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Интернет-технологии в процессе информирования подростков по вопросам профилактики инфекций, передаваемых половым путем

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АННОТАЦИЯ

Актуальность. В Российской Федерации обеспечение информирования школьников по вопросам полового воспитания и профилактики инфекций, передаваемых половым путем (ИППП), регламентируется рядом Федеральных законов, устанавливающих основные принципы, права и обязанности родителей, педагогов, а также учащихся в этой области. На сегодняшний день половое воспитание входит в образовательные программы различных предметов, таких как «Основы безопасности жизнедеятельности», «Биология» и др. Конкретное количество часов, выделенных на половое воспитание, может варьироваться в зависимости от региона и образовательной организации. К сожалению, в большинстве случаев в учебных планах предусмотрено всего несколько подобных уроков в год. Интернет-ресурсы могут значительно улучшить информированность школьников в вопросе профилактики ИППП, привлекая школьников своей доступностью, анонимностью и актуальностью предоставляемой информации, однако они нуждаются в предварительной оценке: родителей, преподавателей и самих пользователей.

Цель. Оценить информационный Интернет-ресурс, разработанный с целью информирования школьников в вопросах профилактики ИППП.

Материалы и методы. Исследование включает в себя результаты анонимного анкетирования 435 школьников 14–17 лет, а также результаты оценки чат-бота тремя группами респондентов: 154 студента Сеченовского Университета, 20 сотрудников профессорско-преподавательского состава Сеченовского Университета, 44 родителя старшеклассников. Методы исследования: аналитический, социологический, экспертных оценок.

Результаты. По результатам данных, полученных в ходе исследования, все три группы опрошенных по оценке чат-бота отметили необходимость повышения уровня информированности подростков в вопросах профилактики ИППП. Также респонденты отметили, что чат-бот понятен в использовании, полезен для обучающихся, информация в нем является достоверной и обладает преимуществами перед информацией, которую школьники могут найти в Интернете самостоятельно.

Заключение. Информирование школьников в вопросах профилактики ИППП играет важную роль в формировании репродуктивного поведения молодого поколения. Использование Интернет-ресурсов в образовательных программах по профилактике ИППП может стать эффективным инструментом для повышения информированности и формирования ответственного отношения к вопросам здоровья и репродуктивного поведения.

Ключевые слова: профилактика; инфекции, передаваемые половым путем; половое воспитание; чат-бот; репродуктивное здоровье

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Internet Technologies in Informing Adolescents of Prevention of Sexually Transmitted Infections

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ABSTRACT

INTRODUCTION: In the Russian Federation, informing schoolchildren of issues of sex education and prevention of sexually transmitted infections (STIs) is regulated by a number of Federal Laws that establish the main principles, rights and responsibilities for parents, teachers, as well as students, in this area. Today, sex education is included in the educational programs of various subjects, such as fundamentals of health and safety, biology and others. A number of academic hours assigned to sex education, may vary depending on the region and educational organizations. Unfortunately, in most cases, the curriculum provides for only a few such classes per year. The Internet resources can significantly improve the awareness of schoolchildren of prevention of STIs attracting them with availability, anonymity and relevance of the information provided, which, however, requires the preliminary assessment by parents, teachers and users themselves.

AIM: To assess the information resource developed for the purpose of informing schoolchildren about issues of STI prevention.

MATERIALS AND METHODS: The study includes the results of an anonymous survey of 435 schoolchildren aged 14–17 years, as well as the results of the assessment of the chatbot by three groups of respondents: 154 students of Sechenov University, 20 members of the teaching staff of Sechenov University, 44 parents of senior high school students. The following study methods were used: analytical, sociological and expert assessments.

RESULTS: Based on the data obtained in the course of study, all the three groups of respondents, in assessing the chatbot, noted the need to increase the level of awareness of adolescents of STI prevention. The respondents also noted that the chatbot is understandable, useful for the learners, contains reliable information that is superior to the information that can be found on the Internet by schoolchildren on their own.

CONCLUSION: Informing schoolchildren of the questions of prevention of STIs plays an important role in formation of the reproductive behavior in the younger generation. The use of Internet resources in the educational programs on STI prevention can be an effective tool for increasing awareness and forming responsible behavior in terms of health issues and reproductive behavior.

