

Sexual behaviour reported by a sample of Italian MSM before and after HIV diagnosis

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Summary. In 2006 we conducted a cross-sectional study involving hospital clinical centres in five Italian cities to compare the sexual behaviour of HIV-positive MSM (men who have sex with men) before and after the diagnosis of HIV infection. Each centre was asked to enrol 30 HIV-positive persons aged ≥ 18 years. The questionnaire was administered to 143 MSM on average 9 years after HIV diagnosis. After diagnosis there was a decrease in the number of sexual partners: the percentage of persons who reported having had more than 2 partners decreased from 95.8% before diagnosis to 76.2% after diagnosis. After diagnosis, there was a significant decrease in the percentage of persons who had never (or not always) used a condom with their stable partner for anal sex from 69.2% before diagnosis to 26.6% after diagnosis and for oral-genital sex from 74.8% before diagnosis to 51.7% after diagnosis. Though at-risk behaviour seems to decrease after diagnosis, seropositive MSM continue to engage in at-risk practices: one fourth of them did not use a condom during sexually transmitted infections (STI) episodes, 12.5% of the participants had had sex for money, and 8.4% had paid for sex. The study shows that our sample of Italian HIV-positive MSM, though aware of being infected, engage in sexual behaviours that could sustain transmission of HIV and other STIs. The results could constitute the first step in implementing national prevention programs for persons living with HIV.

Key words: homosexual, HIV, behaviour.

Riassunto (*Il comportamento sessuale di un campione di maschi omo-bisessuali prima e dopo la diagnosi di infezione da HIV*). Nel 2006 abbiamo condotto uno studio trasversale in 5 centri clinici ospedalieri di cinque città italiane per confrontare negli uomini HIV positivi che avevano avuto rapporti sessuali con altri uomini, il comportamento sessuale prima e dopo la diagnosi di infezione da HIV. Ogni centro clinico ha reclutato 30 maschi omosessuali HIV positivi di età ≥ 18 anni. Il questionario, appositamente preparato per questo studio, è stato somministrato a 143 uomini HIV positivi in media 9 anni dopo la diagnosi di HIV. Allo studio hanno partecipato 143 uomini. Dopo la diagnosi di HIV è stata evidenziata una diminuzione del numero di partner sessuali: la percentuale di uomini che avevano più di 2 partner è passata dal 95,8% prima della diagnosi al 76,2% dopo la diagnosi. Dopo la diagnosi di HIV tra le persone con relazioni stabili è diminuita la percentuale di persone che non usavano il preservativo nei rapporti anali dal 69,2% prima della diagnosi al 26,6% dopo la diagnosi e nei rapporti oro-genitali dal 74,8% al 51,7%. Un quarto dei partecipanti ha dichiarato di non aver usato il condom con una infezione sessualmente trasmessa (IST) in atto, il 12,5% aveva avuto rapporti sessuali in cambio di soldi e l'8,4% aveva pagato per avere rapporti sessuali. Questo studio mostra che il nostro campione di omosessuali HIV-positivi, anche se consapevole di essere infetto, ancora pratica comportamenti sessuali a rischio che potrebbero trasmettere l'infezione da HIV e altre IST. I risultati di questo studio potrebbero costituire un primo passo nella realizzazione dei programmi nazionali di prevenzione per le persone affette da HIV.

Parole chiave: omosessuali, HIV, comportamenti.

INTRODUCTION

The success of new antiretroviral therapies has led to a progressive increase in the number of persons living with HIV, who constitute one of the most important factors in the evolution of the epidemic: if these persons do not adopt safe lifestyles (*e.g.*, consistent condom use with all partners), they may facilitate the spread of HIV infection. According to several studies, many HIV-positive persons continue to engage in at-risk behaviour, and awareness of seropositivity does not always translate into safer sexual behaviour [1-4].

This observation also applies to men who have sex with men (MSM). In the last few years, it has been claimed that safer sex practices among MSM are fading. As a result, a sharp increase in the rate of sexually transmitted infections (STI), such as gonorrhoea and syphilis, has been recorded in different European countries [5-11]. Moreover, some studies have shown that persons undergoing highly active antiretroviral therapy (HAART) and those with a non-detectable viral load tend to have unprotected sex more frequently and to have more occasional partners than persons not undergoing HAART and those with a detectable viremia, which could lead to an increase in the probability of transmitting more aggressive and resistant strains [12-15]. However other studies show different results [16, 17] and highlight that being on HAART, having undetectable viral load, reporting more than 90% medication adherence, and having no additional STI were not associated with unprotected intercourse or with an increase of infectivity.

