

Changes in HIV demographic patterns in a low prevalence population: no evidence of a shift towards men who have sex with men



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SUMMARY

Objectives: This study aimed to examine the changes in HIV demographics over time in an exceptionally low prevalence population, with particular emphasis on men who have sex with men (MSM).

Methods: A total of 1292 newly diagnosed HIV-positive patients registered in the ACTHIV-IST Study Group database between 2000 and 2014 were included. The changes occurring over time in the characteristics of patients at the time of initial admission were examined retrospectively.

Results: A gradual increase in the total number of newly diagnosed patients was evident during the study period; however, it was not possible to show an increase in the proportion of MSM within the study population ($p = 0.63$). There was a male predominance throughout the study (85% vs. 15%), with further increases in the proportion of males in recent years. The mean age was lower at the end of the study ($p < 0.05$) and there was an increase in the number of unmarried patients ($p < 0.05$).

Conclusions: Sexual preference patterns of HIV patients in extremely low prevalence populations may be different, possibly due to an early phase of the epidemic. Nevertheless, MSM still represent a target subgroup for interventions, since they account for a substantial proportion of cases and a resurgent epidemic may be expected among this group in later phases of the epidemic.

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1. Introduction

Improvements in AIDS-related morbidity and mortality due to advanced treatment options, advances in treatment access, and the establishment of effective prevention strategies, as well as the resulting low rate of new infections even in high burden countries, all represent undisputed successes in the battle of humanity against the initially dreadful HIV pandemic.¹

Men who have sex with men (MSM) represent a group that is particularly vulnerable to HIV infection.² Despite an overall declining trend in the overall HIV epidemic in high-income countries such as North America and Western Europe, where

access to treatment is widespread and effective prevention strategies are actively in effect, HIV prevalence remains high among MSM; there actually appears to be a resurgent HIV epidemic among this particular subgroup.^{3–9} In the USA for example, MSM account for approximately two-thirds of new HIV infections,¹⁰ whereas MSM represent only 4% of the male population.¹¹ This is in contrast with the increased awareness of the disease among MSM.¹² Available data on HIV show that MSM are also at similarly high risk in low- and middle-income countries.^{13–15} In Latin America for example, MSM are at 30-times higher risk of HIV infection compared to the men in the general population.¹⁶ Studies from different parts of the world, including Europe, the USA, China, and Japan, have shown a recent increase in HIV infection among MSM.^{7,17–21} Nevertheless, successful attempts to decrease the frequency of HIV infection in this particularly vulnerable population have also been reported.^{22,23}

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In Turkey, there is no legal restriction on homosexuality; however, it is not approved of by society. MSM do not publicly disclose their sexual preference, in order to prevent any social discrimination, therefore there is a lack of reliable data on the number of MSM in this population and on the prevalence of HIV among this subgroup. Based on unpublished data from a study conducted by a non-governmental organization, the frequency of HIV among 1200 MSM who wished to participate in an anonymous testing study was found to be 13.1%, which is quite high when compared to the general population.

Turkey is a European country with an exceptionally low HIV-1/AIDS prevalence,^{24,25} where the first AIDS case was reported in 1985.²⁶ Based on reported cases, there were about 8200 HIV-positive people by the middle of 2014, corresponding to a prevalence of approximately 1/10 000 in a population of 77 million inhabitants.²⁷ Latest reports indicate that 632 new cases were recorded during the first 6 months of 2014, from which a very low incidence of 1.6/100 000/year can be estimated.²⁷ It should be noted that HIV is a notifiable disease in Turkey and reporting is strictly regulated, thus these figures may well represent actual indexes.

Public awareness, early initiation and adherence to highly active antiretroviral treatment in index cases, and effective prevention strategies are all known to be important in the control of HIV epidemics;^{28–34} thus particularly vulnerable groups represent specific targets for intervention.

To date, no study has examined the change in sexual preference patterns and other demographic characteristics in such a low HIV prevalence population over time. In an attempt to provide a rational basis for prevention strategies and improved treatment access, this study examined the changes in proportion of MSM over time in the largest major city of a low prevalence country.

