

HIV/AIDS Among Immigrants in Portugal: Socio-Demographic and Behavioural Correlates of Preventive Practices

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1. Introduction

HIV infection remains a major public health concern in Europe, with evidence of continuing transmission of HIV. Surveillance data published by the European Centre for Disease Prevention and Control and the World Health Organization Regional Office for Europe indicate that, in 2009, 53 427 cases of HIV were diagnosed and reported by 49 of the 53 countries in the WHO European Region; the rate of HIV cases diagnosed was 8.5 per 100 000 population in this region (European Centre for Disease Prevention and Control/World Health Organization Regional Office for Europe [ECDC/WHO Regional Office for Europe], 2010). Migration has been acknowledged as a factor influencing the epidemiology of HIV in Europe (ECDC, 2010a). In 2005, 46% of all cases of heterosexually acquired HIV infection in Western Europe involved migrants from high prevalence countries (ECDC, 2009).

Portugal is one of the western European countries with the highest burden of HIV infection (European Centre for the Epidemiological Monitoring of AIDS [EuroHIV], 2007). Recent data estimates that, in 2007, Portugal presented one of the highest rates of new HIV diagnosis in the European Region (ECDC/WHO Regional Office for Europe, 2008). The epidemic has been mainly driven by injecting drug users, but recently sexually transmitted cases are on the rise.

The Portuguese epidemic is of the concentrated type, i.e. prevalence within the general Portuguese is inferior to 1% but specific groups present a high prevalence of HIV infection (National Coordination for HIV/AIDS Infection, 2007). The groups considered most vulnerable, characterized by a more intensive and frequent exposure and by a more difficult access to means of prevention, include the migrants (National Coordination for HIV/AIDS Infection, 2007). In fact, estimates indicate that immigrants represent approximately 20% of Portugal's diagnosed HIV cases, accounting for a disproportionate number of new heterosexually acquired infections (ECDC, 2010a).

In the last decades, immigrants' inflows have increased across most OECD countries (Organisation for Economic Co-operation and Development [OECD], 2011). Statistics on international migration in the European Union (EU) estimate that, in 2008, the total number of non-nationals (people who are not citizens of their country of residence) living on the territory of the EU Member States was 31.8 million, representing 6.4% of the EU's

population (Eurostat, 2010). Around two thirds of all non-nationals living in the EU were citizens of a third country (non-EU Member State).

The proportion of immigrants in Portugal has also continuously increasing. According to recent data, the total stock of foreign population (with a valid residence permit) reached 457 000 in 2009 (4.3% of the total population) (OECD, 2011). Most of these immigrants have come from Brazil, Ukraine and Cape Verde (OECD, 2011).

Migration places populations in situations of greater risk for poor health in general and HIV in particular (ECDC, 2010a; WHO, 2010). The linkages between migration and HIV/Aids are largely related to the conditions and structures of the migration process itself, as in the countries of origin, transit and destination (International Organization for Migration [IOM], 2006). In host countries specifically, factors like poverty, exploitation, lack of legal protection, social exclusion and discrimination may increase the risk of exposure to HIV and may reduce the individual's ability to protect him- or herself from infection (Fenton, 2001; Soskolne & Shtarkshall, 2002). Other potential risk factors for migrants include separation from families and partners, besides separation from the socio-cultural norms that guide behaviours in more stable communities. These circumstances may reinforce the adoption of risk behaviours such as consumption of injection drugs and sexual risk practices (Albarrán & Nyamathi, 2011). Additionally, immigration policies that make integration of migrants in host countries more difficult may have a negative impact on their health (Grove, 2006). In fact, health vulnerability of migrants has been associated to poor access to health care (Derose et al., 2009; Politzer et al., 2001; Stronks et al., 2001). Barriers to health services, including legal, socioeconomic, linguistic and cultural constraints, may result in a reduced utilization of services, in particular for HIV/Aids prevention and care, which makes these groups more vulnerable to HIV and their related complications (Dias et al., 2004; Salama & Dondero, 2001).

Increasing the uptake of HIV testing has been acknowledgedly an important component of primary and secondary prevention strategies (Burns et al., 2005; ECDC, 2010b). Timely HIV testing may lead to improved clinical outcomes through early diagnosis and access to treatment as antiretroviral therapy makes individuals less infectious (Levy et al., 2007; Saracino et al., 2005). Moreover, awareness of positive serostatus may prevent ongoing transmission of disease as it enhances individual behavioural change toward reduced risky sexual behaviour (Ehrlich et al., 2007; Schwarcz et al., 2006).

Given the epidemiological situation in Portugal, national HIV prevention and control efforts targeted to groups most-at-risk as the migrant population have been a priority. During the last decade, one of the main strategies undertaken has been generalizing access to early detection of the infection and promotion of voluntary testing and counselling (National Coordination for HIV/AIDS Infection, 2007). Presently, HIV testing in Portugal is non-mandatory and can be done anonymously, confidentially and for free at the HIV Early Detection and Counselling Centres.

Despite the benefits of HIV testing upon the individual and the community, and the continued efforts to guarantee access to diagnosis and promote the uptake of HIV testing in Portugal, a high proportion of adults in this country remain so far untested (National Coordination for HIV/AIDS Infection, 2007). Since 2001, immigrants in Portugal are entitled to health care regardless of legal status, including free health care to pregnant women and recent mothers, users of family planning programmes and individuals with transmissible

diseases. Nevertheless, evidence on access and utilization of health services among migrants in Portugal suggests that barriers related to legal issues, economic constraints, lack of information of migrants on their health rights and negative attitudes of health professionals remain (Dias et al., 2008, 2010a).

Knowledge on HIV testing among immigrants is limited; nevertheless, the literature indicates that a proportion of these groups remain undiagnosed and tend to utilize HIV health services at a later stage of disease (Burns et al., 2007; Delpierre et al., 2007). A growing body of literature indicates that factors such as socio-demographic (sex, age, country of origin, education, immigration status), behavioural (perceived risk for HIV, risk behaviours) and structural (utilization of health services) are associated with HIV testing (Bond et al., 2005; Stein & Nyamathi, 2000; Stolte et al., 2003; Wang et al., 2010).

