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KNOWLEDGE OF ADOLESCENT GIRLS REGARDING SEXUALLY TRANSMITTED DISEASES: A STUDY IN A RURAL AREA FROM NORTH-EASTERN ROMANIA

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Knowledge of Adolescent Girls regarding Sexually Transmitted Diseases: A Study in a Rural Area from North-Eastern Romania

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Abstract

This study aimed at assessing knowledge on sexually transmitted diseases (STDs) in rural 14 to 18-year-old adolescent girls. We administered a questionnaire about STDs to 534 girls and, then, organized a health education programme that included didactic lectures. The major sources of information about STDs were: family – 45.50%, professors – 21.70%, and the family doctor – 11.80%. Girls prefer to discuss sexuality with their mothers rather than with their fathers (23.03% vs. 2.62%). 16.60% knew about at least two STDs, while 8.10% had no knowledge about STDs. 95.30% of girls questioned had heard about HIV/AIDS, while 23.20% were aware that hepatitis B can be sexually transmitted, and 33.60% had heard about vaccination. Other STDs known by the adolescents were: syphilis (55.80%), candidiasis (12.90%), and trichomoniasis (6.60%). 33.10% of adolescents did not know of any methods of preventing STDs. Condoms were reported to be the first method of protection against pregnancy, not against STDs. If they had

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an STD, most adolescents (58.61%) would prefer to get their treatment from the pharmacy without first consulting a doctor. 74.50% of adolescents consider it useful to receive sexual education lectures in school, whereas 41.19% would like to receive information about STDs through brochures and 85.58% would rather find information on a website. STDs in teenage girls represent a special issue both for their families and society as a whole. The health education program contributed to raising awareness about STDs prevention and transmission in adolescents from rural area.

Keywords. adolescent girls, rural, sexually transmitted disease, knowledge, prevention, sexual education.

Introduction

Adolescence is a critical period, the most important and sensitive period in life, a bridge between childhood and adulthood. It is also a period of curiosity in which adolescents could engage in different risky activities (unprotected sex, alcohol consumption, smoking, drug abuse) (Nayak, Toppo & Tomar, 2016). In the Report of a Technical Consultation on Sexual Health, World Health Organization (WHO) define sexual health as “a state of physical, emotional, mental and social well-being in relation to sexuality and not merely the absence of disease, dysfunctions or infirmity” (Suman, Raghavendra & Ramelinggowda, 2015; Chinte, Kendre & Godale, 2014).

According to EUROSTAT statistics, in 2015, 47% of women in the European Union (EU) had their first child in their 20s and 45% were first-time mothers in their 30s. In the same time, 93.000 first childbirths were recorded in teenage mothers. The average age for women who became mothers for the first time was 29 years old (EUROSTAT, 2017).

According to the same publications, Romania occupied the first place regarding first childbirths from teenage mothers, with 12.30% of total first childbirths in 2015, in EU, followed by Bulgaria.

Also, adolescents may experience unsafe sexual practices due to lack of information or communication with their family (Genz, Konzgen Meincke & Vidal Carret, 2017). Sexually transmitted diseases (STDs), either curable or incurable, are a major health problem, occurring more frequently in adolescents. Thus, according to WHO, annually, 1 in 20 adolescents contracts an STD and 20% of persons with HIV/AIDS are less than 20 years old (Amu & Adegun, 2015; Visalli, Picerno & Vita, 2014). Both teenage pregnancies and STDs are socially determined, as families and education play an important role. Among adolescents, girls are more vulnerable to STDs, including biologically (anatomic development of the cervix is incomplete) and unplanned pregnancies. Teenage girls who start

their sexual activity too early run a higher risk of contracting a sexually transmitted infection with complications (pelvic inflammatory disease, dyspareunia, chronic pelvic pain), of having unexpected pregnancies, becoming single mothers, or undergoing abortions and experiencing marital instability and poverty.