2. Methods

A total of 1292 newly diagnosed HIV-positive patients registered in the ACTHIV-IST Study Group database between 2000 and 2014 were included in this study. The ACTHIV-IST Study Group (Action against HIV in Istanbul) consists of the infectious disease departments of five training hospitals (three university hospitals and two public state hospitals) in Istanbul, a city located in the north-west of Turkey. Istanbul is the most populated metropolitan city in the country, with a population of more than 15 million. These five infectious disease departments specialize in the management of HIV infection, thus HIV patients are referred to these institutions, and most of the known HIV-positive patients in Istanbul are followed by one of these institutions. The database is updated continuously. Therefore, the ACTHIV-IST database represents well all known HIV-positive patients in Istanbul. This study retrospectively examined the change over time in demographic characteristics of patients at the time of initial admission, including sexual preference, age, sex, and marital status.

HIV positivity was defined as two positive HIV ELISA tests (Architect System, Abbott Diagnostics, Germany) confirmed by Western blot. Sexual preference was recorded as the self-reported sexual preference of each individual, when available. An MSM was defined as a genetically male person who engaged in anal sexual relations with at least one other male, either actively or passively, regardless of how he identified himself. However, transgender persons were excluded.

2.1. Statistical analysis

SPSS version 15.0 software (SPSS Inc., Chicago, IL, USA) was used for the statistical analysis. Since the number of patients registered before 2006 was relatively small, data from these patients were

merged with 2006 data. For the remaining years, each year's data were examined separately. One-way analysis of variance (ANOVA) was used for the comparison of continuous data between years. The Tukey HSD test was used for post hoc analysis. Pearson's Chi-square test was used for the comparison of categorical data, and for pairwise comparisons, the Bonferroni correction was made. A p -value of <0.05 was considered to indicate statistical significance.

3. Results

Figure 1 shows the changes in the proportion of MSM, men, and married individuals over time among newly diagnosed HIV patients. Sexual preference data were available for 1032 patients (80%). Although a gradual increase in the total number of newly diagnosed patients was evident over the study period, it was not possible to show an increase in the proportion of MSM within the study population ($p = 0.63$), who still accounted for 40% of all patients with available preference data.

There was a male predominance throughout the study period (85% vs. 15%), with further increases in the proportion of males in recent years ($p = 0.001$) (Figure 1). The proportion of males was significantly higher in 2012, 2013, and 2014 when compared to 2006 ($p < 0.001$ for all). The number of newly diagnosed female patients was relatively stable, suggesting that the increase in total number can mostly be explained by the increase in male subjects. The mean age changed significantly, with younger patients at diagnosis in the year 2014 when compared to the years 2006 ($p = 0.040$), 2009 ($p = 0.001$), and 2010 ($p = 0.008$) (Figure 2). Information on marital status at the time of diagnosis was available for 1147 patients (89%). Although there were similar proportions of married and unmarried patients at the beginning of the study period, the number of unmarried patients increased and surpassed the number of married patients after 2011 ($p < 0.001$) (Figure 1).

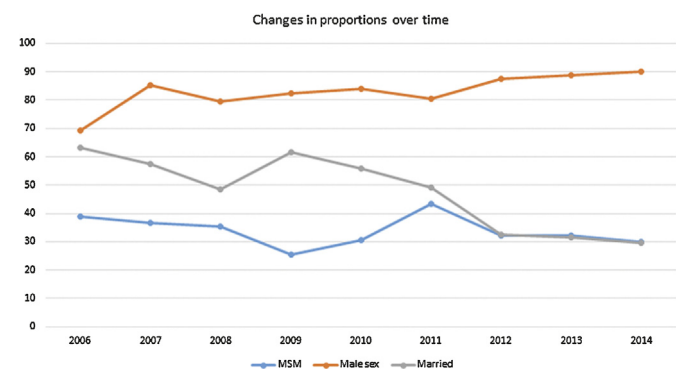


Figure 1. Changes in the proportion of MSM, male sex, and married individuals over time among newly diagnosed HIV patients.

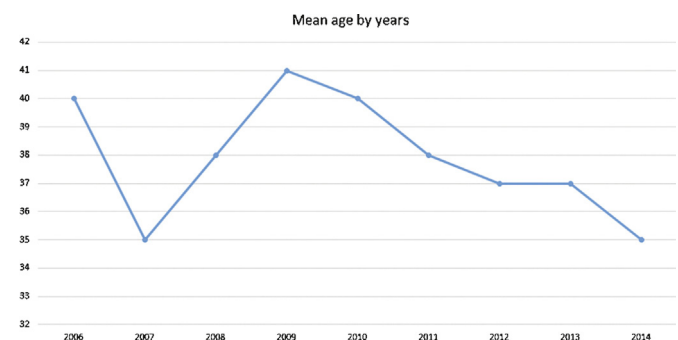


Figure 2. Mean age by year.

