

Introduction/Objectives

The right entry into HIV care results in health benefits to the HIV-infected individuals by decreasing morbidity and mortality. It also helps community through its impact on infectiousness [1]. Indeed, test-and-treat strategies for HIV prevention dispose that expanded testing and earlier treatment of HIV infection could markedly decrease ongoing HIV transmission [2]. As a result, HIV testing guidelines have been revised and/or issued and significant resources have been allocated to expand HIV testing [3].

In recent years, Portugal has engaged in efforts towards an earlier diagnosis by means of increasing the number of tests performed [4, 5]. Moreover, testing guidelines have recently been presented for public discussion [6]. In this context, in order to ensure effective HIV testing and considering that HIV testing in Portugal is non-mandatory, it is relevant to understand which factors are associated with an increased probability of being tested for HIV, in the population, in general.

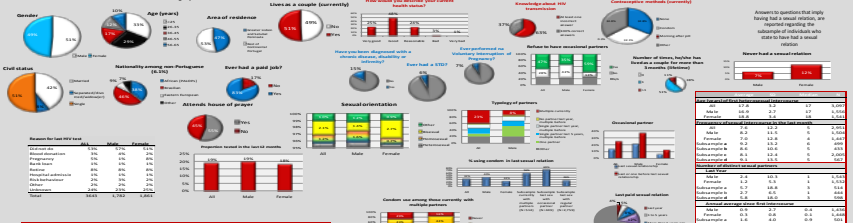
Among HIV-infected individuals in Portugal, illness/hospitalization has been identified as a major reason for being tested for HIV and perception of low risk pointed as the main reason for not having been tested prior to diagnosis [7]. We aimed at understanding whether these results are observed in the population, in general.

Materials and methods

Data were collected within a study of sexual patterns of behavior and the HIV/AIDS infection in Portugal [7]. A representative sample was obtained consisting of 3443 randomly selected individuals, aged 16 or older in continental Portugal. Data was collected by means of a questionnaire described elsewhere [7].

Logistic regression analysis was performed to identify factors associated with ever having been HIV tested and with having been tested in the last 12 months. Three sets of factors were considered: socio-demographic, health and knowledge/attitudes/behaviors. The statistical analysis was performed in Stata 11[®].

Results



Probability of having been tested in the last 12 months

| Variable | OR (95% CI) | P-Value |
|--|------------------|---------|
| Gender (Female) | 0.64 (0.47-0.87) | <0.001 |
| Age (16-24 years old in reference) | 0.61 (0.49-0.76) | <0.001 |
| 25-34 | 0.68 (0.53-0.88) | <0.001 |
| 35-44 | 0.63 (0.48-0.84) | <0.001 |
| 45-54 | 0.72 (0.53-0.97) | <0.001 |
| 55-64 | 0.78 (0.57-1.06) | <0.001 |
| Area of residence (Urban in reference) | 0.82 (0.62-1.08) | <0.001 |
| Suburban | 0.71 (0.52-0.96) | <0.001 |
| Knows an example (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |
| Sexual orientation (Heterosexual in reference) | 0.71 (0.52-0.96) | <0.001 |
| Homosexual | 0.64 (0.47-0.87) | <0.001 |
| Ever participated in a sexual risk reduction program (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |
| Know how to use a condom (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |
| Refer to have sexual partners (No in reference) | 0.71 (0.52-0.96) | <0.001 |
| Yes | 0.64 (0.47-0.87) | <0.001 |
| Consent to questions that imply being bad or social relations (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |

