach should be considered as part of an overall strategy when attempting to address the human resources shortages.

International community has responded well by collectively creating the Global Health Workforce Alliance (GHWA) in 2006. Under the alliance, task forces and working groups were established in order to address specific issues such as technical cooperation, migration and resource mobilisation. One such group, the Task Force for Scaling up Education and Training for Health Workers, aims to encourage governments and donors to invest in the education and training of HIV personnel in resource crunch countries, particularly in Africa.

5.3.2.8 Moving Towards Universal Access

A country where AIDS related activities are already taking place and it has a proper infrastructure system, then it is easier to initiate HIV treatment and care services, such as in antenatal clinics. Otherwise it will be a difficult task to move into rural areas and reach people who have little or no contact with health services or community organisations, or to reach marginalised groups such as refugees, prisoners and injecting drug users. Treatment providers need to look for innovative ways to reach the most

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unfortunate sections of the society as they too strive for universal access to health care services. One example is the use of mobile outreach services to take drugs from treatment centres to outlying communities on a regular basis.\textsuperscript{74}

Another unfortunate section in many cases are the children, HIV positive children are more difficult to treat, because dosages depend on size and weight, many a time standard pills and capsules are often unsuitable for these little futures. The best solution may be to provide drugs and medicines in the form of syrups, but many of these options are either non-existent or unavailable to procure, transport and store (some may require refrigeration). Children often face difficulty in swallowing large pills or unpleasant tasting syrups, as well as coping with side effects.\textsuperscript{75}

The reduction in the rate of mother-to-child-transmission of HIV may do away the need for paediatric treatment, but such utopian situation is unlikely to happen at the moment and one can only hope! As long as this is the reality, testing and treatment facilities for children need to be improved, ARVs prescribe for children needs to be clinically modified and made much more widely available.\textsuperscript{76}

The success and progress depends on the general improvements in the health systems of a country. Many countries lack the resources and capacity needed to help children living with HIV/AIDS, and suffer from a shortage of healthcare workers that are trained to test and treat children. Many HIV positive children are prescribed with cheap antibiotics such as cotrimoxazole, which could fend off illness and potentially save lives. Due to its low cost, the provision of cotrimoxazole is one of the most obvious and immediate ways in which illness and death can be reduced among HIV positive children in resource crunch countries.\textsuperscript{77}

Hence, there is a need for greater research and development on ARVs which can be used in treating children. The development of cheaper and simplified drug

\textsuperscript{75} WHO (2007), n.68.
\textsuperscript{76} \textit{Ibid}.
\textsuperscript{77} \textit{Ibid}.
formulations, fixed dose combination tablets as well as low cost generic versions of ARVs suitable for children can have immense benefits. Even the paediatric drugs that are currently available are simply not reaching enough children, so governments, international organisations and donors need to focus on achieving much wider treatment coverage in this direction. If these improvements are made, then HIV/AIDS problems among children can be significantly reduced. Presently not much progress is initiated in this direction, but more funding, greater advocacy and effort will be required if the challenges surrounding HIV treatment for children are to overcome. 78

5.3.2.9 Changing Mindsets

The assistance provided to the people living with HIV/AIDS in poor countries either by governments, international donors or NGOs mainly consist of home or community based palliative care, this has been continuing since long time. Many support organisations still regard it as the only help in HIV treatment. Therefore it urgently calls for a real change in both mindset and attitude in regards to HIV/AIDS treatment programmes. 79

Access to Anti-Retroviral Therapy (ART) has tripled since the end of the year 2003; however only a few countries, such as Brazil and Botswana could boast of covering over 80 per cent, thereby saving tens of thousands of lives. Though there is a serious challenge to provide treatment to millions, but it is not an impossible task. If enough effort and resources are invested properly, the future of millions of people around the world will be secured. 80

The most effective treatment programmes for HIV/AIDS seems to be those which are led by home and community based organisations. Governments, international agencies, business houses and NGOs or CSOs should strive to mobilise all the sections and sectors of society, if it has to achieve its targets. This means harnessing the united

78 Ibid.
80 Ibid.
strengths of community organisations, faith-based organisations, employers, families and the people living with HIV/AIDS themselves.\textsuperscript{81}

5.3.3 Challenges of HIV/AIDS Stigma and Discrimination

In India, as elsewhere, AIDS is often seen as someone else’s problem, even though it has long moved into the general population. HIV epidemic is misunderstood and stigmatised in Indian society. A person living with HIV/AIDS in India faces various problems, such as: Rejection by families, spouses and communities; Refusal of medical treatment; and even denial in their last rites.\textsuperscript{82} The stigma and discrimination is largely hindering the efforts of HIV prevention programmes, thereby adding to the sufferings of people living with HIV/AIDS. In the environment of strong reactions to HIV/AIDS, it becomes difficult to educate people about how they can avoid infection. Time and again HIV personnels such as outreach workers and peer-educators have been either harass or have been subject to attack, and in schools, teachers sometimes face negative reactions from the parents of children, they object that such teachings on AIDS could spoil the young minds, because it refers to sex.\textsuperscript{83}

