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Research Article

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High School Students' Knowledge and Teaching of Sexually Transmitted Infections at Public Institutions

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Abstract

This study aimed to evaluate the effectiveness of a didactic instrument for teaching sexually transmitted infections (STIs) among high school students of state schools based on their previous knowledge of STIs and to identify the most vulnerable population groups to such infections. This is a cross-sectional quantitative study. A total of 330 students, mostly aged 14 to 17 years, were interviewed. Concerning sexual activity, 51.5% reported having had sexual intercourse, and over half reported having initiated it in elementary school, with one out of five students aged 12 years or younger. In this group, 70% stated that they had a steady partner. For monogamy, approximately 60% mentioned practicing it for one month at most. Regarding STIs, 60% were unaware that having an STI increases the risk of acquiring the human immunodeficiency virus, and over 75% did not know how to put on and take off a condom. Regarding knowledge of the subject, 60.5% admitted to having doubts, and over 90% stated that they learned something from the study questionnaire. We concluded that the instrument was effective in teaching the subject and that one out of two students had already started their sexual life, without sufficient family and institutional guidance confirmed by the knowledge of STIs and forms of prevention.

Keywords: Adolescents, Sexually Transmitted Infections, High school, Teaching Materials.

Introduction

Adolescence is the stage of life between childhood and adulthood. Brazilian law defines adolescents as individuals aged from 12 to 18 years [1]. According to the Brazilian Department of Health, the age group limits are between the ages of 10 and 24 [2]. These concepts allow for broader understandings, identifying young adolescents (15 to 19 years old) and young adults (20 to 24 years old). In any case, this period is marked by a complex process of growth and biopsychosocial development when important physical and emotional transformations occur, preparing children to assume a new role within the family and society [3]. Thus, the investigation and analysis of risk factors to which adolescents are exposed play an important role in contributing to the understanding of this particular issue [4].

The prevalence and increase in the proportion of adolescent pregnancy over the years are worrisome, being considered cases of public calamity in Brazil, and thus require interventions mainly regarding health promotion [5].

Individual risk factors are related to characteristics such as sex, age, lack of or limited social, intellectual, and psychological skills. These factors are also related to environmental risks such as violence, lack or fragility of social and emotional support, and low

socioeconomic status [6]. Currently, the concept of risk in adolescence takes on a unique configuration, as it is related to exposure to violence, drugs, and precocious sexual experiences. These factors present themselves as developmental risks when adolescents are faced with them in the daily life of their community [7].
The information received by adolescents from the media does not satisfy the need for dialog. Poor communication within families leads adolescents to take unknown paths, obtaining this information from unreliable sources and thus having a distorted view of reality. For instance, young people do not have consistent information about their development and sexual health [8].

A study conducted by Nascimento et al. showed early initiation of sexual activities among adolescents, with the predominant age group between 12 and 20 years [9].

The National Survey of High Student Health (PeNSE), conducted with adolescents from the last seven years of pre-undergraduate education — to become representative of students aged 13 to 17 years — aimed to describe situations related to the sexual health of adolescents in Brazil. The investigations also demonstrated early first sexual intercourse among adolescents, with the predominant age group ranging from 13 to 15 years, and allowed researchers to analyze the change in indicators over time, such as the use of condoms among adolescents, which decreased from 2009 to 2015 [10]. This is a stage of consolidation of principles and more intense learning, and the school is an important educational vehicle [11].

The National Curriculum Parameters (Parâmetros Curriculares Nacionais – PCN) consider five cross-cutting topics, and one of them was entitled "Sexual Guidelines," addressing topics such as the prevention of sexually transmitted infections (STIs) and pregnancy [7].

According to Souza, adolescents are in a process of individual vulnerability because they irregularly use methods for preventing STIs, such as condoms, and because of the lack of information on issues related to sexuality during adolescence, such as body, sex, gender, and prevention of STIs [12].

