CHAPTER - 1

INTRODUCTION
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Over the last few decades, Acquired Immunodeficiency Syndrome (AIDS) caused by Human Immunodeficiency Virus (HIV), has been identified as a major public health crisis and a research priority all over the world. With its deleterious effects on mankind, it was described as the most serious health problem since the bubonic plague of the fourteenth century (Koop, 1986). Once enter into the body, Human Immunodeficiency Virus (HIV) destroys the body's immune (defence) system and allows the otherwise controllable opportunistic infections to invade the body in due course of time and cause additional fatal multi-system disease as described by the synonym AIDS over a certain period of time. The disease has been spreaded first among the risk groups in an epidemic form and then to the general population in a pandemic nature.

Since the early days of the epidemic, needle and syringe sharing among injecting drug users (IDUs) has been recognised as one of the major vectors for the spread of the HIV. Sexual transmission of HIV among IDUs, and from IDUs to non-IDU sexual partners has also been a long standing concern, as has perinatal transmission to their children. The number of IDUs diagnosed with AIDS continues to expand in the second decade of the epidemic, as does the number of related cases in IDUs' sexual partners and their children (Robert, et al, 1994). Approximately one-third of AIDS cases are associated with injecting drug use (Centres for Disease Control and Prevention, 1993).

Thus, it has been understood that the twin problem of drug abuse and HIV transmission has turn out to be a serious issue. In India too specially in
Manipur (and Northeastern India), the youthful manpower resources in the age group 15 - 35 years are affected most by both drugs and HIV. Approximately, 74% of all the HIV seropositive cases was represented by IDUs (State AIDS Cell, 1993) in Manipur. In another study, Jain, et al (1994) has reported that 64% of the IDUs are infected by 1993. It is now anticipated that there will be a grave situation in the near future when the AIDS epidemic begins in the region with the existing health care setups and understanding of the disease in the public.

Though much has been explored in Africa and western world regarding the natural history of HIV infection, India, specially the state of Manipur still remains with sporadic reports requiring much to investigate. By now, considerable progress has been made in identifying risk behaviours that contribute to HIV transmission and in enumerating the extent of injecting and sexual risk behaviours specially for IDUs. However, much less progress has been made in identifying the factors that may explain risk behaviours and barriers to risk reduction. Therefore, social network analysis is an important tool for understanding the mechanism of HIV transmission because transmission occur between individuals who make up a network (Friedman and Wypijewska, 1995) of human interaction. Till now, no successful curative medicine has been explored. Studies has suggested that changes of the risky behaviours only help for reducing the spread of HIV (Becker and Joseph, 1988; Catania, et al. 1990; Roehrich, et al. 1994).

To develop a research agenda for the present study, a world wide review on research works related to HIV and AIDS disease and its associated risk factors in both retrospective and prospective aspects are conducted as follows.
1.1 Review of Literature

1.1.1 Emergence of AIDS:

The world came to know for the first time about a new disease when the American scientists had published articles in the prestigious medical journal *The New England Journal of Medicine* on 10th December, 1981. The disease was reported in Los Angeles and subsequently in New-York and California in previously healthy male homosexuals who suffered from *Pneumocystis Carinii Pneumonia* (PCP) and *Kaposi's Sarcoma* (KS) with clinical and laboratory evidence of immune system dysfunction (Centre for Disease Control, 1981a, 1981b; Gottlieb, et al, 1981; Ansary, et al, 1989). Among a large number of homosexuals who are also called Gayman, opportunistic infections caused by microorganisms that rarely give rise diseases in persons with normal immune defence mechanism were also reported (National Academy of Science, 1986a).

By early 1982, the disease was known by a variety of names and acronyms. Some called it Gay plaque. Others called it GRID, for the gay-related immune deficiency. When the disease was detected in groups other than gays such as intravenous drug users, blood transfusion patients and haemophiliaacs (Centre for Disease Control, 1982), the staff members at Centre for Disease Control (CDC) refused to call it GRID because they were aware that the disease was not restricted to homosexuals only. To solve the problem of nomenclature, the experts met under the aegis of CDC in 1982 and came out with a resolution to name the disease AIDS, an acronym for *Acquired Immunodeficiency Syndrome* (Shilts, 1987). Among the heterosexual individuals, the first AIDS cases were recognised from Central Africa and Haiti in 1983 (ASTPHLD, 1994). In India, the first AIDS case was detected in
1987 (NACO's Newsletter, 1992). By the mean time, reports of emergence of AIDS are pouring into the WHO from different countries in the world.

1.1.2 **Discovery of HIV**:

Before the discovery of HIV, AIDS by then was shrouded in mystery because the actual agent was not yet identified till 1983 and those who were infected were inevitably dying, because there was yet no known cure for it. This led to an unprecedented panic among the populace. The stories of ostracism, discrimination and people fleeing from AIDS victims are legion. People started worrying about getting infection from toilet seats and in buses and subways. Even doctors and nurses were affected by this mass hysteria. Many of them refused to treat anyone with the faintest suspicion of AIDS and hospital wards were deserted by other patients (Malaviya, 1990). Therefore, scientists and researchers have taken up a challenge to discover the mysteries of AIDS and remove the fear psychosis by which largely affect the men who furthermore deteriorate their morals to live among themselves.

This story of AIDS and alarming responses of the people in the west and subsequently to other parts of the world has led the European and American physicians to think of what could be the causes of the disease. It was believed to many working in this area that AIDS was probably caused by a certain microorganisms. Some of the major virological laboratories around the world then started the arduous work of discovering the causative agent in right earnest. To mention a few, Paul Fiarino at CDC, J. Levy in San Francisco, A. Karpas in Cambridge, Luc Montaigner at the Institute Pasteur in Paris, Robert Gallo at the National Institute of Health, USA and Max Essex at Harvard, Boston were some of the Scientists who took up the challenge.
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Although, it was suspected that AIDS might be transmitted through sexual relations among homosexually active men, the first strong evidence for the idea did not emerge until the completion of a case control study in June 1982 by epidemiologists at the CDC (Auerbach, et al, 1984). In that investigation, data were obtained from homosexual men in Los Angeles and found that AIDS cases in United States were linked through sexual contact.

Yet, even in the view of this evidence, there were quite a few who doubted that AIDS was caused by some transmissible agents. However, when AIDS cases began to emerge in other population - among individuals who had been injected with blood or blood products but had no other expected risk factors - the transmission vectors for the diseases become somewhat clearer. Such cases were confirmed first among people with haemophilia, followed by blood transfusion recipients and intravenous drug users who shared hypodermic needles. Then, when there were documented cases of AIDS among the heterosexual partners of male IV drug users, it becomes increasingly evident that AIDS was a disease transmitted by the exchange of certain body fluids - primarily blood products and semen. Thus, sexual preference was found not necessarily the only risk factor (National Academy of Sciences, 1986b, Fettner, 1987) for HIV transmission.