Discrimination is also alarmingly common in the health care sector. Negative attitudes from health care staff have generated anxiety and fear among many people living with HIV/AIDS. As a result, many keep their status secret. It is not surprising that among a majority of HIV positive people, AIDS related fear and anxiety, and at times denial of their HIV status, can be traced to traumatic experiences in health care settings. There is an almost hysterical kind of fear at all levels, starting from the humblest sweeper, then ward boy and up to the heads of departments, which make them

\textsuperscript{81} \textit{Ibid.}
\textsuperscript{82} UNDP (2006), “The Socio Economic Impact of HIV and AIDS in India”, n.3.
pathologically scared of having to deal with an HIV positive patient. Wherever they have an HIV patient, the responses are shameful.\textsuperscript{84} A study in 2006 found that about 25 per cent of people living with HIV/AIDS in India had been refused medical treatment simply because they are HIV positive. It also found strong evidence of stigma in the workplace, with 74 per cent of employees not disclosing their status to their employers for fear of discrimination and banishment from job. Out of about 26 per cent who disclose their status of being HIV positive, 10 per cent reported that they faced prejudice as a result.\textsuperscript{85} People in marginalised groups such as female sex workers, Hijras (transgender) and gay men are often stigmatised not only because of their HIV status, but also because they belong to socially excluded group's.\textsuperscript{86}

HIV related stigma and discrimination remains an enormous barrier in fighting the epidemic. Fear of discrimination often prevents people from seeking treatment for AIDS or from admitting their HIV status publicly. People with or suspected of having HIV may be turned away from healthcare services, employment, refused entry to foreign country. In some cases, they may be evicted from home by their families and rejected by their friends and colleagues. The stigma attached to HIV/AIDS can extend into the next generation, placing an emotional burden on those left behind.\textsuperscript{87}

Denial goes hand in hand with discrimination, with many people continuing to deny that HIV exists in their communities. Today, HIV/AIDS threatens the welfare and well being of people throughout the world. At the end of the year 2007, around 33.2 million people were living with HIV/AIDS and during the same year 2.1 million died from AIDS related illness. Combating the stigma and discrimination against people who are affected by HIV/AIDS is as important as developing the medical cures in the process of preventing and controlling the global epidemic.\textsuperscript{88}

\textsuperscript{86} Ibid.
\textsuperscript{87} Ibid.
\textsuperscript{88} Human Rights News (2002), n.78.
So the important questions of how can progress be made to overcome the stigma and discrimination attached to HIV/AIDS and how can people's mindset and attitudes towards AIDS be changed. These are some of the major challenges in governments HIV/AIDS control programmes. Hence for such stance, the only possible solution seems to be the legislation of a proper and strict law. Many a time people who are living with HIV/AIDS lack the knowledge of their rights in the society. They need to be guided and educated, so that they can be able to challenge the discrimination, stigma and denial in the society where they belong. Institutional and other monitoring mechanisms can enforce the rights of people living with HIV/AIDS and provide powerful means of mitigating the worst effects of discrimination and stigma.89

However, no policy or laws can alone combat HIV/AIDS related discrimination. The fear and prejudice that lies at the core of the HIV/AIDS discrimination needs to be tackled at the community and national levels. A more enabling environment needs to be created to increase the visibility of people with HIV/AIDS as a 'normal' person in society.90

5.3.4 Challenges of HIV/AIDS and the Future Prospect in India

Various groups have made predictions about the effect that AIDS will have on India and the rest of Asia in the future, and there has been a lot of dispute about the accuracy of these estimates. For instance, a 2002 report by the CIA's National Intelligence Council predicted 20 million to 25 million AIDS cases in India by the year 2010, which is more than any other country in the world.91 The Indian government responded sharply by calling these figures completely inaccurate, and accused those who cited them of spreading panic.92 The government has also disputed predictions that

89 Ibid.
India’s epidemic is on an African trajectory, although it claims to acknowledge the seriousness of the crisis. But various surveys and studies suggest that the national HIV prevalence India has probably fallen slightly in recent years. This trend is mainly due to a drop in infections in southern states; in other areas there has been no significant decline.

In the north-east, the dual HIV epidemic driven by unsafe sex and injecting drug use is highly concerning. Moreover, there are many areas in the northern states where HIV is increasing, particularly among injecting drug use.

Even if the country’s epidemic does not match the severity of those in southern Africa, it is clear that HIV/AIDS will have a devastating effect on the lives of millions of Indians for many years to come. It is therefore imperative to take an effective action to minimise the anticipated impact.

The challenges India faces to overcome this epidemic are enormous. Yet India possesses ample quantities of resources needed to achieve universal access to HIV prevention and treatment... defeating AIDS will require a significant intensification of our efforts in India, just as in the rest of the world.