In a survey conducted by the University of Campinas (UNICAMP) with its undergraduates aged 16–29 years, of the 1,448 seniors who participated in the study, 58% stated that they had not had sexual relations before entering university, which would allow for preexposure prevention measures. Regarding the use of condoms, 43% of UNICAMP undergraduates believed that they would be 100% safe if they used a male condom, and less than 20% of the sexually active respondents used the condom properly, that is, correctly and in every sexual relationship [13]. We can observe that adolescence is a time not only of risk and sexual experimentation but also of vulnerability. Safeguarding young people is the responsibility of all health professionals who come into contact with these individuals. One must not miss opportunities to educate young people to prevent or minimize harm through health education. Thus, it is possible to improve quality of life and certainly have healthier adults [14].

Thus, this study aimed to assess the effectiveness of a didactic instrument for teaching STIs among high school students from state schools in the city of Marília, state of São Paulo (SP), Brazil, their knowledge of STIs, and to identify the most vulnerable population groups to such infections.

Material and Methods

A descriptive, cross-sectional study with a quantitative approach was conducted with high school adolescents from public schools in the municipality of Marília/SP, Brazil. Students' knowledge was evaluated by an adapted questionnaire used in research with university students conducted by Castro13 and registered at the Brazilian National Library No. 614657 on 9/11/2013. The instrument presents student characteristics, information about STIs, their prevention, and comments. It features images of diseases and is offered as a way to encourage students to read more about these infections. It is an online research instrument developed in the Enquetefacil® program, which seeks students' active participation in the learning process. The instrument also aims at raising doubts about the subject. In the final comments, the relevance of each question and the acquired basic knowledge of the subject are justified.

The applications were carried out using computers installed in the schools' computer room in the presence of the researcher. During the completion of the questionnaire, the researcher was present and clarified any doubts. The inclusion criteria in the research were a) being regularly enrolled at the school; b) being present in the classroom on the days when the questionnaire was applied and accepting to answer it; and c) that legal guardians and students agreed to participate in the research after signing the informed consent and assent form.

Data were collected on the premises of five public schools, distributed as follows: two schools in the Northern region (schools A and B); one in the Southern region (school C); one in the Western region (school D); and one in the Eastern region (school E), from the municipality of Marília/SP, Brazil in 2017.

Statistical Analysis

The data collected in each of the schools using the Enquetefacil® program were gathered in an Excel spreadsheet and exported to the Statistical Package for the Social Sciences – SPSS® 20 program, Windows version. The sample calculation was defined considering the finite population, the confidence level of 95%, the sampling error of 5%, and the prevalence of 50%. The Mann–Whitney test was used to compare two independent samples, and the Kruskal–Wallis test was used in the analyses of three or more independent samples. To cross-reference the questions, a 5% significance level was considered.

Ethics

This project was approved by the Institutional Research Board of the Universidade de Marília (IRB/UNIMAR), under No. 1.753.370, and by the Center for Evaluation and Research in Medical Education (NAPEM) of UNICAMP. A copy of the project and an official letter were sent to the Regional Department of Education of Marília, requesting authorization to carry out the research in schools in the city. After receiving authorization from the department, the schools were contacted, and an official letter was sent to them. With the schools that agreed to participate in the research, a meeting was scheduled to present the study in those schools that agreed to participate; the meeting included the teachers, the head teacher, and the researcher.

Results

In 2017, there were 1302 students enrolled in secondary education at public schools in Marília. The sample calculation was 297 respondents and 330 students were enrolled in high school at public institutions in Marília, SP, Brazil. Of these, 56.7% of

whom were first-year students. Most participants were boys (50.6%), aged 14 to 17 years, who lived in an owned home (63.9%), with four or more people, and with a family income of up to two minimum wages, $500,00 US dollars, (32.4%).

