ORIGINAL ARTICLE

Knowledge of sexually transmitted infections among younger subjects of the city of Messina (Sicily)

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Key words

Sexually transmitted infections • High school students

Summary

Introduction. *Sexually transmitted infections (STIs) are considered a serious public health problem worldwide, affecting especially young people. The international monitoring data indicate that 70% of patients with STIs are aged between 15 and 24 years and the World Health Organization estimates that one out of 20 teenagers contracts an STI each year. We wanted to evaluate, through this work, what high school students of Messina know about the STIs.*

Material and methods. *From February to May 2013 questionnaires were distributed to students of the last three classes of seven high schools, three of which belonging to humanistic area and four to technical area. The completed questionnaires collected were 1588.*

Results and discussion. *The investigation carried out showed a better knowledge of the STIs by students of humanistic schools than students of technical-scientific schools, the percentage of correct answers was 74% and 60% respectively; this probably also depends on the family context, in fact, there is a statistically significant correlation between the percentage of correct answers and parents education level. Young people have a limited knowledge on the subject. We concluded our work by stressing the importance and the need to deepen and improve the training and information of the medical staff, teachers and families, as it is from their knowledge and their ability to provide complete and accurate information about the risks posed by STIs that can derive knowledge and choices of appropriate lifestyle between the youth population.*

Introduction

According to 2008 World Health Organization (WHO) estimates, 499 million new cases of curable STIs (syphilis, gonorrhoea, chlamydia and trichomoniasis) occur annually throughout the world in adults aged 15-49 years. These figures do not include the additional health burden caused by HIV and other viral STIs such as HSV [1].

A real increase in incidence is due to the increased tendency to have promiscuous sex without using a condom [2, 3]. Another reason of the increased incidence is certainly related to the disinterest of most of population against these infections; this lack of interest is linked to lack of information devoted to this subject, especially by young people and consequently to poor knowledge of the problem represented by the STIs [4]. It's also important to point out that in most industrialized countries, where the widespread use of antibiotics in the past decades has led to a drastic reduction in the spread of STIs, there is now a marked increase in viral STIs such as genital herpes and warts, and the re-emergence of diseases almost completely disappeared, such as syphilis and lymphogranuloma venereum [5].

In fact, from the mid-1990s, the increase in diagnoses of sexually transmitted infections, including syphilis, gonorrhoea and chlamydia were reported in several European countries, especially among adolescents between 16-19 years [3]. In addition, the sexually transmitted infections are a major health problem that affects mostly young people, not only in developing but also in developed countries.

The problem with the most of STIs is that they can occur symptom-free and thus can be passed on unaware during unprotected sexual intercourse [3]. On an individual level, complications can include pelvic inflammatory diseases, ectopic pregnancies and infertility [4, 6, 7].

Female adolescents may have a higher risk of contracting a sexually transmitted disease than their male peers, being generally their sexual partners older and therefore with a greater probability of being infected [8, 9].

Certainly it is noteworthy, although we are in a period of great technological advances which fully involve information systems worldwide, that the STIs among adolescents continue to be an important public health problem for many industrialized and developing countries.

The international monitoring data indicate that 70% of patients with STI are aged between 15 and 24 years and the WHO estimates that one out of 20 teenagers contracts an STI each year [4].

In particular, some studies carried out in Italy [4] showed a significant prevalence of infections such as syphilis and hepatitis B. On the basis of this information it must be said that the rates of illness reported underestimate the true burden of infection because most STIs are asymptomatic.

The declining age of first sexual intercourse has been proffered as one possible explanation for the increase in numbers of STIs [10]. According to data from different European countries, the average age of first sexual intercourse has decreased over the last three decades, with increasing proportions of adolescents reporting sexual activity before the 16 years [11, 12]. The reluctance of adolescents to use condoms is another possible explanation for the increase in STIs.
Some surveys of adolescents reported that condoms were seen as difficult to use by those who is sexually inexperienced, they diminish sexual pleasure and it is embarrassing to suggest its use [13, 14]. Condoms have also been reported to be primarily used as a contraceptive and not to prevent the occurrence of sexually transmitted diseases, and their use becomes irregular when other contraceptives are used [15, 16].
Furthermore, many adolescents do not perceive themselves to be at risk of contracting an STI. So the understanding and prevention of STIs among adolescents represent a critical aspect that would minimize the risk of sexual transmission and thus reduce the frequency of these infections [17]. Information on sexual practices of adolescents and, in particular, knowledge of risk behavior related to unprotected intercourse would lead to the dissemination of knowledge on preventive measures.
Therefore, since today sexually transmitted infections continue to pose a serious public health problem, especially among the younger subjects, the aim of this study was to evaluate both knowledge and information regarding STIs of high school students of Messina.