4. Discussion

The main finding of this study was the lack of evidence of an epidemiological shift towards MSM type sexual contact as the transmission route over the last decade in a low prevalence population. Population-specific epidemiological findings are important and helpful in terms of developing accurate preventive strategies for the overall control of HIV infection.

Several studies have examined the change in severity of the HIV epidemic among MSM over the years. However, most of the data have come from populations with a relatively high prevalence. Despite several successful attempts to control the epidemic in this high-risk group, many reports from all over the world are pointing to a resurgence of the HIV epidemic among MSM. A longitudinal cohort study reported in 2014 examined the incidence rate of HIV-1 infection and trends among 1862 seronegative MSM in the Italian metropolitan city of Rome throughout a 25-year period (1984–2010).⁷ During the study period, 18% of the subjects seroconverted. The incidence rate increased from 5.2/100 persons/year in 1986 to 9.2/100 persons/year in 1992, then decreased to 1.3/100 persons/year in 2001. However, after 2001, the incidence showed a progressive increase and reached a peak in 2009 at 11.7/100 persons/year. When subgroups were considered, the risk of HIV-1 seroconversion increased during the study period particularly in younger MSM and in those who had acquired syphilis. A European study reported in 2013 supported these findings.¹⁷ Although newly reported HIV cases remained stable in the general population of the European Union region, new HIV-positive cases among young MSM (20–29 years of age) nearly doubled over the years 2003–2012.³⁵

In the USA, the annual rate of diagnosis of HIV infection between 2002 and 2011 decreased by 33.2% from 24.1 per 100 000 population in 2002 to 16.1 per 100 000 population in 2011.¹⁸ The decrease was evident in most subgroups, but although the rate among MSM remained stable overall, it increased in the male age groups of 13–24, 45–54, and ≥ 55 years, and decreased among males aged 35–44 years.¹⁸

Findings suggesting increased HIV infection among MSM during recent years have also been reported from China. The overall HIV prevalence in the Pearl River Delta (China) among MSM increased from 4.7% to 11.4% between 2009 and 2013, with an apparently increasing trend.¹⁹ Similar findings have also been reported from Henan region of China.²⁰ A study from Japan showed an increase in homosexual transmission compared to heterosexual transmission in recent years.²¹ However, there was large regional variation, with the transmission route being predominantly homosexual in Tokyo, Kinki, Tokai, and Kyushu areas, whereas heterosexual transmission was similar or even dominant in the Kanto-Koshinetsu area.

There are a few reports that are in disagreement with the above findings. For example, a recent study examined the self-reported HIV prevalence rate among substance-using MSM in Los Angeles and found a significant decline between the years 2008 and 2011, from 20.2% to 8.1%.²³ However, the results of that study should be interpreted with caution since it was limited by the collection of self-reported data and used a highly specific study sample. In addition, public awareness of HIV infection may be relatively high in the population of Los Angeles when compared to other parts of the world and public education and preventive facilities may be more efficient. A study from the largest metropolitan city of the USA, New York, again examined the self-reported HIV prevalence rate among MSM and failed to find a change between the years 2004 and 2011, despite a decrease in drug use and number of sex partners during this period.³⁶ In addition, the prevalence of HIV testing increased and the prevalence of those who did not disclose or were unaware of their HIV status decreased over the study

period. Although encouraging steps have been taken towards controlling the epidemic among MSM in high-income populations, it still seems to represent a major public health issue among MSM, particularly in large metropolitan areas.

This study examined the demographic trends in relation to HIV-positive patients during the last decade in a very large metropolitan city with an extremely low prevalence population; however, in contrast with the findings from high prevalence populations, no evidence in favour of a resurgence of the epidemic among MSM was found.

In Turkey, homosexual marriage and the adoption of children by homosexual couples are not allowed; however, no other legal restriction exists on homosexuality in general and MSM in particular. On the other hand, the attitude of society is not so liberal and some degree of discrimination still exists; thus, MSM usually prefer not to disclose their sexual preference publicly in an attempt to avoid such discrimination. Social disapproval is more prominent in rural and urban places other than Istanbul. Istanbul is a large metropolis offering some degree of freedom as well as social interaction possibilities through specific bars, cafes, and internet applications, where MSM can develop and improve relationships with individuals of similar sexual preference without restriction. In this study, MSM constituted a substantial proportion of HIV patients; however, an increase in MSM patients among HIV-positive cases over time was not shown. Several factors may account for this finding. MSM communities in Turkey are small and comprise small closed networks. In addition, extremely high numbers of partners for each MSM, as observed in some high prevalence populations, is not a common practice. These factors may prevent the rapid transmission of the disease among MSM at the societal level. Another important finding of this study was the change towards male sex, younger age, and unmarried status during recent years, which may point to an increased risk of contracting the disease among unmarried and young male individuals, probably via heterosexual contact. This potential risk also needs to be addressed within the context of epidemic prevention.

