Profile of HIV-positives and determinants with mode of transmission of HIV/AIDS patients on anti-retroviral treatment center at civil hospital, Ahmedabad

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Abstract

Context: Improved antiretroviral treatment (ART) access reduces AIDS mortality and lowers HIV incidence by reducing the viral load at the individual/community level. Aims: To find out the epidemiological profile of the patients at ART Centre of Civil Hospital, Ahmadabad. Settings and Design: Centre-based cross-sectional study. Materials and Methods: 132 AIDS patients (on ART) during Jan–Aug, 2009. Statistical analysis used: Proportions and Chi-square test. Results: Out of 132 cases, 60% were males, 70% from 15–44 years of age, 80% married, 78% literate, and 43% were gainfully employed. Sexual route accounted for infection in 63% cases while in 22% cases mode of transmission could not be elicited. Less common routes were injecting drug use (9%) and blood transfusion (6%). Heterosexual route was more common (70%) among migrants than the locals (50%). Half of them were diagnosed by VCTC. Thirteen clients did not receive pre-test counseling; 9 (6.6%) did not inform their spouse. Proportion of discordant couple was 42%. Conclusions: Comparing these determinants of patients on ART with those detected at ICTC can help in identifying the characteristics helpful in sending people to ART centers and bridging the gap between those detected at ICTC and those who reach at ART centers.

Key words: Antiretroviral treatment, HIV/AIDS, modes of transmission, sociodemographic determinants

INTRODUCTION

Adult population in Gujarat has HIV sero-prevalence of 0.37% putting the estimate of people living with HIV and AIDS (PLHA) at 1.37 lakhs (in 2009). Timely instituted antiretroviral therapy (ART) improves the quality of life and increases the survival of PLHAs. Improved access to HIV testing and counseling and ART together could significantly reduce infection rates.[1] Transmission rates can be as high as 10 times for a person who is not on ART (5.6 per 100 person years) than those who are (0.5 per 100 person years). Currently Gujarat has 21 ART centers (ARTC), 29 link ART centers (LAC), and 14 community care centers (CCC), which have more than 19,000 patients “on ART.” A gap still exists between those detected as HIV-positives and those who report on ARTC. With so many patients joining at treatment, it becomes essential to ensure the regular compliance and drug adherence in them – most crucial aspect of this therapy.

Sexual, especially the heterosexual, transmission is the main driver of the epidemic in most of India, accounting for nearly 90% of nationwide prevalence.[2] In order to implement the desired intervention, the epidemiology of modes of transmission (HIV/AIDS) in a particular region has
to be understood with regard to sociodemographic factors, level of awareness, as well as risk behavior of the population. It is so because the effective approach for the prevention and control of infection/disease is through awareness generation and lifestyle changes.^[3] This ARTC-based study was planned with the objective to find out profile of HIV-positives and association with sociodemographic determinants of modes of transmission. Findings of this study may help in redesigning the strategy to bridge the gap between those detected and registered at ART centers.

**MATERIALS AND METHODS**

Study data were gathered by five medical students of sixth semester of a teaching institute during Community Medicine posting. First they underwent extensive training on various components of HIV/AIDS by the author (RS), later the performa was designed and pilot-tested at ARTC Mahesana during August 2009. Later the performa was modified. This pretested structured questionnaire was used on 132 clients at ARTC of Civil Hospital, Ahmadabad. Clients receiving ART during September 2009 were interviewed after the prior approval from the institutional authorities and informed consent from clients. Here 132 cases were selected serially for the duration of the posting of students. Sample size was considered adequate to document the routes of acquiring infection and various sociodemographic factors. Data were complied and analyzed in EPI INFO package.