Understanding such factors among immigrants may contribute to developing strategies designed to effectively promote HIV testing and reduce undiagnosed infection. This paper aims to describe the proportion of HIV testing among an immigrant population in Portugal and identify demographic, socioeconomic, behavioural and structural factors.

2. Methods

Based on a participatory approach, a cross-sectional study was conducted with a sample of 1282 immigrants (35.7% from Portuguese-speaking African countries, 33.2% from Eastern European countries and 31.1% from Brazil) living in the Lisbon Metropolitan Area. This area has currently the highest concentration of immigrant population in the country. Official data indicate that, in 2010, 43% of the immigrant population in Portugal (around 189 220 immigrants) resided in the Lisbon region (Serviço de Estrangeiros e Fronteiras, 2011).

2.1 Sampling and data collection

Participants were selected through snowball sampling. This sampling method was used as the information available on immigrant population in Portugal does not allow constructing sampling frames for representative population based surveys.

Representatives of non-governmental organisations (NGOs) and associations of African, Brazilian and eastern European immigrants were contacted by the research team and invited to collaborate in the study. The investigators carried out several meetings with NGOs members to present the research' main objectives and procedures and ask their collaboration in publicising the study within the immigrant community and in identifying and recruiting potential participants. The inclusion criteria were being an immigrant, defined as a non-national person who migrated for settlement purposes (IOM, 2004) and being 18 years old or older. These potential participants were personally approached and invited to participate by the research team. After respondents finished filling the questionnaire they were asked to identify and recruit within their social networks other possible participants who met the study criteria.

Data was collected between May 2010 and January 2011 through a questionnaire applied in community based associations, governmental and non-governmental organizations working with immigrant populations. Data collection days were scheduled with these entities based on the availability of free rooms for that purpose. Given the sensitive nature of the subject

under investigation, the questionnaires were administered in a quiet room, in isolation, to ensure privacy and comfort of participants.

Questionnaires were applied by trained interviewers from immigrant communities, recruited and selected in collaboration with NGOs and immigrant associations. The interviewers training included information about the questionnaire, the data collection procedures and general interview techniques. A training manual was elaborated and provided to support interviewers in the field.

The questionnaire comprised closed-ended questions on sociodemographics, self-perception of HIV risk, knowing someone infected, number of sexual partners in Portugal in the last 12 months, having had a consultation on sexual and reproductive health, and HIV testing. The instrument of data collection was constructed along with feedback provided by partners of the study - community based associations, governmental and non-governmental organizations. After the questionnaire was developed, a pre-test was conducted with members of immigrant communities; few amendments were made to improve clarity of the questions and to make it better adapted to the study populations.

Anonymous participation and confidentiality of data was guaranteed. Informed consent was obtained. The study was approved by the Ethical Committee of the Institute of Hygiene and Tropical Medicine, New University of Lisbon.

2.2 Measures

Sociodemographic characteristics included sex, age (continuous variable), origin ('African', 'Brazilian', 'Eastern European'), educational level ('elementary education', 'secondary education', 'higher education'), immigration status ('legal status', 'irregular status'). Length of stay was a continuous variable measured in years.

Self-perception of HIV risk was measured using a dichotomous question on fearing to become infected with HIV ('yes'/'no'). Knowing someone infected (friend or relative) had also two response options: 'yes'/'no'. The number of sexual partners in Portugal in the last 12 months was a continuous variable; for descriptive analysis, this variable was recoded into a three-category variable: '1 sexual partner', '2-4 sexual partners' and '≥ 5 sexual partners'.

Having had a consultation on sexual and reproductive health, having ever been tested for HIV, having been tested in Portugal and having been tested in the last year were measured as dichotomous variables ('yes'/'no').

2.3 Data analysis

Descriptive analysis was conducted for background characteristics of participants; continuous variables are presented as mean ± standard deviation. The associations between socio-demographic characteristics, fear of becoming infected, knowing someone infected, number of sexual partners, having had a consultation on sexual and reproductive health, HIV testing and the three immigrant groups were analysed using the Chi-Square test (for categorical variables) and the Kruskal-Wallis test (for continuous variables).

A logistic regression analysis was performed to identify factors associated with having ever been HIV tested. In the final model, all the variables that were found to be significantly

associated with HIV testing were included: age, sex, origin, educational level, fear of becoming infected, knowing someone infected, number of sexual partners and having had a consultation on sexual and reproductive health. The magnitude of the associations was estimated by means of odds ratios (OR) with 95% confidence intervals. The software SPSS 18.0 was used for all the data analysis.

3. Results

3.1 Socio-demographic characteristics of participants

Of the total sample, more than a half was female (Table 1). Eastern Europeans were significantly older than Africans and Brazilians. Differences on educational level were found across origin. Most participants reported to have legal status, more frequently Eastern Europeans than Brazilians and Africans. The mean length of stay was higher among Africans, compared to Eastern Europeans and Brazilians (Table 1).

| | Total | | African | | Brazilian | | Eastern European | | P value |
|------------------------|-------|------|---------|------|-----------|------|------------------|------|---------|
| | n | % | n | % | n | % | n | % | |
| Sex | | | | | | | | | |
| Female | 715 | 55.8 | 265 | 57.9 | 235 | 55.2 | 215 | 54.0 | 0.504 |
| Male | 567 | 44.2 | 193 | 42.1 | 191 | 44.8 | 183 | 46.0 | |
| Educational level | | | | | | | | | |
| Elementary education | 356 | 27.9 | 269 | 58.7 | 61 | 14.3 | 26 | 6.6 | |
| Secondary education | 480 | 37.6 | 116 | 25.3 | 258 | 60.6 | 106 | 27.0 | <0.001 |
| Higher education | 441 | 34.5 | 73 | 15.9 | 107 | 25.1 | 261 | 66.4 | |
| Immigration status | | | | | | | | | |
| Legal | 1088 | 86.0 | 372 | 82.5 | 356 | 84.4 | 360 | 91.8 | <0.001 |
| Irregular | 177 | 14.0 | 79 | 17.5 | 66 | 15.6 | 32 | 8.2 | |
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | |
| Age (years) | 35.4 | 10.6 | 35.5 | 11.0 | 33.8 | 9.8 | 37.1 | 10.8 | <0.001 |
| Length of stay (years) | 7.9 | 10.2 | 11.6 | 10.2 | 4.1 | 6.1 | 7.8 | 11.9 | <0.001 |

