

## Information and attitudes about HIV/AIDS in portuguese adolescents: State of art and changes in a four year period

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The incidence of infection with HIV/AIDS among the heterosexual population has been increasing in young adults. The goal of this research was to deepen knowledge of preventive sexual behavior in Portuguese adolescents, including knowledge and attitudes about HIV/AIDS, and assessing whether they changed from 2002 to 2006. Data were collected through a self-administered questionnaire from the Portuguese sample of the Health Behavior in School-aged Children (HBSC), a collaborative WHO study. The study provides national representative data of 7093 Portuguese adolescents, randomly chosen from those attending 8th and 10th grade of high school. Results showed there was an increase in the age of first sexual intercourse and a decrease in the number of teenagers who reported having had sexual intercourse, also in the level of information regarding HIV/AIDS transmission/prevention and in positive attitudes towards people with HIV/AIDS. In general, adolescents have good knowledge about how to protect themselves from becoming infected. However, comparing to 2002, there was a reduction of knowledge and consequent increase in the doubts regarding HIV/AIDS. Given the incipient state of sex education in 2006, the results cannot be attributed to sex education, but they will be relevant for comparison with the 2010 HBSC results.

*Información y actitudes sobre el VIH/SIDA en los adolescentes portugueses: estado del arte y los cambios en un período de cuatro años.* La incidencia del VIH/SIDA en la población heterosexual ha aumentando en los adultos jóvenes. El objetivo de esta investigación fue profundizar en los conocimientos y actitudes sobre el VIH/SIDA, y evaluar si desde 2002 hasta 2006 han cambiado. Los datos fueron recolectados a través de un cuestionario autoadministrado, de conducta de salud en niños en edad escolar, que se ha aplicado a una muestra portuguesa. Este estudio, hecho en colaboración con la OMS, proporciona datos representativos de Portugal, incorporando una muestra de 7.093 adolescentes portugueses, elegidos aleatoriamente entre los que frecuentan en octavo y décimo grado. Los resultados obtenidos muestran que la edad de la primera relación sexual aumentó y que el número de adolescentes que reportaron haber tenido relaciones sexuales disminuyó. También ha disminuido el nivel de información y prevención de VIH/SIDA, al igual que las actitudes positivas hacia las personas con VIH/SIDA. En general, los adolescentes tienen buen conocimiento de cómo protegerse. Sin embargo, en comparación con el 2002, hubo una reducción de los conocimientos y, por consiguiente, las dudas sobre el VIH/SIDA aumentaron. En 2006, la educación sexual fue incipiente y por eso los resultados obtenidos no se pueden atribuir a la educación sexual, pero pueden ser relevantes en comparación con HBSC 2010.

The incidence of infection with human immunodeficiency virus / acquired immunodeficiency syndrome - HIV/AIDS among the heterosexual population has been systematically increasing, particularly in young adults (Eurostat, 2006; UNAIDS, 2009) constituting a major public health problem in the world, for which Portugal is no exception.

According to UNAIDS (2009), at the end of 2008 there were about 33.4 million people living with HIV infection in the world

and 85% of the newly HIV/AIDS infected occur in an age group (15-49) which includes young people. Nevertheless, the recent declines in HIV incidence in several countries (e.g., Dominican Republic and United Republic of Tanzania) demonstrate that to reduce sexual transmission of HIV is a possibility.

In Portugal, according to the latest available report from the national monitoring center of sexually transmitted diseases (CVEDT, 2010), the total number of cumulative cases of HIV/AIDS on 31<sup>st</sup> December 2009 was 37,201, with 15,685 of these being cases of AIDS, among which 75.8% correspond to the group of individuals aged between 20 and 49 years (46.7% between 20 and 34), and 81.4% of individuals infected with HIV are men. From the analysis of the distribution of the cases of AIDS according to the transmission categories, it appears that the majority are associated with patients who report the use of drugs intravenously or «drug

addicts» (41.7%), followed by cases associated with heterosexual transmission (41.1%) and male homosexuality (12.7%). However, statistics confirm the epidemiological pattern recorded annually since 2000, that is, there is a proportional increase in the number of cases of heterosexual transmission and subsequent decrease (proportional) of the cases associated with drug dependence.

