ORIGINAL ARTICLE

HIV PREVALENCE AND RISK FACTORS IN A SUBURBAN REGION

D. P. Danave[1], S. N. Kothadia[2], N. K. Shaikh[3]

HOW TO CITE THIS ARTICLE:
D. P. Danave, S. N. Kothadia, N. K. Shaikh. "HIV Prevalence and Risk Factors in a Suburban Region". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 20, May 18, 2015; Page: 3010-3015.

ABSTRACT: OBJECTIVES: Human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome have created havoc due to high morbidity and mortality. Apart from anti- retroviral therapy (ART) there is no effective line of management available for this infection. Preventive strategies remain the mainstay to curb this epidemic. We undertook this study for estimating the prevalence and risk factors of HIV infection in our local population. This would help us to plan appropriate interventions for minimizing and preventing HIV infections. **MATERIALS AND METHODS:** The study was conducted from January – December 2004, in Integrated Counselling and Testing Center (ICTC) affiliated to our institute. After pre-test counselling, blood samples were collected from 1694 patients. They were subjected to Enzyme Linked Immunosorbent Assay (ELISA) and rapid tests -Comb AIDS, Tri Dot & ACON under strict quality control. **RESULTS:** Out of 1694 patients, seropositive males and females were 297 (17.53%) and 166 (9.79%) respectively. Heterosexual behaviour (35.20%) and parent to child transmission (10.36%) were the major routes of transmission of HIV infection. Amongst infected patients labourers, farmers and housewives were high in numbers. **CONCLUSIONS:** Behavioural interventions and risk factor modifications are important targets in controlling the HIV epidemic.
KEYWORDS: Acquired immunodeficiency syndrome (AIDS), Human immunodeficiency virus (HIV), Integrated Counselling and Testing Center (ICTC), risk factors.

INTRODUCTION: The epidemic of human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS) emerged in the last quarter of the 20th century and within less than two decades, had infected over 190 countries.[1] Infection with HIV induces an insidious, progressive loss of immune system function leaving the victim vulnerable to a host of life threatening opportunistic infections, neurological disorders or unusual malignancies.[2] HIV can be transmitted in three ways: through sexual intercourse, through blood and from mother to child. [3] Transmission as a result of sexual intercourse accounts for about three fourths of all HIV infection worldwide.[3] This means that HIV infection is mainly a sexually transmitted infection (STI). Though blood donation has been made safe, it is still problematic apart from other sources as use of contaminated injection equipment by drug users and use of non-sterile instruments in health facilities. Mother to child transmission of HIV includes transmission during pregnancy, during delivery and through breast feeding.[4]

AIDS has evolved from a mysterious illness to a global pandemic which has infected tens of millions in less than 20 years. Maharashtra is one of the high prevalence states where HIV infection has crossed five per cent mark in high risk group and one per cent or more in antenatal women.[5] The study of trends in HIV spread has contributed to a better understanding of the dynamics and impact of the epidemic in various parts of the world. It also helps in the mapping of preventive strategies. Ours is a sub-urban area with working class labourers accounting for a

major populace. Considering these implications we undertook the current work to study the prevalence, distribution and transmission patterns of HIV / AIDS in our city.

MATERIALS AND METHODS: The study was carried out from January-December 2004 in the Integrated Counselling and Testing Centre (ICTC) under Dept of Microbiology from our institute. The patients were voluntary walk-ins presenting to our hospital coming on their own free will or as advised by medical providers. Initially pre-test counselling was done to the individuals and consent for testing was taken. Total samples collected were 1694. Aprroximately 5ml blood was collected from each patient. Serum was separated and used for detection of antibodies against HIV-1 and HIV-2 by Enzyme Linked Immunosorbent Assay (ELISA) (Microlisa-HIV by J. Mitra& Co. Pvt. Ltd. New Delhi, India) and rapid tests viz.Comb AIDS-RS Advantage (Span Diagnostics Ltd. Surat, India), Tri-dot (J.Mitra& Co. Pvt. Ltd. New Delhi, India) and Acon. Reporting protocol was as per guidelines by Maharashtra State AIDS Control Organization (MSACS). Strict quality control measures were taken.