Table 1. Socio-demographic characteristics of participants

3.2 HIV risk perception, knowing someone infected and number of sexual partners

Most participants (59.6%) referred to fear becoming infected with HIV, more frequently Brazilians (69.7%) and Africans (65.8%) compared to Eastern Europeans (41.6%) ($p < 0.001$) (Table 2). Differences were found across sex: a higher proportion of women feared becoming infected compared to men (63.2% vs. 55.0%, respectively) ($p = 0.003$). Origin differences across sexes remained: Brazilian and African women reported more often to fear becoming infected compared to Eastern European women (73.1% and 68.1% vs. 46.2%) ($p < 0.001$), as Brazilian and African men reported more often fearing to become infected than Eastern European men (65.6% and 62.6% vs. 36.1%) ($p < 0.001$).

Almost 28% of participants had a friend or relative infected with HIV, more frequently Brazilians (35.7%) and Africans (25.9%) than Eastern Europeans (19.1%) ($p < 0.001$) (Table 2). Knowing someone infected did not differ significantly between men and women.

The mean number of sexual partners in Portugal in the last 12 months was 1.6 ± 4.2 ; 70% of participants referred having had one sexual partner, 19% had between two and four and 11% had five or more sexual partners (Table 2). Brazilians reported more frequently to have had one sexual partner in the last 12 months (73.4% vs. 68.7% Africans and 67.4% Eastern Europeans); Africans reported more frequently having had between two and four partners (22.2% vs. 20.1% Brazilians and 14.5% Eastern Europeans); Eastern Europeans reported more frequently to have had five or more sexual partners (18.1% vs. 9.1% Africans and 6.5% Brazilians) ($p < 0.001$) (Table 2). Differences by sex were also found, with women reporting more often to have one sexual partner than men (80.6% vs. 57.9%) and men reporting more frequently higher number of sexual partners than women (2-4 partners: 28.7% vs. 10.6%; ≥ 5 partners: 13.4% vs. 8.9%) ($p < 0.001$). In each sex group, the number of sexual partners in Portugal in the last year differed across origins. Among women, more frequently Africans and Brazilians referred having one sexual partner (84.9% and 83.3%, respectively, vs. 71.9% Eastern Europeans), Brazilians having between two and four (13.1% vs. 9.8% Eastern Europeans and 8.4% Africans) and Eastern Europeans having more than four partners (18.3% vs. 6.7% Africans and 3.5% Brazilians) ($p < 0.001$). In contrast, among men, more frequently Eastern Europeans and Brazilians reported having one sexual partner (63.1% and 60.9%, respectively, vs. 49.3% Africans), Africans having between two and four (38.7% vs. 28.8% Brazilians and 19.1% Eastern Europeans) and Eastern Europeans having more than four (17.8% vs. 12% Africans and 10.3% Brazilians) ($p = 0.002$).

| | Total | | African | | Brazilian | | Eastern European | | <i>P value</i> |
|---|-------|------|---------|------|-----------|------|------------------|------|----------------|
| | n | % | n | % | n | % | n | % | |
| Fear of becoming infected with HIV | | | | | | | | | |
| Yes | 752 | 59.6 | 294 | 65.8 | 295 | 69.7 | 163 | 41.6 | <0.001 |
| No | 510 | 40.4 | 153 | 34.2 | 128 | 30.3 | 229 | 58.4 | |
| Knowing someone infected with HIV | | | | | | | | | |
| Yes | 322 | 27.5 | 113 | 25.9 | 148 | 35.7 | 61 | 19.1 | <0.001 |
| No | 850 | 72.5 | 324 | 74.1 | 267 | 64.3 | 259 | 80.9 | |
| | Mean | SD | Mean | SD | Mean | SD | Mean | SD | |
| Number of sexual partners in Portugal in the last 12 months | 1.6 | 4.2 | 1.9 | 6.0 | 1.5 | 2.4 | 1.2 | 2.8 | 0.094 |

Table 2. HIV risk perception, knowing someone infected and number of sexual partners

3.3 Consultation on sexual and reproductive health and HIV testing

Of the total sample, having been tested for HIV at least once was reported by 60%; more frequently among Brazilians (73.2%) and Africans (63.5%) than Eastern Europeans (41.9%) ($p < 0.001$) (Table 3). Across sex, a significantly higher proportion of women had been HIV tested compared to men (63.4% vs. 55.8%) ($p = 0.006$). Differences on having ever been tested for HIV across origins remained among women and men (women: 72.6% Brazilians and 70.2% Africans vs. 44.9% Eastern Europeans; $p < 0.001$) (men: 73.8% Brazilians and 54.4% Africans vs. 38.5% Eastern Europeans; $p < 0.001$). No differences were observed across immigration status.

Having ever been HIV tested was mainly due to routine medical screening (31.2%), pregnancy/partners' pregnancy (20.2%), curiosity (12.6%), requirement for mortgage or life/health insurance application (6.4%) and having engaged in risk behaviours (6%). Of those participants who were never tested, the main reasons were having never had risk behaviours (28.6%), not thinking about it (19.6%), not perceiving to be at risk (16.3%), feeling well (11.7%), not knowing where to do the test (9.3%) and not considering it important (6.9%).

Among those who have ever been tested for HIV, 54.6% had a test in Portugal; 77.4% of Africans versus 42.3% Eastern Europeans and 39.7% Brazilians ($p < 0.001$) (Table 3). Having been tested in Portugal did not differ significantly between women and men.

Of participants who have ever been tested, 36.8% had their last test in the previous year (Table 3). Having been tested in the last year was more frequent among Africans (41.2% vs. 36.5% Brazilians and 29.7% Eastern Europeans) ($p = 0.048$). Also, HIV testing was more frequent among women (39.7% vs. 32.7%) ($p = 0.048$). In both sex groups, origin differences were not found regarding having been tested in the last year.