According to WHO, in 2008 there were approximately 489 million new cases of curable STDs in adolescents and 15 to 49-year-old adults, a group that also includes 15 to 18-year-old adolescent girls (Newton-Levinson, Leichter & Chandra-Mouli, 2016). Globally, there are over 357 million sexually transmitted infections reported annually (Chlamydia, Syphilis, Gonorrhoea & Trichomoniasis), and Romania has incidence rates which rank it in the top 10 in Europe. In 2017, there were 840 cases of syphilis (incidence of 4.28^{0/0000}), 78 cases of gonorrhoea (incidence 0.39^{0/0000}), and 21 cases of *Chlamydia trachomatis* genital infection (0.11^{0/0000}) (Pistol, Popovici, Stanescu, Popescu, Sirbu, Zota *et al.*, 2017). Consequently, adolescents and particularly adolescent girls need adequate information about STDs.

The goal of the sexual education is to provide accurate information about human sexuality (Clark, Jackson & Allen-Taylor, 2002). A 2005 review realized cited by Newton-Levinson *et al.* (2016) regarding the barriers to accessing information about STDs states that there are four categories of impediments: availability, acceptability, accessibility and equity. Cultural and social statuses, as well as taboos related to sexuality are also barriers described by adolescents and providers.

Methodology

The study was carried out with the purpose of evaluating STDs knowledge of adolescent girls and promoting efficient sexual education in populations at risk such as young people from rural areas with low levels of education in order to prevent STDs and ensure that sexual and reproductive health services are available, accessible and affordable without discrimination to these adolescents.

The study was carried out with the support of the grant project P-2015-B-01 obtained from the European Society of Contraception and Reproductive Health (ESC) grant competition. The study had the approval of Iasi County School Commissioners' Office, Romania, and a collaboration agreement was signed with the headmasters of seven high schools included in the project (Cotnari, Focuri, Halaucesti, Lungani, Miroslava, Raducaneni, Victoria). The parents of adolescent girls included in the study signed a written informed consent before the beginning of the study. In the case of participants over 18 years of age (legal age), only students were asked to sign the informed consent. The study was approved by the Ethics Committee of "Grigore T. Popa" University of Medicine and Pharmacy Iasi, Romania.

Participants and study design

The study was carried out between September 2016 and March 2018 and included 534 adolescent girls 14 to 18-year-old from the 7 high schools mentioned randomly chosen from Iasi County. The first stage consisted in administering an anonymous questionnaire divided into three sections as follows: 1. social status and family characteristics, 2. sources of information and knowledge about reproductive health, and 3. knowledge about STDs.

The adolescent girls completed the questionnaire in the classroom after we explained them the purpose of the study and ensured confidentiality.

Social status and family characteristics referred to: age, religion, type of family (monoparental or single parent family/biparental or two-parent family), parents' educational level, Internet access, and boyfriend relationship. We assessed the sources of information used (family, other persons, media) and the preference for certain persons to appeal to for information about STDs. Finally, we tested the adolescents' knowledge about HIV/AIDS, hepatitis B, the existence of other STDs (syphilis, trichomoniasis, and candidiasis), curable STDs, STDs treatment access and the need for information sources (brochures, websites). Another stage of the study consisted in a health education program based on didactic lectures followed by interactive sessions. We provided current and age-appropriate information using print media, brochures and a friendly web portal (www.sanatatea-adolescentelor.ro) to help this category of adolescents to avoid negative outcomes.

Statistical analysis

The collected data were coded and entered into an EXCEL® database, then exported to the statistical software application. Statistical analysis was performed using the IBM SPSS version 18. Statistical values with a p-value <0.05 were considered significant, thus setting up a level of confidence of 95%. Most of the data were categorical, thus we used for comparison the Chi-square test with the Fisher exact approximation when needed (the consistency condition for Chi-square test unfulfilled). Descriptive characteristics such as absolute and relative frequencies, means and standard deviations were computed.

Results

Among the eligible adolescent girls from the high schools included in the study, a total of 534 (73.15%) answered the questionnaire. 196 girls (26.85%) refused to answer or their parents hadn't signed the informed consent.

Respondents were aged between 14 and 19 (average age 16.90 ± 2.43 years). Most of the girls were of Orthodox religion (75.46%) and 44 (8.23%) were Roma ethnics. 44.75% of adolescents had already started their sexual life. 100 girls

(18.72%) came from single-parent families and most of respondents ‘parents graduated high school (62.92%). 89.70% of girls benefited from Internet access (Table 1).