RESULTS: A total of 1694 samples were collected which included 1097 males and 597 females. Seropositive samples detected were 463(27.33%) amongst which 297(17.53%) were males and 166(9.79%) were females- Table 1. Heterosexual behaviour (35.20%) and parent to child transmission (10.36%) were the pre-dominant routes of transmission in known causes. However in more than half of these patients (53.99%) the causes could not be specified- Table 2. Among male patients, labourers (37.71%) and farmers (10.10%) were in high numbers while in female patients housewives (55.42%) formed a high portion in seropositive patients- Table 3.

Sex	Total Cases	Seropositive	Negative
Male	1097	297(17.53%)	800(47.22%)
Female	597	166(9.79%)	431(25.44%)
Total	**1694**	**463(27.33%)**	**1231(72.66%)**

Table 1: Distribution of cases

M: F = 1.78: 1

Risk/ Transmission categories	Our Study	India	Global
Heterosexual	163(35.20%)	85.34%	70-80%
Homosexual	01(0.2%)		
Perinatal transmission	48(10.6%)	3.80 %	5-10 %
Blood and blood products	01(0.2%)	2.05 %	5-10 %
Injecting drug users	_	2.34 %	5-10 %
Others(not specified)	250(53.99%)	6.46 %	_

Table 2: Routes of infection in our study, India,[5] and globally.[6]

Males n = 297.

Occupation	Cases
Labourer	112(37.71%)
Farmer	30(10.10%)
Children	19(6.39%)
Service	16(5.38%)
Business	15(5.05%)
Jeep Driver	14(4.71%)
Auto Driver	13(4.37%)
Truck Driver	12(4.04%)
Hotel Staff	11(3.70%)
Tailor	10(3.36%)
Painter	10(3.36%)
Veg. Vendor	05(1.68%)
Prisoner	04(1.34%)
Milkman	04(1.34%)
Carpenter	04(1.34%)
Gardener	04(1.34%)
Student	04(1.34%)
Wireman	03(1.01%)
Beggar	03(1.01%)
Police	03(1.01%)
Doctor	01(0.33%)

Table 3: Occupation- wise distribution of seropositive patients

Females n = 166.

Occupation	Cases
Housewives	92(55.42%)
Beedi workers	50(30.12%)
Children	23(13.85%)
C. S. W.	01(0.60%)

Table 4

DISCUSSION: The global spread of HIV has been swift and relentless, sparing no country. HIV distribution is characterized by a marked heterogeneity among continents and countries or even within a single country with geographic areas of HIV prevalence of up to 30% of the adult

population contiguous with areas of much lower prevalence. [7] India being a land of villages, majority of its population resides in the rural and sub-urban regions. Many people belong to the low socio- economic group with diverse cultural, religious and social practices. Our city is a suburban area with textile, beedi workers and migratory workers forming the masses. We focused on studying the prevalence and major risk factors in our population so as to assess the magnitude of HIV infection and plan appropriate preventive strategies. In our study 27.33% cases were found to be seropositive in the total screened population. The ratio of seropositive males to females was 1.78: 1 which is not statistically significant (Table 1). Data from antenatal clinics in India indicate rising HIV prevalence among women which in turn contribute to increasing HIV infection in children.[5]

An understanding of the ways in which HIV can be transmitted is central to an understanding of the epidemiology and planning strategies. Rapid HIV spread probably continues in India, home to 16% of the world's population.[8,9] Worldwide heterosexual intercourse is the predominant mode of HIV transmission. Many societal factors influence risky sexual behaviour and these affect women and men differently. Heterosexual behaviour pattern (35.20%) accounted for a major cause of acquired HIV infection in our study.

This is followed by vertical transmission and transmission by blood products and contaminated equipment though the incidence is low (approx 5-10%). Vertical transmission can vary from 15-30 per cent without breast feeding and reaches as high as 45 per cent with prolonged breast feeding.[5] Transmission during peripartum period therefore becomes the focus of prevention efforts. Perinatal transmission was seen in 10.36% of cases in our study.

AIDS is also transmitted by contaminated blood transfusion of whole blood cells, platelets and factors VIII and IX derived from human plasma and tissue organ donations. In our study there was one documented case (0.2%) who acquired HIV infection through blood transfusion. A major problem in the developed and developing world is HIV transmission resulting from the use of contaminated injection equipment by drug users. We did not come across any such case during our study.

In more than half the seropositive cases (53.99%) in our study, cause could not be pinpointed. Unawareness or purposeful hiding of facts could be the explanation for this (Table 3).