As luck would have it, a bright young research fellow Francoise Barrefinoussi working in Montaigner’s Laboratory was the first to peep the others to the post. Working with the lymph node of a patient with early AIDS, she was clearly able to demonstrate the presence of a new virus which was the most likely cause of this dreaded disease - AIDS. Subsequently, the special efforts made by Montaigner’s and later by Robert Gallo’s groups made it possible to grow the virus in the laboratory in bulk amounts. In 1983, Montaigner and his colleagues, in the
Institute of Pasteur (Paris) had confirmed the causative agent and the name Lymphadenopathy Associated Virus (LAV) was given to it. Almost simultaneously in 1984, Robert Gallo and colleagues in USA isolated a retrovirus. They termed it Human T-cell Lymphotrophic Virus type -III (HTLV-III). These two isolates have subsequently been found to be identical, and are now recognised to be the cause of AIDS (Farthing et al, 1987). However, there was a dispute between the two research Institutes to claim to be the first discoverer of AIDS virus. But in 1987, both scientists were given credit for the discovery and in 1991, Gallo dropped his claim to have discovered the virus. In the meantime, the virus was renamed as Human Immuno deficiency Virus (HIV) by an international team of virologists (Connor and Kingman, 1989). Thus, the causative agent for AIDS was finally discovered to be HIV.

More specifically, HIV is a primate retrovirus in the family Retroviridae, sub family Lentivirinae - a type of infectious agent that had previously been identified as causing many animal diseases. The designation of retrovirus derives from the backward or retro flow of genetic information from RNA to DNA, which reverses the normal flow of genetic messages (National Academy of Sciences, 1986b).

Today, the molecular structure of HIV and its responses to treatment was unlike that of two decades ago. Much had been advanced in the molecular and genetic variability of HIV. It has been classified into HIV type 1 and 2 (Biberfeld, et al., 1987). Despite early efforts to standardize the nomenclature of HIV, it remains inconsistent, and there are no widely accepted definition for the HIV types. Some called it as strain and still others used it as subtypes or variants. But, study on this aspect is out of the scope of the present study.
Though the AIDS virus was discovered with an understanding of how it is transferred from one person to another, mysteries are still remain with the origin of HIV and its evolutionary process over time and space within the individual and the community requiring more informative data on its natural course of the illness.

1.1.3 Origin of HIV:

Almost immediately after the first case of AIDS was reported in 1981, researchers at the CDC began tracking the disease backward in time to discover its origin. They ultimately determined that the first cases of AIDS in the United States of America probably occurred in 1977 (Biggar, et al., 1988). Several reports of cases resembling AIDS both clinically and immunologically have appeared in the literature (Katner and Pankey, 1987; Huminer, et al 1987).

Another report rather convincing is that the first case of AIDS in United States may be dated back to the 1960s. This was known when a 15 year old boy who had anal sex was found to have been infected with HIV (Garry, et al, 1988). So, it is believed that HIV or a genetically related virus may have entered several communities before the current epidemic. However, the actual origin is still remain undecided. But different school of thoughts have given different opinions regarding its origin.

One school of thought believed that HIV were existing for decades, nestled in remote regions of Africa and limited to small, relatively isolated population (National Academy of Sciences, 1989). The social mores of those population may not have been conducive to the rapid spread of the disease, and the few cases that did develop could likely have escaped detection against the backdrop of multiple life threatening infections that are common in Africa. As to supplement, after the World
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War -II, the urbanization of Africa was accompanied by social changes and family disruptions, combined with the anonymity of urban life, all of which increased the likelihood of behaviours that contributed to the spread of sexually transmitted diseases. In time, the prevalence of HIV increased sufficiently to make AIDS visible as a new clinical entity in Africa and elsewhere.

An alternative theory suggests that the original source of the AIDS virus was an animal. The African green monkey has been singled out as a prime suspect with the hypothesis that somehow the virus mutated and entered the human population when monkeys bite hunters in the attempt to capture them for food (National Academy of Science, 1986b).

Another hypothesis reflects that AIDS and HIV might have made their ways in North America from Africa via Haiti. More specifically, from the early 1960s through the mid-1970s, there was considerable migration from Zaire to Haiti, and many of this immigrants are believed to have settled in the United States (DeVita, et al, 1985). Haiti was also known for its vacation spot for gay Americans who brought the disease home with them and infected the mainland population (Altman, 1987). In another quarter, there was a belief that AIDS virus was created by Pentagon experiment which was carried out at Forte Detrick, Maryland in 1987 by Soviet scientists in an attempt to launch biological warfare. Dr. Francis Cress Welsing opined that AIDS was an instrument of genocide likely introduced into blacks and other undesirable groups for the purpose of a Systematic depopulation agenda (Welsing, 1987). Whatever may be the theory for the origin of HIV and AIDS, there were two major landmarks in the history of HIV and AIDS evolution:
I) First, the mysteries and intricacies of the virus including its genetic structure and the ways in which it attacked the body's defence system were able to study using the bulk cultures of the AIDS virus.

II) Using the ELISA method for testing the presence of AIDS virus (HIV) and confirmed by Western Blot (WB) among risk groups, the hidden magnitude of the epidemic may be estimated for the development of timely prevention and control strategies all over the world.

Thus, the scope for prospective research to understand the natural history of HIV infection and AIDS epidemic in the light of the bio-socio-cultural networking system has been explored.

1.1.4 Natural History of HIV disease:

As has been known to the clinicians, the natural history of HIV disease or in other words the clinical events secondary to HIV infection occur in a chronological order (Shiv Lal and Sengupta, 1993). Figure 1 summarises the typical clinical course of an HIV infected individual along the number of CD4+ T- lymphocyte counts (Fauci and Lane, 1994). As the group name lentivirus in which the HIV belong suggests that it establishes chronic, slowly progressive infection with long, asymptomatic latency period (Varmus, 1988) and AIDS as the end stage result of the prolonged erosion of the immune system (Burke and Redfield, 1989). Biologically, it begins with as soon as the virus enters the body cell of a susceptible host through any of the sexual or parenteral or perinatal routes and ends with the death of the infected individual in its full blown stage of AIDS. In the study of natural history of HIV infection elsewhere in the World, it has been confirmed that infected individuals passed through a phase in the beginning during which no signs
and symptoms of any associated diseases were detected. This phase of the HIV infection disease is called **Asymptomatic condition**. It is an established fact that there is a spectrum of disease from the point of infection with asymptomatic condition to the development of AIDS with clinical manifestations varying from individual to individual and from community to community taking different courses of **Natural History** or **Clinical Events**. While a clear definition exists for AIDS, the intermediate manifestations of HIV infection are poorly classified. Now, we know little about the natural history of HIV disease. Therefore, study on natural history of HIV infection spectrum is highly needed for better intervention and therapeutic management of AIDS disease.
In fact, in a more broader sense, the natural history does not just begin with its biological infection and end with the death of the ailed person. To extend, the problem behaviours for HIV transmission may be considered as the beginning of natural history of HIV disease and the emotional and economic trauma left after the expiry of the patient may also be considered as the end stage of it. Appearance of clinical events only does not limit the mapping of the natural course of the disease. Anthropometric changes along with the differential nutritional impairment in different stages of HIV may also be considered as part and partial of the natural course of HIV disease (AIDS). Before he dies, there is always a chance for transferring HIV and associated illness to the other members in the community through physical contacts with exchange of body fluid conditioned by cultural system or sub-culture.

