

## Source of information, knowledge, and sexual behaviour related to HIV/AIDS amongst university students in an inland territory of central Italy

Michela L. Sammarco<sup>1</sup>, Giancarlo Ripabelli<sup>1</sup>, Fabio Ferrucci<sup>2</sup>, Guido M. Grasso<sup>1</sup>

<sup>1</sup>Department of Health Science, University of Molise, Campobasso, Italy; <sup>2</sup>Department of Human, Historical and Social Science, University of Molise, Campobasso, Italy

Correspondence to: G.M. Grasso, Department of Health Science, University of Molise, 86100 Campobasso, Italy.

E-mail [grasso@unimol.it](mailto:grasso@unimol.it)

### Abstract

Italian university students were investigated for: sources of information about HIV, knowledge of HIV risk behaviours, as well as sexual behaviours and condom use. A self completed anonymous questionnaire was administered to 430 university students in Campobasso, Italy (mean age 23,1; males 35,8%).

Although TV, radio and the printed press were the most common sources of HIV information (>60% of respondents), most respondents preferred to receive information from physicians or resource centres (50 and 51%). Most students (>97%) were aware that specific sexual behaviours (unprotected vaginal or anal intercourse) and sharing of needles with illegal injecting drug users could transmit HIV. Most students (>50%) did not regularly use condoms (despite understanding their protective effect), and continued to engage in behaviours considered risky. Males were significantly more likely than females to engage in vaginal sex (84 vs. 67%) or anal sex (37 vs. 13%) with both regular and casual partners. Although knowledge of HIV in itself is not enough to produce behaviour change, increases in students' levels of knowledge may be useful.

*Key words: HIV/AIDS knowledge, sources of information, sexual behaviour, university students*

### Introduction

Heterosexual contact accounts for an increasing proportion of AIDS cases and has become the predominant transmission mode among new AIDS cases in several European countries, including Italy [1,2]. This trend emphasises the need for increasing initiatives to control transmission in the heterosexually active population [1]. Moreover, information pertaining to knowledge and behaviours related to HIV/AIDS is essential in identifying populations at risk of HIV infection and in assessing changes over time as a result of prevention efforts. In addition, poor knowledge may be responsible for insufficient preventive measures as well as prejudice and human right violations against people with AIDS.

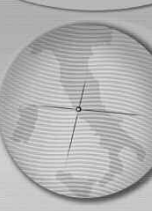
Students and other adolescents are an essential population group to receive targeted HIV/AIDS prevention because of their higher levels of sexual activity at increasingly younger ages, the tendency to have multiple partners and unprotected sexual intercourse. In Italy information relating to knowledge, perceptions, and behaviours regarding HIV/AIDS has focused predominantly on secondary school students and the general population but requires further investigation in university students [3-7]. The purposes of this study were to determine,

in a sample of university students from an inland territory of Central Italy: sources of information about HIV/AIDS; knowledge of HIV/AIDS risk behaviours and preventative measures; as well as the characteristics of their sexual behaviours and condom use.

### Methods

Participants in the study were randomly selected university students who were attending the University of Molise in Campobasso, Italy. Campobasso is a small town of approximately 50,000 people located in the inland territory of Central Italy (Molise region). The final sample consisted of 430 students (out of a total university population of about 8000) representing four faculties of the university (Law, Education, Management Sciences and Agricultural Sciences).

After receiving permission from the university authority, letters of invitation were distributed to undergraduate students in order to explain the purpose and significance of the research project. Participation in the study was voluntary. Consequently the study had some degree of selection bias. To minimize selection bias, obstacles to participation in the study were minimized, the questionnaire was anonymous and



the study took place during normal class sessions. Questionnaires were distributed over a two month period within classes, with the cooperation of the course instructors, who generally permitted their completion either before or after the class. All forms were anonymously completed and then returned.

The study questionnaire collected data on sources from which the participants got information about HIV/AIDS, and how useful the participants perceived those sources for providing HIV/AIDS information. The questionnaire also included "true", "false" or "don't know" responses to twenty-one questions assessing knowledge on transmission modes (including several common misperceptions), prevention, and treatment of HIV/AIDS. The final group of 27 questions investigated the students' sexual behaviour. A pilot study in 80 students was carried out to validate the questionnaire for acceptability, feasibility, reproducibility and applicability.