India's epidemic seems to be following the so called type 4 pattern. The epidemic shifts from highest risk group (CSW's, IDU's) to bridge population (clients of sex workers, migrant population etc) and then to general population.[5] This indicates the emergence of new epidemic foci and shifts in transmission patterns in established epidemics and suggest that prevention efforts maybe influencing the overall course of the pandemic.

In our study labourers (37.71%) and farmers (10.10%) were predominant male seropositive cases followed by other menial vocations as drivers, tailors, vegetable vendors, carpenters and prisoners etc. This is indicative of occurrence in bridge / migrant population and general population. While in seropositive females, housewives (55.42%) and beedi workers (30.12%) accounted for a major chunk indicative of general population.

Sudden large migration flows and economic crises events that rupture social structures and break norms are often associated with an increase in sexually transmitted diseases.[10] There is increasing evidence that HIV infection and AIDS is associated with various socioeconomic

determinants,[11,12] and that social context is one of the main driving forces behind "risk". Policies that ignore the social and economic constraints on behavioural changes may be counterproductive and stigmatising. High risk sexual behaviours can be modified through behavioural interventions. Four major kinds of behavioural interventions for the prevention of HIV infection are individual, small group, community and societal actions. Awareness and education programmes among IDU's can also facilitate behaviour change.

These services are available to all clients under one roof named as "Integrated Counselling and Testing Centres" (ICTCs). Under the National AIDS Control Programme ICTCs play a pivotal role for counselling and testing services of HIV/AIDS. Hence high risk population and general population should be motivated to avail the services of these centres.

REFERENCES:

1. Mertens TE, Belsey E, Stoneburner RL et al. Global estimates of HIV infections and AIDS: Further heterogeneity in spread and impact. AIDS 1995; 9 (suppl1): S251.
2. Who (1986) Techn. Rep. Ser., 736.
3. World Health Organization, Global programme on AIDS. The HIV /AIDS pandemic: 1993 overview. Geneva: World Health Organization, 1994.
4. Pizzo PA, Butler KM. In the vertical transmission of HIV, timing maybe everything. N Engl J Med 1991; 325: 652.
5. K Park. Epidemiology of communicable diseases AIDS. In: Park's Textbook of Preventive and Social Medicine.19th ed. M/s Banarsidas Bhanot; Jabalpur; 2007. P286-287.
6. Thiery Mertens, Peter Piot. Global aspects of Human Immunodeficiency virus Epidemiology: general considerations. In: Vincent T Devita Jr, Samuel Hellman, Steven A Rosenberg, editors. AIDS- Etiology, Diagnosis, Treatment, Prevention. 4thedn.Lippincott-Raven; Philadelphia USA; 1997.pg106.
7. Piot P, Laga M, Ryder R, et al. The global epidemiology of HIV infection: continuity, heterogeneity and change. J Acquir Immune Defic Syndr 1990; 3: 403.
8. Jain MK, John JT, Keusch GT, Epidemiology of HIV and AIDS in India. AIDS 1994; 8 (suppl 2): S61.
9. Ramalingaswami V. India: national plan for AIDS control. Lancet 1992; 339: 1162.
10. Brandt AM. No magic bullet. A social history of venereal disease in the United States since 1880. New York: Oxford University press, 1987.
11. Homes KK, Karon JM, Kreiss J. The increasing frequency of heterosexually acquired AIDS in the United States, 1983 – 1988. Am J Public Health 1990; 80: 858.
12. Simon PA, Hu DJ, Diaz T, Kerndt PR. Income and AIDS rates in Los Angeles County. AIDS 1995; 9: 281.

ORIGINAL ARTICLE

AUTHORS:

1. D. P. Danave
2. S. N. Kothadia
3. N. K. Shaikh

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Microbiology, Dr. Vaishampayan Memorial Govt. Medical College.
2. Profesor & HOD, Department of Microbiology, Dr. Vaishampayan Memorial Govt. Medical College.
3. Associate Professor, Department of Microbiology, Dr. Vaishampayan Memorial Govt. Medical College.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. D. P. Danave,
Department of Microbiology,
Dr. Vaishampayan Memorial
Govt. Medical College,
Opp. District Court,
Solapur-413003.
E-mail: milliondollarbaby@rediffmail.com

Date of Submission: 03/05/2015.
Date of Peer Review: 04/05/2015.
Date of Acceptance: 16/05/2015.
Date of Publishing: 18/05/2015.