There is always variation among different risk groups as well as in different communities. Though, most of the information on natural history of HIV illness has been explored among homosexual and bisexual men, there is a paucity of data for IDUs (Libman and Witzburz, 1993). The natural history of HIV infection may therefore, be reviewed to provide a general background and understanding for the present study.

**Primary Infection**: Within the individual, HIV infection into the body takes place through mucous membrane or by parenteral injection. It is uncertain that cells of which kind in the blood or lymphatic tissue is the first to actually become infected. It has been assumed that $CD_4$ + T-cells or monocytes were the initial targets. But, dendritic cells have been demonstrated to be efficient transporters or presenters of HIV to the $CD_4$ + T cells (Fauci and Lane, 1994). Still others specified that for infection to occur, the virus needs to get into the target host cells and it
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does so by attaching itself either to the CD$_4$ receptor on the surface of T$_4$ cell or to Fusin (CXCR4) co-receptor. Following the entry into the target host cells, symptoms of the acute HIV syndrome were reported to the patients that last for several weeks (Fig. 1). It is highly likely that during this period, most patients develop some degree of viremia which contributes to virus dissemination even though they remain asymptomatic or do not recall experiencing symptoms.

To be particular, the clinical features associated with initial phase of infection variably starts from 2 to 4 weeks after infection although it may prolonged sometimes to 36 weeks. It was described originally as a mononucleosis (Flu) like illness but now recognised as a distinct clinical entity (Shiv Lal and Sengupta, 1993). It is manifested by fever, lymphadenopathy, skin rashes, headache encephalitis and aseptic meningitis, joint pain and muscle pain, at times thrombocytopenia. By the mean time, the antibodies start appearing in blood and the blood tested at this time is found positive for HIV antibody. The CD$_4$ + cell count at this stage is not affected much. The diagnosis of primary HIV infection is made by demonstrating HIV antibody seroconversion (Libman and Witzburg, 1993). This episode of initial infection is called Primary Infection. It is these early events which likely play a major role in the subsequent course of infection in that the degree of initial virus replication and seeding of organs such as lymph nodes establishes the magnitude of virus burden which the immune system will be required to contain and which will expose susceptible cells to infection.

As mentioned earlier, HIV is a retrovirus and this term has a special meaning, DNA usually makes RNA which is then translated into protein in the body’s cells. It used to be thought that this was an inviolable rule of life. HIV and other
retrovirus break this rule. The viral RNA, in order to replicate in infected cells, is
reversely (retrograde) transcribed back to DNA with help of an enzyme called reverse transcriptase. The DNA copies so formed are inserted into host chromosome with another enzyme called integrase. The virus is able to do this because it carries these enzymes allowing the information to be transcribed in the reverse direction. It is possible that integration of the viral DNA to the host chromosome could occur before the production of antibody and; if that happened the person might become an antibody negative virus carrier with a latent infection (Tedder, 1986). If, with early integration, there is little or no antigenic expression, the individual could remain antibody negative for a long time until virus expression is triggered and antibody production would follow a long time after exposure. This very long period to seroconversion is rare (Tedder, 1986).

Clinical Latency Period: A combination of the development of an HIV specific immune response (both humoral and cell mediated) and the efficient trapping of virions in the Follicular dendritic cells (FDC) of the Lymph node germinal centre leads to the curtailment of viremia, disappearance of symptoms, and the beginning of the so called Clinical Latency (Fig. 1) which lasts for a variable period with a median duration of approximately 10 years (Fauci and Lane, 1994). In adults, the duration may be longer (Bacchett and Moss, 1989). It is so far reported in India to be 3-5 years. During this period, patients usually recovered from illness of primary HIV infection except in few cases.

It has been the consistent observation of clinicians caring for AIDS patients that there is a gradual and progressive diminution of CD4+ T-cells over time with few exceptions. The slope of the decline is highly predictive of the clinical
course and the development of advanced disease (Fig. 1). Most of the patients are entirely asymptomatic during this progressive decline of CD4 T-Cells. Viremia and antigenemia are also uncommon. During this period, detection of virus replication in peripheral blood mononuclear cells is extremely difficult. However, a large number of active virus replication take place in lymph nodes (Fauci and Lane, 1994). Persistent Generalised Lymphadenopathy (PGL) may be noted without symptom showing enlarged extra-inguinal lymph nodes particularly cervical or auxiliary parts of the body. Collection of B lymphocytes in these lymph nodes lead to enlargement of the nodes in an attempt to contain HIV infection and prolonged utilisation of B-lymphocytes makes exhaustion of the resources for future used in fighting other bacterial and fungal infections. Disappearance of PGL of HIV infected person is an indication of disease advancement towards AIDS.

The emergence of opportunistic infections or malignancies does not appeared generally during clinical latency period. There is a great co-relation between the CD4+ cell count and clinical manifestation of other infections associated with HIV. There is a progressive diminution of CD4+ cell counts during the asymptomatic period which ultimately leads to a state of immune suppression that is severe enough (CD4+ cell count < 200 per microliter) to place the patient at high risk for opportunistic infection (Fig. 1).

Secondary Infection and the AIDS: After a variable period of time (i.e. about 10 years or so), the CD4+ T cell count falls bellow a critical level say less than 200 cells per microliter of blood and the patients become highly susceptible to opportunistic diseases (Fig. 1). The patients show constitutional signs and symptoms or may develop Secondary Infection which is primarily caused by oppor-
tunistic organisms including PCP, CMV and common bacterial as well as mycobacterial pathogens. The secondary infections are the leading cause of morbidity and mortality in patients with HIV infections. Approximately 80 percent of AIDS patients died as a direct result of secondary infection (Fauci and Lane, 1994). The clinical spectrum of diseases caused by secondary infection is constantly changing as patients live longer and as new and better approaches to treatment and prophylaxis are developed. Recent data have shown that vast majority of death in patients with HIV disease occurred when the CD₄ cell count falls below 50/mm³. The common causes of death in America, Africa and other European countries include bacterial infection, PCP, Kaposi’s Sarcoma, wasting syndrome, and lymphoma (Stein, et al, 1992). Early survival data comes from a large cohort study of 5,833 AIDS patients diagnosed before 1986 in New York City (Rothenberg, et al, 1987). One year survival was reported to be approximately 50 percent, and 2-year survival was 30 percent. Women, blacks, and IDUs are shown having shorter survival than men, whites and homosexuals respectively. However, differences in survival rate may have the results of delayed access to medical care or delayed diagnosis (Libman & Witzburg, 1993).