5.3.5 Challenges of HIV/AIDS to India’s National Security

During the summer of 2000, UN Security Council passed Resolution 1308 stipulating that HIV/AIDS poses a serious security threat in the world, since then there has been a considerable debate regarding the linkage of HIV/AIDS to nation’s security. However, the EU, Japan, and the United States continue to consider viewing the pandemic in terms of the security priorities, which means that the poor nation’s security will be placed after considering the rich nations security. In early 2004, the Global Health

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95 Sujatha Rao, Director General of NACO about the general increasing trend of HIV/AIDS prevalence in India
Program at the Council on Foreign Relations embarked on an effort to rigorously explore the linkages between the HIV pandemic and national security.\textsuperscript{97}

The threat to national security pose by HIV/AIDS are obvious and reality, in economic front HIV/AIDS disrupt the economic viabilities of a country, like wise a countries political and social setup are being shaken and disturb. HIV/AIDS also importantly challenges the demographic profiles of a country, such as: Uneven sex ratio; uneven age group; orphanage; and old age problems. (Discus in chapter 1, see under sub-heading 1.5).

\section*{5.4 The Emerging Challenges in South Africa}

Despite a considerable investment of national resources and manpower efforts, many people are affected and dying from HIV/AIDS in South Africa. The effectiveness of treatment programmes on HIV/AIDS in South Africa remains threatened due to: Ignorance; Stigma; Discrimination; Gender bias and the emergence of gray and multi-ineffective drugs. HIV/AIDS are spreading rapidly in South Africa, including the countries with large populations such as India. HIV/AIDS continue to pose a big burden not only in South Africa but also Sub-Saharan countries which continues to carry the largest burden of HIV/AIDS, these countries are the home to two-thirds (an estimated 25 million people) of HIV infected people globally.\textsuperscript{98}

In South Africa or any developing countries, poverty reduction remains the main framework in which to confront the HIV/AIDS, as the diseases are often a consequence and a cause of poverty. HIV/AIDS negatively affect the communities’ social and economic fabric. Due to the critical interaction between human security issues, the consideration of human security and human rights are becoming obvious in South Africa.


Moreover the spread of HIV/AIDS among refugees and people living in conflict situations remains a major challenge in the world today. The HIV/AIDS pandemic continues to affect women disproportionately in terms of infection rate, impact and lack of access to prevention, treatment and care. Consideration of vulnerable children, including the 12 million AIDS orphans in Africa, remains a daunting challenge.\(^99\)

5.4.1 Challenges of Prevention, Treatment and Care

For the prevention and treatment of HIV/AIDS, a proven strategy with a comprehensive policy, that integrates the prevention, care and treatment options must be appropriately ensured. Successful programmes contain a balanced response. Condom uses, and harm reduction programmes including needle exchange for injecting drug users, have to be promoted as methods of HIV/AIDS prevention. Most of the health systems in South Africa are showing signs of weak infrastructures and overstretched human resources; given the growing care and treatment needs for HIV/AIDS, maintaining an adequate focus on prevention and care is a major challenge. Provision of treatment requires more predictable and long-term resources. Research into new interventions is therefore needed to deal with changing forms of the diseases. Capacity building for research and health services is also an integral part of the strategy.\(^100\)

5.4.2 Challenges in Financing and Governance

Resources allocated to HIV/AIDS have increased substantially in South Africa because of an increase in its budgets from year to year and despite the increase there is a scant global funding figure in South Africa, moreover a considerable gap remains in terms of external resources to confront the HIV/AIDS menace.\(^101\)

The challenge in governance remains a prime importance in South Africa. Reaching the affected and the poorest people, and the disenfranchised of all societies remains a challenge in South Africa. Women and the marginalised sections of South


\(^{100}\) Ibid.

\(^{101}\) Ibid.
African are already facing barriers in the government’s prevention, treatment and care programmes. The high-risk groups such as: commercial sex worker; truck drivers; men having sex with men; injecting drug users and soldier are often very difficult to bring under the proper policy formulation. People living with HIV/AIDS regularly face stigma and discrimination. This prevents open dialogue, and can lead to poor access and uptake of prevention methods, testing and treatment services.\(^{102}\)

One of the most important and crucial need to address an HIV/AIDS issue is to enable and incorporate youth, women and people affected by the diseases to have a stronger voice in planning, policy and implementation of governmental and non-governmental policies. Strong leadership with political commitment behind effective policies and consequent mobilisation of resources are essential. The acknowledgement among political leaders of the need to address HIV/AIDS is a challenge. The fact that the HIV/AIDS know no institutional or national boundaries is another challenge. Confronting them requires strong cooperation between all partners in society. South Africa has managed to establish cross-sectoral cooperation with concrete results. The Country Coordinating Mechanisms (CCMs) set up to access Global Fund support can play a strong role in catalysing cooperation between different partners, promoting harmonisation and facilitating implementation.\(^{103}\)

Confronting HIV/AIDS often requires a cross-border response, which will be difficult where regional institutions are weak. Increasing the efforts of the private sector to supply resources and skills is a major challenge in South Africa. The private sector has significant untapped potential to invest in the health sector, increasing private sector efforts in the area and their contribution to multilateral initiatives such as: the European Union; the Developing Countries Clinical Trials Partnership (EDCTP); and the Global Fund are important, because the lack of vocal representation and the imbalance of power on global issues also represent a challenge in terms of global governance on health. Many countries do not have the voice, negotiation capacity or voting rights to design and implement global rules to their advantage prominently in researching priorities and

\(^{102}\) Ibid., p.4.

