

HIV/AIDS Epidemic Features and Trends in Iran, 1986–2006

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Abstract This study describes the reported HIV/AIDS data for all verified cases in Iran between 1986 and 2006. The cumulative number of the reported cases of HIV/AIDS among Iranians, up to the end of September 2006 was 13,702. Over the 20-year surveillance period, the rate of HIV/AIDS infections diagnosed annually among Iranian citizens gradually increased and, over the period 1997–2004, it reached from 1.38 to 4.6 cases per 100,000 populations per year. Our findings highlight the need for intensified HIV prevention efforts with men who use drugs via injection and strengthened efforts to encourage the individual at risk to get tested for HIV.

Keywords HIV · AIDS · Surveillance · Iran

Introduction

In countries of the Middle East and North Africa, the visible trend of HIV and AIDS is towards an increasing number of cases. Large numbers of outbreaks of HIV infection have been noticed among injecting drug users in

some countries in the Middle East and North Africa in recent years. The major modes of transmission among adults in the Middle East and North Africa are heterosexual contact and intravenous drug use (WHO and UNAIDS 2003). Yet, as it pertains to HIV, some of the practices that stem from gender inequality in the Middle East and North Africa regions, particularly the strong prohibitions against extramarital sex that are applied more strictly to women than men are associated with lower prevalence. Statistical evidence indicates that the percentage of women with HIV/AIDS is lower in the Middle East and North Africa (mostly under 25%) than in other regions; for example, 57% in sub-Saharan Africa (WHO and UNAIDS 2006). A comparative analysis of data from African countries showed that the prevalence of HIV was negatively associated with the percentage of the population that is Muslim (Gray 2004). It is possible that some practices, such as low alcohol use and male circumcision among Muslim populations contribute to decreasing the risk of HIV transmission (Obermeyer 2006).

Information on HIV epidemiology in Iran and other Muslim countries is limited. Although some data are available, there is much that is still unknown (e.g. whether there are differences in HIV risk profiles for men versus women?). In Iran, the first case of HIV was diagnosed in 1987. Since that time, surveillance of HIV/AIDS in Iran has faced many challenges, such as under-reporting and difficulties in reaching high-risk groups, leading to an inaccurate and incomplete epidemiological profile. In addition, there is a lack of information about these high-risk groups, although the size of some of these groups, like intravenous drug users, seems to be large. Moreover, Iran is located on a major narcotics transit route in the region and her neighbor, Afghanistan, is the biggest narcotics producer in the world. In Iran, the drug addiction rate, particularly

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through injection, has been growing and is the main risk factor associated with HIV infection (Ramezani et al. 2006). The Iranian Ministry of Health and Medical Education has recently announced an estimated figure of 200,000 injecting drug users in Iran (Gheiratmand et al. 2005). Therefore, studying HIV/AIDS epidemic features is of great importance in Iran.

To date, there appears to be no readily available research exploring the features of the HIV epidemic in Iran and those published papers are restricted to subjects such as mode of transmission of HIV. The present study is an investigation of the recent trends in the number of reported cases of HIV and AIDS based on HIV/AIDS surveillance data available in Iran through September 2006. Moreover, the study aims at the assessment of the actual extent of the epidemic through an estimation of the total HIV infections.

A national committee to combat HIV/AIDS, chaired by the minister of health, was set up in 1987. This committee provided policy guidance to the national AIDS programmers. The National Strategic Plan, based on multi-sectoral collaboration and co-ordination, focuses on prevention and contains the major strategies, such as providing patients and community with information, educational material and communication, doing serological and behavioral surveillance, voluntary testing and counseling of patients and blood safety and HIV care, as well as support and treatment.

About 1.2 million people are annually tested for HIV in Iran. Injecting drug users and STD patients are among those who are tested. Medicines, which help the infected persons live longer, are distributed free of charge. The government is starting a telephone counseling initiative and national distribution of 10 million brochures on HIV. There are more than 154 sites for voluntary testing and counseling and more than 600 sites for voluntary counseling only.

