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Original Article

View changes and educational demands on sexual/reproductive health of students at Shanghai Jiaotong University

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Abstract: Objectives: To determine whether the attitudes to sexual and reproductive health of a cohort of university students had changed from 2005 to 2013. Methods: Questionnaires (1,000) on sexual and reproductive health attitudes were randomly distributed to students at Shanghai Jiaotong University in May 2013. All participants volunteered for the study and their answers were anonymous. The questionnaire contents included personal information and 72 MCQs, which covered four categories: knowledge about sexual/reproductive health and STDs; attitude to sexual behavior; attitudes to pornographic books/movies; desire of the participants for education on sexual/reproductive health. The participants had not received sexual/reproductive health education since their admission to the university. Their study majors were broadly similar to those participants in the April 2005 survey. The high sensitivity of the content of the questionnaire made it imperative to maintain anonymity and high security of the collected data. Results: The return rate of questionnaires were 98% (request age from 19~21 years). Personal hygiene was much greater in females than in males. The proportion of females and males who held a positive attitude to premarital sexual behavior was significantly increased ($P < 0.0001$). 80% of the participants understood the need to use condoms with strangers; however, still high proportion of participants lacked of this knowledge ($P = 0.142$). About one third of the participants still did not believe that unmarried pregnancy was acceptable (no significant change from 2005 to 2013). There was significantly improved knowledge about the way in which AIDS spreads. Conclusions: College students are more open today compared to the 2003 survey. A higher level of sexual knowledge has been achieved but there scope for further improvement. Sex education should be based on the actual needs of young people, teaching reforms, and special attention paid to practical teaching.

Keywords: Sexually transmitted disease, AIDS, sexual behavior, sexual and reproductive health, sexual education

Introduction

Concern has focused on the education of sexual/reproductive health for adolescents, because of the ever-increasing spread of sexually transmitted diseases (STDs) such as acquired immune deficiency syndrome (AIDS) and the increased rate of sexual behavior especially in young people. It was reported that U.S. teens are two and a half times as likely to give birth as compared to teens in Canada, around four times as likely as teens in Germany or Norway, and almost 10 times as likely as teens in Switzerland [1].

Sexually transmitted diseases (STDs) are a prevalent and preventable health concern among adolescents and young adults in the United States. 19 million new STDs infections are reported annually [2]. Individuals aged 15 to 24 years account for nearly half (48%) of all reported STDs in the United States, despite representing only 25% of all sexually active individuals [3]. With high rates of other sexually

Table 1. Information on Participants' Ages and Genders in the Surveys of 2005 and 2013

Date	No. of people	Average age (Years)	Number of males	Number of females
2005	435	19.5 ± 0.8	234 (54.0%)	201 (46.2%)
2013	980	19.8 ± 0.7	506 (51.6%)	474 (48.4%)

transmitted infections, adolescents may be increasingly vulnerable to HIV infection. Globally, 42% of incident HIV infections were in 15 to 24 year old in 2010 [4].

A report from the Chinese Ministry of Health estimated that nearly 800,000 people were living with human immunodeficiency virus (HIV) in 2011 in China. According to this report, sexual transmission is the primary mode of transmission and cases attributed to sexual transmission continue to increase. Among the 7.8 million people living with HIV, 46.5% were infected by heterosexual transmission and 17.4% were infected by homosexual transmission. Homosexual transmission has increased since surveillance of HIV among this group began a decade ago. In 2011, 29.4% of the estimated 48,000 new HIV infection were infected through homosexual transmission [5].

AIDS is currently one of the leading causes of death among 15- to 24-year old adolescents and young adults worldwide [6]. Many in this age group are high school and college students with China having the largest number of students in the world [7]. According to a report from the Chinese Ministry of Education, there were an estimated 45.9 million high school students and 33.2 million college students in China by the end of 2012, approximately half of whom are male [8]. Though Chinese students were not previously considered to be a population at high-risk of HIV infection among nationally reported HIV/AIDS cases, the proportion of HIV among students increased from 0.96% in 2006 to 1.64% in 2011, respectively. During this time period (2006-2011), the proportion of HIV cases among self-reported 20-24 year old students increased from 20.3% to 49.0% and the proportion of homosexually transmitted cases increased from 8.0% to 55.5% [9].