Since the incubation period of HIV, according to research published, can vary between 6 and 12 years, most of these individuals were most likely infected during adolescence or early adulthood (Matos et al., 2006). In the absence of an effective cure and taking into account the particular epidemiology of disease, both the control and prevention of AIDS are largely dependent on changes in behavior, mostly on the sexual level.

There are several HIV prevention interventions currently being implemented. However, most of them aren't theory-based and instead focus (almost) exclusively on disseminating information, disregarding motivation and behavioral skills training. Moreover, when evaluated, these interventions did not show a significant impact on adolescents' HIV risk behaviors. Therefore, it is critically important to develop interventions based on theories that have shown empirically to reduce sexual risk behaviors (Currie, Hurrelmann, Settertobulte, Smith, & Todd, 2000).

According to literature, if young people possess knowledge, information and motivation on safe sexual behavior, they may change their attitudes and their behavior (Belo & Silva, 2004; Synovitz, Herbert, Kelley, & Carlson, 2002; Thompson, Currie, Todd, & Elton, 1999).

The information-motivation behavioral skills (IMB) model (Fisher & Fisher, 1992) has been validated over the years with diverse populations (Carey et al., 2000; Fisher et al., 1996; Gordon, Carey, & Carey, 1997; Hawa, Munro, & Doherty-Poirier, 1998). It claims that HIV prevention information, motivation, and behavioral skills are the essential determinants of HIV preventive behavior. As for information, it mainly contemplates information regarding HIV transmission and prevention; as for motivation, it refers to the engagement in HIV preventive behavior, as well as personal motivation (positive attitudes towards the performance of HIV preventive actions) and social motivation (perceived social support for performing these actions); and as for behavioral skills, it refers to the specific skills one needs in order to perform HIV preventive actions, which includes the sense of self-efficacy for doing them (Bandura, 1989; Bandura, 1994; Fisher & Fisher, 1992; Fisher & Fisher, 1993). Thus, according to this model there are three prerequisites to possess HIV preventive behavior; information - motivation - and - behavioral skills. The three of them determine whether individuals will be able to have preventive behavior.

According to WHO's recommendations (UNAIDS, 2008), in the absence of a cure for HIV/AIDS, its prevention depends on the adoption and maintenance of safe behaviors, noting that the educational strategies that modify or eliminate risk behavior remain the major interventions to prevent and control the spread of this pandemic. Thus, it is essential to defend an action as soon as possible. Since adolescence is the period of transition between childhood and adulthood, and this stage is characterized by a plasticity and vulnerability of the personality, adolescents are naturally more likely to absorb the concepts that will lead them to a healthier physical, psychological and sexual maturity. It is crucial that they realize that their sexuality can be experienced in a healthy and happy way, and that to protect from STIs, including HIV/AIDS, they have to use condoms always (for it is the only

way of protection against HIV/AIDS and other STIs) (Matos et al., 2008). As such, it is necessary to educate young people *before* they are faced with making decisions about their sexuality and sexual behavior, which involves not only working on the acquisition of information but also motivation and behavioral skills (Eurostat, 2006; FNUAP, 2005).

In order for a IMB-based model HIV intervention to be effective for Portuguese adolescents, their specific information, motivation and behavior skills deficits must be addressed, which requires identifying them previously to intervention. Therefore, this article's goal is to deepen the knowledge of preventive sexual behavior in Portuguese adolescents, including knowledge and attitudes about HIV/AIDS, and assessing whether they have changed and how they have changed from 2002 to 2006.

Method

Participants

Data were collected through a self-administered questionnaire from the Portuguese sample of the Health Behavior in School-aged Children (HBSC) of 2002 and 2006, a collaborative WHO study (Currie et al., 2000; Matos et al., 2003; Matos et al., 2006). The study provides national representative data of 7093 Portuguese adolescents, randomly chosen from those attending 8th and 10th grade of high school. The sample included 52.3% girls and 47.7% males, whose mean age was 15.10 years (standard deviation 1.35). The majority of adolescents are of Portuguese nationality (93.7%), 55.3% attended the 8th grade and 44.7% attended the 10th grade and are distributed proportionally by all the educational Portuguese regions (North, Center, Lisbon and Tagus Valley, Alentejo and the Algarve) in the mainland (see table 1).