Keywords: *prevention; sexually transmitted infections; sex education; chatbot; reproductive health*

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LIST OF ABBREVIATIONS

FEFD — Far Eastern Federal District

STI — sexually transmitted infections

INTRODUCTION

Comprehensive sex education should include a wide range of relevant topics including the topics of family, communication, relationships, spiritual and moral values, culture, and the topics touching upon physiology, anatomy, reproductive behavior, prevention of sexually transmitted infections (STI). The biology course provided by the school curriculum, includes a section on anatomy and intersexual relations, but this information takes only several pages in the book and reflects a small part of the above-mentioned concepts.

In the Russian Federation, informing schoolchildren on the issues of sex education and prevention of STI is regulated by a number of Federal Laws [1–3], which establish the basic principles, rights and responsibilities for parents, teachers, as well as students, in this area.

Today, sex education is included in the educational programs of various subjects, such as fundamentals of health and safety [4], biology [5], etc. The specific number of hours allocated to sex education may vary depending on the region and educational organization. Unfortunately, in most cases, the curriculum provides for only a few such lessons per year.

Internet resources can significantly improve the awareness of schoolchildren of matters of STI prevention for several reasons, the first one being the availability of information: providing easy access to reliable sources of information on STI prevention will allow schoolchildren to study the topic independently [6].

Another no less important advantage for schoolchildren is anonymity: many young people may feel shy to discuss sex health issues, and the online-format makes anonymous search for information without fear of being judged. Besides, the online resources can be quickly updated in view of the new research and recommendations, which ensures the reliability of the data presented.

The **aim** of this study is to assess the information resource developed for the purpose of informing schoolchildren about issues of STI prevention.

MATERIALS AND METHODS

The following *study methods* were used: analytical, sociological, expert assessments.

To study the awareness of schoolchildren-adolescents of the issues of STI prevention, we conducted a study in the regions with unfavorable levels of morbidity with STI. The first part of the study includes the results of an anonymous survey of 435 schoolchildren of 14–17 years of age of the Far Eastern Federal District (FEFD).

We have created a similar chatbot aimed at informing high school students in the field of reproductive behavior and STI prevention. The information in the chatbot is presented in an educational format and is adapted to the modern generation. The texts are written constructively, clearly and informatively, without large amounts of theoretical material that may seem boring to young people.

The chatbot includes 7 sections:

The first section is an online reference book. Having entered this section, the user can select the disease of interest: gonorrhea, syphilis, chlamydia, HIV, hepatitis B, genital herpes, human papillomavirus, trichomoniasis or candidiasis. After moving on to studying a specific disease, brief information about it is displayed, as well as links to the following information: where the disease came from, how it is transmitted, the incubation period, diagnosis, symptoms, prognosis, prevention.

The second section describes transmission paths. This section contains brief information about who can become infected with STIs and how. Special emphasis is placed on the fact that not all STIs are transmitted only sexually, this is important for young people who suspect they have STIs, but are afraid to contact their elders because of possible condemnation from them.

The third section answers the question: what to do on suspicion of having an STI. It includes information for young people who suspect they may be infected with an STI. The format of the section is aimed at reducing stress and tactfully calling for help from parents and a doctor.

The fourth section is anatomy. To understand the information presented in other sections, one needs to know the basics of anatomy. The pictures are abstract, they match the images known by schoolchildren from the year 8 biology curriculum.

The fifth section provides information about the consequences of diseases. The information is aimed at cultivating the idea that sexually transmitted disease cannot be cured by patients on their own. At the same

time, with timely therapy, a person, in most cases, can expect a favorable prognosis.

The sixth section deals with the question of how not to get sick. It reflects the basic concepts of preventive measures that every person must follow, including abstaining from risky sexual behavior, observing personal hygiene rules, and undergoing regular preventive examinations.

The seventh section includes the most frequently asked questions, in particular, it gives short and clear answers to 13 questions that are of highest interest for the young generation.