In order to have a better understanding on the natural history of HIV infection for various reasons, classification and staging of the disease has been needed for persons dealing with HIV and AIDS patients. Several terms and classification systems for HIV infection have been described (Centre for Disease Control, 1982). Among other reasons for staging HIV infection, the most important of which is the management of patients with timely medical therapy and public health projections all over the world.

A more recent staging system (Annexure -III) developed by the World Health Organisation (WHO) in July, 1990, also uses four clinical stages based on a
variety of definitive or presumptive parameters or the individuals’ activity level or both (Laurence, 1991).

So far, clinical manifestations of medical importance has been reported in the construction of natural history of AIDS. No any physical anthropological parameters associated to these clinical events excepting the body weight has not come up to the world literature till the time for designing this study. Among other anthropological variables which may be incorporated to the establishment of natural history of HIV disease, arm circumference yield a relatively reliable estimation of the body muscle mass, the reduction of which is one of the most striking mechanism by which the body adjust to inadequate energy intakes. In a similar way, the skin with its adipose tissues beneath it function as reservoir of fat which is a high energy yielding metabolites. The skin with its fat content is highly adaptive and sensitive in the sense that any diseased condition whether of environmental origin or nutritional, may bring drastic changes which can be detected through simple measurement of the skinfold at selected sites such as triceps and biceps, etc. When the food absorption or intake has a problem with the opportunistic infection of the GI system after the episode of HIV infection, the stored metabolites (fat) in the muscle and adipose tissues are utilised. If the repletion does not take place quickly it may lead to shrinking of the tissues resulting cachexia or wasting syndrome as often called slim disease in African situation.

In developing countries where AIDS has added to the already existing burden of undernutrition, both among adults and children, very few initiative on need assessment of nutritional status of HIV infected individuals have been taken up (ICMR, 1991).
Early in the course of the epidemic, there are relatively few people with AIDS while there are in fact, large group of people with asymptomatic carriers of the virus. As the epidemic evolves, more of the previously asymptomatic people become ill, and also more non-infected people will become infected. This change prompts us what people is going to face in near future if attempts are not made to slow down the speed of the virus by changing the life style and risky behaviours of the people.

1.1.5 HIV/AIDS and Deviant Behaviours:

In many preventive programme for HIV and AIDS, it has been observed to encourage behavioural changes (WHO, 1992; Fisher and Fisher, 1992). This shows that HIV and AIDS is a very much a disease preceded by abnormal human behaviours and practices which are the most difficult and tricky part in the whole system of preventive approach. In fact, drug misuse and sexual promiscuity though conditioned by the social mores, myths and legends is an acquired legacy which is often considered as a deviant behaviours when it cross the limit of tolerance and affect the society with dare consequences because they are often side tracking from the set norms that exist in every society to control any malpractice or eventualities. Although prostitution has remained as an age old institution in almost every society, it is often considered as a profession of behavioural deviants.

Modification of someone’s behaviours on humanitarian ground not to infect others with HIV by having sex and getting marriage is also a question of contradiction against the birth right conferred by the society. It is a hard fact to practice. Here lies the complicity for changing the behaviour to stop further spread of HIV in the community. Changing one’s behaviours required to understand how the behaviours have developed in him or her. Whether, it is acquired conditionally
or developed through personnel liking and how long it takes place to reach the maximum level endangering the family and the society as a whole. Sharing needles and syringes as well as other injecting paraphernalia in the shooting galleries, within their injecting groups and among the opposite sexes may also be considered as a hard but changeable sub-cultural behaviours associated with drug misuse. Rather, it is socially, economically and environmentally influenced behaviours which has been complicated with bio-chemical reactions in cellular level after a prolonged use of drugs. Withdrawal of chemical effects of drugs, minimisation of harms by safer injecting practices such as non-sharing injecting equipment, proper cleaning with sterilisation (WHO, 1990b) as well as total abstinence from drug, etc are the commonly given messages for prevention of HIV transmission.

Sex and urge for it on the other hand, is an intrinsic biological characters appearing with exceptions in the life of every individual as and when biological maturity arrived. Unlike in other animals, it is a biological process sanctioned by the social institutions like marriage and sexual taboo. Though polygamy-polyandry and polygyny, are other institutions accepted in certain societies, premarital and extramarital sex within or outside the kinship system is a socially prohibited sexual act in almost all the communities in the world. However, data on premarital and extramarital routes of HIV transmission has not been ascertained among IDUs in Manipur unlike in other parts of the country and the world.

With the improvement of transport and communication system as a consequence of the development in science and technology, acculturation takes place between country to country at a faster speed throughout the world. With this, transmission of HIV took place to almost all countries of the world in such a way that
no country in the world may not be left untouched by HIV in the next few decades. Now, a time has arrived to determine which culture and behaviours of which people is better and which one is not in regard to the obliterous effect of HIV infection irrespective of caste, creed and race, whether it is in the west or in the east. For hundreds of years Anthropologists are facing the challenge to explain the mankind for the concept of no superior and inferior race; all are equal in their own settings and value system. On the basis of physical traits -white or blacks, red or yellow, differentiation of mankind has been proving senseless act. Behaviours that makes the entry of HIV are all the more risky and concern everywhere in the world whether it may be through injection of drug or homosexual and heterosexual act. Thus, AIDS is primarily found affecting the persons who have deviant behaviours and then transmitted to the vulnerable section of the society. As one of the strategies to prevent and control of the disease, enhancement of the quality of life for the affected individuals is an important aspect through timely care and treatment with consistent and quality control counselling supports.

1.1.6 Care and Treatment of AIDS Patients: Recent Advances

It is reported that progression to AIDS is faster in persons at the extremes of age, with the youngest having the shortest latency phase. However, early medical interventions have prolonged the time interval between acquisition of HIV infection and progression to AIDS, and may also improve survival (Graham, et al, 1992). Factors that may influence the rate of disease progression include the strain of HIV, the disease status of the source of infection and the age of the recipient. Other factors that appear to affect the natural history include anti-retroviral therapy.
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In March 1987, azidothymidine (AZT; now known as Zidovudine or ZDV) was made available as an investigational agent and later approved by the Food and Drug Administration as a promising drug for treatment of AIDS patients (Fischl, et al., 1987). Later on, reduction of viral load possibly below the detectable level with the use of 10 virostatics owing to the availability of lamivudine (or 3 TC), stavudine (or d4T) and three HIV-1 protease inhibitors, saquinavir, ritonavir and indinavir was reported for the therapeutic management of HIV patients (Mathe, et al., 1996). So far, these drugs were claimed as the most effective medicine for treatment of AIDS patients. However, development of resistance to single application of the virostatics leading to combination therapy and possible differential effects of these drugs on race and gender are still reported. It is therefore, required to conduct large-scale longitudinal trial studies of these drugs in representative cohorts.