Materials and methods

From February to May 2013, a survey was conducted on a sample of students aged 16-18 years in some public high schools in the city of Messina (Italy). In particular, the study involved students of the last three classes of seven high schools, three of which belonging to humanistic area and four to technical area.
All public high schools were approached by letter and visited by one of the researchers to request participation. A member of the research-team verbally explained the study to the students in their classroom. Participation is voluntary and to all students enrolled in the study were asked to complete an anonymous self-administered questionnaire (Fig. 1) after providing written informed consent for their participation. Belonging our research team at the center of reference for the epidemiological surveillance of HIV of Messina we have focused our attention primarily on the knowledge of the guys on this pathology. The completed questionnaires collected were 1588. Humanistic school's students were 735, 207 males and 528 females, however, the technical-scientific school's students were 853, including 378 women and 475 men (Tab. I).

Fig. 1. Self-administered questionnaire to students involved in the study.

What do you know about HIV/AIDS and sexually transmitted diseases?

Nationality..... Place of birth.....

Sexual habits: heterosexual ○ homosexual ○

Parents cultural level .....

1) What STIs do you know?

2) How is the infection?
○ sex ○ contact with body fluids ○ oral sex ○ petting ○ kiss
○ coughing and sneezing ○ mother-child ○ common social contacts

3) Which of the following clinical manifestations can be found?
○ genital lesions ○ infertility ○ brain injury ○ blindness ○ Aids
○ headache ○ diarrhea ○ hematuria ○ powerlessness ○ I do not know

4) How can you protect yourself from STIs?

5) HIV is?
○ a bacterium ○ a virus ○ a fungus ○ a disease ○ I do not know

6) AIDS is?
○ a virus ○ an infectious disease ○ a hereditary disease
○ an opportunistic infection ○ I do not know

7) How is HIV infection transmitted?
○ kiss ○ blood ○ transfusion ○ sharing syringes ○ living with an HIV-positive
○ sexual relations with infected partner ○ pregnancy ○ I do not know

8) Which body fluids contain HIV?
○ saliva ○ sperm ○ sweat ○ precoital fluid
○ blood ○ tears ○ I do not know

9) Which of these statements is correct?
○ AIDS causes HIV ○ HIV causes AIDS ○ a disorderly life leads to AIDS (drug, sexual promiscuity)

10) Who is an HIV-positive?
○ an AIDS patient ○ in the blood has antibodies against the virus ○ a person with risk behaviors
○ recognizable on sight because thin and worn ○ I do not know

11) If you are HIV positive:
○ not say it to anyone ○ say it only to your best friend ○ say it only to your family
○ say it only to the doctor ○ say it only to your partner ○ no problems to tell everyone

12) Is it necessary to isolate the seropositive subjects at school, working, sports?
○ yes ○ no ○ I do not know

13) Which of these statements do you think is true?
○ AIDS can be cured ○ you die of AIDS ○ AIDS is not a problem because there is a vaccine
○ AIDS does not exist in Italy ○ AIDS is only a problem in developing countries ○ I do not know

14) In which of the following affirmations do you recognize yourself more?
○ I use a condom if I have sex with people I do not know ○ I always use a condom
○ I do not use a condom because I make use of alternative methods of prevention

15) Can you diagnose HIV infection?
○ yes ○ no ○ I do not know

16) Where can you make diagnostic tests for HIV infection?
○ public hospitals ○ analysis laboratories ○ nursing homes
○ counseling ○ I do not know

17) Do test results remain secret?
○ yes ○ no ○ I do not know

18) Will a person living with HIV develop AIDS?
○ yes, always ○ yes, sometimes ○ no ○ I do not know

19) Which was for you the main source of information on AIDS?
○ school ○ books ○ brochures ○ family doctor ○ newspapers
○ magazines ○ TV or radio ○ family ○ friends ○ websites

20) Do you think your knowledge on HIV/AIDS is?
○ limited/null ○ insufficient ○ sufficient ○ good ○ excellent

21) From what source do you expect more information about this topic?
○ media ○ school ○ family ○ healthcare environment

The first part of the questionnaire collected information on nationality, place of birth, age, sex, sexual behavior and the level of education of their father and mother.
The second part of the questionnaire included questions with one correct answer and questions with subjective responses, with the aim of assessing the youths' knowledge about the main sexually transmitted infections, particularly HIV / AIDS, modes of transmission, methods of prevention, HIV seropositivity and progression of the disease, and also some questions related to the HIV test and the source of information for students on these topics.
Correlations were determined using either the standard Pearson correlation coefficient or the Spearman's rank correlation test. All analyses were performed using Prism 4.0 software.