Table 1. Socio-demographic characteristics of the lot under study

Characteristics	Frequency	Percentage
Age (years)		
14-15	112	20.97
16-17	266	49.81
≥18	156	29.21
School		
Cotnari	18	3.37
Focuri	25	4.68
Halaucesti	77	14.41
Lungani	33	6.17
Miroslava	112	22.84
Raducaneni	221	41.38
Victoria	48	8.98
Ethnicity		
Romanian	490	91.76
Roma	44	8.23
Religion		
Orthodox	403	75.46
Catholic	116	21.72
Undeclared	15	2.80
Family		
Biparental/two-parent	434	81.28
Monoparental/ single parent	100	18.72
Education level of the parents		
primary	25	4.68
secondary	151	28.27
High-school	336	62.92
University	22	4.11
Internet access		
Yes, anytime	479	89.70
Occasionally	11	2.05
No access	36	6.74
Boyfriend relationship		
Yes	239	44.75
No	295	55.24

The major sources of information about STDs were, in decreasing order, the family (parents/sisters/brothers) – 45.50%, school teachers – 21.70%, and the family doctor – 11.80% (Table 2). The adolescent girls declared that they prefer to discuss sexuality with their mothers rather than with their fathers (23.03% vs. 2.62%).

Questioned about their knowledge of STDs, 16.60% mentioned at least two STDs, while 8.10% had no knowledge about STDs whatsoever. Most of the girls (75.30%) mentioned one STD (Table 2).

Table 2. Sources of information and knowledge about STDs

Characteristics	Frequency	Percentage
1. The main sources of information about STDs:		
Parents/sisters/brothers	243	45.5
Teachers	116	21.7
Family doctor	63	11.8
Other sources (friends, newspapers, films, Internet)	112	21.00
2. Number of STDs known		
None	43	8.10
1	402	75.30
≥ 2	89	16.60
3. Have you heard about HIV or AIDS?		
Yes	509	95.30
No	25	4.70
I don't know	0	0.00
4. Can HIV or AIDS be cured?		
Yes	90	16.90
No	265	49.60
I don't know	179	33.50
5. Can one be tested for HIV?		
Yes	457	85.60
No	13	2.40
I don't know	64	12.00
6. Hepatitis B virus is an STD?		
Yes	124	23.20
No	52	9.70
I don't know	358	67.00
7. Is there a vaccine that helps prevent hepatitis B?		
Yes	179	33.60
No	29	5.40
I don't know	325	61.00
8. Do you know of any other STDs (with the exception of HIV / AIDS and hepatitis B)?		
Yes	427	80.00
No	8	1.50
I don't know	99	18.50

9. Most common signs and symptoms of STDs known		
Pain in the lower back region	51	9.55
Itching in intimate areas	302	56.55
Burning urination	138	25.84
Without signs	43	8.05
10. Known methods of prevention		
None	187	35.01
1	231	43.25
≥ 2	116	21.72
11. If you had an STD, where would you go for treatment?		
Pharmacy	313	58.61
Family doctor	178	33.33
Specialist in infectious diseases	43	8.05

95.30% of adolescent girls (95.00% from single-parent families, and 95.40% from two-parent families, respectively), have heard about HIV/AIDS. The knowledge about the existence of a diagnosis test for HIV/AIDS did not reveal any significant differences between adolescents from monoparental and biparental families ($p=0.796 > 0.05$). 49.60% of adolescent girls (46.00% from monoparental families, and 50.50% from biparental families, respectively) consider that there is no possibility of curing this infection.

In the case of hepatitis B, 23.20% were aware that the disease can be sexually transmitted.

Depending on the type of family (mono- or biparental), only 20% and 24%, respectively, knew that this disease can be sexually transmitted ($p=0.342 > 0.05$), and about one third (33.60%) had heard of a vaccine (Table 2).

Other STDs that adolescent girls knew about were: syphilis (55.80%), followed by candidiasis (12.90%), while a few mentioned trichomoniasis (6.60%). The most commonly mentioned was syphilis, this being explained by awareness advertising for this disease.