So far, no any curative medicine has been claimed. We do not know whether we will continue to see non-infected population in the next decade. Subsequent review on the magnitude of the disease in the global, country and state levels will indicate the gravity of the problem among the mankind.

1.1.7 Magnitude of the Problem:

After the discovery of HIV and AIDS, it has been tracking down retrospectively as well as prospectively to know the magnitude and direction of the epidemic. Retrospectively, it is suggested to have been spreaded since late 1970s or early 1980s in population of both developed and developing countries. The epidemic has been found first spreading all over the world in a rapid speed among deviant behaviour persons like Injecting drug users (IDUs), Homosexuals, Bisexuals, Prostitutes, Lesbians, etc. Exposing themselves not only to the risk of contract-
Introducing HIV, injecting drug users (IDUs) and sexually promiscuous persons play the role of a vector for transmission of HIV to their wives and other vulnerable sections in the society such as haemophiliacs, blood recipients, children, etc increasing morbidity and mortality rate in the community. It has been often reported that these risky persons sometimes become either professional blood donors or commercial sex workers (CSWs) to meet their monetary needs either for drugs or livelihood. However, data on premarital and extramarital routes of HIV transmission has not been established yet among them.

Once HIV has been introduced into a community of drug users, it can be pervaded extremely. Rapid increase in HIV seroprevalence among the drug users have been observed in both developed and developing nations. Among other routes of transmission, the tiny blood transmission that take place when drug users shared needles or syringes (Des Jarlais and Friedman, 1994) and exchange of infected semen and vaginal secretions between sexual partners during coitus (Coates and Schechter, 1988) serve to transmit diseases efficiently. Nothing has illustrated this fact more tragically than the rapid spread of HIV—the causative agent of AIDS.

By 1992, close to 4,50,000 AIDS cases had been reported to WHO but it was estimated that, when under-diagnosis, under-reporting and delays in reporting are taken into account, close to 1.5 million AIDS cases might have occurred in adults worldwide. In addition, it was estimated that by 1992 more than 5,00,000 paediatric AIDS cases resulting from perinatal transmission might have occurred (WHO, 1992). World Health Organisation have projected that there will be a cumulative total of 30 - 40 million HIV infected men, women and children by 2000 A.D., of which more than 90% will be in the developing countries. And
10 million or more children less than 10 years of age will be orphaned primarily in the developing countries due to AIDS.

The date of first discovery of AIDS and HIV infection probably varied considerably from country to country, depending on such factors as the degree of monitoring and the methodology used in the country concerned. But several reports are coming up showing that HIV and AIDS are primarily found among behavioural deviants as they are always exposed to the risk for contracting HIV by having unsafe sexual practices with multiple sex partners and sharing drug injecting equipment. Now, HIV infection and AIDS are spreading world wide in pandemic form. However, they have not affected the world’s population uniformly. Therefore, the magnitude of the disease may be reviewed in different regions of the world.

In America, Australia and Europe: The population groups predominantly affected have remained to be homosexual or bisexual men and injecting drug users, although heterosexual transmission is on the rise. A large number of non-infected injecting drug users remain in many areas, and an explosive spread might occur in these population in future if they continue to have shared injection equipment. Fricher, et al (1992) has reported that there are 118 countries injecting illicit psychoactive drugs. More than 70 of such countries have documented HIV infection among persons who injected drugs. The first nine cases of AIDS amongst drug abusers were diagnosed retrospectively in 1980 (Des Jarlais, et al, 1985). The number of cases associated with drug abuse in the USA increased from 29 in 1981, to 148 in 1982, 324 in 1984 and over 4500 by the end of 1986 - accounting for at least 17% of AIDS cases in the USA (Centre for Disease Control, 1986). Unlike in USA, only 1% of the reported 88% of the patients with AIDS in UK during 1987 were
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from Intravenous Drug Misuse (IDM) alone. By the mean time, only 2.5% of the AIDS cases have come from Scotland of which only one was a drug misuser (Brettle and Nelles, 1988). In England and Wales, IDM represents only 2% of the reported cases of infection with HIV and this contrast markedly with the position in Scotland in which over 60% of those infected with HIV have implicated IDM. However, it is difficult to estimate the number of cases of infection with HIV among drug users in the UK as relatively few drug-misusers had been screened in areas other than Scotland. Until treatment options become more attractive and more drug users are persuaded to seek help, we will continue to have only the crudest estimate of HIV sero-prevalence. In surveys conducted in 1985 and 1986, drug-misusers had been found infected with HIV between 38% and 52% in Edinburgh and 40% in Dundee (Brettle, et al, 1987; Urquhart, et al, 1987).

By comparison, only 4.5% of drug misusers in Glasgow and 10% in England and Wales was also infected with HIV (Follet, et al, 1986; Jesson, et al 1986). This geographical variation of infection amongst drug misusers had also been noted in USA where for instance, the over all incidence of IDM associated AIDS was 17%. But in New York, it was detected 72% and only 2% in California (Spira, et al, 1981).

HIV infection and subsequent illness due to AIDS are reportedly showing a rising trend within a short period of time among the Injecting Drug Users throughout the world. Heterosexual transmission among CSWs, sexual partner of injecting drug users increased slowly but steadily during the later half of the 1980s (WHO, 1992). Of all reported AIDS cases in the USA, about 3% were due to heterosexual transmission in 1985. In each succeeding year, heterosexual cases increased gradually, so that by 1988 they constituted about 5% of the total cases and
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by November 1991 they accounted for 6%. Through the 1990s, homosexual men and injecting drug users would continue to be the population groups most affected by AIDS in Australia, America and Europe but it was expected that new infection would have been predominantly occurred among heterosexuals with multiple sex partners resulting a considerable increase in perinatal AIDS cases.

In Africa: Most of the available epidemiological and clinical data indicated that extensive spread of HIV started in sub-Saharan Africa in the late 1970s, although some evidence suggested that HIV infection was present in some part of Africa several decades earlier. Since then, heterosexual transmission continue to be the predominant mode of HIV spread. The HIV infection through social practices such as circumcision, ritual scarification and sharing of unsterile needles and syringes during drug injection was accounting for less than 10% of all infections (WHO, 1992).