Tab. I. Study population.

	Samples	School address
Students	1588	humanistic area 735
		technical-scientific area 853
Female	906	humanistic area 528
		technical-scientific area 378
Men	682	humanistic area 207
		technical-scientific area 475
Average age	16-18	humanistic area 16-18
		technical-scientific area 16-18

Results

Analysis of the questionnaire responses, given by students of seven schools under consideration, showed that the highest percentage of incorrect responses concerns the questions on the meaning of the term "HIV-positive", the concept HIV / AIDS and the future of a person with AIDS, this is a sign that unfortunately the students' knowledge is not complete. However the boys know the mode of infection of STDs, particularly HIV and biological fluids containing the virus (Fig. 2).
Comparing the correct answers between the humanistic group and the technical-scientific group we observed a higher percentage of correct answers in the first group (Fig. 3) with a significant difference ($p = 0{,}0012$).
We did not find significant difference assessing the correct answer according to gender and age regardless of the school address, however considering only the humanistic area there is a significant increase in correct answers directly proportional to the class belonging. In particular, as regards knowledge of sexually transmitted infections, the answers are similar between boys belonging to humanistic area and those of technical-scientific area. AIDS is the sexually transmitted infection better known followed by syphilis, HSV, Candida, EBV and HPV with 91%, 45%, 28%, 22%, 20% and 19% respectively (Fig. 4). Moreover humanistic school's students have a better knowledge of the mode of infection respect to technical-scientific school's students, in fact, the percentage of correct answers was 74% and 60% respectively.
In relation to the knowledge on the symptomatology related to infection, all students, independently of school membership, responded AIDS (63% humanistic school's students, 60% technical-scientific school's students), genital lesions (33% humanistic school's students, 28% technical-scientific school's students) and sterility (25% humanistic school's students, 23% technical-scientific school's students).
The question about the methods of sexually transmitted infections prevention showed a good understanding of the methods to be used, the majority of students reported to always use condom with both casual and regular partners.
Furthermore the questionnaire included questions related to knowledge of HIV infections. Our particular interest stems from the fact that there is very little information on this topic with a consequent lowering of the level of attention especially from the boys. With regard to the issues relating to the definition of HIV and AIDS, pupils

Fig. 2. Questions with the highest percentage of incorrect answers.

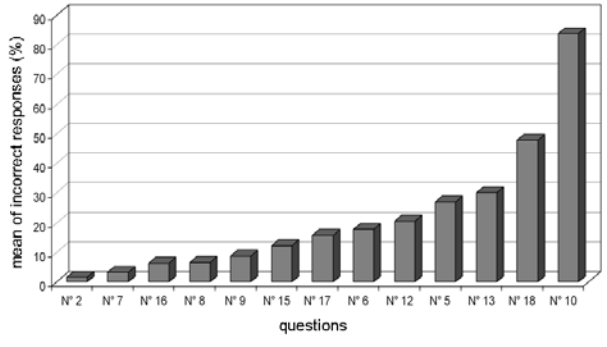
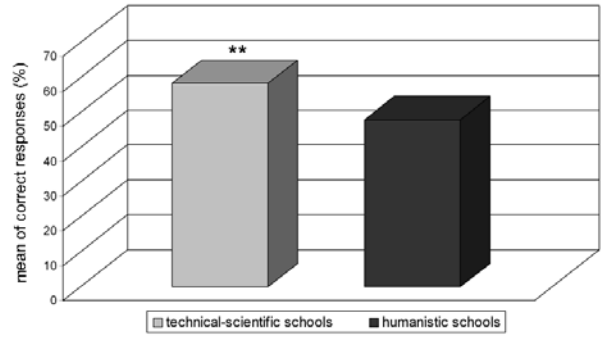