Regarding the parents' educational level, about one out of three of the 330 students were unable to answer it. Among those who knew their parents' educational level, more than 40% reported that mothers had high school or higher education, and 34% reported that their fathers had the same educational level.

Among the 276 students who were able to answer about family income, there was a significant difference in the comparison among schools, with school D having the highest income (p = 0.001). In the same school (school D), students recognized that they had doubts about STIs in a greater proportion (p = 0.001). Regardless of school, students from families with higher incomes found it easier to admit that they had doubts about these infections (p = 0.001), (Table 1).

Table 1: Family Incomes and Doubts About Sexually Transmitted Infections

Family incomes	**School A**	**School B**	**School C**	**School D**	**School E**	**TOTAL**	
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	
Up to 2 MW	19 (61.3)	68 (58.6)	13 (65.0)	2 (8.3)	63 (74.1)	165 (59.8)	p value 0.001
From 2 to 4 MW	8 (25.8)	32 (27.6)	6 (30.0)	13 (54.2)	15 (17.6)	74 (26.8)	
Over 4 MW	4 (12.9)	16 (13.8)	1 (5.0)	9 (37.5)	7 (8.2)	37 (13.4)	
TOTAL	31 (100.0)	116 (100.0)	20 (100.0)	24 (100.0)	85 (100.0)	276 (100.0)	
Doubts	**School A**	**School B**	**School C**	**School D**	**School E**	**TOTAL**	p value 0.001
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
Doubts: yes	13 (38.2)	68 (49.6)	15 (71.4)	30 (88.2)	35 (36.1)	161 (49.8)	
Doubts: no	21 (61.8)	69 (50.4)	6 (28.6)	4 (11.8)	62 (63.9)	162 (50.2)	
TOTAL	34 (100.0)	137 (100.0)	21 (100.0)	34 (100.0)	97 (100.0)	323 (100.0)	
MW	**Up to 2**	**From 2 to 4**	**Over 4**	**TOTAL**			p value 0.001
	N (%)	N (%)	N (%)	N (%)			
Doubts: yes	65 (39.6)	42 (56.8)	25 (69.4)	132 (48.2)			
Doubts: no	99 (60.4)	32 (43.2)	11 (30.6)	142 (51.8)			
TOTAL	164 (100.0)	74 (100.0)	36 (100.0)	274 (100.0)			

MW: minimum wages; N: number of respondents

In Table 2, we show the proportion of correct answers to the different questions about the knowledge of STI prevention in different schools. We can observe that the correct answers were higher in school D, the school with the highest income and the same school where more students assumed that they had more doubts about STIs. However, even at this school, basic aspects about the prevention of these infections were unknown (Tables 2, 3 and 4). Notably, three out of five interviewees are unaware of the protection of long-term mutually monogamous relationships. Over half the students were unaware that there are vaccines to protect against STIs or that the treatment of other STIs is important in the prevention of human immunodeficiency virus (HIV) infection, and many were unaware of other important ways to prevent STIs (Table 2).

Table 2: Proportion of Correct Answers to The Different Questions About the Prevention of Sexually Transmitted Infections in Different Schools.

Characteristic	**School A**	**School B**	**School C**	**School D**	**School E**	**TOTAL**	
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	
	There are vaccines that can help preventing STIs						p value 0.077
CORRECT	14 (41.2)	55 (38.7)	9 (42.9)	19 (54.3)	55 (56.1)	152 (46.1)	
INCORRECT	20 (58.8)	87 (61.3)	12 (57.1)	16 (45.7)	43 (43.9)	178 (53.9)	
	Having a relationship with an uninfected sexual partner, in which the two are having relations only with each other for an extended period of time, is an effective way to avoid these infections						p value 0.000
CORRECT	12 (35.3)	47 (33.1)	7 (33.3)	28 (80.0)	33 (33.7)	127 (38.5)	
INCORRECT	22 (64.7)	95 (66.9)	14 (66.7)	7 (20.0)	65 (66.3)	203 (61.5)	
	Everyone must have access to quality condoms at an affordable price						p value 0.000
CORRECT	23 (67.6)	76 (53.5)	17 (81.0)	32 (91.4)	50 (51.0)	198 (60.0)	
INCORRECT	11 (32.4)	66 (46.5)	4 (19.0)	3 (8.6)	48 (49.0)	132 (40.0)	