Data were analyzed using SPSS release 12.0 for Windows. Descriptive statistics were produced for all variables. Relationships among socio-demographic variables, knowledge, and risk

behaviours were examined using chi-square analysis. The independent-samples T test was used to compare quantitative variables for two groups of cases. Differences were considered statistically significant when they reached the 0.05 level. Logistic regression was carried out to establish the independent effect of age, sex and knowledge on the probability of having unsafe sexual behaviours.

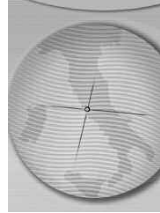
## Results

A total of 430 questionnaires were completed. Males represented 35.8% of the sample. The mean age of the respondents was 23.1 years (range 19-35), with males being older (mean age 23.6; range 19-35) than females (mean age 22.8; range 19-35). Gender differences were reported only if statistically significant.

Television, radio (77.7% of respondents) and the printed press (61.3%) were the most frequently used source of information (Table 1), but only 29.4% (males, 46.6%; females, 19.8%;  $p < 0.05$ ) and 35.3% of respondents rated TV/radio and the printed press as their preferred information sources. School-based information, particularly

Table 1. Sources of HIV information

Source	using that source		preferring that source	
	n.	(%)	n.	(%)
<b>All the respondents</b>	n=426		n=422	
TV or radio	331	(77.7)	142	(29.4)
Print (newspaper or magazines)	261	(61.3)	149	(35.3)
friend	77	(18.1)	31	(7.3)
parent	31	(7.3)	57	(13.5)
partner	17	(4.0)	30	(7.1)
School counsellors	102	(23.9)	110	(26.1)
doctors	42	(9.9)	211	(50.0)
Agencies or resource centre	32	(7.5)	215	(50.9)
<b>Male</b>	n=153		n=150	
TV or radio	121	(79.0)	70	(46.6)
Print (newspaper or magazines)	99	(64.7)	65	(43.3)
friend	25	(16.3)	10	(6.7)
parent	12	(7.8)	18	(12.0)
partner	4	(2.6)	3	(2.0)
School counsellors	25	(16.3)	47	(31.3)
doctors	16	(10.4)	58	(38.7)
Agencies or resource centre	8	(5.2)	54	(36.0)
<b>Female</b>	n=273		n=272	
TV or radio	210	(77.0)	54	(19.8)
Print (newspaper or magazines)	162	(59.3)	84	(30.9)
friend	52	(19.0)	21	(7.7)
parent	19	(7.0)	39	(14.3)
partner	13	(4.8)	27	(9.9)
School counsellors	77	(28.2)	63	(23.2)
doctors	26	(9.5)	153	(56.2)
Agencies or resource centre	24	(8.8)	161	(59.2)



school counselors, also served as an important source of information with 23.9% of all respondents accessing the service for this purpose and 26.1% preferring this source overall. In contrast, doctors and other resource centres were underused (9.9% and 7.5%) but were the preferred sources. In particular, females preferred doctors or resource centre significantly more often than males (doctors were preferred by 56.2% of females and 38.7% of males and similarly agencies or other resource centres were preferred by 59.2% of females and 36.0% of males,  $p < 0.05$ ).

The results of the questions directed at knowledge of AIDS/HIV risk behaviours and prevention measures are presented in Table 2. Respondents were familiar with the risk of: sharing needles with IDUs (99.3%), engaging in unprotected vaginal sex with casual partners (98.3%), and having unprotected anal intercourse with homosexual men (97.6%). However a high percentage of respondents incorrectly answered that AIDS can be transmitted after hospital admission (72.9%), by sharing plates and cutlery with AIDS patients (49.3%), and by using public toilets (43.1%; 35.8% of males and 47.2% of females  $p < 0.05$ ); by donating blood (28.0%); by

blood testing (17.8%); by being bitten by mosquitoes or other insects (29.6%); by working near someone with HIV or going to school with a child with HIV (23.4%; 32.0% of males and 18.7% of females  $p < 0.05$ ); by drinking from a glass previously used by someone with AIDS (14.9%); and by shaking hands with an infected person (7.3%). Misperceptions were also identified concerning prevention and treatment in that: 11.3% of respondents thought or were not sure that there is an effective vaccine against AIDS; 14.8% thought or was not sure that a cure for AIDS was available; 21.6% did not know that the onset of AIDS can be delayed with an appropriate therapy; and 26.3% did not know that people who contract AIDS die from it.