\(^{103}\) Ibid.
regulatory frameworks. The increase in the number and diversity of global initiatives and players in the HIV/AIDS will be an added advantage to South Africa because without global partnership it would further alter the global institutional structure, and poses opportunities and challenges in terms of harmonisation and coherence.\textsuperscript{104} Also discuss in chapter 1 under the sub-heading 1.4 and 1.6 of this thesis.

5.5 Policy Projection on HIV/AIDS in India

Perhaps the greatest challenge the world is facing today is the pandemic of HIV/AIDS, which is likely to have a serious dimensions and implications in the present century. HIV/AIDS in India was first identified among the Commercial Sex Workers (CSW) in Chennai in Tamil Nadu in 1986. Immediately the government of India constituted a high powered National AIDS committee in the same year. The spread of HIV/AIDS is rapid and has entered among all the sections of society in India. Present estimates analyse that one out of 100 Indians is HIV positive.\textsuperscript{105} More than 60 per cent of HIV prevalence rate is absorb among the high-risk groups, especially among the Sexually Transmitted Disease (STD) clinic attendees. Researchers fear that India will soon have a larger number of AIDS cases than any other country in the world.\textsuperscript{106}

Basically, the two predominant HIV risk groups in India correspond to heterosexuality and blood transfusion. HIV/AIDS in India has a social stigma and the discriminations are galore, hence it is surrounded by many confidential issues. Understanding about the dynamic nature of HIV/AIDS infection and its progression to

\textsuperscript{104} Ibid.


\textsuperscript{106} Ibid.
clinical AIDS, are some of the plausible way to check the further spread of HIV pandemic.\textsuperscript{107}

The national AIDS control policy of India principally aims at the following strategy for the prevention and control of the disease, such as: Prevention of further spread of the disease by making the people at large and specially the high risk group’s by educating about its implications and provide them with the necessary tools for protecting themselves from getting infected; Control of Sexually Transmitted Diseases (STDs) among sexually active and economically productive groups together with promotion of condom use as a measure of prevention from HIV infection. (Condom use is the most important component of the prevention strategy of National AIDS Control Programme in India); To provide an enabling socio-economic environment so that individuals and families affected by HIV/AIDS can manage the problem themselves with the help of their family and community support; and lastly the National AIDS control policy seeks to improve the treatment and care services for the people living with AIDS/AIDS in times of their sickness both in hospitals and at homes through community and home based health care services.\textsuperscript{108}

In 1987, the National AIDS Control Programme (NACP) was launched under the ministry of Health and Family Welfare. The national AIDS control program realised the establishment of a number of screening centres throughout the country, which covered the screening of blood products and health education. The focus was initially to screen the foreign students in India. Towards the end of 1981, the National AIDS Control Organisation (NACO) started seeding ground with the programme activities that covered the surveillances in the epicenter of the epidemic. Screening of blood and blood products for safe transfusion, health education and the generation of public awareness through mass communication were initiated in all the major urban areas of India. In 1992, with the support of the international agencies such as World Bank, UNAIDS, UNDP and


\textsuperscript{108} Ibid.
WHO, the ministry formally established the National AIDS Control Organisation with the prime function of policy formulation, prevention and control programmes.\textsuperscript{109}

Enthusiasms and understandings of the current state of HIV/AIDS and predicting the future results and implications are of substantial concern to the national AIDS policy makers, administrators and healthcare systems. Statisticians will have new challenges and a greater role to play in the modelling of the syndrome, developing estimation methods and in collection, analysis and interpretation of AIDS data, which are often incomplete.\textsuperscript{110} There are large discrepancies between observed and estimated number of HIV and AIDS cases in India. Given the magnitude of the endemic and the vast geographical area with dense population in India, the projections of AIDS cases are of critical importance for assessing healthcare needs and planning interventions. However, data in India are inadequate and inaccurate for exact assessment of the size and progression of the endemic.\textsuperscript{111}

5.5.1 National AIDS and National Health Policy 2002

AIDS control program has hitherto been seen as a public health matter dealt by the Ministry of Health and Family Welfare. However, because of the behavioral nature and the strong socio-economic implications, the disease requires to be treated as a developmental issue which impinges on various economic and social sectors of Governmental and non-Governmental activity. As economically productive sections of the population are the most susceptible to the disease, participation of Ministries like Railways, Heavy Industry, Steel, Coal and other public sector undertakings employing large workforce require to be actively involved in the programme. Organised and unorganised sector of industry needs to be mobilised for taking care of the health of the productive sections of their workforce. Social Ministries like Welfare, Women and Child Welfare, Education, etc. should devise and own up the HIV/AIDS control programs


\textsuperscript{111} Ibid.
within their own sectoral jurisdiction. There should be strong budgetary and managerial support to these sectoral programmes from within these Ministries.  