Other studies conducted among general population comparing MSM with heterosexual men have shown that the likelihood of having unprotected sex is 3 times higher among MSM [18].

It has been shown that MSM, engage in behaviour that constitutes a higher risk for HIV infection; however, it can be hypothesised that MSM also change their behaviour after being diagnosed [4].

The objective of this study was to describe the behaviour of HIV-positive MSM before and after the diagnosis of HIV infection and to analyze possible behavioural changes. We also investigated whether awareness of one's HIV seropositivity modifies sexual behaviour and the use of recreational drugs.

MATERIALS AND METHODS

In 2006, we conducted a cross-sectional multicentre study involving five major public clinical centres (*i.e.*, hospital infectious-disease clinics and STI clinics) in five different large cities in Italy: Turin and Milan, in Northern Italy; Rome, in Central Italy; and Bari and Palermo, in Southern Italy. Each of the centres was asked to include 30 consecutive MSM HIV-positive aged ≥ 18 years who had been found to be HIV-positive at least 2 years prior to the study.

An anonymous, specifically designed questionnaire was used to collect the following data: socio-demographic and clinical data; information on drug-using

behaviour (substances used in lifetime, injecting use, syringe exchange); information on sexual behaviour (age at first sexual experience, number of sexual partners in lifetime, sexual orientation, sexual intercourse with sex workers, sexual intercourse for money, condom use during anal/oral intercourse with stable or occasional partner); sexual intercourse in the presence of STIs other than HIV; and the reasons for engaging in unprotected sex and risk perception. All questions referred to both before and after the diagnosis of HIV infection. The questionnaire was administered by trained medical personnel in 2006. Written informed consent was obtained from all the persons before completing the questionnaire.

The McNemar χ^2 and Wilcoxon tests were used to compare the data before and after the diagnosis of HIV infection, to identify any changes. The test for paired data, used to compare behavioural changes in the same individuals before and after diagnosis, was exclusively applied to persons who had provided information for both periods. Statistical analysis was performed using SPSS 17 software (Statistical Package Social Science).

RESULTS

During the study period, 143 of the 150 MSM were agreed to participate (95.3%). None of them were injecting drug users or transfusion recipients. All of them reported that they had engaged in at-risk sexual behaviour. The median age was 36 years (range: 32-44 years). Most participants (83.6%) were Italians; of the 23 non-Italians, 36.4% had been living in Italy for more than 10 years. Of the participants, 86.7% were single, and 8.4% were cohabiting partners (4.9% missing data). Regarding educational level, 3.5% had attended primary school, 23.7% had graduated from middle school, 45.5% had attended high school, and 27.3% had a high school diploma and 0.7% had not attended the school. Regarding economic status, 43.6% reported a monthly salary lower than 1000 Euros, 40.6% of the participants reported a monthly salary of 1000 / 2000 Euros, and 15.8% more than 2000 Euros.

Among the participants, 23.4% had been diagnosed with HIV infection more than 10 years before the interview, 27.0% from 10 years to 6 years before, and 49.6% during the last 5 years or later. According to the classification of the US Centers for Disease Control and Prevention, 59.4% of the participants were in stage A upon enrolment in the study; 18.9% were in stage B and 21.7% in stage C. Overall, 92.6% were treated with HAART. Unfortunately, data on the type of treatment carried were not available.

The median age of sexual debut was 16 years (interquartile range: 14-18). The median time elapsed between the first sexual contact and the diagnosis of HIV infection was 12 years, and the median time elapsed between the diagnosis and the study interview was 9 years.

The number of sexual partners reported before diagnosis was higher than the number reported after diagnosis. This decrease was significant ($p < 0.000$; Wilcoxon test). In particular, the percentage of persons who reported having had 0-2 partners increased from 4.2% before diagnosis to 23.8% after diagnosis whereas it decreased from 95.8% before diagnosis to 76.2% after diagnosis for those with more than 2 partners.