Overall, 72.6% of respondents (83.6% of males and 66.5% of females  $p < 0.005$ ) reported heterosexual intercourse (Table 3); 55.9% of the survey respondents had not used condoms during their last episode of sexual intercourse. Amongst the sexually active students, 18.5% of respondents (29.9% of males and 10.5% of the females;  $p < 0.005$ ) had one or more one-time sexual encounters in their lifetime. Furthermore, of those students who reported heterosexual intercourse,

**Table 2. Subject responses to each knowledge statement**

Statement	n.	true		false		don't know	
		n.	(%)	n.	(%)	n.	(%)
You can contract AIDS after hospital admission	417	304	(72.9)	88	(21.1)	25	(6.0)
You can contract AIDS by sharing needles with an IDU	425	422	(99.3)	3	(0.7)	0	(0)
You can get AIDS by having unprotected anal intercourse with homosexual man	425	415	(97.6)	2	(0.5)	8	(1.9)
You can contract AIDS by receiving a routine blood transfusion	423	395	(93.4)	19	(4.5)	9	(2.1)
You can contract AIDS by donating blood	421	118	(28.0)	280	(66.5)	23	(5.5)
You can contract AIDS from blood test	422	75	(17.8)	330	(78.2)	17	(4.0)
You can contract AIDS by being bitten by mosquitoes or other insects	419	124	(29.6)	230	(54.9)	65	(15.5)
You can contract AIDS by having unprotected sexual intercourse with occasional partners	421	414	(98.3)	5	(1.2)	2	(0.5)
You can contract AIDS by having sexual intercourse with occasional partners using condoms	420	123	(29.3)	288	(68.6)	9	(2.1)
You can contract AIDS working near someone with HIV or going to school with a child with HIV	423	99	(23.4)	315	(74.5)	9	(2.1)
You can contract AIDS from public toilets	422	182	(43.1)	206	(48.8)	34	(8.1)
You can contract AIDS by drinking from a glass previously used by someone with AIDS	424	63	(14.9)	349	(82.3)	12	(2.8)
You can contract AIDS by having a sexual intercourse with a prostitute	421	407	(96.7)	10	(2.4)	4	(1.0)
You can contract AIDS by shaking hands with an infected person	424	31	(7.3)	388	(91.5)	5	(1.2)
You can contract AIDS by sharing plates and cutlery with an AIDS patient	422	208	(49.3)	181	(42.9)	33	(7.8)
You can contract AIDS from kissing an infected person	422	163	(38.6)	227	(53.8)	32	(7.6)
Someone HIV-positive can transmit AIDS	416	383	(92.1)	14	(3.4)	19	(4.6)
There is an effective vaccine against AIDS	400	10	(2.5)	355	(88.8)	35	(8.8)
AIDS can be cured	400	11	(2.8)	341	(85.3)	48	(12.0)
The onset of AIDS can be delayed with an appropriate therapy	412	323	(78.4)	19	(4.6)	70	(17.0)
People who contract AIDS die from it	403	297	(73.7)	42	(10.4)	64	(15.9)