In 2000, the government set up “Triangular Clinics” in Iran. Three main measures have been taken in these clinics, namely, (1) reducing the level of risk among injecting drug users, (2) effectively treating those suffering from sexually transmitted diseases, and (3) protecting and supporting patients infected with HIV/AIDS. In fact, the clinics are set up to facilitate the organization and provision of integrated services to the patients and those who are at risk. Triangular Clinics are recognized as representing the best practice in the Middle East and North Africa for controlling and preventing HIV/AIDS infection (YOUANDAIDS 2006). These clinics have so far been established in all provinces where integrated nationwide services are provided.

Method

To describe the demographic and temporal characteristics of the HIV/AIDS epidemic in Iran, the data on HIV/AIDS

cases from 1986 to the end of September 2006, collected by the Center for Disease Control (CDC) were analyzed at the Iranian Ministry of Health and Medical Education (MOHME). HIV/AIDS cases were diagnosed by testing certain groups of individuals, including suspected seropositives, risk-related contacts of seropositive persons, blood donors, prisoners, staff members in certain occupations, voluntary testers, and intravenous drug users. Tests for diagnosis included an initial test, using ELISA, and a confirmatory test, using Western Blot. Confirmed positive cases were reported to regional health authorities and, through regional AIDS coordinators, to the National AIDS Program.

The variables studied included age, sex, and reported mode of transmission. The same classification appearing in WHO UNAIDS annual reports utilized as global and regional data reference was used in this study. The HIV coverage rate technique was applied for estimating overall HIV infection. The HIV coverage rate is defined as the ratio of reported AIDS cases with prior report as HIV positive to the total number of reported AIDS cases. To obtain an estimate of all HIV infections, the reciprocal of this ratio was multiplied by the number of all reported infections (Matsuyama et al. 1999). Descriptive statistics were employed to analyze, summarize, and organize the data.

Results

HIV/AIDS Cases

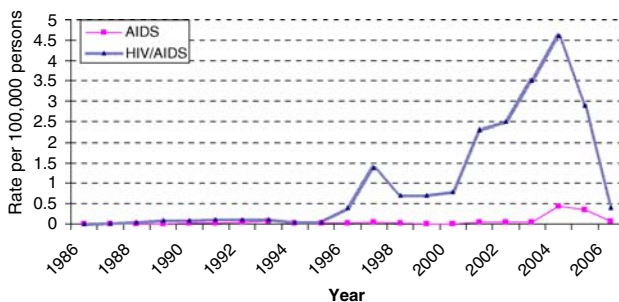
The cumulative reported numbers of HIV/AIDS among Iranians to the end of September 2006 was 13,702. Results are summarized in Table 1.

Figure 1 shows the annual reported HIV/AIDS and AIDS infections among Iranian citizens. The number of the newly reported HIV/AIDS cases increased significantly over the 20-year period from 0.01 case per 100,000 persons in 1984 to 4.3 cases per 100,000 persons in 2004. Of the 13,702 HIV/AIDS cases among Iranians, 94.5% and 5.5% were male and female, respectively.

Table 2 shows the prevalence rates of HIV/AIDS infections in 2006 per 100,000 by age groups and sex. Overall and in all age groups, the HIV/AIDS were higher among males. The total HIV/AIDS rate for males (36.4 per 100,000) was 16.5 times more than the rate for females (2.2 per 100,000). In particular, the rate of HIV/AIDS infections for persons aged 25–34 years was 13.2 times more than the rate for persons aged 15–24, and 1.2 times more than the rate for those aged 35–44. Children under 15 years of age comprised approximately 0.77%, adults 15–44 years, 76.6%, and adults over 44 years accounted

Table 1 Number of HIV/AIDS, HIV and death cases by category of transmission among Iranian, 1986–2006