Understanding the prevalence of HIV and other sexually transmitted diseases (STDs) among Chinese student is important in order to design proper interventions for this population to curb the HIV epidemic. The European Centre for Disease Prevention and Control (ECDC) has coordinated enhanced surveillance of STDs in Europe since 2009. The UK put a robust surveillance system in place many years ago and recently reported that 33-50% of STDs were diagnosed in women < 20 years of age in 2008 [10].

Chinese sexual health education

Sexual/reproductive health education studies have been carried out in a number of countries for many years. However, influenced by long-term 'feudal' thinking, the majority of Chinese parents traditionally avoid talking about sexual/reproductive issues with their offspring. However, in recent years, with the rapid development of social culture and more and more communication with the outside world, the concept of sexual openness among the Chinese population has greatly changed. Since the end of the last century, sexual education in schools, colleges and universities in China has been gradually advocated, but the teaching content has been limited to human physiology, and rarely involved sexual psychology, sexual morality, contraception and reproductive health or indeed the prevention of sexually transmitted diseases (STDs). To promote the effectiveness of sexual/reproductive health education and to understand the opinion and demands of youth about these issues, we investigated 480 students who were enrolled in Shanghai Jiaotong University about their sexual attitudes and behavior in April 2005 [11]. Eight years later, we again investigated this topic at same university by asking 1,000 students to fill in a questionnaire.

The aims of this study were to determine whether the attitudes to sexual and reproductive health of a cohort of university students had changed from the time of the first survey conducted in 2005 to the present investigation carried out in 2013.

Methods

Participants

Questionnaires (1,000) with questions on sexual/reproductive health were randomly distributed to students at Shanghai Jiaotong University

Table 2. Knowledge About Sexual Health and STDs: No (%)

	2005			2013			*P* values		
	Female	Male	Total	Female	Male	Total	2005 *vs* 2013		
	(*n* = 201)	(*n* = 234)	(*n* = 435)	(*n* = 474)	(*n* = 506)	(*n* = 980)	Female *vs* female	Male *vs* male	Total *vs*. total
Daily washing of genitals									
Yes	150 (74.6)	119 (50.9)	269 (61.8)	356 (75.1)	283 (55.9)	639 (65.2)	.896	.199	.224
No	19 (9.5)	51 (21.8)	70 (16.1)	37 (7.8)	79 (15.6)	116 (11.8)	.479	.040	.029
Not matter	32 (15.92)	64 (27.4)	96 (22.1)	81 (17.1)	144 (28.5)	225 (23.0)	.711	.756	.712
The correct use of condoms									
Correct	103 (51.2)	119 (50.9)	222 (51.0)	225 (47.5)	254 (50.2)	479 (48.9)	.370	.868	.454
What is emergency contraception?									
Correct	71 (35.3)	64 (27.4)	135 (31.0)	181 (38.2)	121 (23.9)	302 (30.8)	.483	.316	.935
What are sexually transmitted diseases?									
Correct	69 (34.3)	96 (41.0)	165 (37.9)	184 (38.8)	198 (39.1)	382 (39.0)	.272	.624	.709
The routes of transmission of AIDS									
Correct	164 (81.6)	197 (84.2)	361 (83.0)	421 (88.8)	461 (91.1)	882 (90.0)	.012	.006	.000
Will a handshake or embrace spread the AIDS virus?									
Correct	148 (73.6)	183 (78.2)	331 (76.1)	370 (78.1)	405 (80.0)	775 (79.1)	.215	.566	.210

Table 3. Attitude Difference to Sexual Behavior: No (%)