	Healthcare services must be prepared to promptly treat people with STIs						p value 0.001
CORRECT	19 (55.9)	85 (59.9)	18 (85.7)	30 (85.7)	49 (50.0)	201 (60.9)	
INCORRECT	15 (44.1)	57 (40.1)	3 (14.3)	5 (14.3)	49 (50.0)	129 (39.1)	
	It is always necessary to investigate the sexual partners of patients with sexually transmitted infections						p value 0.279
CORRECT	14 (41.2)	69 (48.6)	12 (57.1)	23 (65.7)	48 (49.0)	166 (50.3)	
INCORRECT	20 (58.8)	73 (51.4)	9 (42.9)	12 (34.3)	50 (51.0)	164 (49.7)	
	The treatment of STIs is important in the prevention of HIV infection						p value 0.136
CORRECT	16 (47.1)	64 (45.1)	15 (71.4)	13 (37.1)	42 (42.9)	150 (45.5)	
INCORRECT	18 (52.9)	78 (54.9)	6 (28.6)	22 (62.9)	56 (57.1)	180 (54.5)	

N: number of respondents; STIs: sexually transmitted infections; HIV: human immunodeficiency virus.

In Table 3, we can verify that many students knew or had already used a male condom in their sexual relations.

Table 3: Proportion of Answers to the Question "do you Know or Have you Used a Condom in our Sexual Relations?".

Characteristic	School A	School B	School C	School D	School E	TOTAL	
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
I do not know it	1 (2.9)	10 (7.0)	1 (4.8)	4 (11.4)	6 (6.1)	22 (6.7)	p value 0.030
I know it, but I have never used it	22 (64.7)	66 (46.5)	17 (81.0)	9 (25.7)	55 (56.1)	169 (51.2)	
I know it and I have used it	10 (29.4)	60 (42.3)	3 (14.3)	21 (60.0)	35 (35.7)	129 (39.1)	
Did not answer	1 (2.9)	6 (4.2)	0 (0.0)	1 (2.9)	2 (2.0)	10 (3.0)	
TOTAL	34 (100.0)	142 (100.0)	21 (100.0)	35 (100.0)	98 (100.0)	330 (100.0)	

N: number of respondents.

However, as observed in Table 4, it is evident that most students did not know or would not know how to use a male condom properly for the effective prevention of both unintended pregnancy and STIs, considering the proportion of incorrect answers regarding their correct use. In none of the schools was knowledge of proper use sufficient. More than half of students were unaware of the proper storage and removal of the condom; one-third did not know about the appropriate lubricant to be used and how to correctly put on the condom; and one out of four thought that using two condoms at the same time could be useful in preventing STIs.

When asked about sexual activity, of the 330 respondents, 170 (51.51%) reported having already had sexual intercourse. Among those who answered about the initiation of sexual activity, most had their first intercourse between 13 and 15 years of age (55.7%), and 22.7% were aged under 12 years. A total of 55% of sexually active participants reported initiation of sexual activity in lower secondary education.

Among the students who had had sexual intercourse, 39.1% reported always using a condom, and only 16.7% correctly answered all the items about the correct use of a male condom.

Table 4: Proportion of Correct and Incorrect Answers Regarding the use of a Male Condom.