**OBSERVATIONS**

Out of total 132 patients, 79 (59.8%) were males, 52 (39.4%) females including 1 transgender. All subjects were adults (>15 years) and none of them gave history suggestive of mother-to-child transmission. Majority were married (79.8%), literates (78%), urbanites (62%), and natives (59%) [Table 1]. One-fourth of them were housewives, 22% farmers, 4.5% truck drivers, 12.1% unemployed (including 1.5% students) [Table 2]. Half of them came to know their HIV status from VCTC (ICTC general), followed by physicians (28.8%) and rest from RNTCP (10.6%), PPTCT (6%), self-referral (3%), and accidentally detected (0.8%) [Table 3] and 9.8% reached on ART without pre- and post-test counseling; large number informed their spouse (87.9%) and family (78.8%). Among the couples, 55.3% were of discordant type [Table 3].

Based on self-reporting, 78 (59%) clients acquired it by heterosexual and 5 (3.8%) by homosexual

| Determinants/ modes of transmission | Sexual* | Blood transfusion | Injecting drug users | Unknown | Descriptive statistics |
|------------------------------------|---------|-------------------|----------------------|---------|----------------------|
| Age (yrs) (N = 132)                |         |                   |                      |         |                      |
| 15-24                              | 7 (5.3) | 0                 | 1 (0.8)              | 2 (1.6) | \(X^2 = 5.07\)       |
| 25-34                              | 25 (18.9)| 1 (0.8)          | 5 (3.8)              | 3 (2.3) | \(df = 3\)           |
| 35-44                              | 31 (23.5)| 4 (3.0)          | 4 (3.0)              | 9 (6.8) | \(P > 0.05\)         |
| >45                                | 20 (15.1)| 3 (2.3)          | 2 (1.6)              | 15 (11.4)|                      |
| Gender (N = 132)                   |         |                   |                      |         |                      |
| Male                               | 43 (32.6)| 3 (2.3)          | 9 (6.8)              | 23 (17.4)| \(X^2 = 4.99\)       |
| Female                             | 40** (30.3)| 5 (3.8)        | 3 (2.3)              | 6 (4.6) | \(df = 1\)           |
| Marital status (N = 132)           |         |                   |                      |         |                      |
| Unmarried                          | 8 (6.1) | 0                 | 4 (3.0)              | 1 (0.8) | \(X^2 = 7.61\)       |
| Married                            | 70 (53.0)| 8(6.0)          | 7 (5.3)              | 20 (15.2)| \(df = 2\)           |
| Divorced                           | 2 (1.6) | 0                 | 0                    | 4 (3.0) | \(P = 0.05\)         |
| Widow/widower                      | 2 (1.6) | 0                 | 2 (1.6)              | 4 (3.0) |                      |
| Residential status (N = 132)       |         |                   |                      |         |                      |
| Urban                              | 51 (38.6)| 7 (5.3)          | 8 (6.1)              | 16 (12.1)| \(X^2 = .05\)        |
| Rural                              | 32 (24.2)| 1 (0.8)          | 4 (3.0)              | 13 (9.9) | \(df = 1\)           |
| Migrant status (N = 132)           |         |                   |                      |         |                      |
| Migrant                            | 40 (30.3)| 0                 | 2 (1.6)              | 12 (9.1) | \(X^2 = 4.73\)       |
| Local (native)                     | 43 (32.6)| 8 (6.1)          | 10 (7.6)             | 17 (12.9)| \(df=1\)            |

*Figures in parenthesis indicate percent values, *Include five patients with history of MSM relations, **Include one transgender with history of MSM relations
underreporting is possible as in 29 (22%) cases; counselors could not elicit the route of transmission [Table 1] Sexual route needs to be targeted because 25–34 years age group accounted for 73.5% cases. Further the contribution was more in females (73%) than males (50.6%). Even alarming was the fact that among those infected by sexual route, half were unmarried. Five persons who got infected from MSM relations include one transgender and two men above 55 years of age. Blood transfusion was identified by 8 (6%); none of the unmarried acquired infection through this mode. Injectable drug users were 12 (9%) and included both males (11.3%) and females (5.7%). Out of six truck drivers five acquired it from heterosexual route and in case of one, counselor could not get information. Up to SSC, there was not much difference but after HSC, proportion of clients decreased and decline was more obvious for heterosexual mode of transmission from 14.4% to 6%.