	2005			2013			*P* values		
	Female	Male	Total	Female	Male	Total	2005 *vs* 2013		
	(*n* = 201)	(*n* = 234)	(*n* = 435)	(*n* = 474)	(*n* = 506)	(*n* = 980)	Female *vs* female	Male *vs* male	Total *vs* total
Sexual behavior before marriage									
Acceptable	50 (24.9)	108 (46.2)	158 (36.3)	231 (48.7)	394 (77.9)	625 (63.8)	.000	.000	.000
Not acceptable	48 (23.9)	31 (13.3)	79 (18.2)	91 (19.2)	45 (8.9)	136 (13.9)	.170	.070	.039
Depends	103 (51.2)	9 (40.6)	198 (45.5)	152 (32.1)	67 (13.2)	219 (22.4)	.000	.000	.000
Unmarried pregnancy									
Acceptable	72 (35.8)	84 (35.9)	156 (35.9)	161 (34.0)	179 (35.4)	340 (34.7)	.643	.890	.671
Not acceptable	70 (34.8)	68 (29.1)	138 (31.7)	150 (31.6)	182 (36.0)	332 (33.9)	.421	.067	.428
Unexpectedly	59 (29.4)	82 (35.0)	141 (32.4)	163 (34.4)	145 (28.7)	308 (31.4)	.204	.080	.713
Premarital medical examination									
Necessary	162 (80.6)	154 (65.8)	316 (72.6)	417 (88.0)	359 (71.0)	776 (79.2)	.013	.160	.007
Not necessary	6 (3.0)	19 (8.1)b	25 (5.8)	5 (1.1)	10 (2.0)	15 (1.5)	.071	.000	.000
No matter	33 (16.4)	61 (26.1)	94 (21.6)	52 (11.0)	137 (27.1)	189 (19.3)	.052	.774	.314

in May 2013. All participants volunteered and their answers were anonymous. The participants had not received any sexual/reproductive health education since their admission to the university. Their areas of study for their majors were broadly similar to those participants in the April 2005 survey and included liberal arts, science and engineering. Considering the high sensitivity of the content of the questionnaire and the imperative need to maintain privacy, we highlighted the security of collected data. To ensure the anonymity of each participant, data reliability and the authenticity of the survey, we distributed the questionnaires within the campus and asked every participant to complete them onsite. Each completed questionnaire was sealed in an envelope and assigned a unique code.

Procedure

Having scrutinized the questionnaire and the security systems that we adopted to maintain the anonymity of participants, this study was approved by the ethics committee of Shanghai Jiao Tong University, China.

Before beginning the survey investigation, we met the participants in a comfortable environment to discuss the questionnaire contents, honest, impartial answering of questions and the collection method. Based on this feed back, we modified the questionnaire's design and contents to improve the quality and relevance of the data collected. The questionnaire contents included personal information (age, gender, grade and major) and 72 multiple-choice questions, which covered four categories: knowledge about sexual/reproductive health and STDs; attitude to sexual behavior; attitudes to pornographic books/movies; and the desire of the participants for education on sexual/reproductive health.

Statistical analyses

All data were entered into Microsoft Office Excel 2013. The statistical package SPSS (version 19) was used for data analysis and statistics. The data from 2005 and 2013 were presented as the mean ± *SD* for continuous variables and countable numbers (rate) for categorical variables, which were compared using Mann-Whitney U-test.

Results

General Information

A total of 980 valid completed questionnaires were received in the 2013 survey from a total of 1,000 questionnaires distributed, an effective return rate of 98%. The ages of the participants who submitted completed questionnaires was between 19~21 years. A comparison of the 2013 data with data from the2005 survey revealed that there were no significant differences between the ages and genders of the participants (**Table 1**).

Knowledge about sexual health and sexually transmitted diseases

The number of participants who washed their genitals appeared to be slightly increased from 61.8% (269/435) in 2005 to 65.2% (639/980) in 2013, but the apparent increase was not statistically significant ($P = 0.224$). The number of male participants who did not wash daily was significantly decreased from 21.8% to 15.6 ($P = .040$). The rate of males who washed daily was much lower than that of females (55.9*vs* 75.1%). The proportion of participants who knew the right time to use condoms was not changed (51.0%, 222/435 *vs* 48.9%, 479/980, $P = .454$). Disappointingly, both surveys showed that only about one third of the participants correctly understood the concept of emergency contraception and were knowledgeable about STDs (**Table 2**).

The percentage of the participants who knew the exact route of transmission of AIDS was increased from 83.0% (361/435) to 90% (882/980) ($P < 0.0001$). The majority of the participants understood that AIDS couldn't spread through a handshake or embrace. The relative knowledge level of participants on difference aspects of sexual health and HIV/AIDS is shown in **Table 2**.