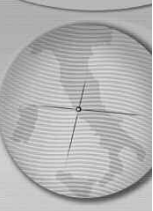


Table 3. Sexual behaviours of study participants

Sexual practice	n.	yes		no	
		n.	(%)	n.	(%)
Vaginal intercourse	427	310	(72,6)	117	(27,4)
Vaginal intercourse in the last three months	306	245	(80,1)	61	(19,9)
Using condom during the last vaginal intercourse	245	108	(44,1)	137	(55,9)
One or more one-time sexual encounters in lifetime	308	57	(18,5)	251	(81,5)
Sexual intercourse with IDU	306	14	(4,6)	292	(95,4)
Using condom during the last sexual intercourse with IDU	14	7	(50,0)	7	(50,0)
Sexual intercourse while intoxicated by alcohol	305	158	(51,8)	147	(48,2)
Using condom during the last sexual intercourse	152	69	(45,4)	83	(54,6)
Sexual intercourse after drug using	307	50	(16,3)	257	(83,7)
Using condom during the last sexual intercourse	47	21	(44,7)	26	(55,3)
Believing that partner had other sexual partners	304	142	(46,7)	162	(53,3)
Having STDs in lifetime	307	33	(10,7)	274	(89,3)
Anal intercourse (heterosexual)	425	92	(21,6)	333	(78,4)
Anal intercourse (heterosexual) in the last three months	90	33	(36,7)	57	(63,3)
Using condom during the last anal intercourse (heterosexual)	33	6	(18,2)	27	(81,8)
Oral-genital contact*	271	132	(48,7)	139	(51,3)
Oral-genital contact in the last three months*	131	95	(72,5)	36	(27,5)
Using condom during the last oral-genital contact*	95	5	(5,3)	90	(94,7)
Anal intercourse (homosexual) **	149	10	(6,7)	139	(93,3)
Anal intercourse (homosexual) in the last three months**	10	6	(60,0)	4	(40,0)
Using condom during the last anal intercourse (homosexual) **	6	3	(50,0)	3	(50,0)

\* females \*\* males

4.6% had sexual intercourse with an IDU. Amongst these, 50.0% did not use condoms during their episode of last sexual intercourse. Additionally, 46.7% believed that their partner had other sexual partners, and 10.7% (6.3% of males and 13.9% of females;  $p < 0.05$ ) had been previously diagnosed with a sexually transmitted disease (STDs).

Amongst those sexually active students, 51.8% (65.9% of males, and 41.9% of females;  $p < 0.05$ ) had sexual intercourse while intoxicated by alcohol, and 54.6% of these did not use condoms during their last episode of sexual intercourse. What is more, 16.3% (23.6% of males and 11.1% of females;  $p < 0.005$ ) had sexual intercourse after drug use. Of these students, 55.3% did not use a condom during their last episode of sexual intercourse. Amongst those students who used drugs, 74.0% had used cannabis, 14.0% cocaine, 8.0% heroin, 6.0% ecstasy, and 2.0% LSD.

Logistic regression was performed to establish the independent effects of age, sex, and knowledge on the probability of having sex without a condom, having one or more one-time sexual encounters, and having sexual intercourse while intoxicated by alcohol and after drug use. Male gender was associated with having casual sex (OR 3.969; 95% CI, 1.950 to 8.079), having sexual intercourse while intoxicated by alcohol (OR 3.370; 95% CI, 1.928 to 5.889), and having sex after drug use (OR 3.528; 95% CI 1.717 to 7.247).

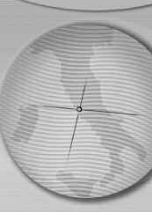
Male gender was not associated with having sex without a condom and age and knowledge were not associated with unsafe sexual behaviours.

Twenty one point six percent of respondents had engaged in anal intercourse (37.1% of males and 12.8% of females;  $p < 0.005$ ). Amongst these, 36.7% (29.1% of males and 48.6% of females  $p = 0.06$ ) reported having anal intercourse in the three months prior to the completion of the questionnaire, with 81.8% stating that they had not used condoms during their last episode of anal intercourse. Among females, 48.7% had engaged in oral-genital contact, and of these 72.5% reported oral-genital contact in the three months prior to completion of the questionnaire. Of these students, 94.7% did not use a condom during their last contact. Among males, 6.7% indicated homosexual anal intercourse with 60.0% reporting anal intercourse in the three months prior to completing the questionnaire. Amongst these, 50.0% had not used condoms during their last episode of anal intercourse.