Approximately 23% of participants referred having had a consultation on sexual and reproductive health; no differences were found across origin (Table 3). According to sex, a higher proportion of women had a sexual and reproductive health consultation compared to men (32% vs. 12.4%) ($p < 0.001$).

| | Total | | African | | Brazilian | | Eastern European | | <i>P value</i> |
|--|-------|------|---------|------|-----------|------|------------------|------|----------------|
| | n | % | n | % | n | % | n | % | |
| Having ever been tested for HIV | | | | | | | | | |
| Yes | 768 | 60.0 | 291 | 63.5 | 311 | 73.2 | 166 | 41.9 | <0.001 |
| No | 511 | 40.0 | 167 | 36.5 | 114 | 26.8 | 230 | 58.1 | |
| Having been tested in Portugal | | | | | | | | | |
| Yes | 412 | 54.6 | 223 | 77.4 | 123 | 39.7 | 66 | 42.3 | <0.001 |
| No | 342 | 45.4 | 65 | 22.6 | 187 | 60.3 | 90 | 57.7 | |
| Having been tested in the last year | | | | | | | | | |
| Yes | 282 | 36.8 | 120 | 41.2 | 113 | 36.5 | 49 | 29.7 | 0.048 |
| No | 484 | 63.2 | 171 | 58.8 | 197 | 63.5 | 116 | 70.3 | |
| Having ever had a consultation on sexual and reproductive health | | | | | | | | | |
| Yes | 295 | 23.3 | 105 | 23.1 | 90 | 21.2 | 100 | 25.9 | 0.288 |
| No | 969 | 76.7 | 349 | 76.9 | 334 | 78.8 | 286 | 74.1 | |

Table 3. HIV testing (ever, in Portugal and in the last year) and consultation on sexual and reproductive health

3.4 Factors associated with HIV testing

The logistic regression analysis allowed the identification of sex, origin, fear of becoming infected with HIV, knowing someone infected, number of sexual partners and having ever had a consultation on sexual and reproductive health as positively associated with having been tested for HIV.

After adjusting for potential confounding factors, having ever been tested was positively associated with being older (OR = 1.02, CI 95% = [1.01-1.03]), female (OR = 1.39, CI 95% = [1.05-1.84]), Brazilian (OR = 3.75, CI 95% = [2.56-5.50]) and African (OR = 2.60, CI 95% = [1.75-3.86]) compared to Eastern European, and having higher education (OR = 1.55, CI 95% = [1.04-2.31]) compared to elementary education (Table 4). HIV testing was also more likely among those reporting fear to become infected with HIV (OR = 1.28, CI 95% = [0.97-1.70]; $p < 0.10$), knowing someone infected (OR = 1.97, CI 95% = [1.43-2.71]), having higher number

| | Crude OR (CI 95%) | <i>P value</i> | Adjusted OR (CI 95%) | <i>P value</i> |
|--|----------------------|----------------|-------------------------|----------------|
| Age | 1.00 (0.99-1.01) | 0.806 | 1.02 (1.01-1.03) | 0.005* |
| Sex | | | | |
| Male | 1 | | 1 | |
| Female | 1.37 (1.09-1.72) | 0.006* | 1.39 (1.05-1.84) | 0.022* |
| Origin | | | | |
| Eastern European | 1 | | 1 | |
| African | 2.41 (1.83-3.18) | <0.001* | 2.60 (1.75-3.86) | <0.001* |
| Brazilian | 3.78 (2.82-5.07) | <0.001* | 3.75 (2.56-5.50) | <0.001* |
| Educational level | | | | |
| Elementary education | 1 | | 1 | |
| Secondary education | 0.98 (0.74-1.30) | 0.903 | 1.06 (0.74-1.52) | 0.763 |
| Higher education | 0.80 (0.60-1.06) | 0.120 | 1.55 (1.04-2.31) | 0.033* |
| Immigration status | | | | |
| Non regular | 1 | | 1 | |
| Regular | 0.97 (0.70-1.35) | 0.870 | 1.29 (0.89-1.87) | 0.183 |
| Fear of becoming infected with HIV | | | | |
| No | 1 | | 1 | |
| Yes | 1.96 (1.56-2.47) | <0.001* | 1.28 (0.97-1.70) | 0.084** |
| Knowing someone infected with HIV | | | | |
| No | 1 | | 1 | |
| Yes | 2.35 (1.76-3.13) | <0.001* | 1.97 (1.43-2.71) | <0.001* |
| Number of sexual partners | 1.15 (1.06-1.25) | 0.001* | 1.12 (1.03-1.22) | 0.008* |
| Having ever had a consultation on sexual and reproductive health | | | | |
| No | 1 | | 1 | |
| Yes | 2.37 (1.77-3.18) | <0.001* | 2.52 (1.78-3.58) | <0.001* |

*Statistically significant at $p < 0.05$

**Statistically significant at $p < 0.10$

Table 4. Factors associated with HIV testing

of sexual partners (OR = 1.12, CI 95% = [1.03-1.22]) and having ever had a consultation on sexual and reproductive health (OR = 2.52, CI 95% = [1.78-3.58]). No significant association was found between HIV testing and immigration status.

4. Conclusion

In this study, the prevalence of having ever been tested for HIV was 58.6%, higher than the one (51.2%) estimated in a previous study conducted in 2007 with a sample of immigrants residing in Lisbon (Dias et al., 2010b). The prevalence of HIV testing obtained in the present study was also higher compared to the one estimated in the National Survey of Sexual Behaviour conducted in 2009 - 44% of a representative sample of the general Portuguese population aged 16–64 years old reported having been tested for HIV (National Coordination for HIV/AIDS Infection). The findings of the present study may indicate that the national efforts undertaken during the last years to promote HIV testing among most-at-risk groups as migrants have been positive.

The most commonly reported motivations for having been tested were event-driven (routine medical screening, pregnancy or partners' pregnancy). Also, approximately a fifth of participants were tested based on person-driven reasons (i.e., having the desire to know one's own HIV serostatus, having engaged in risk behaviours). This result may reflect the positive outcomes of prevention strategies population-wide focused on increasing awareness of the importance of doing the test. Nevertheless, reported reasons for having never been tested included low self-risk perception and lack of information on where HIV test can be done. These findings reinforce that continuing efforts are needed to encourage HIV testing among immigrant population.