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| Yes | 0.64 (0.47-0.87) | <0.001 |
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Answers to questions that imply being bad or social relations, regarding the behavior of individuals who do not have had a sexual partner last year

| Variable | OR (95% CI) | P-Value |
|--|------------------|---------|
| Age (16-24 years old in reference) | 0.61 (0.49-0.76) | <0.001 |
| 25-34 | 0.68 (0.53-0.88) | <0.001 |
| 35-44 | 0.63 (0.48-0.84) | <0.001 |
| 45-54 | 0.72 (0.53-0.97) | <0.001 |
| 55-64 | 0.78 (0.57-1.06) | <0.001 |
| Area of residence (Urban in reference) | 0.82 (0.62-1.08) | <0.001 |
| Suburban | 0.71 (0.52-0.96) | <0.001 |
| Knows an example (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
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| Homosexual | 0.64 (0.47-0.87) | <0.001 |
| Ever participated in a sexual risk reduction program (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |
| Know how to use a condom (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |
| Refer to have sexual partners (No in reference) | 0.71 (0.52-0.96) | <0.001 |
| Yes | 0.64 (0.47-0.87) | <0.001 |
| Consent to questions that imply being bad or social relations (Yes in reference) | 0.71 (0.52-0.96) | <0.001 |
| No | 0.64 (0.47-0.87) | <0.001 |

Among socio-demographic factors, we find younger age, (at least) obligatory schooling, living in the capital or surroundings and having entered the job market as determinants of HIV testing in the last 12 months. Current health status is not found to be associated with HIV testing but chronic disease history. Knowledge on HIV transmission increases the odds of being tested.

Once sexual behavior is accounted for, results do not change significantly among women but among men sexual behavior is, in some but not all indicators, found to be associated with a higher probability of HIV testing. The impact of the recommendation for HIV testing in pregnant women shows clearly in the analysis (OR=2.371) emphasizing the relevance of extending such policy.

Conclusion:

In line with the results by Carvalho [7] among people living with HIV, in this analysis in the population, in general, (chronic) illness is also found to be associated with HIV testing. Once sexual behavior is accounted for, while in women, socio-demographic and pregnancy are found to be the main drivers, in men risk perception is found to play a role. Worth noting that in women, sexual risk behavior is not found to be associated with an increased probability of HIV testing in the last 12 months and among men, the effect is not clear in all indicators suggesting a margin for improvement.

The impact of the recommendation for HIV testing in pregnant women shows clearly in the analysis emphasizing the relevance of extending such policy and recently issued provider driven HIV testing guidelines are likely to be part of this direction. Worth noting, nonetheless, that outreach testing approaches are likely to be required to reach high prevalence subgroups with diminished access to health care.

References:
 1. World Health Organization. *WHO International Guidelines for Adult and Adolescent HIV Testing: A Technical Update*. Geneva: WHO, 2009. 2010. 2011. Available from: <http://www.who.int/hiv/data/20100927/9789241548000/en>
 2. World Health Organization. *WHO International Guidelines for Adult and Adolescent HIV Testing: A Technical Update*. Geneva: WHO, 2009. 2010. 2011. Available from: <http://www.who.int/hiv/data/20100927/9789241548000/en>
 3. World Health Organization. *WHO International Guidelines for Adult and Adolescent HIV Testing: A Technical Update*. Geneva: WHO, 2009. 2010. 2011. Available from: <http://www.who.int/hiv/data/20100927/9789241548000/en>
 4. World Health Organization. *WHO International Guidelines for Adult and Adolescent HIV Testing: A Technical Update*. Geneva: WHO, 2009. 2010. 2011. Available from: <http://www.who.int/hiv/data/20100927/9789241548000/en>
 5. World Health Organization. *WHO International Guidelines for Adult and Adolescent HIV Testing: A Technical Update*. Geneva: WHO, 2009. 2010. 2011. Available from: <http://www.who.int/hiv/data/20100927/9789241548000/en>
 6. World Health Organization. *WHO International Guidelines for Adult and Adolescent HIV Testing: A Technical Update*. Geneva: WHO, 2009. 2010. 2011. Available from: <http://www.who.int/hiv/data/20100927/9789241548000/en>
 7. Aragão F, Ferreira PM, et al. *Sexual behavior and HIV/AIDS infection in Portugal: a representative sample of the general population*. *PLoS One* 2012; 7(12): e44444. doi:10.1371/journal.pone.0044444