## Discussion

In Italy, public health efforts to reduce transmission of HIV have predominantly relied on informational campaigns that have utilized public service announcements on TV, radio and in the printed press. However, although TV, radio and the printed press print were the most frequently used





source of HIV/AIDS information, most respondents preferred information from doctors, other health providers or resource centres. This finding concurs with previous studies [8,9]. Indeed, despite the ability to reach large numbers of people, TV, radio and the press are not the most effective methods of delivering HIV/AIDS information. Therefore, there is a need for a greater role for doctors, healthcare or social agencies in providing HIV/AIDS information. In this study we found that differences in sources of HIV information related to gender. Women preferred to receive information from health care providers or social service agencies, while men preferred to obtain their information from TV, radio, or the press.

Most students were aware that unprotected sexual intercourse and sharing needles with IDUs could result in the transmission of HIV. However, the majority of students thought that AIDS could be transmitted after hospital admission, by sharing plates or cutlery or by using public toilets. Of considerable concern is the finding that 28% thought that AIDS could be transmitted by donating blood, and that 23.4% thought that AIDS could be contracted by working or studying near someone with AIDS. These findings are similar to those of Petro-Nustas [10] who indicated the presence of a "knowledge-deficit" problem among university students in terms of what can or cannot transmit HIV/AIDS, particularly in those from science or humanities rather than medical faculties. Better public health education in schools is likely to improve students' knowledge base, however this is not sufficient to produce behavioural changes. Encouraging individuals to change their behaviour and teaching them the necessary skills should be encouraged in all AIDS-related educational programs [10].

In terms of unsafe sex, our findings are consistent with the research of Roberts and Kennedy [11] in the United States and Huang et al. in China [12]: substantial proportions of students did not use condoms, and continued to engage in behaviours considered risky. Male respondents were significantly more likely than female respondents to engage in vaginal sex and in anal sex with both regular and casual partners. Moreover in the multivariate analysis, male gender was shown to be the best predictor of sexual risk behaviours except for condom use. Gender differences in sexual behaviour and attitude have been widely documented and indicate that men are more sexually active, hold more liberal sexual attitudes, and are more willing to engage in sexual behaviour under a range of circumstances [13]. However, significant differences were not observed in reported condom use. Indeed, the majority of

students knew the protective effect of condoms, but they did not use them regularly. Although condom use is a well-publicized AIDS-prevention strategy, it has not been widely accepted by youths. Several surveys have reported that only a relatively small proportion of adolescents use condoms regularly [14]. Most students perceive themselves to be at low risk for HIV infection despite their involvement in risky sexual practices (e.g. unprotected sexual intercourse). This perception may have an inhibiting effect on positive health behaviour such as condom use [15]. Moreover, in spite of high rates of HIV transmission associated with unprotected anal intercourse, of greatest concern is that most of the anal intercourse reported was unprotected.

The risks posed by drugs and alcohol use in the sexual transmission of HIV have been described elsewhere [16]. Indeed, the students who regularly use alcohol and drugs are less likely to use condoms, increasing the risk of contracting HIV. Poppen and Reinsen [17] suggested that the use of alcohol or drugs influences sexual risk taking by affecting judgment and impulse control. Stueve and O'Donnell [18] reported that early drinkers were more likely to report unprotected sexual intercourse, and multiple partners. These findings are of significant concern and require specific educational interventions.

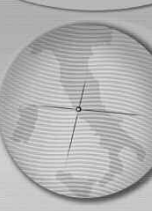
The future of the AIDS epidemic in Italy will be determined by the population's sexual behaviour, in particular the number of sexual partners and frequency of condom use. Prevention continues to be the principal weapon against the AIDS epidemic and strategies targeting increasing student's awareness of the risks of their sexual behaviours and promoting positive health changes (e.g. promotion of condom use, and reducing the number of risky sexual partners) are likely to be the most effective. It is important to note that HIV/AIDS education may need to start before individuals become sexually active and establish risky patterns of behaviour. Schools provide both a broad range of opportunities and have a responsibility for addressing and reducing sexual risk-taking behaviours. Knowledge of HIV transmission is a basic first step to any change in attitudes or practices.

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