Characteristic	School A	School B	School C	School D	School E	TOTAL	
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	
	An oily lubricant, such as petroleum jelly, should not be used with a condom						p value 0.000
CORRECT	20 (58.8)	103 (72.5)	19 (30.5)	10 (28.6)	62 (63.3)	214 (64.8)	
INCORRECT	14 (41.2)	39 (27.5)	2 (3.5)	25 (71.4)	36 (36.7)	116 (35.2)	
	The condom must be stored away from heat						p value 0.000
CORRECT	13 (38.2)	70 (49.3)	7 (33.3)	29 (82.9)	24 (24.5)	143 (43.3)	
INCORRECT	21 (61.8)	72 (50.7)	14 (66.7)	6 (17.1)	74 (75.5)	187 (56.7)	
	When putting a condom on, the tip that will receive the semen must be kept tight, without air						p value 0.000
CORRECT	21 (61.8)	79 (55.6)	9 (42.9)	27 (77.1)	34 (34.7)	170 (51.5)	
INCORRECT	13 (38.2)	63 (44.4)	12 (57.1)	8 (22.9)	64 (65.3)	160 (48.5)	
	The condom should be put on before penetration, as soon as the penis is erect						p value 0.070
CORRECT	22 (64.7)	92 (64.8)	14 (66.7)	30 (85.7)	57 (58.2)	215 (65.2)	
INCORRECT	12 (35.3)	50 (35.2)	7 (33.3)	5 (14.3)	41 (41.8)	115 (34.8)	

	Using two condoms does not increase protection against STIs						p value 0.000
CORRECT	26 (76.5)	116 (81.7)	19 (90.5)	8 (22.9)	80 (81.6)	249 (75.5)	
INCORRECT	8 (23.5)	26 (18.3)	2 (9.5)	27 (77.1)	18 (18.4)	81 (24.5)	
	Wallets and glove compartments are not exampling of suitable places to carry condoms						p value 0.000
CORRECT	29 (85.3)	109 (76.8)	12 (57.1)	10 (28.6)	77 (78.6)	237 (71.8)	
INCORRECT	5 (14.7)	33 (23.2)	9 (42.9)	25 (71.4)	21 (21.4)	93 (28.2)	
	Condoms have an expiration date						p value 0.000
CORRECT	31 (91.2)	123 (86.6)	15 (71.4)	14 (40.0)	89 (90.8)	272 (82.4)	
INCORRECT	3 (8.8%)	19 (13.4)	6 (28.6)	21 (60.0)	9 (9.2)	58 (17.6)	
	A male condom cannot be reused as a female condom can						p value 0.000
CORRECT	33 (97.1)	132 (93.0)	20 (95.2)	14 (40.0)	97 (99.0)	296 (89.7)	
INCORRECT	1 (2.9)	10 (7.0)	1 (4.8)	21 (60.0)	1 (1.0)	34 (10.3)	
	After ejaculating, a man must remove his penis while still erect, holding the condom by the base						p value 0.214
CORRECT	20 (58.8)	66 (46.5)	10 (47.6)	14 (40.0)	36 (36.7)	146 (44.2)	
INCORRECT	14 (41.2)	76 (53.5)	11 (52.4)	21 (60.0)	62 (63.3)	184 (55.8)	
	Using a female condom and a male condom during the same sexual intercourse does not increase protection against STIs						p value 0.008
CORRECT	20 (58.8)	66 (46.5)	10 (47.6)	14 (40.0)	36 (36.7)	146 (44.2)	
INCORRECT	14 (41.2)	76 (53.5)	11 (52.4)	21 (60.0)	62 (63.3)	184 (55.8)	

N: number of respondents; STIs: sexually transmitted infections

There was no significant difference between the initiation of sexual activity among schools or in relation to family income (Table 5).

Table 5: Proportion of Initiation of Sexual Activity in Schools and According to Household Income.