In this study, demographic, socioeconomic, behavioural and structural factors were identified as predictors of HIV testing.

Differences observed across sex are consistent with previous research reporting higher prevalence of HIV testing among women (Fakoya et al., 2008; Lopez-Quintero et al., 2005). This may be due to the fact that migrant women are commonly of reproductive age and therefore tend to use more health services than men (Bond et al., 2005; Dias et al., 2008). Indeed, in this study, having had a consultation on sexual and reproductive health was more often reported by women. Currently, universal prenatal care in Portugal includes HIV counselling and testing. This may result in more opportunities to get information on HIV prevention and to uptake the test among female migrants.

Accordingly, having had a sexual and reproductive health consultation was also positively associated with HIV testing. Although reasons for having never been consulted were not explored, the results suggest that access to health services is important in linking individuals with HIV testing services. In previous studies, utilization of health services has been found to increase the likelihood of HIV detection as these services are a useful setting in which to provide HIV preventive counselling and promote HIV testing (Bond et al., 2005; Wang et al., 2010). The findings may also suggest that health professionals may be influential in encouraging individuals to receive HIV testing. In fact, previous studies have shown that HIV testing is more likely when health care providers initiate discussion, emphasize its benefits and strongly recommend it (Fernandez et al., 2000).

Age and educational level were also significant socioeconomic factors of HIV testing, similarly to other studies (Fernández et al., 2005; Haile et al., 2007). Higher education has been positively associated with HIV knowledge, awareness of availability of health services and HIV testing (Burns et al., 2005; Dias et al., 2004; Stolte et al., 2003; Wong et al., 2004).

The results show a significant variation across origins, with Brazilian and African participants reporting more often to have been tested for HIV. A similar result was obtained in a previous study (Dias et al., 2010b). In the countries of origin of these participants, Portuguese is the official language. This may reinforce the idea that having a common language may be a facilitator of utilization of health services, and in particular for HIV testing. In several other investigations, linguistic differences have been mentioned as predictive of underutilization of HIV-related health services and having never been tested for HIV among immigrants (Burns et al., 2007; Dias et al., 2004; Prost et al., 2008).

In this study, having been tested for HIV appeared to be independent of immigration status, which may reflect the efforts undertaken to promote voluntary, anonymous and confidential HIV testing, free of charge and regardless of legal status (National Coordination for HIV/AIDS Infection, 2007).

Two thirds of participants feared becoming HIV infected; this variable was associated with higher odds of having been tested for HIV. Perception of individual HIV risk has been associated with knowledge of HIV risk factors, fewer risk-taking practices and HIV testing (Bardem-O'Fallon et al., 2004; Maman et al., 2001; Stein & Nyamathi, 2000). It is possible that individuals who perceive to be at risk for HIV infection are more likely to consider the disease as a personal danger, to recognize its consequences and to acknowledge the importance of adopting HIV-related protective measures (Norman & Gebre, 2005; Worthington & Myers, 2003). Differences by origin revealed that Brazilians and Africans report a higher perception of HIV risk, compared to Eastern Europeans. These findings are consistent with research suggesting that migrants from high prevalence countries tend to show high levels of knowledge and awareness of HIV risk factors (Burns et al., 2007). These migrants may therefore be more likely to perceive themselves at risk of HIV infection. Women also reported higher perception of individual risk compared to men. Although reasons for fearing to become infected with HIV were not explored in this study, in previous investigations the lack of trust in a male partner and a partner's promiscuity are the most common reasons given for perceived high personal risk (Dias et al., 2004, 2010c; Sarker et al., 2005; Ventura-Filipe et al., 2000). Additional research is needed to deepen understanding of the ways in which issues of gender and origin underpin HIV risk perception.

The results show a significant association between knowing someone infected and HIV testing. Studies have pointed out that knowing someone with HIV/AIDS appears to be an important contributor to knowledge of HIV and may result in more positive attitudes toward HIV protective measures (Barden-O'Fallon et al., 2004; Kalichman & Simbayi, 2003). Increased knowledge and more positive attitudes may help individuals to recognize the benefits of the HIV test (Norman & Gebre, 2005). The differences observed by origin support the hypothesis that country of origin's background plays an important role in HIV-related perceptions and experiences, thus influencing willingness to test for HIV.

In this study, risky sexual behaviour as having multiple sexual partners was a predictor of HIV testing. This result confirms the findings of surveys conducted in other countries

showing that increasing number of sexual partners is associated with progressively higher prevalence of testing (Song et al., 2011; Wang et al., 2010). When individuals experience sexual risk behaviours, they may be aware of their increased risk for HIV infection and, in turn, they may be more likely to test for HIV. The findings indicate a variation on sexual behaviour patterns across origin and sex. Further investigation on sexual behaviours must take into account the cultural and gender-related influences.

This study points out interesting challenges for HIV prevention among immigrants and may help in the design of tailored interventions focused on promotion of HIV testing among these populations. The findings highlight that strategies should be targeted to specific subgroups including men, Eastern Europeans, those younger, with lower educational level and in stable relationships.

In view of the missed opportunities for HIV testing in outpatient care, this study reinforces that the sexual and reproductive health services may be a useful setting in which to provide HIV preventive counselling and testing. These services are considered to greatly contribute to HIV prevention given their potential outreach to diverse groups of the population through primary health care (Berer, 2004). Voluntary counselling in primary care is increasingly recognized as an appropriate way to encourage early diagnosis of HIV among immigrants, many of whom often do not suspect to be infected (Askew & Berer, 2003). Interventions might therefore focus on improving the provision of HIV information, counselling and testing in primary care.

Further efforts to improve HIV testing among immigrants should focus on increasing individuals' awareness of HIV self-risk and benefits of doing the test, as well as on promoting utilization of health services and providing access to timely, culturally competent and appropriate HIV testing and counselling.