Self-reported sexual preference may be considered a limitation of the study, which may have underestimated the number of new HIV-positive MSM cases in recent years. All Turkish citizens have free access to HIV-related tests and antiretroviral drugs when necessary. However, anonymous testing is currently not common and HIV is a notifiable disease that is strictly regulated. In Turkey, HIV is not considered a disease of MSM, but rather is perceived as a sexually transmitted disease indicating multi-partner sexual relations, which is not an approved practice in the Muslim religion. Thus, the main obstacle in Turkey preventing MSM from accessing healthcare services is not their concerns for disclosure of their sexual preference, but rather disclosure of their HIV positivity. Identified and notified cases on the other hand, are followed at specialized centres where experienced medical personnel take care of the patients on an individual basis with mutual trust and openness. Thus, it is believed that such supportive conditions would have allowed most, if not all, MSM to disclose their preference accurately in this study.

Another limitation may be the lack of true incidence data; the present findings were from the data of registered cases. Nevertheless, these data appear to cover most of the HIV-positive cases in Istanbul and the database is a centralized database for the city.

The globally expanding epidemics of HIV infection among MSM despite a decline in HIV in the overall world population suggest that current prevention strategies are not sufficient particularly for this group and that the development of new focused strategies is warranted. However, understanding the biology of transmission during sexual practices between men and the specific cultural and

social obstacles preventing success are of the utmost importance. Receptive anal intercourse represents the practice with the highest per act transmission. Moreover, MSM usually change roles during the act and multiple partners are common, all putting partners at relatively high risk. The high frequency of high-risk behaviour aids rapid transmission of the disease within closed networks. In addition, controlling the disease through preventive measures is a daunting and time-consuming task, which may require a high level of behavioural change over time to obtain an encouraging effect on HIV incidence. Even substantial improvements in sexual practices including condom use and high levels of behavioural changes may not translate into a demographic gain in the short term.^{13,22} It is most probable that a substantial amount of transmission occurs during the early stages of the disease,³⁷ necessitating the early identification of index cases, which is particularly challenging given the social and cultural circumstances. Discrimination and criminalization both constitute barriers to seeking healthcare. The stigma surrounding MSM not only prevents the provision of healthcare but also limits resource allocation, related research and strategy development, political incentives, and community engagement.

HIV prevention strategies for MSM should include both medical/institutional and societal measures all targeting key points in HIV transmission, identification, and treatment. In addition, measures should be tailored to the cultural background, financial conditions, and regional and individual circumstances. Medical measures include the support of condom use, education targeting behavioural change in terms of both sexual practices and healthcare service seeking, regular HIV testing, pre-exposure and post-exposure prophylaxis where necessary, and seeking and implementing new technologies (such as rectal microbicides³⁸). In addition, at the healthcare services level, the provision of comprehensive and tailored services is necessary, including the provision of competent healthcare workers, easy access to HIV and sexually transmitted infections testing, confidential counselling, antiretroviral treatment, and substance abuse treatment. The most important measures at the societal level would be to stop discrimination and hostility and to promote decriminalization through widespread public education and the use of effective media (including internet and social media) for communication.

In conclusion, as is true for every human being, providing adequate healthcare for MSM is not only essential but also a fundamental human right. The last three decades have witnessed great advances in the control of the HIV epidemic, particularly in high-prevalence countries. However, the situation is not as promising for MSM, perhaps the most vulnerable group, although it was not possible to show an increase in the proportion of MSM within the population of the present study. Sexual preference patterns of HIV patients in extremely low prevalence populations may be different, possibly due to an early phase of the epidemic and other social factors. Nevertheless, MSM still represent a target subgroup for interventions since they account for a substantial proportion of cases and a resurgent epidemic may be expected among this group in later phases of the epidemic. The lesson for low-prevalence countries, which are probably at the very beginning of the epidemic, may be to focus specifically on the MSM population and take all necessary precautions for the prevention of the epidemic before it is too late.

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