**DISCUSSION**

Mean age of study subject (38.7+10.3 years)

### Table 2: Sociodemographic determinants of study subjects (N = 132)

| Determinants                  | Sexual | Blood transfusion | Injecting drug users | Unknown | Descriptive statistics |
|-------------------------------|--------|-------------------|----------------------|---------|------------------------|
| Educational status (N = 132)  |        |                   |                      |         |                        |
| Illiterate*                   | 30 (22.7) | 4 (3.0)         | 2 (1.6)             | 12 (9.1) | $\chi^2 = 0.0$ df = 2 $P \geq 0.05$ |
| Up to primary                 | 15 (11.4) | 1 (0.8)         | 4 (3.0)             | 4 (3.0) |                        |
| Up to SSC                     | 20 (15.2) | 3 (2.3)         | 2 (2.3)             | 6 (4.6) |                        |
| SSC and above                 | 18 (13.6) | 0                | 4 (3.0)             | 7 (5.3) |                        |
| Occupation (N = 132)          |        |                   |                      |         |                        |
| Agriculture                   | 16 (12.1) | 1 (0.8)         | 2 (1.6)             | 10 (7.6) | $\chi^2 = 3.38$ df=4 $P > 0.10$ |
| Truck driver                  | 5 (3.8)   | 0                | 0                   | 1 (0.8) |                        |
| Factory worker                | 11 (8.3)   | 1 (0.8)         | 3 (2.3)             | 6 (4.6) |                        |
| Unemployed and student        | 12 (9.1)   | 1 (0.8)         | 1 (0.8)             | 2 (1.6) |                        |
| Housewife                     | 23 (17.4)  | 3 (2.3)         | 1 (0.8)             | 5 (3.8) |                        |
| Retired/others not specified  | 16 (12.1)  | 2 (1.6)         | 5 (3.8)             | 5 (3.8) |                        |

Figures in parenthesis indicate percent values, *Also include just literate (with no formal schooling)

### Table 3: Role of integrated testing and counseling center (N = 132)

| Characteristics                  | Sexual | Blood transfusion | Injecting drug users | Unknown | Descriptive statistics |
|----------------------------------|--------|-------------------|----------------------|---------|------------------------|
| Source of referral (N = 132)     |        |                   |                      |         |                        |
| VCTC                             | 45 (34.1) | 4 (3.0)         | 6 (4.6)             | 12 (9.1) | $\chi^2 = 5.21$ df = 3 $P > 0.10$ |
| RNTCP                            | 5 (3.8)   | 1 (0.8)         | 0                   | 8 (6.1) |                        |
| Physician ref.                   | 24 (18.2) | 2 (1.6)         | 5 (3.8)             | 7 (5.3) |                        |
| Self check up                    | 4 (3.0)   | 1 (0.8)         | 0                   | 0       |                        |
| PPTCT                            | 5 (3.8)   | 0                | 1 (0.8)             | 2 (1.6) |                        |
| Pre-test counseling status (N = 130) |        |                   |                      |         |                        |
| Done                             | 72 (55.4) | 8 (6.2)         | 12 (9.2)            | 25 (19.2) | $\chi^2 = 0.30$ df = 1 $P > 0.10$ |
| Not done                         | 9 (6.9)    | 0                | 0                   | 4 (3.1) |                        |
| Informed to spouse (N = 125)     |        |                   |                      |         |                        |
| Yes                              | 75 (60.0) | 7 (5.6)         | 10 (8.0)            | 24 (19.2) | $\chi^2 = 0.02$ df = 1 $P > 0.10$ |
| No                               | 6 (4.8)    | 2 (1.6)         | 0                   | 1 (0.8) |                        |
| Informed to family (N = 131)     |        |                   |                      |         |                        |
| Yes                              | 63 (48.1) | 7 (5.3)         | 10 (7.6)            | 24 (18.3) | $\chi^2 = 1.69$ df = 1 $P \geq 0.10$ |
| No                               | 20 (15.3)  | 1 (0.8)         | 2 (15.3)            | 4 (3.1) |                        |
| Spouse HIV status (N = 115)      |        |                   |                      |         |                        |
| Concordant                       | 44 (38.3) | 3 (2.6)         | 3 (2.6)             | 9 (7.8) | $\chi^2 = 4.65$ df = 1 $P < 0.05$ |
| Discordant                       | 31 (27.0)  | 5 (4.4)         | 6 (5.2)             | 14 (12.2) |                        |

