

HIV awareness: a kap study among students in Italy reveals that preventive campaigns still represent a public health priority

D. Loconsole¹, A. Metallo¹ V. Bruno¹, A.L. De Robertis¹, A. Morea¹,
M. Quarto¹, M. Chironna¹

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Abstract

Background. Improving knowledge about HIV/AIDS among young people is crucial for preventing new infections. The aim of the study was to investigate knowledge, attitudes and practices regarding HIV infection among students attending university courses related to the healthcare professions, in order to better target future preventive and informative HIV campaigns tailored for young people.

Study Design. A knowledge, attitude and practices study was conducted among university students attending the following university courses in Bari (Southern Italy): Medicine and Surgery (MS), Dentistry and Dental Prostheses, Health Assistance, Motor Activities and Sports Sciences, Sciences and Technology of Herbal and Health Products, Nursing, Biomedical Laboratory Techniques, and Dietetics.

Methods. Students completed a self-administered questionnaire designed to assess their knowledge/attitudes re/ HIV and their own sexual practices. The general part of the questionnaire requested information about age, gender, nationality, religion and marital status. The second part included questions asking about knowledge, attitude and practices with respect to HIV, which required true/false answers or graduated answers (reported as agree, quite agree, quite disagree, and disagree).

Results. Four hundred students were invited to fill in the questionnaire. The response rate was 91.2% (n=365). Almost all students were aware that HIV is transmitted through sexual intercourse and blood, but only 34% knew that breast feeding is a route of transmission. Of the respondents, 86.8% referred to previous sexual intercourse (25.8% reported using a condom in all cases of sexual intercourse, 43.5% in most cases, 18.6% rarely and 12.1% never). Sexual intercourse with casual partners was reported by 37.5% of these students and 63.9% of them did not always use a condom.

Conclusions. The results of the study show that knowledge about some aspects of HIV is insufficient even though the students participating in the present study are students attending university courses related to the healthcare professions. Moreover, high-risk behaviors as the lack of the use of condom during sexual intercourse with casual partners are also common among interviewed students. Programs aimed at providing information that can prevent/reduce transmission of HIV in young people and new strategies to improve knowledge should be stressed as a public health priority.

Introduction

Every day, an estimated 1 million sexually transmitted infections (STIs) occur worldwide (1). HIV infection, although

preventable through effective public health measures, remains a major public health issue; globally, 1 million people died from HIV-related causes in 2016 (2, 3). The

¹ Department of Biomedical Sciences and Human Oncology, University of Bari "Aldo Moro", Bari, Italy

increase in sexually transmitted diseases in younger people seems to be related to a reduction in the average age at which they first have sexual intercourse (4). The 15–24 year age group, in particular, is most at risk of acquiring HIV infection, also for lack of knowledge of HIV testing (5, 6).

In 2016, the incidence of HIV infection reported in the WHO European Region was 18.2 per 100,000 people; about half (51%) of these infections were diagnosed at a late stage (CD4 cell count $<350/\text{mm}^3$) (2). Late diagnosis is dangerous in terms of both patient health (it delays initiation of anti-retroviral therapy - ART) and for the community at large (because it increases the risk of spreading HIV infection) (2).

In 2016 in Italy, the incidence of new HIV infections was comparable to that reported by the 31 countries of the European Union/ European Economic Area (5.7/100,000 people vs. 5.9/100,000) (2, 7). An estimated 40% of newly diagnosed people were unaware of their exposure to the risk of contracting HIV infection (7). Adolescents and young adults account for about 25% of new HIV infections and the highest incidence, in particular, was reported for young adults aged 25–29 years (13.6% of all diagnoses) (7). Overall, 37.3% of people diagnosed when aged under 25 years presented late (7).

In 2015, the Puglia region reported more diagnoses in people under the age of 25 (16.0%) than any other Italian region, despite the fact that the overall incidence of new HIV infections was lower than the national average. Furthermore, 35.0% of those in the 18–25 year age group were diagnosed late (CD4 count $<350/\text{mm}^3$) (8).