Procedure

The sampling unit used in this survey was the class. The 135 schools in the sample were randomly selected from the official

Table 1  
Socio demographic characteristics

	2002 (N= 3762)		2006 (N= 3331)		Total (N= 7093)	
	N	%	N	%	N	%
<b>Gender</b>						
Male	1806	48	1579	47.4	3385	47.7
Female	1956	52	1752	52.6	3708	52.3
<b>Grade</b>						
8th grade	2181	58	1740	52.2	3921	55.3
10th grade	1581	42	1591	47.8	3172	44.7
<b>Nationality</b>						
Portuguese	3382	93.3	3101	94.1	6483	93.7
African + Brazilian	82	2.3	81	2.5	163	2.4
	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>
<b>Age</b>	15.12	1.35	15.07	1.34	15.10	1.35

national list of public schools, stratified by region. In each school, classes were randomly selected in order to meet the required number of students for each grade, according to the international research protocol (Currie et al., 2000).

This study has the approval of a scientific committee, an ethical national committee and the national commission for data protection and followed strictly all the guidelines for human rights protection.

### Instruments

In the questionnaire, which covers a wide range of questions about behaviors and lifestyles in adolescence, it was selected issues that relate to socio-demographic characteristics, sexual behavior, information regarding HIV/AIDS transmission/prevention and attitudes towards people living with HIV/AIDS.

### Data analysis

**Sexual behaviors.** The  $\chi^2$  test was used to examine sexual behaviors according to base year. A logistic regression analysis was conducted considering «not having had sexual intercourse» as a dependent variable and using gender, age, information regarding HIV/AIDS transmission/prevention and attitudes towards people living with HIV/AIDS as independent variables.

**Information regarding HIV/AIDS transmission/prevention.** Young people were asked to respond to nine statements about HIV/AIDS transmission/prevention: 1. «it is possible to become infected with HIV/AIDS by sharing needles»; 2. «it is possible to become infected with HIV/Aids from coughing and sneezing»; 3. «an HIV-infected pregnant woman may pass the virus to her baby»; 4. «it is possible to become infected with HIV/AIDS by hugging someone infected»; 5. «the oral contraceptive can protect against HIV/AIDS infection»; 6. «it is possible to become infected with HIV/AIDS by engaging in unprotected sexual intercourse with someone just once»; 7. «someone who looks healthy can be HIV infected»; 8. «it is possible to become infected with HIV/AIDS by sharing a glass, fork/spoon»; 9. «it is possible to become infected with HIV/AIDS by blood transfusion in a Portuguese hospital». Items were rated on a three response options (1= Yes, 2= No and 3= I do not know). Only responses that showed correct information scored and so final scores ranged from 0 to 9, with high scores suggesting more positive knowledge/more information. These items were shown to have adequate reliability (Cronbach's alpha of 0.81).

Chi-squared analyses were used to examine the association between 2002 and 2006 for information regarding HIV/AIDS transmission/prevention.

**Attitudes towards HIV/AIDS - infected people.** Young people were asked to respond to five statements about attitudes towards HIV-infected people: 1. «I wouldn't be a friend of someone if he had AIDS», 2. «Adolescents with AIDS should be allowed to go to school», 3. «I would sit near an infected student in classroom», 4. «I would visit a friend if he or she had AIDS» and 5. «HIV infected people should live apart of the rest of people». Items were rated on a 3-point rating scale (1= disagree to 3= agree). After recoding items 1 and 5, final scores ranged from 5 to 15, with high scores suggesting more positive attitudes. These items were shown to have adequate reliability (Cronbach's alpha of 0.76).

Chi-squared analyses were used to examine the association between 2002 and 2006 for attitudes towards HIV/AIDS -

infected people. A Pearson correlation analysis was conducted to examine the association between information regarding HIV/AIDS transmission/prevention and attitudes towards HIV-infected people.