Attitudes to sexual behavior

The attitudes to sexual behavior showed the most prominent alteration in the present study compared to the survey conducted in 2008. The proportion of both females and males who held a positive attitude to premarital sexual behavior was significantly increased from 36.2% in 2005 to 63.85 in 2013 ($P < 0.0001$),

Table 4. Differences in Sexual Contact with Sexual Health Habits: No (%)

	2005			2013			*P* values		
	Female	Male	Total	Female	Male	Total	2005 *vs* 2013		
	(*n* = 201)	(*n* = 234)	(*n* = 435)	(*n* = 474)	(*n* = 506)	(*n* = 980)	Female *vs* female	Male *vs* Male	Total *vs* total
Heavy petting									
Yes	44 (21.9)	82 (35.0)	126 (29.0)	156 (32.9)	213 (42.1)	369 (37.7)	.003	.070	.002
No	157 (78.1)	152 (65.0)	309 (71.0)	318 (67.1)	293 (57.9)	611 (62.4)	.004	.069	.002
Sex life									
Yes	19 (9.5)	46 (19.7)	65 (14.9)	86 (18.1)	141 (27.9)	227 (23.2)	.005	.018	.001
No	182 (90.6)	188 (80.3)	370 (85.1)	388 (81.9)	365 (72.1)	753 (76.8)	.005	.017	.000
Masturbation experience?									
Sometimes	24 (11.9)	112 (47.9)	136 (31.3)	68 (14.4)	318 (62.9)	386 (39.4)	.406	.000	.004
Usually	3 (1.5)	35 (15.0)	38 (8.7)	23 (4.9)	107 (21.2)	130 (13.3)	.039	.048	.016
Never	174 (86.6)	87 (37.2)	261 (60.0)	383 (80.8)	81 (16.0)	464 (47.4)	.072	.000	.000
Using contraceptive when having sexual life									
Yes	163 (81.1)	177 (75.6)	340 (78.2)	418 (88.2)	395 (78.1)	813 (83.0)	.016	.465	.033
No	20 (10.0)	26 (11.1)	46 (10.6)	20 (4.2)	47 (9.3)	67 (6.8)	.004	.440	.017
Depending	18 (9.0)	31 (13.3)	49 (11.3)	36 (7.6)	64 (12.7)	100 (10.2)	.552	.821	.549
Using condom, if sexing with strangers									
Yes	178 (88.6)	170 (72.7)	348 (80.0)	429 (90.5)	436 (86.2)	865 (88.3)	.443	.000	.000
Depending	10 (5.0)	42 (18.0)	52 (12.0)	36 (7.6)	60 (11.9)	96 (9.8)	.218	.026	.221
No	13 (6.5)	22 (9.4)	35 (8.1)	9 (1.9)	10 (2.0)	19 (1.9)	.002	.000	.000
Knowledge of using condom									
Yes	19 (9.5)	42 (18.0)	61 (14.0)	62 (13.1)	106 (21.0)	168 (17.1)	.186	.344	.142
No	182 (90.6)	192 (82.1)	374 (86.0)	412 (86.9)	400 (79.1)	812 (82.9)	.185	.343	.142

Table 5. Demand on the Education of Reproductive and Sexual Health: No (%)

	2005			2013			*P* values		
	Female	Male	Total	Female	Male	Total	2005 *vs* 2013		
	(*n* = 201)	(*n* = 234)	(*n* = 435)	(*n* = 474)	(*n* = 506)	(*n* = 980)	Female *vs* female	Male *vs* male	total vs. total
Necessary to have the knowledge of reproductive and sexual health									
Yes	44 (21.9)	119 (50.9)	163 (37.5)	248 (52.3)	320 (63.2)	568 (58.0)	.000	.002	.0000
Sometimes	93 (46.3)	81 (34.6)	174 (40.0)	117 (24.7)	176 (34.8)	293 (29.9)	.000	.965	.0002
No	64 (31.8)	34 (14.5)	98 (22.5)	109 (23.0)	10 (2.0)	119 (12.14)	.017	.000	.0000
Willing to participate in reproductive health electives									
Yes	96 (47.8)	151 (64.5)	247 (56.8)	327 (69.0)	435 (86.0)	762 (77.8)	.000	.000	.0000
No	105 (52.2)	83 (35.5)	188 (43.2)	147 (31.0)	71 (14.0)	218 (22.2)	.000	.000	.0000

including an increase from 24.9 to 48.7% in females and 46.2 to 67.9% in males ($P < 0.0001$), respectively. However, about one third of the participants still did not believe that unmarried pregnancy was acceptable, showing no significant change in attitude from 2005 to 2013 (**Table 3**). More than 70% of the participants in both 2005 and 2013 considered that a premarital medical examination is necessary. Moreover, homosexuality was regarded as 'sexual orientation' by 34.5% (150/435) of participants in 2005 and 78.5% (769/980) in 2013.