The unawareness of the risk of exposure to HIV may be due largely to a lack of knowledge regarding transmission routes and to a lack of preventive and informative campaigns that could lead to a change in behavior (9, 10). Therefore, although improving HIV testing and treatment is a public health priority, it must be accompanied by a much

stronger primary prevention response (such as improved use of condoms) (9).

The aim of this study was to investigate knowledge, attitudes and practices with respect to HIV infection among students attending university courses (at “Aldo Moro” University of Bari, Southern Italy) related to the healthcare professions. A comparison between medical students and students of the other healthcare professions was carried out.

Methods

A KAP (knowledge, attitude, and practices) study was conducted among students attending any years of the following university courses: Medicine and Surgery, Dentistry and Dental Prostheses, Health Assistance, Motor Activities and Sports Sciences, Sciences and Technology of Herbal and Health Products, Nursing, Biomedical Laboratory Techniques, and Dietetics. Participation was voluntary and anonymous, and did not interfere with lecture time. In addition, permission from the lecturer was a prerequisite for class participation. Students were informed of the aim of the study and the topic to be addressed. Informed consent was obtained from all participants included in the study.

The questionnaire was designed by the authors in accordance with current privacy legislation (D.Lgs. 196/2003) and was self-administered. It comprised multiple-choice questions. The general part of the questionnaire requested information about age, gender, nationality, religion and marital status. The second part included questions asking about knowledge (3 items), attitude (7 items) and practices (7 items) with respect to HIV, which required true/false answers or graduated answers (reported as agree, quite agree, quite disagree, and disagree).

All procedures performed in the study were in accordance with the ethical standards

of the institutional and national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by the Institutional Review Board at the Apulian Regional Observatory for Epidemiology.

For analysis purpose, participants were classified as MD students or students of the other considered courses (termed “non-MD students”). Descriptive and statistical analyses were performed using STATA 12.0 software. The Chi-squared or Fisher’s exact test was used to compare proportions. A *p* value of <0.05 was considered significant.

Results

Among 400 questionnaires administered from October 2016 to July 2017, 365 (91.2%) were returned. Of the respondents, 35.9% (n=131) were male, 63.6% (n=232) were female, and 0.5% (n=2) did not declare their gender. The median age was 21 years (interquartile range, 20–24; range, 17–56 years). Demographic characteristics and university course attended by the sample cohort are reported in the Table 1. Of the sample cohort, 41% were in the first year of their university course. Students reported that their principal sources of information about HIV/AIDS were the course being studied (68.8%), internet (64.7%), television (55.6%), primary care physicians (36.4%), scientific journals (20.5%) and friends/relatives (34.5%). In Table 2 are reported the results of further items on HIV knowledge. Almost all respondents were aware that HIV could be transmitted through sexual intercourse and blood, but only 34% knew that breast feeding is a route of transmission. Some students believed that HIV could be transmitted through saliva (26.0%) or by a mosquito bite (17.3%). Of the MS students, 73.6% and 72.6% knew that HIV is not transmitted via saliva or mosquito bites,

Table 1 - Demographic characteristics of, and university course attended by, the interviewed students (n=365)

	Number	Percentage (%)
<i>Gender</i>		
Male	131	35.9
Female	232	63.6
Not declared	2	0.5
<i>Nationality</i>		
Italian	357	97.5
Other	7	1.9
Not declared	2	0.6
<i>Religion</i>		
Catholic	297	81.4
Other	56	15.3
Not declared	12	3.3
<i>Marital status</i>		
Living together	7	1.9
Relationship/Married	173	47.4
Single/Divorced	177	48.5
Not declared	8	2.2
<i>University course attended</i>		
Medicine and Surgery	106	29
Dentistry and Dental Prostheses	21	5.8
Health Assistance (Health visitors)	47	12.9
Motor Activities and Sports Sciences	45	12.3
Sciences and Technolo- gy of Herbal and Health Products	39	10.7
Nursing	37	10.1
Biomedical Laboratory Techniques	58	15.8
Dietetics	12	3.4

respectively (data not showed in table). Of the total sample, 97.5% were aware that condoms prevent transmission of HIV, but 12.3% believed that an intrauterine device (IUD) also prevents transmission. Most students were aware that ART prevents mother-to-child transmission (55.1%) and can be used for post-exposure prophylaxis (PEP) (49.0%). Of the MS students, 68.9% were aware of PEP (data not shown in table).