## Results

**Sexual behaviors related to HIV/AIDS.** A substantial minority of young people continue to engage in high-risk practices. The percentage reporting ever having had sexual intercourse was 23.7% in 2002 and 22.7% in 2006. Boys were more likely than girls to report ever having had sexual intercourse (30.6% versus 16.7%). The age of 1<sup>st</sup> sexual intercourse increased from 2002 to 2006 (56.8% versus 71.6% at 14 or more). From the total sample, 23.4% report that they or their partner did not use a condom the previous time they had engaged in sexual intercourse. However, this percentage decreased from 2002 to 2006 (28.3% versus 18.7%) (table 2).

In logistic regression model we obtained an adjusted model (Hosmer and Lemeshow  $\chi^2= 13.800$  (8)  $p=. 087$ ) and the regression equation explained 11% of the variance (Nagelkerke  $R^2= 0.11$ ) and 78% of cases that did not have sexual relations. In this model, the condition of «not having had sex» is explained by the variables gender (girls with a 0.5 times greater likelihood of being in this group) [OR 0.46; 95% CI 0.40-0.52;  $P<0.000$ ] and age (8<sup>th</sup> grade more often than 10<sup>th</sup> grade adolescents, with a probability 3.8 times higher to be in this group) [OR 3.76; 95% CI 3.15-4.49;  $P<0.000$ ] (see table 3).

Table 2  
Differences between 2002 and 2006 for questions about sexual behaviors

	2002		2006		Total	$\chi^2$
	N	%	N	%		
<b>Sexual Intercourse</b>						1.019
Yes	862	23.7	723	22.7	1585	
No	2772	76.3	2464	77.3	5236	
	Males		Females		Total	$\chi^2$
	N	%	N	%		
<b>Sexual Intercourse</b>						183.714***
Yes	980	30.6	605	16.7	1585	
No	2222	69.4	3014	83.3	5236	
<b>Young people who have had sexual intercourse</b>						
	2002		2006		Total	$\chi^2$
	N	%	N	%		
<b>Age of 1<sup>st</sup> sexual intercourse</b>						35.430***
11 years or less	143	17.2	68	9.7	211	
12 - 13 years	217	26.1	134	19.2	351	
14 years or more	473	56.8	497	71.1	970	
<b>Condom use at last sexual intercourse</b>						20.370***
Yes	596	71.7	634	81.3	1230	
No	235	28.3	146	18.7	381	

*Table 3*  
Predictors of not having sexual intercourse

	$\beta$	SE	p	CI (95%)	OR
Gender	-.784	.066	.000	(.402 – .519)	.457
Age	1.323	.091	.000	(3.145 – 4.486)	3.756
Information HIV/AIDS	-.047	.039	.224	(.883 – 1.029)	.954
Attitudes HIV/AIDS	-.019	.038	.608	(.911 – 1.056)	.981

OR: adjusted odds ratio; CI: confidence interval

*Information regarding HIV/AIDS transmission/prevention.* According to our results, we found that from 2002 to 2006, young people more often say that coughing, sneezing and hugging someone infected with HIV/AIDS can be a means of transmission, that the pill can protect a woman from being infected, and that a person may seem very healthy and be infected. In 2002, young people more often claimed that a person could become infected with HIV/AIDS if he/she used a needle and / or a syringe already used by an infected person, that an infected pregnant woman could infect her baby, that one could become infected through a blood transfusion in a hospital in Portugal, and that a person could become infected with HIV/AIDS by using utensils to eat or drink (dishes, cutlery, glasses) previously used by an infected person (see table 4).

From 2002 to 2006 there was a slight decrease in information regarding HIV/AIDS transmission/prevention.

*Attitudes towards HIV/AIDS-infected people.* It was found that in 2002 young people agreed more often that they would be able to attend a class next to a colleague infected with HIV/AIDS, and that they would visit a friend that was infected (see table 5). In 2006, young people agreed more often that people infected with HIV/AIDS should live apart from the rest of the population (see table 5).

From 2002 to 2006 there was also a slight decrease in positive attitudes towards people with HIV/AIDS.

### Discussion

Comparing the data from the 2002 and 2006 HBSC surveys, there was a slight decrease in the number of adolescents who reported having had sexual intercourse, a slight increase in age of first sexual intercourse, an increase in the number of adolescents that used a condom during the last sexual intercourse, a slight reduction of knowledge and consequent increase in the doubts regarding HIV/AIDS transmission/prevention, and a slight decrease in positive attitudes towards people with HIV/AIDS.