Characteristic	**School A**	**School B**	**School C**	**School D**	**School E**	**TOTAL**	
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**	**N (%)**	
Lower secondary	5 (45.5)	45 (64.3)	1 (33.3)	17 (73.9)	20 (43.5)	88 (57.5)	p value 0.219
Upper secondary	6 (54.5)	25 (35.7)	2 (66.7)	6 (26.1)	26 (56.5)	65 (42.5)	
TOTAL	11 (100.0)	70 (100.0)	3 (100.0)	23 (100.0)	46 (100.0)	153 (100.0)	
Characteristic		**Up to 2 MW**	**From 2 to 4 MW**	**Over 4 MW**	**TOTAL**		
		N (%)	**N (%)**	**N (%)**	**N (%)**		
Lower secondary		39 (54.9)	27 (67.5)	12 (54.5)	78 (58.6)		p value 0.830
Upper secondary		32 (45.1)	13 (32.5)	10 (45.5)	55 (41.4)		
TOTAL		71 (100.0)	40 (100.0)	22 (100.0)	133 (100.0)		

MW: minimum wages; N: number of respondents.

A total of 70% of those who had sexual activity reported having a steady partner, but when asked for how long, approximately 60% mentioned for one month at most.

Regarding the federal government's campaign slogan "Faça o que quiser, mas faça com preservativo (Do what you want, but do it with a condom, free translation)," only 40.3% understood that they would have to use a condom in every relationship. Over 50% understood that using the barrier method guarantees complete protection against STIs. Only 1.8% understood that a condom is important, but it does not guarantee 100% protection. However, when they saw an image and were asked about it, 75.5% of the respondents noticed that the condom does not protect against condylomas at the base of the penis.

When asked about STIs, 60% were unaware that having an STI increases the risk of having HIV. A total of 61% did not know that hepatitis B is an STI, and only 11.3% knew that human papillomavirus (HPV) is the virus that causes condyloma. Only 52% of students were aware of herpes simplex lesions.

When asked about their knowledge of the subject, 60.5% admitted to having doubts about STIs, 68.7% learned something by answering the questionnaire, and 91.8% stated that they wanted to read more about the subject.

Regarding the final informational part, 92.3% learned something from the questionnaire. The lowest learning rate (87.5%) was about HPV infection.

Discussion

In this study, we observed great nescience about STIs in high school students from public educational institutions. The result is in line with a study conducted by Vieira, in which adolescents presented superficial knowledge regarding STI prevention [15]. According to Silva et al [16], the school is the best place to approach these adolescents for guidance on how to prevent STIs.

In our study, the majority of the sample consisted of boys, aged 14 to 17 years, who lived in an owned home, with four or more people, and with a family income of up to two minimum wages. Conversely, in a study conducted by Andrade, the author surveyed the profile of adolescents, identifying that the majority were girls, single, high school students, and dwelling in urban areas [17]. According to Moreira et al [18], socio economic status is directly linked to knowledge of STIs, which was confirmed in this study. In a study conducted by Rodrigues et al [19], the issue of family income did not influence the knowledge or attitude of adolescents.

However, many school students with greater purchasing power incorrectly answered basic questions about the use of male condoms and other forms of prevention (Tables 2 and 4). Nevertheless, in this study, students with better financial conditions acknowledged their doubts about STIs the most (Table 1).

The results of this study showed a lack of knowledge of basic concepts regarding STIs and their prevention. The collected data evince that students from public high schools in the city of Marília/SP do not have essential knowledge of the subject.

STIs are prevalent among young people aged 14 to 29 years [20]. This study showed that most sexually active students initiated sexual activity while still in lower secondary education and, among them, one out of five participants was 12 years old or younger and would be at a grade lower than the eighth grade, which confirms the results of a study conducted with 1,196 adolescents from public schools according to which sexual initiation occurred with an average age of 13.6 years in the case of boys and 14.6 years in the case of girls [4].

The São Paulo State curriculum provides an initial approach to STIs in the eighth grade, when most students are at least 13 years old. For Moreira et al [16], socioeconomic and cultural factors, gender differences, and peer influence are related to the early initiation of sexual activity.