Figures in parenthesis indicate percent values
indicates a shift whereby younger persons are reporting at ART centers. Presence of almost 40% female subjects on ART shows feminization of epidemic. Globally women make up 50% of those affected, up from 41% just 6 years ago. Proportion of subjects from sexually active age group (62%) was less than national figure of 89% for 20–49 years age group. Males accessed ART services more than females in this study, which indicates some barriers preventing the access of females even now.

Better education helps to cope up with disease as shown by a Chennai-based study that patient with better education had significantly higher domain scores. Present study found up to SSC proportion of clients as well as sexual route was almost same but for those educated up to HSC and above it came down. The demographic profile of clients of VCTC attendees elsewhere was 64% males, 75% in the age group of 20–49 years, 80% currently married, 70% literates, 66% gainfully employed, one-fourth were housewives, 98% lived with families. And 78 (59.1%) clients acquired it by sexual mode and one-fifth of them did not disclose their mode of transmission. The route of transmission reported among HIV-positive male and female clients of ICTC is mainly heterosexual contact (77% and 79%, respectively). Therefore for behavioral change communication (BCC) and effective positive prevention, it is essential to explore HRB of each and every client.

Another important bridge population is the long-route truck drivers of India; 70% of them have sexually transmitted infections and on an average they have 200 sexual encounters per year. Therefore it was not surprising to find five out of six PLHA truck driver in this study to have acquired the infection through heterosexual route (remaining one did not mention the route). Present study reinforces the need to work more intensively with this population.

The use of nonsterile injecting drug equipment is the principal driver of HIV epidemic in NE of India; 20 districts showed 5% or more HIV prevalence among IDUs in 2008–09 and is a critical in fuelling HIV epidemics among injecting drug users (IDU). There were three women who acquired it by this mode, which is a matter of concern. In BSS 2006, the proportion of respondents being aware of HIV transmission through needle sharing varied between 86% and 97%. Survey in Chennai showed that 6.5% of MSM were HIV infected against 0.9% of heterosexual men. A Mumbai study among MSM and transgender in the same year showed that 17% MSM and over 60% transgender were HIV-positive. UNAIDS estimated that in 2005 only 9% of MSM had access to any type of HIV prevention program. Out of five homosexual in our study, one was student, another one factory worker, and three were educated to SSC and above.

One-fifth clients in present study were from rural areas, which confirm that the epidemic is moving from urban to rural areas; better surveillance can explore more clients. Migration itself is not a risk factor for HIV but the circumstances in which migration occurs increases vulnerability to infection. In present study, the distribution of HIV was equal between migrants and locals; 13 (9.8%) clients were not counseled at all at ICTC – they may transmit this infection, may not adhere to treatment as they have not received the needed psychosocial support.

Blood transfusion is second established route of transmission after sexual route, which has reduced but is still around 2%, much lower than present study (6%). Those who acquired it form blood route informed their spouse as well as family, while those who acquired it from sexual route did not inform to their spouse (7) and family (18). Because of stigma associated with sexual route, a PLHA (infected through sexual route) finds it difficult to share HIV status with his/her spouse/family. Same is not the case when it is acquired through blood route. Presence of 28 discordant couples in the study can be due to the quality of counseling and adoption of safe sex and other preventive measures. With successful intervention, this number can be increased further.

**CONCLUSION**

All four modes of transmission were associated with typical epidemiological determinants and have impact on accessibility of preventive/curative services and treatment-seeking behavior. It underscores the need for more skill and professional training to ART counselors so that they can create more awareness about safer sex and provide much needed psychological support to PLHAs for taking ART with needed drug adherence. PLHAS are easily able to discuss their issues and share their identity which will also benefit the society through reduction in stigma and discrimination and the positive prevention.

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