	Male	Female	Total
<i>HIV/AIDS category</i>			
Injection drug use	8765 (91.1)	84 (15.5)	8894 (64.58)
Sexual contact	601 (6.2)	410 (75.5)	1011 (7.37)
Prenatal	223 (2.3)	17 (3.2)	240 (1.75)
Mother	35 (0.4)	32 (5.9)	67 (0.49)
Unspecified	3325 (25.6)	210 (27.9)	3535 (25.79)
Total	12949 (94.5)	753 (5.5)	13702 (100)
<i>AIDS category</i>			
Injection drug use	463 (61.2)	1 (1.4)	464 (56.2)
Sexual contact	111 (14.7)	47 (61.7)	158 (19.1)
Blood	117 (15.5)	7 (10)	124 (15)
Prenatal	10 (1.3)	2 (2.9)	12 (1.5)
Unspecified	55 (7.3)	13 (18.6)	68 (8.2)
Total	756 (91.5)	70 (8.5)	826 (100)
<i>Deaths category</i>			
Injection drug use	1217 (73.9)	10 (16.2)	1227 (71.8)
Sexual contact	131 (8)	34 (54.8)	165 (9.6)
Blood	115 (7)	9 (14.5)	124 (7.3)
Prenatal	9 (0.5)	1 (1.6)	10 (0.6)
Unspecified	175 (10.6)	8 (12.9)	62 (3.6)
Total	1647 (96.4)	62 (3.6)	1709 (100)

**Fig. 1** Newly reported cases of HIV/AIDS in Iran (1986–2006)

for 22.6% of all HIV/AIDS-infected Iranians. By HIV/AIDS transmission category hierarchy, 91.1% of the males diagnosed were classified in the injection drug use category, 6.2% in the sexual activity, and 2.3% in the blood transfusion. Among the females, 75.5% were classified in the heterosexual contact category, 15.5% in the injection drug use, and 3.1% in the blood transfusion (Table 1).

AIDS Cases

The cumulative number of reported cases of AIDS (those still alive) among Iranians, up to the end of September 2006, was 826, according to the expanded WHO AIDS

case definition for surveillance. Of these, 91.5% were males and 8.5% were females (Table 1). In total, 7.9% of AIDS cases were between the ages of 0 and 24 years and 70.8% between the ages of 25 and 44 years. (Table 2). By HIV/AIDS transmission category hierarchy, 61.2% of the males diagnosed were classified in the injection drug use, 14.7% in the sexual activity, and 15.5% in the blood transfusion category. Of the females, 61.7% were classified in the heterosexual contact, 10% in the blood transfusion, 2.9% in the perinatal, and 1.4% in the injection drug use category (Table 2). For 18.6% of all AIDS cases, transmission category was unknown.

Deaths

From 1986 to September 2006, there were 1709 deaths among AIDS cases nationwide. Of these, 96.4% were males and 3.6% were females (Table 1). Of the deaths among males, 7.9% were categorized in the sexual contact and 73.9% in the injection drug use group. Deaths among females by HIV/AIDS transmission were categorized as 54.8% in the heterosexual contact and 16.1% in the injection drug use group.

Figure 2 shows that HIV transmission due to infected transfused blood has been declining since 1994, with no reported cases since 2003. The reverse is true for both sexual transmission and cases linked with intravenous drug use where the trend has greatly increased in the last few years. The overall coverage rate of HIV reporting was 20%, so the estimated cumulative number of HIV-infected Iranians, including hidden cases until the end of the year 2006, could be about 68,525 infections.

Discussion

In this study, the recent trends in the number of people reported with HIV and AIDS, based on the HIV/AIDS surveillance data available in Iran through September 2006, was investigated. The rate of newly reported HIV/AIDS cases among Iranians was found to be increasing significantly. In particular, the rate from 2001 to 2006 seemed to have increased rapidly. We noticed fluctuations in the data for the years 1996 and 2001 and there was a peak in 2004. Although these fluctuations are not meaningful, the growing number of new cases can be because of both the advancement in diagnostic methods and the increasing number of the infected people, which is due to increase of IDUs in Iran.