Table 2 - Knowledge of HIV infection reported by the interviewed students (n=365)

	True		False		Do not know/no answer	
	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)
<i>Modes of HIV transmission</i>						
Sexual intercourses	364	99.7	0	0	1	0.3
Syringes or infected needle	362	99.2	1	0.3	2	0.5
Blood transfusion	339	92.9	8	2.2	18	4.9
Mother-to-child during pregnancy or at delivery	283	77.5	26	7.1	56	15.4
Breast feeding	124	34.0	139	38.1	102	27.9
Saliva	95	26.0	213	58.4	57	15.6
Mosquito bite	63	17.3	233	63.8	69	18.9
Piercing and/or tattoos	255	69.9	48	13.2	62	16.9
<i>HIV transmission could be prevented by:</i>						
Condom	356	97.5	2	0.5	7	2.0
IUD (intrauterine device)	45	12.3	236	64.6	84	23.1
Birth control pill	12	3.3	322	88.2	234	64.1
Coitus interruptus	16	4.4	267	73.1	82	22.5
<i>Antiretroviral therapy (ART) could:</i>						
Prevent mother-to-child transmission	201	55.1	36	9.8	128	35.1
Be used for post-exposure prophylaxis	179	49.0	43	11.8	143	39.2
Improve survival rates of HIV positive subjects	301	82.5	8	2.2	56	15.3
Reduce HIV transmission rate through dropping on viral load in positive subjects	185	50.7	27	7.4	153	41.9

The results of the HIV attitudes section are reported in Table 3. More than 70% of respondents thought that all hospitalized patients should be mandatorily screened for HIV (48.2% “quite agree” and 25.2% “agree”) and almost all respondents would like to have more information about HIV/AIDS (50.1% “quite agree” and 47.4% “agree”).

The results of the practices section are reported in Table 4. Of all students that responded, 86.8% reported previous sexual intercourses. Of these, 78.9% reported condom use. Sexual intercourses with casual partners were reported by 37.5% of the students and 63.9% of these reported the use of condom rarely.

Among all students, 72.6% had never undergone HIV testing, and only 26.3% had been tested for HIV at least once during their lifetime (42% were MS students, data not shown in the table). In addition, 61% of respondents reported that their sexual partners had never had an HIV test.

The analysis of data revealed that MD students were more aware about HIV mode of transmission compared to students of the other healthcare professions (Table 5). MD students did not think that people with AIDS should be isolated from population ($p < 0.05$). Compared to the students of the other healthcare professions, a significant proportion of MD students thought that students with HIV infection should not be

Table 3 - Attitudes on HIV infection reported by the interviewed students (n=365)

	Agree		Quite agree		Quite disagree		Disagree		No answer	
	N.	Percent- age (%)	N.	Percent- age (%)	N.	Percent- age (%)	N.	Percent- age (%)	N.	Percent- age (%)
Only homosexuals can become infected with HIV	3	0.8	2	0.5	98	26.8	257	70.4	5	1.5
HIV infection is a punishment for irresponsible behavior	14	3.8	59	16.2	186	51.0	103	28.2	3	0.8
People with HIV/AIDS should be isolated from population	1	0.3	22	6.0	174	47.7	160	43.8	8	2.2
I would like to learn more about HIV	173	47.4	183	50.1	5	1.4	0	0	4	1.1
Students with HIV infection should not be allowed to attend university courses for health-care professions	6	1.6	23	6.3	162	44.4	170	46.6	4	1.1
HIV positive healthcare workers should carry out their work using appropriate precautions	125	34.2	168	46.0	51	14.0	17	4.7	4	1.1
All patients at hospital admission should be mandatorily screened for HIV infection	92	25.2	176	48.2	77	21.1	13	3.6	7	1.9

allowed to attend health professional courses ($p<0.05$). Moreover, MS students thought that seropositive healthcare workers should continue to work, albeit with precautions ($p<0.001$).