The State Governments at their levels should develop strong ownership of the HIV/AIDS prevention and control programme. As the prevalence of the disease and its implications vary from State to State, the State Governments should devise their own strategies and action programmes for tackling the disease keeping the national objectives in view. It has been observed that wherever there is strong ownership of the program from the State Government side, it has been immensely successful. As high prevalence of the disease is directly related to the degree of urbanisation and consequent high risk behaviour among groups like commercial sex workers, drug users, men having sex with men in these communities, the municipal corporations of large metropolitan cities should be encouraged to draw up their own program strategy for AIDS prevention and control. Direct funding of programmes undertaken by the municipal corporations can go a long way in reducing the administrative bottlenecks and help in effective control of the disease.  

As HIV/AIDS is relatively new to the country, there has been no effective field organisation at the district or sub-district level to tackle the problem. In diseases like leprosy, TB, etc. the district level Societies play a very active role in implementing the programmes and receive funds directly from the national programmes. There is an urgent need to create a similar infrastructure at the district level for prevention and control of HIV/AIDS. This will not only help in quick channelisation of funds but bring in participation of elected representatives of the people from the 3-tier panchayati raj system and urban municipalities. The district administration headed by the District Magistrate/Collector and the Chief Medical Officer of Health should be able to provide the necessary administrative and technical infrastructure for supporting the programme. 

113 Ibid.
114 Ibid.
It is felt that only a large scale mobilisation at the Centre, State, District and sub-district levels through organised sections of the community including non-Governmental organisations can help in effectively prevent further spread of the disease. There is also a great need to strengthen the AIDS Control Organization at the national and the State levels by providing more number of qualified technical and managerial personnel.  

5.5.2 HIV/AIDS Estimation Methods and Process in India

The methodologies followed by the HIV/AIDS sentinel surveillance in India are:

- Use of cross-sectional survey of two fixed-size samples representative of the high and low risk groups is annually conducted;
- The blood samples are thoroughly screened for the possible HIV positive by using two test procedures and its trends are monitored over a period of time;
- Samples for high-risk group are selected from STD clinics and IDUs, and the samples for low-risk group are drawn from antenatal clinics which are employed to evaluate seroprevalence in the country. In India the HIV/AIDS estimation and its processes are mainly based on three popular methods.  

5.5.2.1 The Incidence Curve Method

In this method, estimation models is prepared and fitted to the incidence curve, which are extrapolated into the future possibilities. This method is considered inefficient, because it uses less information and ignores important and vital statistical parameters like incubation period.

5.5.2.2 The Endemic Method

In this method a model is prepared that represents the dynamism of HIV/AIDS, however this method of HIV/AIDS modelling depend on critical but unverifiable assumptions, because it contain various unknown statistical parameters.

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115 Ibid.
117 Ibid.
118 Ibid.
5.5.2.3 The Back-Calculation Method

This method is perhaps the most important method employed for both HIV/AIDS projections and estimations. Under this method the past pattern of HIV infections are reconstructed and on the basis of this enumerations, the number of HIV/AIDS cases are predicted for the future as well as the present status and numbers are enumerated. The back-calculation method depends on three key components: (a) a model for distribution of infection; (b) assumed incubation period and distribution; and (c) observed counts of AIDS cases over a period of time.\textsuperscript{119}

5.5.3 Difficulties and Uncertainties of HIV/AIDS Projection Methods

The methodology being used by HIV/AIDS sentinel surveillance in India inflates a local experience to the national level. It also ignores the sex, urban–rural divide and age structure. Hence, the HIV/AIDS projections and estimation faces major systematic uncertainties and difficulties which are highlighted in the following sub-heading.\textsuperscript{120}

5.5.3.1 Choice of HIV Infection Density

Step functions, Poisson distribution\textsuperscript{121} and logistic growth process are some of the models considered for this function. A standard assumption is that the unobserved times of infection for different individuals are independent. This follows from a stronger assumption that infections occur according to a non-homogeneous Poisson distribution process with intensity. These assumptions may be sometimes violated and the assumed parametric model for the epidemic density may also be incorrect.

5.5.3.2 Incubation Distribution Period

HIV infected person does not develop AIDS immediately. There is often a lengthy period of gap for the infected person to become an AIDS patient, the time periods are noted to be between two to twelve years or even longer. The average time from infection with HIV to the development of AIDS is about eight years. That is, on an

\textsuperscript{119} Ibid., pp. 1.
\textsuperscript{120} Ibid., pp. 2.
\textsuperscript{121} Poisson distribution is a theoretical distribution that is a good approximation to the binomial distribution when the probability is small and the numbers of the trials are large.
average, a person does not develop AIDS until eight years after becoming infected. For most of this period, the person may not have any symptoms and, therefore, may not even be aware that he or she is carrying HIV. This is the most dangerous and critical situation where a person can transmit the infection to others without knowing it. People with full AIDS, of course, remain infectious. For children the incubation period is much shorter because their immune systems are not yet fully developed. Most children who are infected at birth develop AIDS and die within five years. No one is quite sure why some infected individuals develop AIDS at a slower or faster pace than others. Countries where the overall health of the population is poor may have shorter incubation periods, on average, than countries with better health conditions.  