The rate of newly reported HIV/AIDS cases among Iranians was found to be decreasing during 2006. The progressive growth of the disease in the prior years was harnessed by establishing socially reliable drug-weaning

Table 2 Number and rate (per 100000 populations) of HIV/AIDS diagnoses among Iranians, 1986–2006

Age groups	Sex				Total	
	Male		Female		Number (%)	Rate
	Number (%)	Rate	Number (%)	Rate		
0–4	19 (0.2)	0.6	12 (1.9)	0.4	31 (29.6)	0.5
5–14	27 (0.3)	0.3	23 (3.6)	0.3	50 (0.5)	0.3
15–24	462 (4.7)	6.5	72 (11.3)	1	534 (5.1)	3.7
25–34	4002 (40.7)	78.5	237 (37.3)	4.7	4239 (40.5)	48.9
35–44	3069 (31.2)	81	171 (26.9)	4.6	3240 (31)	43.5
45–54	1825 (18.6)	89	82 (12.9)	3.9	1907 (18.2)	4.6
55–64	366 (3.7)	21.4	30 (4.7)	2	396 (3.8)	12.3
65+	56 (0.6)	3.5	8 (1.3)	0.5	64 (0.61)	2.1
Unspecified	3123 (24.1)	–	11 (15.7)	–	3241 (23.7)	–
Total	12949 (94.5)	36.4	753 (5.5)	2.2	13702 (100)	19.6

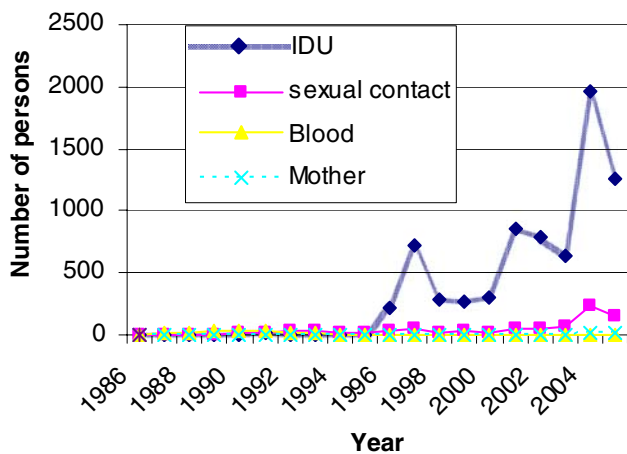


Fig. 2 Mode of transmission of HIV infections in Iran (1986–2006)

clinics, teaching and treating more IDUs in the clinics, and motivating the addicted to use sterile needles. It is important to carefully continue monitoring this increasing trend in Iran.

The rate of reported AIDS cases among Iranians gradually increased and peaked in 2004. This trend in the reported number of HIV infections over the years does not reflect the change in incidence. Since it includes newly reported cases, it does not distinguish between people who acquired the virus recently and those who were infected many years ago. For that reason, HIV infections reported among adolescents and young adults in the age group of 15–24 years are considered a more accurate monitor for new and recent HIV infections due to the expected short period of risky behavior for this age group. In our study, this age group constituted only 6.6% of all HIV infections, compared to 30% in sub-Saharan Africa (WHO and UNAIDS 2002).

Gender distribution and distribution by mode of transmission among HIV-infected Iranians revealed a unique

pattern with a predominance of males over females, by a ratio of 16.5:1. This is different from other countries in the Middle East which experience an equal gender distribution of infection. It is also contrary to sub-Saharan Africa, where women are more affected (WHO and UNAIDS 2002). Male predominance is a characteristic of the “Pattern 2” epidemic, which is seen in industrialized countries and Europe. Women accounted for only 18% of HIV infections in the United States in 1999 and 25% of HIV infections in Europe (Hader et al. 2001; WHO and UNAIDS 2002). This was explained by homosexuality and drug use being the main mode of transmissions in these countries (Kevin and Janssen 2002). In the USA, 60% of men were infected through homosexual relations and 25% through injecting drug use (Kevin and Janssen 2002). In Saudi Arabia, homosexuals and drug users were not of significant proportions among HIV cases (Alrajhi et al. 2004). The main risk factor for men is drug use via injection, whereas heterosexual contact accounts for the largest proportion of HIV and AIDS cases among Iranian women. Our data suggest that in Iran, injecting drug use among men is widespread and that this explains the predominance of HIV diagnoses among male IDUs. Owing to the reported number of the HIV/AIDS afflicted and the lack of female sexual freedom, most infected women have caught HIV through their husbands (Ebrahimi 2008). As the most of IDUs and the majority of those who travel abroad are males, females run a lower risk of HIV. Therefore, the greater exposure to the disease applies to men more than women.