Compared with 2005, the 2013 data showed significantly increased, positive attitudes to caressing and sexual activity. A significant finding was that masturbation was mainly practiced by males. The proportion of females choosing contraception was significantly higher than males, suggesting that protection of females had been consciously recognized (from 81.1% to 88. 2%, $P = 0.016$). More than 80% of the participants understood the need to use condoms if having sexual relations with strangers; however, the proportion of participants who lacked basic knowledge on the use of a condom was still depressing high (85.9% in 2005 and 82.7% in 2013, $P = 0.142$; see **Table 4**).

Attitudes to pornographic books/films

The number of survey participants who never looked at any pornographic books or images was 26.4% in 2005 and 7.4% in 2013. The number of females viewed pornographic books/films in 2005 was 98/201 (48.8%) but this figure increased to 374/474 (78.9%) in the present survey, with no obvious change in the number of male users. The rank order of exposure to pornography material was the disc (30.1%, 131/435), novels (23.2%, 101/435) and the internet (18.2%, 79/435) in 2005. The corresponding ranking was the internet (92.0%, 902/980), novels (12.2%, 120/980) and CDs (7.5%, 73/980), in the 2013 survey.

The rate of almost no effect of pornography on males was increased from 29.9% (70/234) up to 40.9% (207/506), but in females no significant change was detected (65.7%, 132/201 *vs* 66.2%, 314/474).

Demand on education for reproductive health knowledge

The percentage of participants who were willing to take reproductive health electives was significantly increased from 56.8%in 2005 to 77.8% in 2013 ($P < 0.0001$, **Table 5**). In 2013, 100% of the participants considered that it was necessary to develop reproductive health education, while 90.8% (395/435) in 2005 had the same concern, both rates being very high. The rates of received previous sex education were 39.1% (170/435) and 41.9% (411/980), but the previous sex education time was significantly different being 63.5% (108/170) in junior high school in 2005 and 71.9% (555/772) in senior high school in 2013.

Discussion

Summary and discussion of findings

Changes of participants' attitudes to sex health and to premarital sexual behavior: In comparison to the survey in 2005, the present data shows that the rate of negative attitudes to premarital sexual behavior or participants' cohabitation fell by 5% and 18%, respectively, showing that university students in China have become more tolerant, or even accepting, of sexual activity between lovers [12]. **Table 4** shows that the proportion of female experiencing sex was nearly doubled. Therefore, the participants were not only more open on the concept of having sex, but actually practiced this behavior. However, the proportion whose attitude that unmarried pregnancy was wrong did not change; this attitude may be affected by Chinese traditional by perhaps outmoded thoughts, which holds that participants should solely focus on study during their college/university time and not engage with the opposite sex.

Although each proportion about notions of unmarried pregnancy was not changed between the two surveys, unlike the reported data [13], actual numbers of students with unmarried pregnancy has never been investigated because those students choose 'secret' abortion.

In the internet era, participants are able to freely access information about sexual and reproductive health knowledge [14, 15]. Furthermore, it is convenient and discreet for participants to learn about sexual knowledge. On the other hand, the rightness and accuracy of sexual content on the internet cannot be guaranteed because of the lack of an effective monitor of sexually explicit content. Therefore, authorita-

tive experts or full-time teacher's guidance on sexual/reproductive education are still needed to guide students on learning sex-related knowledge. There was a significant change in opinions about premarital cohabitation. The number of females who accepted the notion increased from 24.9 to 48.7%, males from 36.3 to 77.8%, indicating that the participants hope to have the experience of love during their university course, and have a more open attitude to premarital cohabitation. However, no change in the participants' inherent attitude to unmarried pregnancy was found for both females and males between the two surveys conducted 8 years apart.

In **Table 5**, there were obviously increased proportions of participants who were willing to accept formal education on sex knowledge, and especially the percentage among females, which has obviously grown. More than two-thirds were willing to participate in related educational courses. Obviously, fewer participants held the thoughts that females and males should be separated in sexual education classes (from 27.8 to 7.0%), and that sexual education may increase the incidence of premarital sex behavior (from 15.6 to 4.7%), indicating that participants were becoming calmer and more mature about accepting sex education and would no longer feel embarrassed if both genders had classes together.