The incubation period for AIDS is therefore random and generally very long. The estimation for this kind of distributions are rather difficult, because the time of infection in the risk groups is generally unknown and unpredictable, except in the blood transfusion-associated cases where the time of infection is retrospectively ascertained from the date of transfusion. Employing back-calculation will be very sensitive to the choice of incubation period. There have been numerous estimates of this period from many sources, such as Weibull, Bacchetti and Jewel models that provide a non-parametric estimate of median time to AIDS, which is between 10 and 11 years. Thus, estimates of mean and median incubation times have lengthened steadily since an early estimate of 4.5 years. This may be the result of the use of antiretroviral therapy or HAART therapy, which prolongs the life by a few months or so, and Weibull model, which fits steadily, the increasing hazard functions.

5.5.3.3 Inaccuracy in AIDS Counts

The diagnosed AIDS counts are generally incomplete owing to non-detection of a large number of cases as well as delay in reporting, which causes under-reporting. A

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123 Ibid.
study in US has astonishing result:\textsuperscript{124} the US data have shown that less than 10 per cent has reported within a month of diagnosis, 50 per cent within 2 months, 85 per cent within one year and 95 per cent within 2 years. There is evidence that the reporting delay varies across geographic regions.\textsuperscript{125}

5.5.4 Difficulties and Uncertainties of Indian HIV/AIDS Data

Due to the fallacy and difficulties in the projection methods as well as the lacunae in statistical methodologies of HIV/AIDS in India, several limitations and difficulties are time and again encountered in ascertaining a valid HIV/AIDS information or data. AIDS data’s are filled with uncertainties an unreliable. The reasons for such uncertainty about HIV/AIDS data’s in India are: (1) Recording and compilation systems are inefficient and inadequate; (2) Due to the sensitive nature of the syndrome, the responses are reliable; (3) Lack of HIV testing laboratories and surveillances in rural areas; (4) Delay in reporting and under-reporting of HIV/AIDS cases; (5) The mean or median incubation time estimates for Indian set-up are poorly available and estimates available elsewhere are not suitable; (6) Non-recording of the dates of HIV infection, diagnosis and report of AIDS cases. Hence the employment and use of back-calculation method in India is not so plausible.\textsuperscript{126}

5.5.5 Alternative Method of Projection and Estimation

For the accuracy and reliability, back-calculation method of HIV/AIDS projection appeared to be the most sort methods. The back-calculation method depends on: (1) HIV infection density; (2) incubation distribution; and (3) AIDS counts. The estimates accruing from the HIV infection density and incubation distribution parameters are most reliable. However, these parameters are unavailable and lacking in several countries, as is


\textsuperscript{125} Ibid.

\textsuperscript{126} Rao, C. Nagaraja and Srivenkataramana, T (2001), n.102, p.3.
the case with India. Further, the data recording system on AIDS counts is inefficient. Thus the back-calculation, though theoretically well-founded and sound methods, is either not applicable or not applied in the India's HIV/AIDS projection and estimation. 127

Therefore, the viable alternative method of projections in India is built around the HIV seropositivity rate.

5.5.5.1 Sero-Positivity Rate

The sero-positivity rate in India is the key parameter for estimating the number of HIV infected heads. Sero-positivity rate is the number of individual infected per 1000 high-risk group individuals who were being tested for virus infection. This includes: Commercial sex workers and their clients; Truck Drivers; IDUs, Men who have sex with men; and Visitors to STD clinics as well as antenatal clinics. However, the people between the age group of 15 – 49 are commonly considered as a major risk group. Since nationwide estimate of seropositivity rate is difficult to obtain and ascertain. Alternatively, this is computed by pooling data on sero-positivity from different STD clinics in the country and it is taken as an overall estimate. It is therefore desirable to validate the fitted model before using it for estimation and projection. The adult HIV incidence of 3 - 4 per cent in India is an alarming signal. However the available data on HIV infections in India represent an incomplete description of the virus spread phenomenon. Back-calculation is a theoretically well accepted method to estimate the number of HIV infections in a particular population. Since the essential elements of this method are not known in India, therefore suitable modifications should be implemented in the HIV/AIDS sentinel surveillance methodology. One such method based on seropositivity rate and population structure of the region is available and suggested as a simple and viable alternative. This method can be made more effective by incorporating information on age, sex and urban–rural status of the individual. The application of the procedure needs computation of seropositivity rates for each group. The exposure to HIV

127 Ibid.
infection may not be the same for all the ages in the range of 15 - 49 years. Hence a further stratification by age or marital status may be useful.\textsuperscript{128}