Fig. 3. Comparison between the mean of correct responses among the humanistic schools and technical-scientific schools.



of humanistic secondary schools, have revealed a better understanding of the term HIV infection (64,82% vs 46,38%), and of the meaning of acronym AIDS (74,74% vs 63,77%). In fact, while only 5% of students in humanistic high schools do not know that HIV causes AIDS but that seropositivity does not mean that the person has the disease, among students of technical and scientific schools doubles this percentage. We didn't find a very significant difference between the two addresses school regarding questions about the mode of transmission of the virus (59,81 vs 60,74), instead, regarding the presence of the virus in body fluids, the percentage of correct answer (69,10 vs 51,38), indicating a greater knowledge of humanistic address students.

The answers or the lack of answers to the question regarding the actions to be taken against people with HIV, showed a common fear towards this disease, in fact, little more than half of the humanistic schools' students and just under half of scientific and technical schools' students do not would isolate HIV-positive subjects. The responses concerning the ability to diagnose the infection and the knowledge of the places where people can take the test, revealed here, as in the preceding questions, a greater knowledge of the students with humanistic address than those with technical-scientific address about this topic. Moreover, only the 50% of students are fully convinced of the need to maintain secrecy about the test and the results, and there is no significant difference in the responses between the two addresses.

To the question number eleven about "who would you say if you were HIV positive", the majority of students indicated in order: family, partner, doctor, best friend. Although a small percentage of the scientific-technical schools' boys has a greater tendency not to tell it to anyone (Fig. 5).

We also aimed to know more about the source of information of the boys. When we asked what was their best source of news, all students, regardless of school, replied that they had received more information from the school, followed by television. But on the basis of the replies to the question about the quantity and the quality of their knowledge, this information is limited, in fact, on average the 40% of respondents in all the schools makes a judgment of inadequacy of the information received, and therefore, would like to have more news especially from the school. Students from both schools' addresses have responded similarly to the questions. Undoubtedly there emerges a better understanding among the students attending the schools to humanistic address, probably also related to the family environment. In fact, the questionnaire included the collection of information about the cultural level of their parents, and comparing the two different addresses we found a higher degree of education of the parents of teens attending schools of humanistic address and comparing the percentage of correct answers as a function of that, we noticed a directly proportional correlation (Fig. 6).

We must emphasize also the awareness of the teens in asserting to have a limited knowledge on the topic and while identified the school as the main source of information, is from this institution that they expect more information.

Fig. 4 Sexually transmitted infections better known among humanistic schools students and technical-scientific schools students.

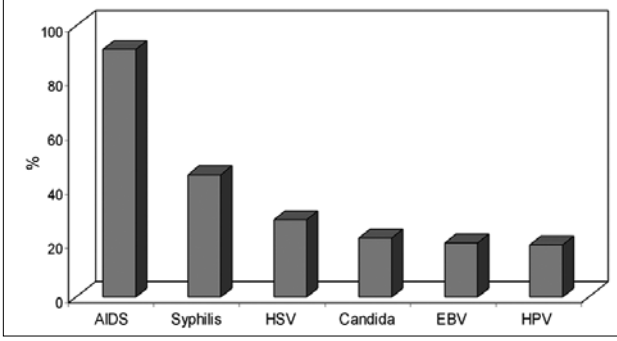


Fig. 5. Most frequent responses to the question number eleven among humanistic schools students and technical-scientific schools students.

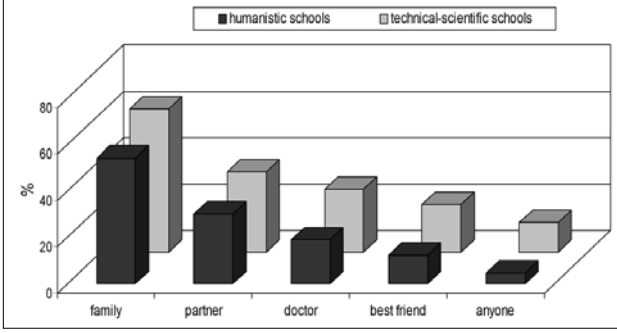
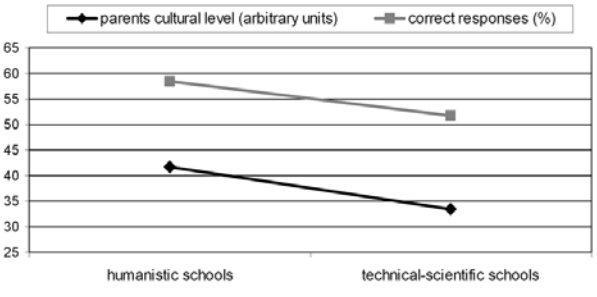


Fig. 6. Comparison between parents' cultural level and percentage of correct answers of the students from both schools addresses.