As shown in *Table 1*, 83.2% (no. = 119) of the participants reported that they had had a stable relationship before diagnosis; the percentage decreased to 65.7% (no. = 94) after diagnosis ($p < 0.000$). Eighty-three percent of those who after diagnosis no longer has a stable partner continues to have a occasional partner.

When stratifying for clinical stage, the analysis revealed a marked decrease, especially for persons in stage C (from 90.0% before diagnosis to 66.7% after diagnosis).

After diagnosis, there was a significant decrease in the percentage of persons who had never (or not always) used a condom with their stable partner for anal sex (from 69.2% to 26.6%) and oral-genital sex (from 74.8% to 51.7%). Among the participants, 95.1% (no. = 136) declared that they had had occasional sexual contact before HIV diagnosis, whereas this percentage decreased to 76.2% (no. = 109) after diagnosis ($p < 0.000$) (*Table 1*). After diagnosis, there was a significant decrease ($p < 0.000$) in the percentage of persons who had never (or not always) used a condom with occasional partners for anal sex (from 72.0% to 25.9%) and oral-genital sex (from 83.9% to 56.6%).

Diverse reasons for not using a condom were reported. Among the participants, 47.6% reported some difficulties in using a condom because "it was uncomfortable or it ruined the mood", whereas 35.0% reported that they wanted to "share everything" with their partner. For more than one fifth (22.4%) of the persons not using condoms, the reason was "because anal or oral contact is not a risk". Of these, about 40% continued to not use a condom during anal intercourse with their stable or occasional partners and 90% continued to not use a condom during oral sex with their stable or occasional partners.

A small proportion reported that sex was almost always unprotected "because my viral load is low" (9.8%) or "because I am taking medication" (2.1%). Feelings of distrust or disinterest towards themselves and others were the main reasons for not using a condom for 12.6%.

The percentage of MSM who reported having sexual activity despite their being infected by an STI other than HIV (or their partners being infected) did not significantly change after HIV diagnosis; notably, one fourth of them did not use a condom during STI episodes (data not shown in *Table 1*). In our sample, 12.5% of the participants had had sex for money, and 8.4% had paid for sex. However, there was not a significant change in either of these behaviours after HIV diagnosis.

Among the participants, 118 reported having used non-injecting drugs before HIV diagnosis (30.6% cannabis, 19.3% cocaine, 8.8% ecstasy, 8.1% hallucinogens and 5.6% inhalants). After diagnosis, there was no statistically significant change ($p > 0.05$) in the overall use of drugs. We also compared the sexual and drug-using behaviour of persons undergoing HAART (92.6%) and those not being treated (7.4%); no significant differences were found.

DISCUSSION

To the best of our knowledge, this is the first study in Italy to explore behavioural changes before and after the diagnosis of HIV infection among HIV-positive MSM. The median age of sexual debut was comparable with Italy's general population, as reported in a large survey [19]. The number of sexual partners plays a crucial role in the spread of the epidemic. Overall, in our sample there was a significant reduction in the number of partners after diagnosis. However, it should be considered that, after diagnosis, there may have been fewer partners because fewer years had elapsed between the diagnosis of HIV infection and the interview, as compared to the time elapsed between first sexual contact and the diagnosis. Nonetheless, an half of the participants reported that they had had more than 20 sexual partners after diagnosis. The only national survey on health and risk behaviours of MSM in Italy, which was conducted by the country's largest gay association shows that 12.8% of respondents (both HIV-positive and HIV-negative) claimed to have had more than 20 partners in the previous 12 months [20]. Unfortunately this data are not directly comparable with our study because they are referred to a different elapse of time.

The analysis of sexual behaviour showed a general increase in condom use both with stable partners and occasional ones after diagnosis. However, as shown by previous studies [17] unprotected anal intercourse was still frequent (more than one fourth of the sample) among those who had a stable partner, as was unprotected oral sex (more than half). Of particular concern is the finding that the same trend was observed with occasional partners, with similar proportions of unprotected anal intercourse after diagnosis. Another concern is the percentage of persons who reported that after having been diagnosed they did not use a condom during anal intercourse or oral sex because "anal or oral contact is not a risk", revealing a possible cognitive risk evasion.

The reasons for which these persons continued to engage in at-risk behaviours are not clear, and they can span across different fields. However, this phenomena could in part be addressed with easily implemented measures such as improved individual counselling, which can encourage communication and negotiation of condom use, and the provision of free condoms for HIV-positive persons.