In 1987, about two third of the HIV infection were found in nine countries of East and Central Africa representing only about one-sixth of the total population of Sub-Saharan Africa. The epidemic was increasingly shifted from urban to rural areas of Africa where most of the people live. In west Africa, many countries have experienced marked increase in HIV-1 infection. In Cote d’Ivoire alone, approximately 8,300 AIDS cases had been reported by January 1992. In North Africa and Middle east, extensive spread of HIV had also been reported among female prostitutes (40%) and injecting drug users (14%) during 1989 - 1991 (WHO, 1992). Taking into account of the extensive under-diagnosis, under-reporting and reporting delays, WHO estimated that by 1992 close to 1 million adults AIDS cases had probably occurred in Sub-Saharan Africa. By 2000 A.D, it was estimated that
5-10 million children will be born with HIV, the majority of them in Sub-Saharan Africa.

**In Asia:** Injecting drug users in Asia were not reported as vector agent for transmission of HIV infection during mid 1980s (Poshyachinda, 1993). However, late 1980s and early 1990s are remarkably noted for detection of HIV among drug injectors. In Singapore, HIV infection among IDUs was first detected in later half of 1990 (Central Registry of Drug Abuse, 1991). In 1990, only one case of intravenous drug users was found to be HIV infected in Japan (Poshyachinda, 1993). By the mean time, the extremely rapid spread of HIV infection among the drug addict population of certain countries in Asia was reported. Zheng, et al (1994) has reported that HIV has been spreading rapidly in the southwestern part of the People's Republic of China. Until 1988, only 32 cases had been reported to the Chinese national AIDS sero-surveillance centre. In 1989, an epidemic of HIV was however, discovered among injecting drug users (IDUs) in Ruili country in southwest China, bordering Myanmar. (Fig. 1). A subsequent sero-prevalence survey conducted in 1989 - 1990 found that more than 50% of IDUs living in Ruili country were HIV positive and that 3% of the wives of HIV positive IDUs were also infected with HIV. By 1993, the number of known HIV infected IDUs had increased to 827. At present, IDUs represent 83% of all known HIV- positive individuals in China (Zheng, et al, 1993). The HIV infection rate among wives of HIV positive IDUs increased from 3% in 1990 to 10% in 1992 (Zheng, et al 1994).

**In Thailand,** Weniger, et al (1991) has reported that time sporadic cases of HIV infection had been dating back to 1984. However, the situation changed dramatically in early 1988 when a rapid spread of HIV was documented among IDUs
in Bangkok. The HIV sero-prevalence increased rapidly in these IDUs from about 1% in late 1987 to over 40% by August 1988 (Weniger, et al 1991). Surveys in Thailand outside Bangkok has shown prevalence rate of HIV infection increased from 30% to 40% throughout the country in 1989.

Among IDUs in Bangkok, 67-78% of the infected cases are found to be due to HIV subtype B that resembles strains isolated from infected individuals in Europe and North America (Weniger, et al, 1994). However, recent data has indicated an increasing frequency of infection of IDUs with subtype E virus (Louisirirot Chanakul, et al, 1994). One study using a capture-recapture method estimated the number of IDUs in Bangkok to be about 36,000 (Mastro, et al, 1994). It was estimated that there are 75,000 IDUs in Thailand, of whom about 40% are HIV-infected. The total number of HIV-infected individuals in Thailand has been estimated to be about 50,000 - 600,000 (Brown, et al, 1994).

In South Asia, the predominant mode of transmission is heterosexual. Available evidences has suggested that up to 2,50,000 individuals have become infected with HIV in many larger cities. As of early 1992, a conservative estimate of HIV infection in South and South-East Asia is over 1 million, the vast majority of them is in India and Thailand (WHO, 1992). The prevalence is still higher in Myanmar. As recorded in the Drug Dependence Treatment and Research unit of Yangon Psychiatric Hospital, the monthly prevalence of HIV seropositive among intravenous heroin users increased from 72.9% in May 1989 to 91.3% in September 1990 (Muang Muang Lwin, 1990).

**In India and Manipur**: The impact of HIV and AIDS is ominous specially for India which is the second most populous country in the world with an esti-
mated population of about 880 million in 1993, and a country expected to be more populous than even China by the beginning of the next century (Jain, et al, 1994). By early 1992, it was estimated that 300,000 to 500,000 Indian men and women would be HIV positive (Thant, 1993). By mid 1994, the figures had risen to 1 million (Chin, 1995). The World Health Organisation had estimated in 1993 that over the past 8 years, 1.8 million people had become infected with HIV (Burton, et al, 1994). About 20% or more of the estimated 1,00,000 to 3,00,000 prostitutes in Bombay are thought to be infected with HIV (NACO, 1994).

The presence of the AIDS virus was first reported in 1986 among commercial sex workers (CSWs) in Madras (Bollinger, et al, 1995) and it was followed by initial case detection among drug injecting population of Manipur in the year 1989 when a 39 year old businessman who was not only injecting drugs but sexually promiscuous too (Pal, et al, 1990). Since then the HIV epidemic among injectors has been exploded, with seropositivity rate rising to over 64% by 1993 (Jain, et al, 1994) and 89% by 1994 (ICMR, 1992-95). Though HIV/AIDS was late coming to India, Manipur, one of the states of the Indian Republic was noted for its rapid increase in HIV sero-prevalence rate among its IDU population. Such an explosive rate of HIV infection among injecting drug users indicated that the presence of drug abuse epidemic is much before the outbreak of the HIV epidemic requiring authentic establishment of the facts.

From October 1985 until the end of September 1994, 2,127,174 individuals had been tested for HIV through the nationwide surveillance networks; and 15,692 were found HIV positive. HIV infected individuals were found in 24 States and Union Territories, basically everywhere where the testing facilities are available for surveillance, blood testing, or for research purposes. However, HIV has not been
detected in Arunachal Pradesh, Dadra & Nagar Haveli and Daman and Diu by Sept. 1994 (NACO, 1994).

The HIV infection prevalence rates vary widely in different geographic areas and population groups. According to the available information, the major concentration of infection remains in Bombay, Maharastra which may contain 5% to 10% of the country's infected individuals (NACO, 1994). The other known hot spots are Pune, Madras and Vellore where local research groups have conducted studies among commercial sex workers. In December, 1993, a new but highly infected area was found in Goa.

In the North-Eastern States, a significant increase of infection among its injecting drug users has now been found to extend to Nagaland, Mizoram and Assam as well. From 50% to 70% of male injecting drug users in Manipur have reportedly engaged in sexual intercourse, of which 40% of them had multiple sex partners with very low frequency of condom use requiring confirmation of the heterosexual mode of HIV transmission in Manipur. In the state, Injecting Drug Users (IDUs) have public health concern that HIV infection goes on extending to their sexual partners giving rise to the infection rate of 1.5% among antenatal mothers.