Therefore, on the one hand, there's an improve on sexual reproductive health because in 2006 less adolescents reported having had sexual intercourse, had their first sexual intercourse at an older age, and used condom more often during last sexual intercourse, which means that there was a bigger chance they could be better informed and motivated, and have better behavioral skills than in 2002. This also means that it's not so obvious that adolescents are anticipating their sexual debut, probably because of all the HIV/AIDS campaigns and structured sex education that was already going on until 2006.

On the other hand, some aspects of sexual reproductive health cause some concern: a slight reduction of knowledge

and consequent increase in the doubts regarding HIV/AIDS transmission/prevention, and a slight decrease in positive attitudes towards people with HIV/AIDS.

In general, adolescents have good knowledge about the main HIV/AIDS transmission routes and how to protect themselves from becoming infected. However, a minority still lack knowledge about main issues. This conclusion reinforces findings from other studies in this area (Currie et al., 2000; Eurostat, 2006). In 2006, 11.3% believed the oral contraceptive could protect against HIV/AIDS infection. This may be the reason why some of them haven't used a condom during the last sexual intercourse and, unfortunately, why the incidence of HIV/AIDS continues to be so significant in this age group.

And 13.3% don't know it is possible to become infected with HIV/AIDS by engaging in unprotected sexual intercourse with someone just once. Though most adolescents admitted knowing that it is possible for a person to have intercourse without a condom once and get infected with HIV/AIDS, it seems that several students may be underestimating the risk in the sense that their risk perception is not consistent with their reports of involvement in potentially risky behaviors such as not having used condom during the last sexual intercourse.

In relation to the number of adolescents that used condom during the last sexual intercourse, one has to refer that still about 20% are not using it and thus continue engaging in sex risk behaviors.

These cannot be forgotten, it is important to learn why the message doesn't get through to these individuals and what their specific characteristics are, in order for prevention interventions to be more successful with this group. This could also be due to the fact that it is not of immediate consequence to their daily lives. This must be an area of consideration for policy makers and providers of any sexual health intervention.

As for the slight decrease in positive attitudes towards people with HIV/AIDS, it is important to say that, in general, they do have very positive attitudes, they are tolerant and inclusive. Nevertheless, there is a general decrease in their positive attitudes, which must be analyzed, especially because it's not the only area they have shown a setback. Some authors (Matos et al., 2008) believe that a few adolescents are no longer concerned about being well informed about prevention and transmission of HIV/AIDS, as long as they use a condom. In this sense they may not be so concerned either about being tolerant towards HIV infected people, they may see it as the result of their own irresponsibility, lacking the ability to consider that condoms aren't 100% effective, so even using a condom at every sexual intercourse there's a chance of becoming infected for condoms can break, tare and slip off.

To summarize, neither information about prevention and transmission of HIV/AIDS nor attitudes towards people with HIV/AIDS were identified as predictors of not having sexual intercourse. The results showed a gap between what young people know about the disease and expressing in sexual behavior. Thus, we can say that is not knowledge per se, although it is a major prerequisite, which will implement the behavioral changes. Several studies have pointed to the relativization of the amount of knowledge about HIV / AIDS, both in preventive behavioral measures, and formulating judgments about personal risk of infection (Matos et al., 2008; UNAIDS, 2009).

Regarding the perception of vulnerability, young people continue to underestimate or minimize the risk and an exaggerated degree of optimism seems to prevail mainly due to the fact that