Studies have consistently pointed toward the need for creating further innovative and effective pathways to HIV testing of immigrant populations (Burns et al., 2001; Delpierre et al., 2007; Erwin et al., 2002). The provision of HIV detection services in non-traditional health settings such as mobile units may be important to facilitate HIV testing and dissemination of HIV information within immigrant communities. Also, the role of community based organizations in HIV prevention among 'hard-to-reach' populations as immigrants has been increasingly recognized (Fakoya et al., 2008; Solorio et al., 2004). Community-based organizations may provide counselling and testing services to migrants and may link those testing positive with health care services, increasing timely access to treatment and care. These organizations may also provide culturally relevant information on HIV risks, protective measures and health services available. Communities' involvement and participation in the planning and development of HIV prevention interventions should be supported.

A deeper understanding of the individual, behavioural and structural factors that underpin HIV testing among immigrant populations is needed. Cultural and gender-related issues should be taken into account as contributors for variation in sexual behaviour patterns, adoption of protective measures and HIV testing across immigrant groups. This knowledge is relevant to support the design of interventions aimed to increase access to diagnosis and reduce the proportion of undiagnosed HIV infection.

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6. References

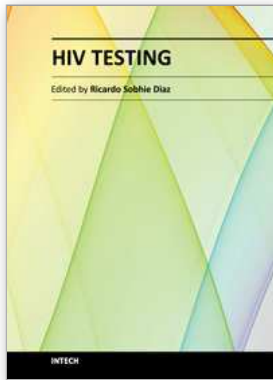
- Albarrán, C.R., & Nyamathi, A. (2011). HIV and Mexican Migrant Workers in the United States: A Review Applying the Vulnerable Populations Conceptual Model. *Journal of the Association of Nurses in AIDS Care*, Vol.22, No.3, (May-June 2011), pp. 173-185, ISSN 1055-3290
- Askew, I., & Berer, M. (2003). The Contribution of Sexual and Reproductive Health Services to the Fight Against HIV/AIDS: A Review. *Reproductive Health Matters*, Vol.11, No.22, (November 2003), pp. 51-73, ISSN 1460-9576
- Barden-O'Fallon, J.L., deGraft-Johnson, J., Bisika, T., Sulzbach, S., Benson, A., & Tsui, A.O. (2004). Factors Associated with HIV/AIDS Knowledge and Risk Perception in Rural Malawi. *AIDS and Behavior*, Vol.8, No.2, (June 2004), pp. 131-140, ISSN 1573-3254
- Berer, M. (2004). HIV/AIDS, Sexual and Reproductive Health: Intersections and Implications for National Programmes. *Health Policy and Planning*, Vol.19, Suppl.1, (October 2004), pp. i62-i70, ISSN 1460-2237
- Bond, L., Lauby, J., & Batson, H. (2005). HIV Testing and the Role of Individual- and Structural-level Barriers and Facilitators. *AIDS Care*, Vol.17, No.2, (February 2005), pp. 125-140, ISSN 1360-0451
- Burns, F., Imrie, J., Nazroo, J., Johnson, A., & Fenton, K. (2007). Why The(y) Wait? Key Informant Understandings of Factors Contributing to Late Presentation and Poor Utilization of HIV Health and Social Care Services by African Migrants in Britain. *AIDS Care*, Vol.19, No.1, (January 2007), pp. 102-108, ISSN 1360-0451
- Burns, F., Fenton, K.A., Morison, L., Mercer, C., Erens, B., Field, J., Copas, A.J., Wellings, K., & Johnson, A. (2005). Factors Associated with HIV Testing Among Black Africans in Britain. *Sexually Transmitted Infections*, Vol.81, No.6, (December 2005), pp. 494-500, ISSN 1368-4973
- Burns, F.M., Fakoya, A.O., Copas, A.J., & French, P.D. (2001). Africans in London Continue to Present with Advanced HIV Disease in the Era of Highly Active Antiretroviral Therapy. *AIDS*, Vol.15, No.18, (December 2001), pp. 2453-2455, ISSN 0269-9370
- Delpierre, C., Dray-Spira, R., Cuzin, L., Marchou, B., Massip, P., Lang, T., Lert, F., & The Vespa Study Group (2007). Correlates of Late HIV Diagnosis: Implications for Testing Policy. *International Journal of STD and AIDS*, Vol.18, No.5, (May 2007), pp. 312-317, ISSN 1758-1052
- Derose, K.P., Bahney, B.W., Lurie, N., & Escarce, J.J. (2009). Immigrants and Health Care Access, Quality, and Cost. *Medical Care Research and Review*, Vol.66, No.4, (August 2009), pp. 355-408. ISSN 1552-6801
- Dias, S., Gonçalves, A., Luck, M., & Fernandes, M. (2004). [Risk of HIV/AIDS Infection: Access and Utilization of Health Services in a Migrant Community]. *Acta Médica Portuguesa*, Vol.17, No.3, (May-June 2004), pp. 211-218, ISSN 0870-399x