Table 1 | Sexual behaviour with stable partner and occasional partners before and after the diagnosis of HIV infection among MSM

	Before diagnosis		After diagnosis		McNemar test for paired data	
	No.	%	No.	%	χ^2	p-value
Having a stable partner						
Yes	119	83.2	94	65.7	12.80	0.000
No	24	16.8	49	34.3		
Total	143		143			
Condom use with stable partner: anal sex						
Always	14	9.8	50	35.0	28.19	0.000
Not always/never	99	69.2	38	26.6		
No answer	30	21.0	55	38.5		
Total	143		143			
Condom use with stable partner: oral-genital sex						
Always	2	1.4	7	4.9	nc	0.030 ^a
Not always/never	107	74.8	74	51.7		
No answer	34	23.8	62	43.4		
Total	143		143			
Having occasional partners						
Yes	136	95.1	109	76.2	21.80	0.000
No	7	4.9	34	23.8		
Total	143		143			
Condom use with occasional partner: anal sex						
Always	30	21.0	65	45.4	33.62	0.000
Not always/never	103	72.0	37	25.9		
No answer	10	7.0	41	28.7		
Total	143		143			
Condom use with occasional partner: oral-genital sex						
Always	1	0.7	19	13.3	nc	0.000 ^a
Not always/never	120	83.9	81	56.6		
No answer	22	15.4	43	30.1		
Total	143		143			

nc: not calculable.
^aSignificance of binomial test.

The finding of no significant changes after HIV diagnosis in the percentage of MSM who engaged in sexual intercourse despite their being infected by an STI other than HIV (or their partners being infected) suggests that there is a low perception of the role of STIs in enhancing the spread of HIV infection. In fact, one fourth of the MSM who had had sex in the presence of a genital infection did not use a condom. The increased incidence of STIs in HIV-positive MSM recorded in the new millennium suggests that there has been an increase in at-risk sexual behaviour, as reported by several international studies [1, 5, 21-23].

After the diagnosis of HIV infection, the percentage of individuals having sex with sex workers or paying for sex did not significantly change, which is consistent with the findings of other studies, which

found that behaviours related to prostitution or commercial sex are the most difficult to change, despite awareness of HIV-positivity [24].

With regard to recreational drugs, the percentage of persons using them did not change after diagnosis, probably because many of these substances are used to enhance sexual performance. These drugs are also associated with lower condom use, possibly contributing to increasing the risk of transmission [25, 26].

Some limitations of this study should be considered. Although the participating centres were equally distributed in the three geographic areas (*i.e.*, northern, central, and southern Italy) and thus allowed us to have good geographical representation, the convenience sample included in the study might not be fully representative of the Italian HIV-positive

MSM. Moreover, this study design did not provide a control group. Another important limitation was that the small sample size did not allow us to adjust the analysis for time of diagnosis. Furthermore, although data collection through structured interviews ensures a homogeneous and complete response to the questionnaire, the persons interviewed may respond according to what they think is more acceptable to the interviewer [27], or their memory of past behaviour may be affected by their current values regarding that behaviour especially because it is personal issues related to sexuality. Finally, the results may have been affected by recall bias, in that the questions on at-risk behaviour before diagnosis referred to a period that was, on average, 10 years prior to the interview. In fact, the survey covers a very wide and variable period of time. Despite of these limitation, our study clearly showed that a large proportion of MSM after the HIV diagnosis do not have safe behavior in anal intercourses, that is known to be among the most risky [28].

CONCLUSIONS

This is the first study in Italy to evaluate behavioural changes after the diagnosis of HIV infection among MSM. The study shows that our sample of Italian HIV-positive MSM, though aware of be-

ing infected, still engage in sexual behaviours that could sustain transmission of HIV and other STIs. In particular, the results stress that there should be further promotion of consistent condom use during anal and oral intercourse with both stable and occasional partners. The results could constitute the first step in implementing national prevention programs for persons living with HIV and for the rest of the community. Eventually, health professionals, through targeted counselling offered during routine clinical examinations and follow-up, could play a substantial role in increasing the awareness of safer sex among HIV-positive persons.

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Conflict of interest statement

There are no potential conflicts of interest or any financial or personal relationships with other people or organizations that could inappropriately bias conduct and findings of this study.

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