The sharing of unclean injecting equipment is one of the most efficient means of transmitting HIV and other blood-borne organisms. In many countries, AIDS epidemic started among injecting drug users before spreading to other population groups. Before 1995, HIV/AIDS epidemic in

Iran had primarily spread via blood transfusion. Unfortunately, the number of newly reported HIV cases has risen sharply after 1995 and IDU has become the largest contributing factor to the HIV/AIDS epidemic in the Iran. There are also two major external reasons affecting the spread of HIV/AIDS in the country. First, since the country is located on a major narcotics transit route in the region and neighbors Afghanistan, the drug addiction rate, particularly through injection, has been growing. Second, to the north of Iran, there are the Newly Independent Countries (NICs) that are suffering from one of the fastest growing HIV/AIDS epidemics in the world. Therefore, the rapid spread of HIV/AIDS in the neighboring countries, especially as a result of narcotics smuggling, has in turn caused the increase of HIV/AIDS infection amongst domestic injecting drug users. In Iran, addiction is not religiously prohibited, but rather it is considered a disease. Thus, in recent years, the government and the private sector have jointly established a good number of drug-weaning clinics where the addicted and especially IDUs are educated and treated. Although legal and religious scruples ban any sexual freedom in Iran, there exists some undeniable degree of HIV transmission through secret intercourse. The transmission by blood transfusion shows that most of the cases infected through contaminated blood were registered before 1993. These patients most probably received blood unscreened for HIV in the 1980 s before blood safety measures were taken. However, the incidence of this type of transmission significantly declined after implementation of blood safety policies. Adults 15–44 years of age old were found to comprise 76.6% of all cases, a fact that points to the serious social impact of the disease. Blood transfusion was incriminated as a risk factor for 1.75% of all HIV infections among Iranians, which differs from the 26% reported by Alrajhi and colleagues in Saudi Arabia (Alrajhi 2004). Moreover, 12.5% of infected Iranians had died by September 2006 as compared to 30% worldwide (WHO and UNAIDS 2003).

By applying the coverage rate estimating method to take cases reported up to September 2006, it was found that the total HIV infections in Iran is about 68,500 cases since the emergence of the epidemic (1986 through 2006). As a Muslim country, the cases of HIV and AIDS in Iran seem lower than non Muslim countries. It is possible that some practices among Muslim populations contribute to decreasing the risk of HIV transmission. One is low alcohol use, which reduces inhibition and hence risky behavior. Another is male circumcision, which was shown to reduce infection in a recent trial, and whose protective effect may be shown if other ongoing trials find similar results (Obermeyer 2006). At the same time other population trends, beliefs, and practices in the region may have adverse effects. Most countries have young populations

with a rapidly increasing age at marriage, but young people may be ill equipped to protect themselves against sexually transmitted infections (Obermeyer 2006). All countries of the Middle East and North Africa compile statistics on reported cases of HIV and AIDS, but case definitions are inconsistent and local capacity for diagnosis and reporting is uneven. Nearly all countries screen blood donors, but epidemiological surveillance is lacking and monitoring of special risk groups is infrequent and at times hampered by local sensitivities. Knowledge, attitude, belief, and practice surveys have been carried out in several countries, but information about HIV prevalence and trends in the region is insufficient, under-reporting is likely, and it is not possible to obtain exact statistics or to ascertain the specific determinants of levels and trends of HIV. Several factors may increase the risk of the epidemic. Firstly, the prevalence of sexually transmitted infections is relatively high. Secondly, war, displacement, and migration, which often bring about risky behaviors, may increase vulnerability to HIV in the region. Thirdly, in some countries, subgroups of intravenous drug users may constitute a “bridge” for transmission of HIV to the general population (Kandela 1993).

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