According to Costa, this precocity may be directly associated with socioeconomic aspects, including parental education [5]. The latter is a fundamental factor to be considered when analyzing the determinants of health involving adolescents and their families.

Among the students participating in this study, most stated that they had a steady partner; however, when asked about the duration of the relationship, most reported that it lasted less than one month. Lima et al [21]. suggest that, currently, with the fast pace of life and the reduction of territorial and psychosocial boundaries, relationships become momentary, ephemeral, varied, and unstable, making traditions lose their importance and making room for social media scenarios, offering, especially to adolescents, a wide opportunity to interact, from relationship chats to dating apps.

Nunes et al. highlight another aspect of the prevention of STIs [22]: "female and male condoms are barrier methods that represent an important strategy for preventing pregnancy and STIs, at low cost and with high effectiveness and free distribution in basic health units" (free translation). Knowledge of the appropriate use of male condoms proved to be insufficient (Table 3). When asked about the Brazilian Department of Health slogan, "Do what you want, but do it with a condom," published years ago, most of our participants misunderstood the message intended to be conveyed. Misunderstandings on the subject, caused by inefficient communication, may lead to greater risk exposure. In this investigation, when observing an image in which the patient had lesions at the base of the penis, 75.5% of the interviewees reported that the condom did not protect the transmission of that injury. In a study conducted with undergraduate students from Universidade Federal do Triângulo Mineiro, most participants reported that condoms protect against all STIs. However, a male condom may not protect against the transmission of HPV, herpes, syphilis, etc., depending on the site of the lesions, which may not be covered by the barrier [23]. The literature shows that it is not a 100% safe method [13].

Only half of the students were aware of herpes simplex lesions, and more than half were unaware that having an STI increases the risk of contracting HIV or were unaware that hepatitis B is an STI. Approximately one out of ten students knew that HPV is the virus that causes condyloma. The majority admitted to having doubts about STIs. These data exemplify the students' ignorance about STIs, which corroborates the data found in a study conducted with high school adolescents from state public schools in Salvador, state of Bahia (Brazil), in which the authors observed that most adolescents had insufficient knowledge/lack of knowledge of available contraceptive methods [24]. Therefore, the authors concluded that the approach used until then had not been effective in fostering knowledge of STI prevention.

In our study, AIDS was the most mentioned STI, which is in line with the outcomes of a study conducted with 195 students from a public school that showed that adolescent girls were well aware of STIs, with HIV/AIDS being the most mentioned by all [25]. Regarding the knowledge of the use of condoms, it was evident that the participants did not know how to properly use condoms. Less than 20% of the respondents reported that they always used a condom and knew how to properly use it, characterizing appropriate use. The vast majority made typical use of condoms, which was also evidenced in the study conducted by Moreira et al [26, 18]. In a systematic review. A study conducted by Nunes et al [22]. On adolescents living in urban settlement areas showed that these young people are vulnerable, with low adherence to male condoms. The study showed that these adolescents only seek assistance from health care units in times of extreme need and are not concerned with health surveillance and disease prevention. In the same study, the authors found that more than 80% of the participants never go to health centers to obtain information about sexuality or to obtain condoms. In the study carried out by Santos et al [27]. Most adolescents used condoms incorrectly and ineffectively and were not concerned about the risks. They mentioned prioritizing the use for the prevention of unintended pregnancies over contracting diseases.

The didactic instrument used in this study achieved its objectives, as over 90% of the students reported that they wanted to read more about the subject and learned something by completing the instrument.

We conclude that the instrument was effective in teaching STIs and that one out of two high school students from public schools in Marília had already initiated sexual life without sufficient guidance, both on the part of the family and the institution, as evidenced by the lack of knowledge of STIs and their forms of prevention. The initiation occurred in elementary school in half of the sexually active respondents. It is necessary to adopt public policies to act on this group so vulnerable to the contraction of these infections.

Declarations of Interest

None

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