In epidemiology, the standard errors for rates (or derivatives of functions) and ratios of rates are generally based on the assumption that the counts like HIV positive have either binomial or Poisson distribution. In a large group, the chance of individual acquiring HIV infection in a short period are quite small, so that there is some plausibility to the assumption that acquiring infection is like a series of Bernoulli trials, where the total infection can be approximated by the Poisson distribution. However, when estimating seropositivity rate, it is not just dealt with perfectly homogeneous group of people and the rates are seldom completely stable over the relevant time periods, so that the Bernoulli assumption will be violated to some extent. One consequence of this is a greater variance associated with the counts than would be the case with binomial and Poisson distributions. This is sometimes dealt with by using models incorporating ‘over dispersion’.\textsuperscript{129}

Moreover, since India is a highly diverse country, a state-wise projection of HIV/AIDS data’s are highly desirable because of the following reasons: (1) Infections are not uniformly distributed over the states in India; (2) There is a large variation in the HIV related population characteristics among the states; (3) Most of the time data’s are available state-wise; (4) Separate projection allows effective implementation of intervention strategies, depending on the local conditions; (5) An aggregation over states produces a national estimate as a corollary. The state-wise strata and size of the population can be obtained from census reports. Though the adults are at a greater risk of HIV infection, the exposure may not be the same for all the ages between 14 – 49 years. Thus stratification by age or marital status may further improve the projection.\textsuperscript{130}

\textsuperscript{128} Ibid.
\textsuperscript{129} Ibid., p.4.
\textsuperscript{130} Ibid., p.5.
5.6 Policy Projection on HIV/AIDS in South Africa

The HIV/AIDS policy projections, estimates and models in South Africa are based on the Epidemic Projection Package (EPP). It is developed by the UNAIDS Reference Group on Estimates, Models and Projections. Along with the EPP of UNAIDS and the Spectrum model being developed by the Futures Group are used in South Africa. These model programmes determinates future trends in HIV/AIDS as well as estimate the demographic impact of AIDS in South Africa.131

The goals of South Africa’s HIV/AIDS policies and projections are structured according to the following four areas and its components:132

Firstly, prevention efforts of HIV/AIDS will include; Promotion of safe and healthy sexual behaviours, improvement in the management and control of STD, reduction of Mother to Child HIV Transmission (MCT), as well as it will also include the issues relating to blood transfusion, post-exposure service and an improvement of accessibility to voluntary testing and counseling channels.

Secondly, South Africa follows the following key features in the treatment, care and support goals, these are: facilitation of treatment, care and support services, availability of treatment, care and support in the communities and the development as well as expansion of provisions of health care to all the children and orphans.

Thirdly, the features which are ensured for research, monitoring and surveillance to tame the HIV/AIDS in South Africa are: to ensure and encourage the AIDS vaccine development initiatives, to investigate the treatment and care options and to conduct regular surveillance’s.

Lastly, to take up the speedy plan on HIV/AIDS, the human right issues have been time and again made the central elements of HIV/AIDS policies in South Africa. The key features of these goals are: creation of an appropriate social environment,

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development of suitable legal and policy environment and the establishment of grievances cells on human right abuse.

The national HIV prevalence surveys among pregnant women from 1990 to 2001 and the first national, population based HIV survey in 2002 served as the data sets used to calibrate the input of HIV prevalence values for the model. The scenario created by the model showed that a dramatic rise in HIV prevalence during the 1990s has peaked in 2002 with 4.69 million infected people and it is projected that the epidemic in South Africa has now begun to level off.133

The HIV incidence among adult between the age group of 15 to 49 years have decreased substantially in the past five years since 1997, which is 4.2 per cent and has reach to 1.7 per cent by the end of the year 2003. The annual number of deaths due to HIV/AIDS is projected to cross over 4,00,000 by the year end 2008. The total population of South Africa is expected to be around 23 per cent smaller than it would have been without AIDS by 2020; however, a negative population growth rate is not expected during the projection period. Life expectancy at birth is been projected to be around 45.6 years in the time period between 2005 and 2010, which is 22 years less than it would have been in the absence of AIDS. Over 2.5 million AIDS orphans are projected for South Africa between the time periods of 2005 to 2015. The policy projections, estimates and models play an important role in determining the variables and dynamism of HIV/AIDS, which are often difficult to measure. Therefore, the policy projections of the future HIV/AIDS burden in South Africa significantly underscore the importance of acting now to reduce the number of new infections and plan for medical and social care needs.134

5.6.1 The Process of Policy Projections and Estimation

5.6.1.1 Mechanisms of HIV/AIDS Transmission

HIV/AIDS transmits from one person to another person in a number of ways. Three important and significant transmission routes of HIV were identified in the Republic of South Africa: heterosexual contact, mother-to-child transmission, and blood transfusions. See figure 5.1.\textsuperscript{135}

\textbf{Figure 5.1: The mechanisms of HIV/AIDS transmission in South Africa}

\begin{center}
\includegraphics[width=\textwidth]{figure51.png}
\end{center}

\textit{Source: UNAIDS and Government of South Africa}

\textit{Source: UNAIDS and Government of South Africa}

\textsuperscript{135} AVERT (2004), n.123.
5.6.1.1.1 Heterosexual Contact

Most of the HIV transmission in South Africa is found to be through heterosexual contact. Though the probability and chance of transmitting HIV in a single act of sexual intercourse can be low, but there are number of other factor that increases the risk of infection profoundly, such as the presence of STDs in either of the partner like syphilis or gonorrhea, as well as having a large number of sexual partners. A large proportion of adult males in South Africa are suffering from at least one ailment of STDs and many of them have multiple sexual partners. Hence an astonishing 88 per cent of new HIV infections in South Africa are due to heterosexual contact.\textsuperscript{136}