Discussion and Conclusions

Improving knowledge about HIV/AIDS among young people represents a key action to reduce the risk of acquiring STIs through increased use of condoms and to improve attitudes towards HIV-positive subjects (11-13).

Our results show that the most common sources of information (in addition to the course being studied at the university) are internet and television. The mass media play

an increasingly important role in providing health-related information; indeed, mass media-led preventive approaches seem to be effective for educating people about HIV (14, 15). Almost all respondents were aware that the virus could be transmitted through sexual contact, but less than 35% were aware that even breast feeding is a mode of transmission. Furthermore, about a quarter of respondents believed that HIV can be transmitted through saliva and almost 20% thought it can be transmitted through a mosquito bite. These data suggest that the participants to the present study had greater knowledge of HIV transmission routes than that reported by a Belgian study (16). If we take into account MD students only, our data agree with those reported by a study conducted on medical students in

Table 4 - Practices reported by the interviewed students

	Number	Percentage (%)
<i>Previous sexual intercourses (n=365)</i>		
Yes	317	86.8
No	48	13.2
<i>Condom use during sexual intercourses (n=317)</i>		
Yes	250	78.9
No	60	18.9
No answer	7	2.2
<i>Frequency of condom use during sexual intercourses (n=317)</i>		
Never	38	12.1
Rarely	59	18.6
In most cases	138	43.5
In all cases	82	25.8
<i>Sexual intercourses with casual partner (n=317)</i>		
Yes	119	37.5
No	188	59.3
No answer	10	3.2
<i>Frequency of condom use during sexual intercourses with casual partner (n=119)</i>		
Never	3	2.5
Rarely	76	63.9
In most cases	22	18.5
In all cases	18	15.1
<i>Tested at least once for HIV (n=365)</i>		
Yes	96	26.3
No	265	72.6
Do not know/no answer	4	1.1
<i>Sexual partner who had never had an HIV test (n=365)</i>		
Yes	35	9.6
No	223	61.0
Do not know/no answer	107	29.4

Israel, which showed that 75.2% and 72.8% of respondents were aware that HIV is not transmitted through saliva or mosquito bites, respectively (17).

More than 70% of respondents thought that all patients admitted to hospital should be mandatorily screened for HIV. This percentage is lower than 90% reported by a study conducted among students at an Indian medical college (18).

Among those reporting at least one occasional sexual intercourse, 63.9% did not always use a condom. This figure is consistent

with that reported by a surveillance study carried out in 4 Italian cities, which showed that 65.6% of subjects interviewed in Bari did not always use a condom during sexual intercourses (19).

Finally, our sample contained a moderate percentage of subjects who were tested for HIV: 26.3% was tested at least once for HIV during lifetime. This percentage increased to 42% among medical students. A surveillance study of students in the United States between 2005 and 2011 found that 21.9% were tested for HIV (20).

Table 5 - Responses about knowledge, attitudes and practices re/ HIV by students attending Medicine and other Healthcare professions (MD students) compared to students attending other university courses (non-MD students) and showing a statistical significance ($p < 0.05$)

	MD students/respondents (%)	Non-MD students/respondents (%)	p value
HIV could be transmitted through:			
Mother-to-child	98/99 (99.0)	185/210 (88.1)	0.0015
Breast feeding	55/82 (67.1)	69/181 (38.1)	<0.001
Saliva	16/93 (17.2)	79/215 (36.7)	<0.001
Antiretroviral therapy (ART) could be used for post-exposure prophylaxis	73/82 (89.0)	106/140 (75.7)	0.015
HIV transmission could be prevented by IUD (intrauterine device)	7/95 (7.4)	38/186 (20.4)	0.004
People with HIV/AIDS should be isolated from population	2/104 (1.9)	21/253 (8.3)	0.025
Students with HIV infection should not be allowed to attend health professions university courses	231/257 (89.9)	101/104 (97.1)	0.022
HIV positive healthcare workers should carry out their work using appropriate precautions	97/104 (93.3)	196/257 (76.3)	<0.001
Tested at least once for HIV	43/103 (41.7)	53/258 (20.5)	<0.001