From South-West Asia to East Asia, extreme differences in patterns of HIV infection and transmission in the population of drug abuse have been noted, with both very low and very high levels, and with both a slow and a rapid rise of seropositive prevalence. The great variation in the prevalence and transmission of HIV infection contains the reality of certain barriers and the influencing factors that seem to operate in different ways in different parts of Asia.
The areas of recent escalation of injecting drug abuse appear to have suffered concurrently from a rapid transmission of HIV infection. The recent changing trend send a strong message that the population of drug abusers is indeed the group most vulnerable to the rapid transmission of HIV infection. With the absence of curative medicines and relapses to risky behaviours, the magnitude of the disease among the behavioural deviants throughout the world suggest the gravity of the problem, requiring vigorous researches related to their behaviours, culture and social mores to throw lights on how to check the unwanted effects of AIDS among the human beings.

1.1.8 Trends of Research on HIV and AIDS:

The discovery of HIV in 1981 and subsequent emergence of AIDS has made an important landmark in the recent history of mankind due to its deleterious effects in pandemic nature. Since then, researches on HIV and AIDS has been undergoing extensively with reference to risky human behaviours in different parts of the Globe with implications of public health services. AIDS has been understood not simply as a bio-medical problem but as a complicated psychosocial development too (Kapur and Mukhopadhyay, 1995) requiring multi-disciplinary approaches to prevent it from further ramification. Detection of the virus (HIV) in different risk behaviour groups, isolation of the viral component for further investigation at the genetic level to understand the strain of the virus and the mechanism of the disease, study on the progressive clinical manifestation with molecular changes in the cellular immunity, study on therapeutic intervention of the associated opportunistic infections, changes in the nutritional status in different stages of the HIV infection etc. are the priority areas for researches from the angle of bio-medical sciences. Similarly, study on disease concepts and responses in different socio-de-
mographic settings, changes in risk behavioural components of affected persons, contradiction between human rights and medical ethics, customary and traditional aspects of the society where there is no legal coverage of human affairs in relation to HIV and AIDS in different local cultural milieu are the areas where social sciences and humanities play a pivotal role. However, biological responses to the socio-environmental and behavioural influences and their interdependent relationship in the background of local belief and value system are the paradigm of medical anthropology. As for example, vaccine trial in the attempt of developing an effective preventive measures of the epidemic in time and space pauses a problem of rejection and denial for reasons of local social and political value system among different communities in the world. In certain society, even simple testing for HIV antibody for reasons of better medical attention and management face a strong denial at the individual and family level due to the operating system of social stigmatisation of quarantine nature and human discrimination. By the mean time, myths and misconceptions due to ignorance is another problem area often hindering preventive research. So far less importance is given in this human affairs. With these concepts and practices of the ethno-medicine, medical anthropologists find an area to deal the intricated issues of HIV and AIDS.

Summation of national data, on the other hand can be highly misleading and moreover, it is often exquisitely sensitive in the assumption of data. Since intervention is a local affairs, a local understanding of the disease transmission process is far more important than national data for those who try to intervene the disease. It is precisely this arena that local social network analysis has its greatest strength. The success of the venture depend on a judicious combination of research and actions: testing what we think and using what we know in the foreseeable future.
In India, many investigators have studied geographical distribution of HIV among the so called risky behaviour groups. Many attempts were also made to characterise them with respect to their HIV status. No study independent of the Government has been attempted to explain these data, regional trend of infection and clinical pattern of associated illness (Jain, et al, 1994).

Both HIV-1 and HIV-2 infection were detected in India too (Rubsam-Waigmars, et al, 1992). Epidemiological study has shown that HIV transmission in India is primarily among heterosexuals fitting the description of pattern - III HIV transmission with alarmingly high prevalence among female sex workers and those men who recently had sexual contact with sex workers (Rodriques, et al, 1995). However, the pattern has become more complex as the number of infected persons has increased other than the heterosexual type.

The presence of co-infection of HIV-1 and HIV-2 among drug injecting population in Manipur has shown the impression of international connection in risk behaviours related to HIV transmission. Pal, et al (1990) has described the connecting link of drug using culture of Manipur and the rest of the country with the Golden Triangle at the border area of Myanmar, Thailand and Laos. It was postulated that HIV might have been transmitted from Thailand to India through Myanmar and Northeastern states of India along with the drug trafficking activities in these region (Fig. 2). In Manipur, sharing drug injecting paraphernalia was established to be the prime cause of HIV transmission among youths.

Researches on molecular structure of HIV and its variants has been attempted elsewhere in the world for identification of candidate vaccine preparation. Efficacy of transmission of HIV variants among couples of IDUs are not yet reported from the country. And discovery of curative medicine too has not been authentically reported in India.
Fig. 2: MYANMAR: HEROIN PROCESSING ZONE AND ITS ROUTE TO INDIA
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So far, most of the studies on HIV and AIDS have been conducted in urban settings (Castro, et al, 1992). In Manipur too, activities on prevention of HIV infection are found concentrated in the city areas specially Imphal, Churachandpur and Moreh(Yaima Singh, 1990-1996). Studies are rarely done in rural areas of Manipur though its importance were recognised in advance countries like USA (Trotter, et al, 1995). For India, majority of the population were contributed from rural areas with lower level of education and poor awareness on health care. The World Health Organization focus that India in Asia will be the country affected most in the next decades if the present trend of HIV transmission is not halted. Therefore, researches among rural masses and tribal areas where limited health care facilities are available, is the need of the hour with health care implications to explore the course of HIV epidemic. Development of AIDS policy with a sectarian attitude without conducting a wide coverage of researches from different specialities and locales may not be a wise step and it might be an erroneous attempt with wasting of energy and resources inviting controversies and counter arguments in the foreseeable future.

With the absence of a curative medicine, it is imperative that how long a person live after contracting HIV, and after attaining the full blown AIDS. Answer is so difficult without knowing the complete natural history of HIV and AIDS diseases in local settings, thorough assessment of the available health resources, psychosocial status of the family and community, economic conditions, nutritional status as well as other environmental factors affecting the health status of the ill persons. It has been reported out that malnutrition alone can make a tragedy for HIV patients. This has to be assessed firmly as it has a concomitant effect for persons infected with HIV and other associated illness such as diarrhoea, tuberculosis, infection of GI system and prolonged use of heroin with poor habit of food intake.
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In an attempt to reconstruct the natural history of HIV and AIDS disease, ICMR (1992 - 95) made a search for clinical features on HIV infected IDUs. Panda, et al (1994) has discovered Herpes Zoster as a predictor for HIV infection among IDUs in Manipur. At present situation, with little knowledge on the contributing factors, management of HIV and AIDS patients face trouble for the health care providers and family members who are in touch of the problem of care and help. N. Yaima and others (1995) has found out that 99% of the HIV patients received family support and care at home while studying a group of Injecting drug users in Manipur. This implies for promoting home base care services for affected persons. However, further investigations are required to provide improved skills for caring and managing the patients at home.