Discussion

Through this study, we wanted to assess the degree of knowledge of secondary school students about STDs and what are their sources of information. The survey "Adolescents and reproductive health", carried out in 11 Italian regions in 1997 by the National Institute of Health, on knowledge, attitudes and behavior related to the reproductive health of students attending the first two years of high school, revealed that the majority of adolescents discover the sexuality with inadequate information often provided by untrained or unqualified sources. Over 95% of respondents would like to do in school sex education, 23% from the primary school and 58% from the middle school. Over 90% of respondents believe that sex education should stimulate a greater awareness. However, only 36% had the opportunity to participate in sex education programs in schools. Slightly less than 80% know that condoms can protect against sexually transmitted infections. Our results show a greater knowledge of AIDS compared to other sexually transmitted diseases much more common and the prevention of sexually transmitted diseases can be effectively implemented only with an integrated approach, starting from the physiology of reproduction and relational wealth of sexuality.
Even though in our study the children have shown to know the arrangements for the transmission of STI in general and HIV in particular, their knowledge is found to be incomplete. As reported in several works [18, 19], it is clear that the family is not for children as a source of information to the contrary of the school and mass media; this reflects a lack of communication between parents and children on topics related to sex. Despite the need to introduce reproductive health education in schools, there are still considerable impediments [20]. For examples, the principals of the schools involved in this study have given us permission to distribute the questionnaire only to students of the last three classes and this probably because it is still believed that talking to boys about sexuality will encourage them to have sex [21]. It should establish a school program on sexually transmitted diseases and decide who should teach the subject. It is clear from our results as the knowledge of the STI record levels well below expectations, especially after information campaigns on the subject done over the years. We think that these gaps are also due to the fact that high school teachers are not trained to carry out a comprehensive program of sexual health education and even the news spread by the mass media fail to be comprehensive and effective. Both teachers and parents should approach the topic in a different way in order to spread their knowledge correctly but also the government should intervene by requiring schools to introduce sex education and increasing news on the prevention of sexually transmitted diseases in television and radio.

Conclusions

Health promotion among adolescents, understood as a real process of "empowerment" of individuals and communities is a top priority in public health. Precisely because of this feeling we decided to perform this study specifically investigating among the students of secondary schools since the process of health promotion becomes more feasible and meaningful if the target population studied may be the basis for more long-term strategies that may then involve the whole population. In addition, the intervention in high schools and in places where young people meet is crucial because it allows you to reach a large proportion of young people by offering a training program that will stimulate their direct involvement [22]. We want to mention here that adopt and develop appropriate health policies to promote global health but with particular attention to the vulnerable groups of the population, is one of the purposes of the "Declaration on Social Determinants of Health" sponsored by the World Health Organization in the conference in Rio de Janeiro on 19-21 October 2011. Due to the wide spread of sexually transmitted infections, the promotion of sexual and reproductive health is certainly an important step in the direction of health promotion and at the same time a topic of great importance with regard to the governments of different countries involved in the prevention of diseases such as AIDS, which continue to represent the wounds of our century [23]. We want to emphasize that the European Union is actively promoting sexual health to encourage the development of lifestyle that prevents the transmission of sexually transmitted diseases, including HIV, avoiding risky sexual behavior [24]. This goal is established in the European Programme for Health 2008-2013, with particular reference to young people as these, in general, are the most vulnerable to the transmission of sexually transmitted diseases, unwanted pregnancies, cultural, social and emotional issues related to their reproductive health. Sex education should ensure the complete formation of the person, through action involving families, schools, parishes, social and health centers. This study shows very clearly that the school should be a point of reference for sex education and intervention considered helpful by young people should be made to make them more aware, filling their doubts and uncertainties [25]. We conclude our work by stressing the importance and the need to deepen and improve the training and information of the medical staff, teachers and families, as it is from their knowledge and their ability to provide complete and accurate information about the risks posed by STI that can derive knowledge and choices of appropriate lifestyle between the youth population.

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