Knowledge about sexual/reproductive health, STDs and self-protection

The participants' awareness of STDs was still less than satisfactory. The right time to use condoms and their recognition that emergency contraception was available was not obviously changed. However, it was encouraging to see that the proportion of the participants having HIV/AIDS knowledge was higher, presumably due to the long-term publicity for AIDS prevention in China, suggesting that advertising campaigns can improve knowledge about sexual/reproductive health.

We did not observe the apparent improvement of knowing 'emergency contraception and sexually transmitted diseases' during the 8 years, and still only one third of participants could rightly answer these questions, together, 50% of participants could correctly know the usage of condoms. In fact, STDs have been serious problems in China, especially in the population with lower educational degree. Because people in China have considered that STDs are with somehow a 'disgrace', most of the patients with STDs never visit a hospital. Therefore, there have been no accurate numbers on the 'real' frequency of occurrence of STDs patients in China.

There was no percentage change in the daily washing of the genital regionover8 years. The percentage of females who washed their genitals daily was much higher than that of males (74.6 *vs* 50.9% in 2005 and 75.1 *vs* 55.9% in 2013). The number of males cleaning their genitals was still surprising low, with one possible explanation being that family guidance still plays an important role in their behavior. In China, mothers always urge females (but not males) to wash their genitals daily. Therefore, it would be highly desirable for the university to implement a sexual/reproductive health education program, due to the lack of family sex education. The survey results suggested that the university participants are still lacking basic sexual/reproductive health knowledge and that education about STDs should be widely publicized or taught.

Although the rate of participants choosing contraception during sex increased to 83.0%, about 10% of the participants reported that they would use them "depending on the circumstances". The main reasons may be the female menstrual cycle and whether a strong sexual impulse together with no prepared birth control procedures was put in place. These are the main underlying factors responsible for unintended pregnancy. The proportion of females choosing contraception was significantly higher than males, which reflects that females have to protect themselves from the consequences of passionate, unexpected sex. Overall, the males' sexual openness and sexual experiences were significantly higher than that of females, but it is clear that the males' responsibility in relationships needs to be greatly improved.

On the other hand, although participants knew that contraception was necessary during their sexual life and that the most commonly used contraception method is the condom, disturbingly few of the college students knew how to use a condom correctly, showing a slight increase (17.1%) compared with the previous

survey. The survey results also showed that even though we had emphasized the use of condoms and that participants should have used them during sex, the correct usage of condoms was explained only by discussion, with no practical demonstration.

Imbalance between supply and the demand on the sexual/reproductive education for university students

The proportion of participants who had accepted early formal sex education was not significantly increased during the 8 years from the first survey, indicating that reproductive health education in high schools had not significantly improved. Nevertheless, the proportion of participants who considered sex education necessary was increased from 37.5 to 58.0%, while the proportion of participants who were willing to take the reproductive health elective was increased from 56.8 to 77.8%, suggesting that most participants realized the need for authoritative sex education. However, although Chinese society now realizes the imperative need for the open-minded discussion of sexual/reproductive health education issues with young people, progress has been slow during the last decade, in part because of a shortage of sex educators and also because a long-term strategic educational plan has not been implemented. Sex education in China is completely different from that in Europe and the United States, the most prominent problem being the lack of a middle school during early sex education. On the one hand, due to traditional culture, Chinese parents have not been willing to talk about sex issues with their children, and anyway many parents lack the appropriate sexual knowledge, which leads to a paucity of family sex education in China. On the other hand, young students are easily affected by the heady atmosphere of 'bad surroundings' and can easily make the wrong sexual choices, with potentially profound consequences. Nevertheless, Chinese society is progressing, with youth attitudes, values and knowledge about sexual activity changing for the better. The results from this survey will help to improve further Chinese sex education.

Summary and conclusions

College students' sexual awareness and attitudes are more open today compared to the 2005 survey. A higher level of sexual knowledge has been reached but there is still much scope for further improvement. Sex education should be based on the actual needs of young people, teaching reforms, and special attention should be paid to practical teaching e.g. the correct use of condoms.

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Disclosure of conflict of interest

None.

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