Physicians are often found suspecting cases of thrombocytopenia, histoplasmosis, etc. which require authentic laboratory confirmation. So far, researchers had been progressing to detect the presence of the diseases among different sections of the society. But proper development of effective intervention and impact analysis to both affected and non-affected groups have not been systematically done and evaluated specially in Manipur. High relapse rate among drug users and higher frequency of marriage among infected persons, accretion of new recruits in injecting drug use, etc. are all signs for failure in the intervention services suggesting further in-depth evaluation and researches to explore the realities of the problem culminated in the local socio-economic and political settings.

Attempts were still making to search for other illness associated to HIV. The association of tuberculosis with HIV infection is also reported in Manipur (Singh, 1994). Suspected cases of Kaposi's Sarcoma were also reported sporadi-
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cally by ICMR (1996) requiring further confirmatory investigations. However, understanding of the Natural history of HIV infection and AIDS is still in early phase requiring extensive longitudinal study among different risk groups.

According to the World Health Organisation, 25 - 50 % of the HIV infected patients take 5 -10 years to reach the full blown AIDS stage from the point of HIV infection (WHO, 1988-90). However, this duration may vary from person to persons and from community to communities depending upon their health status, genetic make-up and environmental factors. However, comparative study in this regard is sporadic in nature if it exists as the epidemic is known recently. So far, early recognition of HIV serostatus and treatment of the complications of opportunistic infections is an important and urgent step from clinical point of view. It helps for better management of opportunistic infections likely to occur in otherwise ignorant and careless patients. It may also help in reduction of HIV transmission and other communicable diseases with marked improvement in quality of life and delaying progression to AIDS. Economic burden of excessive use of other diagnostic tests and inappropriate treatment may also be reduced markedly.

However, acceptance of HIV and AIDS affected individuals in the family and community at large, is a debatable issue in the present context of the disease in Manipur. None of the IDUs who had been counselled agreed to disclosed their serostatus to anybody except their counsellors. The question of maintaining confidentiality of one's own identity in regard to HIV serostatus reflects the idea of how family and community perceive the disease and accept the unfortunate patients. Therefore, many of the individuals who are epidemiologically risk for HIV infection deny testing of their HIV serostatus anticipating the impending dangers of social ostracism and of quarantine nature within or outside the family with a grief of ir-
reparable lost in their life. On the other hand, undergoing invasive testing forcefully against their will might instead bring more harmful effect to the society rather than helping in curving the problem. Therefore, development of a better local alternative method suitable for the interim situation until the members in the family and community are aware of the importance of early HIV testing and accept the affected individuals considering them as a human being with their full rights to live is the need of the hour.

To understand the progression of HIV disease, determination of clinical stages is required with respect to the date of seroconversion after the introduction of AIDS virus into the body. However, knowing the point of infection with subsequent seroconversion is very difficult except in control laboratory situation which is again hardly practicable and controversial human issue all over the world.

Persons with AIDS are often suffered from protein energy malnutrition (Raiten and Fisher, 1991; Haffernan, et al. 1993). Nutritional intervention through correction of deficiencies and maintenance of good nutritional status are important at all stages of HIV infection spectrum to prevent and/ or delay from further deterioration of immunity and progression of the HIV related diseases. Loss of body weight, decreased skinfolds thickness, body cell mass depletion, hypoalbuminemia, decreased iron binding capacity of haemoglobin molecules, etc. among persons with HIV disease are commonly reported and associated nutritional problems.

Several methods are now available to assess the nutritional status of which mention may be made of nutritional anthropometry, clinical observa-
tions and bio-chemical test, etc. Of all these techniques, bio-chemical test which involved invasive procedures and costly laboratory investigations are hardly feasible although it has been suggested to be more accurate for community based researches. In the field, nutritional anthropometry and clinical examination methods are the most commonly employed techniques as these are required with less time and minimum expenditure. On other hand, unless the measured values are computed into accepted indices and the clinical findings are grouped to explain the various grades of nutritional status, simple measurements and clinical features does not reveal much about malnutrition (Jelliffe, 1966). There is also limitation for the use of national and inter-national anthropometric reference standards as the values are often considered to be high for AIDS patients (Raghu ram, 1992). Therefore, the anthropometric values obtained from the asymptomatic stage of HIV infection with normal activity may be considered as normal reference standard developed locally from within the study population. This local reference standard is better used to evaluate or grading current body weight of particular individual or a community under study. The most satisfactory method of nutritional grading is based on expressing observed values as a percentage of normal value in the same age group (Ghai, 1975).

The energy requirement of an individual might be defined as that level of energy intake in relation to expenditure which is most likely to prolong active life (WHO, 1985). For normal person, the energy intake and expenditure are always finely balanced. Any disturbance in the balance might lead to disease condition. Among HIV infected individuals at different stages, weight loss and malnutrition are concomitant with the result of differential immunity depletion. Therefore, measurement of calorie requirement of HIV infected individuals for better nutritional management and intake to maintain the energy balance and prolong the life span is at present an utmost important issue in the absence of a curative medicine.
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1.2 Rationale of the Present Study:

In view of the above review of literature and present trend of researches on matters related to HIV/AIDS and drug abuse, there is a sad lack of longitudinal body of data related to comparative socio-demographic aspects, natural history study of HIV infection, in-depth related risk factors, constitutional changes of the body in response to HIV related diseases, nutritional status and estimated energy needs of the HIV affected persons in different stages of infection, etc. To develop skills on the know-how for management of ailed persons in the absence of a curative medicine for HIV and AIDS whether it is in hospital or at home, is difficult if not impossible without a complete body of knowledge on the above mentioned profile of the disease. For a counsellor to interpret the intricacy of the problem and to remove myths and misconceptions from the affected individual, family and community as a whole, needs to acquire enough factual information based on local cultural background. This study may, at least give a partial if not a complete body of knowledge for the health care providers and policy makers in the region for reasons of not charity but for justice to the people of the land. Hence, the present study had been undertaken with implications to prevent the rampant spread of the AIDS disease and to help the people to understand the problem in times to come with the following target objectives.

1.3 Objectives of the Present Study:

1. To define the demographic and socio-economic conditions and influencing factors of Injecting Drug Use (IDU) in Manipur.

2. To study the changing pattern of the risky injecting behaviours during the epidemic of Drug abuse, HIV infection and AIDS in Manipur.
3. To describe the risks of sexual promiscuity of the IDUs in relation to HIV transmission.

4. To describe the natural history of AIDS among infected IDUs and compare the clinical features between the HIV confirmed IDUs and IDUs with risky behaviours but non-tested drug injectors of Manipur.

5. To study the pattern of changes on certain anthropometric parameters that may be described as predictive features of HIV infection among IDUs.

6. To assess the nutritional status among IDUs and estimate the total energy needs in different stages of HIV infection.

7. To lay out research priority areas for prevention and control of HIV transmission of HIV infection.