33.10% of adolescents did not know of any method of preventing STDs and there were no statistically significant differences between girls from single and two-parent families ($p=0.485 > 0.05$). Condoms were reported to be the first method of protection especially against pregnancy, not against STDs. Analysis of STDs knowledge in adolescent girls depending on their religion (Orthodox *vs.* Catholic) showed that girls of Catholic confession were better informed ($p=0.061$). We do not have an explanation for this result. Maybe Catholic parents, mothers especially, due to this religion rejecting abortion, are better informed on prevention of unwanted pregnancies, and as a side effect, signalled the opportunity for raising awareness about STDs.

If they had an STD, most adolescents (58.61%) would prefer to procure their treatment from the pharmacy without first consulting a physician. 74.50% of adolescent girls consider that it is useful to introduce sexual education lectures in school. 41.19% would like to receive information about STDs through a brochure, while 85.58% would prefer to find information on a website (*Table 3*).

Table 3. Attitude towards sexual education

Characteristics	Frequency	Percentage
1. Is it useful to introduce sexual education classes in school?	398	74.50
Yes	59	11.00
No	77	14.40
I don't know		
2. Do you consider it helpful to read brochures on STDs prevention?	220	41.19
Yes	256	47.94
No	58	10.87
I don't know	457	85.58
3. Do you consider a specific site for useful information about STDs?	36	6.74
Yes	41	7.67
No		
I don't know		

Discussion

The degree of knowledge of those who had access to Internet was not higher compared with those who had no Internet access, nor did it increase with age, except for the case of hepatitis B virus infection, where a 1-year-increase in age conducted to the likelihood that a correct answer will be obtained (1.12 times).

Parents should have an influence on the sexual health of adolescents, but in many cases they don't have the adequate knowledge or avoid discussing this subject with their children (Raheel, White & Kadir, 2007). This fact was confirmed in our study, as some parents declared to be against sexual relationships during adolescence and most of them refuse to discuss about sex or provide sexual education. Correlating adolescent knowledge about STDs with parents' level of education revealed that the more educated the parents, the higher the level of adolescent knowledge. Girls whose parents had higher education levels (high school or university graduates) were significantly more aware that HIV/AIDS infection cannot be cured ($p=0.022$). The chances of knowing about the existence of an HIV/AIDS test were 6.6 times higher for adolescents with educated parents.

Despite the fact that there was no statistical significance, the values of exponential coefficients in the statistical analysis showed that a 2.43 times greater likelihood of knowledge about HIV/AIDS in teenagers having parents whose parents at least secondary school as compared to those whose parents had only primary education.

In our study, teenagers of Catholic faith as compared to Orthodox teenagers, proved to be better informed about hepatitis B as an STD and its prevention methods ($p=0.011$). A percentage of 69.90% of adolescent girls were familiar with these prevention methods. There were twice more adolescents from poorly educated parents (primary school graduates) who did not know of any prevention method than there were from families with higher education (68% vs. 32%). Moreover, the percentage of those who did not know of any STD is high (35.01%), while 218 (40.82%) of the girls mentioned that contraception can prevent contracting an STD.

Regarding the attitude towards sexual education, 74.50% of adolescent girls expressed the desire to benefit from sexual education classes in the school curriculum, and 46.20% found it useful enough to receive a brochure on STDs. They considered that sexual education taught in schools could help promote protected sexual relations. This is recommended because adolescent girls spend a lot of time at school - a place of learning and socialization.

Strengths and weaknesses of the study

Among the strengths of our study, we can mention the quite large number of school girls that participated, and the multidisciplinary team of gynaecology, public health, paediatrics, urology, infectious diseases specialists who took part in our work. As for weaknesses, we may say that it was difficult to have a survey of school-girls' behaviour following our intervention. We could not access suitable mechanisms to help refresh knowledge and maintain an acceptable level of alert among teenage girls concerning issues such as STDs and pregnancy. More often than not, teenage girls living in underdeveloped rural areas or in families with drinking problems seem to see no other future option for themselves than to marry and/or become mothers.