- Dias, S., Severo, M., & Barros, H. (2008). Determinants of Health Care Utilization by Immigrants in Portugal. *BMC Health Services Research*, Vol.8, (October 2008), pp. 207, [Epub ahead of print], ISSN 1472-6963
- Dias, S., Gama, A., & Rocha, C. (2010a). Immigrant Women's Perceptions and Experiences of Health Care Services: Insights from a Focus Group Study. *Journal of Public Health*, Vol.18, No.5, (October 2010), pp. 489-496, ISSN 1613-2238
- Dias, S., Gama, A., Severo, M., & Barros, H. (2010b). Factors Associated with HIV Testing Among Immigrants in Portugal. *International Journal of Public Health*, (November 2010), [Epub ahead of print], ISSN 1661-8564
- Dias, S., Gama, A., & Rocha, C. (2010c). Perspectives of African and Brazilian Immigrant Women on Sexual and Reproductive Health. *European Journal of Contraception and Reproductive Health Care*, Vol.15, No.4, (August 2010), pp. 255-263, ISSN 1473-0782
- ECDC (July 2009). *Migrant Health Series: Background Note to the 'ECDC Report on Migration and Infectious Diseases in the EU'*, 23.03.2011, Available from http://ecdc.europa.eu/en/publications/Publications/0907_TER_Migrant_health_Background_note.pdf
- ECDC (2010a). *Migrant Health Series: Epidemiology of HIV and AIDS in Migrant Communities and Ethnic Minorities in EU/ EEA countries*, ECDC, ISBN 978-92-9193-204-7, Stockholm, Sweden
- ECDC (2010b). *HIV Testing: Increasing Uptake and Effectiveness in the European Union*, ECDC, ISBN 978-92-9193-224-5, Stockholm, Sweden
- ECDC/WHO Regional Office for Europe (2008). *HIV/AIDS Surveillance in Europe 2007*, ECDC, ISBN 978-92-9193-139-2, Stockholm, Sweden
- ECDC/WHO Regional Office for Europe (2010). *HIV/AIDS Surveillance in Europe 2009*, ECDC, ISBN 978-92-9193-228-3, Stockholm, Sweden
- Ehrlich, S., Organista, K., & Oman, D. (2007). Migrant Latino Day Laborers and Intentions to Test for HIV. *AIDS and Behavior*, Vol.11, No.5, (September 2007), pp. 743-752, ISSN 1573-3254
- Erwin, J., Morgan, M., Britten, N., Gray, K., & Peters, B. (2002). Pathways to HIV Testing and Care by Black African and White Patients in London. *Sexually Transmitted Infections*, Vol.78, No.1, (February 2002), pp. 37-39, ISSN 1368-4973
- EuroHIV (2007). *HIV/AIDS Surveillance in Europe: End-year Report 2006, No.75*, Institut de Veille Sanitaire, ISSN 1025-8965, Saint-Maurice, France
- Eurostat (October 2010). *Migration and Migrant Population Statistics - Statistics Explained*, 26.03.2011, Available from http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Migration_and_migrant_population_statistics#
- Fakoya, I., Reynolds, R., Caswell, G., & Shiripinda, I. (2008). Barriers to HIV Testing for Migrant Black Africans in Western Europe. *HIV Medicine*, Vol.9, Suppl.2, (July 2008), pp. 23-25, ISSN 1468-1293
- Fenton, K. (2001). Strategies for Improving Sexual Health in Ethnic Minorities. *Current Opinion in Infectious Diseases*, Vol.14, No.1, (February 2001), pp. 63-69, ISSN 1535-3877
- Fernández, M., Collazo, J., Bowen, S., Varga, L., Hernandez, N., & Perrino, T. (2005). Predictors of HIV Testing and Intention to Test among Hispanic Farmworkers in South Florida. *Journal of Rural Health*, Vol.21, No.1, (Winter 2005), pp. 56-64, ISSN 1748-0361

- Fernandez, M.I., Wilson, T.E., Ethier, K.A., Walter, E.B., Gay, C.L., & Moore, J. (2000). Acceptance of HIV Testing During Prenatal Care. Perinatal Guidelines Evaluation Project. *Public Health Reports*, Vol.115, No.5, (September-October 2000), pp. 460-468, ISSN 1468-2877
- Grove, N. (2006). Our Health and Theirs: Forced Migration, Othering, and Public Health. *Social Science & Medicine*, Vol.62, No.8, (April 2006), pp. 1931-1942, ISSN 1873-5347
- Haile, B., Chambers, J., & Garrison, J. (2007). Correlates of HIV Knowledge and Testing: Results of a 2003 South African Survey. *Journal of Black Studies*, Vol.38, No.2, (November 2007), pp. 194-208, ISSN 0021-9347
- IOM (2004). *International Migration Law: Glossary on Migration*, IOM, ISSN 1813-2278, Geneva, Switzerland
- IOM (2006). *HIV/AIDS and Populations Mobility: Overview of the IOM Global HIV/AIDS Programme 2006*, 25.04.2011, Available from http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/published_docs/books/IOM_Global_HIV_pdf.pdf
- Kalichman, S., & Simbayi, L. (2003). HIV Testing Attitudes, AIDS Stigma, and Voluntary HIV Counseling and Testing in a Black Township in Cape Town, South Africa. *Sexually Transmitted Infections*, Vol. 79, No. 6, (December 2003), pp. 442-447, ISSN 1368-4973
- Levy, V., Prentiss, D., Balmas, G., Chen, S., Israelski, D., Katzenstein, D., & Page-Shafer, K. (2007). Factors in the Delayed HIV Presentation of Immigrants in Northern California: Implications for Voluntary Counselling and Testing Programs. *Journal of Immigrant and Minority Health*, Vol. 9, No.1, (January 2007), pp. 49-54, ISSN 1557-1920
- Lopez-Quintero, C., Shtarkshall, R., & Neumark, Y. (2005). Barriers to HIV-testing among Hispanics in the United States: Analysis of the National Health Interview Survey, 2000. *AIDS Patient Care and STDs*, Vol.19, No.10, (October 2005), pp. 672-683, ISSN 1557-7449
- Maman, S., Mbwambo, J., Hogan, N.M., Kilonzo, G.P., & Sweat, M. (2001). Women's Barriers to HIV-1 Testing and Disclosure: Challenges for HIV-1 Voluntary Counselling and Testing. *AIDS Care*, Vol.13, No.5, (October 2001), pp. 595-603, ISSN 1360-0451
- National Coordination for HIV/AIDS Infection (2007). *National Programme for the Prevention and Control of HIV/AIDS 2007-2010: A Commitment to the Future*, National Coordination for HIV/AIDS Infection, ISBN 978-972-8478-18-6, Lisbon, Portugal
- Norman, L., & Gebre, Y. (2005). Prevalence and Correlates of HIV Testing: An Analysis of University Students in Jamaica. *Medscape General Medicine*, Vol.7, No.1, (March 2005), pp. 70, ISSN 1531-0132
- OECD (2011). *International Migration Outlook: SOPEMI 2011*, OECD, ISBN 978-92-64-11260-5, Paris, France
- Politzer, R.M., Yoon, J., Shi, L., Hughes, R.G., Regan, J., & Gaston, M.H. (2001). Inequality in America: The Contribution of Health Centers in Reducing and Eliminating Disparities in Access to Care. *Medical Care Research Review*, Vol.58, No.2, (June 2001), pp. 234-248, ISSN 1552-6801
- Prost, A., Elford, J., Imrie, J., Petticrew, M., & Hart, G.J. (2008). Social, Behavioural, and Intervention Research among People of Sub-Saharan African Origin Living with