This study has several limitations. First, the respondents were trained to become MDs or other healthcare professionals and so would likely have greater knowledge of the issues than the general population. The results may have been different if respondents were not university educated. Second, the comparison between MD and non-MD students was carried out among students attending different years of the university courses. This was due to the low number of students for each year of the considered university courses. A further limitation is that, in Italy, the Medical curriculum has a duration two fold longer (6 y) than the other standard health professional courses (3 y). However, taken together, the results presented herein suggest that high-risk behavior is common among younger people, comprising students attending university courses related to the healthcare professions. Students should be given more information during university studies about HIV and sexually transmitted diseases.

In conclusion, programs aimed at providing more information that can prevent/reduce transmission of HIV should be a public health priority also in the light of the Italian National Plan of Interventions against HIV and AIDS (PNAIDS) (21).

Riassunto

Consapevolezza dell'infezione da HIV: uno studio cap in studenti italiani evidenzia che le campagne di prevenzione rappresentano ancora una priorità in sanità pubblica

Introduzione. Migliorare le conoscenze su HIV/AIDS tra i giovani è fondamentale per prevenire nuove infezioni. Obiettivo dello studio è stato quello di indagare le conoscenze, gli atteggiamenti e le pratiche relativi all'infezione da HIV tra gli studenti che frequentano corsi universitari di area sanitaria per poter meglio indirizzare future campagne di prevenzione e di informazione.

Disegno dello studio. È stato condotto uno studio CAP (conoscenza, atteggiamenti e pratiche) tra studenti dei corsi di laurea in Medicina e Chirurgia, Odontoiatria e Protesi Dentaria, Assistenza Sanitaria, Scienze delle

Attività Motorie e Sportive, Scienze e Tecnologia dei Prodotti Erboristici e Dietetici, Infermieristica, Tecniche di Laboratorio Biomedico e Dietistica dell'Università degli Studi di Bari (Puglia, Italia meridionale).

Metodi. Gli studenti arruolati hanno compilato un questionario anonimo auto-somministrato. La parte generale richiedeva informazioni su età, sesso, nazionalità, religione e stato civile. La seconda parte comprendeva domande inerenti conoscenze, atteggiamenti e pratiche relative all'infezione da HIV.

Risultati. Il questionario è stato proposto a 400 studenti. Il tasso di risposta è stato del 91,2% (n=365). Quasi tutti gli studenti erano consapevoli del fatto che l'HIV si trasmette attraverso rapporti sessuali e attraverso il sangue, ma solo il 34% che l'allattamento al seno rappresenta una via di trasmissione. L'86,8% riferiva di aver avuto rapporti sessuali (il 25,8% usava sempre il profilattico, il 43,5% nella maggior parte dei rapporti, il 18,6% raramente e il 12,1% mai). Degli studenti che riferivano di aver avuto rapporti sessuali, il 37,5% riferiva rapporti sessuali anche con partner occasionali e, di questi, il 63,9% non utilizzava sempre il profilattico.

Conclusioni. I risultati dello studio mostrano che le conoscenze su alcuni aspetti dell'infezione da HIV risultano insufficienti anche negli studenti che frequentano corsi universitari di area sanitaria. Inoltre, i comportamenti ad alto rischio, come il mancato uso del preservativo durante i rapporti sessuali con partner occasionali, sono comuni anche tra gli studenti intervistati. Programmi volti a fornire informazioni che possano prevenire/ridurre la trasmissione dell'infezione da HIV nei giovani e nuove strategie per migliorare le conoscenze rappresentano una priorità di salute pubblica.

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Corresponding author: Maria Chironna, PhD, Department of Biomedical Sciences and Human Oncology, University of Bari "Aldo Moro", P.zza G. Cesare 11, 70124 Bari, Italy
e-mail: maria.chironna@uniba.it