<i>Table 5</i>							
Differences between 2002 and 2006 for attitudes towards HIV-infected people							
	2002		2006		Total	$\chi^2$	
	N	%	N	%			
<b>I wouldn't be a friend of someone if he had AIDS</b>							
Agree	226	6.1	222	7.0	448		5.752
I'm not sure	629	17.0	588	18.5	1217		
Disagree	2852	76.9	2366	74.5	5218		
<b>Adolescents with AIDS should be allowed to go to school</b>							
Agree	2586	70.1	2188	69.3	4774		1.122
I'm not sure	644	17.5	550	17.4	1194		
Disagree	457	12.4	418	13.2	875		
<b>I would sit near an infected student in classroom</b>							
Agree	2615	<b>70.8</b>	2106	<b>66.6</b>	4721		14.326***
I'm not sure	775	<b>21.0</b>	749	<b>23.7</b>	1524		
Disagree	305	<b>8.3</b>	309	<b>30.9</b>	614		
<b>I would visit a friend if he or she had AIDS</b>							
Agree	3104	<b>83.9</b>	2540	<b>80.6</b>	5644		13.071***
I'm not sure	425	<b>11.5</b>	444	<b>14.1</b>	869		
Disagree	172	4.6	169	16.9	5.4		
<b>HIV infected people should live apart of the rest of people</b>							
Agree	294	<b>8.0</b>	293	<b>9.3</b>	587		11.905**
I'm not sure	300	<b>8.1</b>	314	<b>9.9</b>	614		
Disagree	3103	<b>83.9</b>	2551	<b>80.8</b>	5654		
	2002		2006		Total		
	M	SD	M	SD	M	SD	F
Total scale	<b>13.47</b>	2.03	<b>13.28</b>	2.12	<b>13.38</b>	2.07	14.617***

a high level of knowledge about the disease provides a (false) strong sense of control and self-confidence. Other reasons for this are the sense of invulnerability among heterosexual and the social representation of the illness onset, associated with its famous categorizations (DiClemente, Forrest, & Mickler, 1990). Adolescents' typical egocentrism also translates into difficulties in realizing their vulnerability (Boruchovitch, 1992) and initial sex education programs incorporated into the curriculum followed a traditional format of teaching sessions, strongly homogenized in their content and therefore inadequate for different target audiences.

This may seem disappointing in terms of sexual education, but in Portugal it was about in the last quarter of 2005 that a group of specialists (GTES, 2005) became responsible for making recommendations for the implementation of sex education and it has been in the sequence of those guidelines that the Portuguese Ministry of Education has produced specific legislation and established support measures that enabled sex education in Portuguese schools. Despite the obligation of sexual education, it is not currently offered in all schools yet, but it is considered that it is implemented in quite a number of schools. Given the incipient state of sex education in schools in Portugal at the

year this data was collected (2006), the results for the level of information and attitudes cannot be attributed to sex education, but they will certainly be relevant for comparison with the results of the next HBSC study - 2010 - and at that time they will allow the assessment of school-based sexual education effectiveness.

HIV prevention school-based programs have been suggested (Basen-Engquist et al., 1997; Thurman, 2000) as a means of effective universal access when targeting adolescents. Schools present a valuable setting because that's where nearly all adolescents spend a significant part of their time; it possesses educational structures and resources that will favor the integration of the HIV theme in the context of sexual health education programs (DiClemente et al., 2000). However, research emphasizes that few programs achieve positive results. This is probably due to the lack of a theory at the base of the intervention program (Fisher & Fisher, 2000).

In Portugal, despite the guidelines, there isn't a program of intervention based on a specific theory as studies show it should. The guidelines indicate teachers should improve adolescents' information, not only regarding HIV/AIDS transmission and prevention but also to clarify myths and misconceptions, work on

their attitudes, and motivation to condom use, as well as develop their personal and social skills, which are somehow similar to the IMB model (Information, Motivation and Behaviour model). But it is necessary that the IMB model, which has demonstrated intervention efficacy, is clearly adopted, i.e., identified, explained and then applied and evaluated in Portuguese schools.

Prior to deliver the IMB classroom model, the deficits related to information, motivation, and behavioral skills must be identified so that a prevention program is tailored for the targeted students. This program is delivered by regular teachers in everyday classroom settings, after specific training.

Taking into account the results a greater contribution regarding AIDS prevention needs to be done, particularly providing adequate information systematically so as to increase the chances of teenagers to choose healthier lifestyles.

As a final note, it's important to emphasize the undeniable value of theory-based Health Promotion in school context as a process of assuring youth's healthy development.

#### Key findings

- 1) Decrease in number of adolescents who reported having had sexual intercourse;
- 2) Increase in age of first sexual intercourse;
- 3) Increase in the number of adolescents that used a condom during the last sexual intercourse;
- 4) Reduction of knowledge and consequent increase in the doubts regarding HIV/AIDS transmission/prevention;
- 5) Decrease in positive attitudes towards people with HIV/AIDS.

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