- HIV in the UK and Europe: Literature Review and Recommendations for Intervention. *AIDS and Behavior*, Vol.12, No.2, (March 2008), pp. 170-194, ISSN 1573-3254
- Salama, P., & Dondero, T.J. (2001). HIV Surveillance in Complex Emergencies. *AIDS*, Vol.15, Suppl.3, (April 2001), pp. S4-S12, ISSN 1473-5571
- Saracino, A., El-Hamad, I., Prato, R., Cibelli, D., Tartaglia, A., Palumbo, E., Pezzoli, M.C., Angarano, G., Scotto, G., & SIMIT Study Group (2005). Access to HAART in HIV-infected Immigrants: A Retrospective Multicenter Italian Study. *AIDS Patient Care and STDs*, Vol.19, No.9, (September 2005), pp. 599-606, ISSN 1557-7449
- Sarker, M., Milkowski, A., Slinger, T., Gondos, A., Sanou, A., Kouyate, B., & Snow, R. (2005). The Role of HIV-Related Knowledge and Ethnicity in Determining HIV Risk Perception and Willingness to Undergo HIV Testing Among Rural Women in Burkina Faso. *AIDS and Behavior*, Vol.9, No.2, (June 2005), pp. 243-249, ISSN 1573-3254
- Szwarcz, S., Hsu, L., Dilley, J., Loeb, L., Nelson, K., & Boyd, S. (2006). Late Diagnosis of HIV Infection: Trends, Prevalence, and Characteristics of Persons whose HIV Diagnosis Occurred within 12 Months of Developing AIDS. *Journal of Acquired Immune Deficiency Syndromes*, Vol.43, No.4, (December 2006), pp. 491-494, ISSN 1944-7884
- Serviço de Estrangeiros e Fronteiras (2011). *Relatório de Imigração, Fronteiras e Asilo - 2010*, SEF/Departamento de Planeamento e Formação, Lisboa, Portugal
- Solorio, M.R., Currier, J., & Cunningham, W. (2004). HIV Health Care Services for Mexican Migrants. *Journal of Acquired Immune Deficiency Syndromes*, Vol.37, Suppl.4, (November 2004), pp. S240-S251, ISSN 1944-7884
- Song, Y., Li, X., Zhang, L., Fang, X., Lin, X., Liu, Y., & Stanton, B. (2011). HIV Testing Behavior among Young Migrant Men Who Have Sex With Men (MSM) in Beijing, China. *AIDS Care*, Vol.23, No.2, (February 2011), pp. 179-186, ISSN 1360-0451
- Soskolne, V., & Shtarkshall, R.A. (2002). Migration and HIV Prevention Programmes: Linking Structural Factors, Culture, and Individual Behaviour—An Israeli Experience. *Social Science & Medicine*, Vol.55, No.8, (October 2002), pp. 1297-1307, ISSN 1873-5347
- Stein, J.A., & Nyamathi, A. (2000). Gender Differences in Behavioural and Psychosocial Predictors of HIV Testing and Return for Test Results in a High-risk Population. *AIDS Care*, Vol.12, No.3, (June 2000), pp.343-356, ISSN 1360-0451
- Stolte, I.G., Gras, M., Van Benthem, B.H., Coutinho, R.A., & van den Hoek, J.A. (2003). HIV Testing Behaviour among Heterosexual Migrants in Amsterdam. *AIDS Care*, Vol. 15, No.4, (August 2003), pp. 563-574, ISSN 1360-0451
- Stronks, K., Ravelli, C.J., & Reijneveld, A.S. (2001). Immigrants in the Netherlands: Equal Access for Equal Needs? *Journal of Epidemiology and Community Health*, Vol.55, No.10, (October 2001), pp. 701-707, ISSN 1470-2738
- Ventura-Filipe, E.M., Bugamelli, L.E., Leme, B., Santos, N.J., Garcia, S., Paiva, V., & Hearst, N. (2000). Risk Perception and Counseling among HIV Positive Women in Sao Paulo, Brazil. *International Journal of STD and AIDS*, Vol.11, No.2, (February 2000), pp. 112-114, ISSN 1758-1052

- Wang, B., Li, X., Stanton, B., & McGuire, J. (2010). Correlates of HIV/STD Testing and Willingness to Test among Rural-to-Urban Migrants in China. *AIDS and Behavior*, Vol.14, No.4, (August 2010), pp. 891-903, ISSN 1573-3254
- WHO (2010). *Health of Migrants: The Way Forward - Report of a Global Consultation, Madrid, Spain, 3-5 March 2010*, WHO, ISBN 978 92 4 159950 4, Geneva, Switzerland
- Wong, F., Campsmith, M., Nakamura, G., Crepaz, N., & Begley, E. (2004). HIV Testing and Awareness of Care-related Services among a Group of HIV-positive Asian Americans and Pacific Islanders in the United States: Findings from a Supplemental HIV/AIDS Surveillance Project. *AIDS Education and Prevention*, Vol.16, No.5, (October 2004), pp. 440-447, ISSN 1943-2755
- Worthington, C., & Myers, T. (2003). Factors Underlying Anxiety in HIV Testing: Risk Perceptions, Stigma, and the Patient-provider Power Dynamic. *Qualitative Health Research*, Vol. 13, No.5, (May 2003), pp. 636-655, ISSN 1049-7323



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It can be said that now is the best time for everyone infected to become aware of their own HIV status. The state of the art in HIV management progressively reveals that antiretroviral treatment can prevent transmission, as well as chronic damage in the human body, if started early. Unfortunately, antiretrovirals are not widely available in many places, especially in developing countries. In these parts of the world, diagnosis of HIV infection must be kept in the agenda as a priority, in order to understand specific details of local epidemics and as an effort to interrupt the chain of HIV transmission.

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