5.6.1.1.2 Mother to Child Transmission (MCT)

Many children in South Africa acquire HIV/AIDS from their mother during the time of their birth and through breastfeeding after their birth. More than 25 to 40 per cent of babies born in South Africa are infected through these mechanism. Many children on the other hand do not fall under this category but are at a great risk of becoming orphans when their parents die from AIDS. Around 10 per cent of new HIV infections in South Africa are thorough Mother to Child Transmission.\textsuperscript{137}

5.6.1.1.3 Blood Transfusion

Once the blood is infected by HIV, it is certain that it will transmit HIV if the infected blood is use for transfusion. However, it is appreciable that South Africa has a well regulated as well as well maintained blood policy since the very beginning. The processes of blood screening before transfusion are compulsory and stringent in South Africa. Hence as a result, HIV transmission through this mechanism is not significant. HIV infection by this mode therefore accounts about 2 per cent.\textsuperscript{138}

5.6.1.2 Incubation Period

See under 5.5.3 Difficulties and Uncertainties of HIV/AIDS projection methods, sub-heading 5.5.3.2 Incubation distribution period.

\textsuperscript{136} Ibid.
\textsuperscript{137} Rehle, T.M and Shisana, O (2003), n.124.
\textsuperscript{138} AVERT (2004), n.123
5.6.1.3 Data's from Sentinel Surveillance in South Africa

The data's collected from sentinel surveillance system are used for estimating the extent of HIV/AIDS in South Africa. This system operates in both urban and rural settings. Each province has sites at antenatal clinics, where women attend for treatment and care during pregnancy. Blood samples are tested anonymously, and the results are used determining the status of the epidemic. Tests are also conducted on patients attending STD clinics. Surveys among the general population are also conducted in a few communities. Data's from antenatal clinics were generally used for estimating the HIV prevalence rate. The prevalence rate of HIV among pregnant women ranges from 0 to more than 10 per cent in South Africa.\(^{139}\)

The prevalence rate of HIV among the adult population between the age group of 15-49 was about 20 per cent in South Africa by the end of the year 2004, which were based on the results from surveillance at antenatal clinics, because it is considered that HIV prevalence among pregnant women is a good estimate of prevalence among all adults aged 15-49.\(^{140}\)

5.6.1.4 Estimates of HIV Infection by Age and Sex

Since most new infections are transmitted by heterosexual contact, people are at risk of catching the infection as soon as they become sexually active. Infection levels are extremely high among the girls and young women in South Africa. The highest levels of infection among women are in the age group of 20-24 years, whereas for men the level is between the age group of 30-39 years. The overall prevalence rate among women were found to be markedly higher than for males between the age group of 15-24 years, whereas prevalence among men is higher than women the between the age group of 25-39 years.\(^{141}\)

\(^{139}\) South Africa at a glance., n.130.

\(^{140}\) Prevalence estimates from antenatal clinics tend to under-estimate prevalence among all women and overestimate prevalence among men. They also over-estimate prevalence among young women and underestimate among older women. These differences compensate for each other. As a result, prevalence among pregnant women is generally a good estimate of prevalence among all adults aged 15-49.

\(^{141}\) Government of South Africa (2000), n.131.
5.6.2 Estimates and Projections of HIV/AIDS Prevalence

To project the number of HIV/AIDS as well as the number of new infections in the future, it is necessary to make an assumption about how rapidly HIV will grow and continue to spread further. Since the rate of HIV prevalence is continuing and increasing day by day in South Africa, it is likely that the increase will continue in the future as well. Hence various estimates and projections indicate that HIV/AIDS prevalence in South Africa will be about 40 per cent by the year 2015 before it starts declining.142

5.6.2.1 Number of People Living With HIV/AIDS

South Africa has 5.7 million HIV/AIDS by the end of the year 2007. If the HIV prevalence rate does increase to 40 per cent by the year 2015 as indicated, then the number of infected people in the population in South Africa would triple the present number of 5.7 million.143

5.6.2.2 Number of New HIV/AIDS Cases

The projections further elaborates that, every year the number of new HIV/AIDS cases developing out of people living with HIV/AIDS in South Africa will rise to almost 1.6 million by the year 2015. Most of these people will die within a year of developing AIDS. These deaths are a tragedy in South Africa and will have severe consequences in the future.144 See also in chapter one under the heading 1.4 ‘The Economic Implication of HIV/AIDS in South Africa’, as well as under the heading 1.6 ‘The Social Implication of HIV/AIDS in South Africa’.

142 Ibid.
143 Rehle, T.M and Shisana, O (2003), n.124.
144 Ibid.