Differences in results

In their study, Newton-Levinson *et al.* (2016) mentioned that it is difficult for teachers to discuss subjects related to reproduction and sexual activity, a fact also mentioned by some of the biology teachers from the schools included in our study.

In the studies conducted in Thailand and Nigeria by Svensson *et al.* and by Aliyu *et al.*, respectively, cited by Amu *et al.* (2015), the main source of information were schools. The study carried out by Francis *et al.* (2018) used books as the most frequent source of information, while Nagrale (2017) reported that 26% of adolescents acquired information from media, as in the study by Raheel *et al.* (2007) (28%), whereas only 1% obtained information from family and relatives.

Comparatively, in our study, the first source was the family (parents, siblings) - 45.50%, followed by teachers - 21.70%) School was the second frequently mentioned source of information. In spite the lack of statistical significance, the level of knowledge seems to be related with the opportunity of discussing about STDs.

The answers to the question about the number of STDs known revealed that 75.30% were aware of at least one STD and a small percentage (8.10%) did not know of any STD. By comparison, in the study of Genz *et al.* (2017) from Brazil, the majority of girls mentioned 5-6 STDs, AIDS being the most cited (92.20%). Girls who had already started their sexual life were 1.74 times more likely to be acquainted with different STDs than those who had not had a sexual intercourse by then ($p=0.016$).

The most known common signs and symptoms of STDs mentioned were itching intimate areas (56.55%), followed by burning during urination (25.84%). About 8.05% of adolescent girls knew that, in many cases, STDs do not show any symptoms, compared to a percentage of 18.5% reported by Nayak *et al.* (2016).

Unanswered questions and future research

One unanswered question is how STDs impact the adolescent girls' quality of life. In this respect, we decided to establish a comparison with other infections or health problems. On the other hand, it would be interesting to compare the level of knowledge in adolescent girls from rural areas with that in urban teenage girls or boys. These subjects could be the focus of future research along with the expansion of the study to other areas of Romania.

Conclusion

Due to their social status, adolescent girls from rural areas have a greater risk for STDs compared with girls of the same age in urban areas. Access to sexual and reproductive services that provide the correct information at right age is essential for sexually active adolescent girls. Knowing that an early onset of sexual activity is associated with a higher risk of STDs, it is also necessary to increase the number of campaigns for STD prevention, especially in rural area.

Sexual education is part of the school curriculum in almost all European countries and Romania needs to include programmes of sexual education at all levels of education in order to provide proper information to children and teenagers. As shown in our study, sexual education provided by health professionals contributed to the improvement of knowledge in adolescent girls from rural areas.

Recommendations

STDs create a biological environment that favours HIV transmission for those with co-infections. Bacterial infections such as gonorrhoea, syphilis and Chlamydia increase the risk for HIV infections (Newbern, Anschuetz, Eberhart, Salmon, Brady, De Los Reyes et al., 2013). After reviewing 43 studies, WHO and Global Programme concluded that education could delay the onset of sexual activity, reduce the number of sexual partners and STDs (Suman *et al.*, 2015).

Taking into account that education is a protective factor against STDs as well as unwanted pregnancies, we organized educational activities such as didactic lectures followed by interactive sessions in order to raise awareness about their lack of knowledge on STDs and prevention methods. We encouraged adolescents to dialogue with their parents, teachers and family doctors, but in some cases this proved difficult if not impossible because their parents did not have the adequate knowledge or willingness to discuss. The teachers who participated, together with the adolescent girls, in the educational programme developed in schools considered that they had a useful role as did lectures, brochures on STDs, and websites. We hope that the adolescents included in the study will share the information acquired to other teenagers, their siblings, and even to their parents. We consider it necessary for educators to also communicate with teenagers' parents in order to narrow the gap between generations.

From the point of view of policymakers, we consider that there are two aspects that must be solved. First, it is necessary to have a school physician whose activity is dedicated only to the pupils, considering that the family doctors in rural areas, though they have the adequate knowledge, they, however, cannot ensure privacy for school children and their problems. Second, a psychologist is required to offer counselling, so that schoolgirls should be able to see their future in terms of professional development, to find other alternatives besides working in the household.

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