The developed chatbot was presented for assessment to three groups of respondents. The usefulness of the chatbot was assessed by 3-year students of Sechenovskiy University ($n = 154$), parents of senior high school students ($n = 44$), and the expert assessment was given by teachers of Sechenov University ($n = 20$).

The first group of respondents consisted of 154 third-year students of Sechenovskiy University. It was the category of students who have already acquired the basic list of necessary competencies as part of their academic program, which enabled them to objectively evaluate the information presented in the chatbot, and, besides, these respondents have not long ago left the age group, for which the chatbot was created.

The third group of respondents, the chatbot experts, were 20 teachers from the F. F. Erisman Institute of Public Health of Sechenovskiy University. The main characteristics of the experts were: teaching experience; academic degree; teaching issues of healthy lifestyle, hygiene education and upbringing, prevention of infectious and non-infectious diseases as parts of the discipline. The experts included teachers of the departments lecturing on the disciplines 'Public Health and Healthcare', 'General Hygiene'. At the same time, 25.0% of the respondents had teaching experience of up to 5 years, 30.0% — 5–9 years, 20.0% — 10–19 years, 25.0% — more than 20 years. At the time of the study, 50.0% of the teachers did not have an academic degree, 40.0% had an academic degree of candidate of sciences, 10.0% of the respondents had an academic degree of doctor of sciences.

RESULTS

The respondents gave the following answers to the question about their level of knowledge on the issues of sex education: $12.9 \pm 1.6\%$ answered that they know nothing about it, $60.0 \pm 2.3\%$ answered that they 'know something', $10.8 \pm 1.4\%$ answered that 'everyone knows about it, everything is clear there', and $12.6 \pm 1.6\%$ believed they are fully aware of the matter.

Only $33.8 \pm 2.3\%$ of schoolchildren indicated that they could turn to their elders for information on STI

prevention, $14.0 \pm 1.7\%$ had already asked their elders about it, half ($49.9 \pm 2.4\%$) think that it is awkward to ask their elders about it, and every tenth answered that they had not asked, since the elders might not know themselves.

To note, to obtain the needed information, the modern generation prefers the Internet as an alternative to the increasing number of resources in various areas. To determine and evaluate the commitment of respondents to using the resources, we conducted a study of sources from which schoolchildren obtain interesting to them information concerning sex education and STI prevention. Upon that, $44.6 \pm 2.4\%$ of respondents found the information on their own, $21.6 \pm 2.0\%$ learned it from friends, $16.2 \pm 1.6\%$ learned it from the parents, 1.6% indicated that they received the information at school during the class, and 7.4% of schoolchildren did not indicate the source of information.

The largest number of respondents noted that they are most comfortable receiving information about sex education on social networks ($26.7 \pm 2.1\%$ of respondents); $23.7 \pm 2.0\%$ of respondents believed that it is comfortable to receive this information being alone, $15.7 \pm 1.7\%$ of respondents were not interested in the topic. The second most important answer is 'Subscribe to a channel' ($13.1 \pm 1.6\%$ of respondents). The smallest number of respondents answered that they would be comfortable receiving information about STI prevention among friends ($11.7 \pm 1.5\%$) and among parents ($8.1 \pm 4.1\%$).

Most respondents ($33.7 \pm 2.2\%$) have chosen a blog as the most convenient source of information on STI prevention; $20.6 \pm 1.9\%$ indicated they were not interested in the topic; $19.9 \pm 1.9\%$ would like to obtain information from a physician; $6.5 \pm 1.1\%$ — from friends; $6.2 \pm 1.1\%$ — from teachers; $4.0 \pm 0.9\%$ of respondents would like to get information from a mobile application.

The study revealed the principal difference in preference of the social network for receiving information on STI prevention (Figure 1). Thus, $74.4 \pm 2.1\%$ of respondents from FEFD would prefer the social network 'Vkontakte', while respondents from Moscow (as part of our comparative study) more often preferred the 'Telegram' social network.

Results of assessment of the chatbot by students:

1. Assessing the need to increase public awareness of hygiene education and STI prevention, 76.6% of respondents gave an affirmative answer; 22.0% of respondents believed that awareness of these issues is useful, and only 1.3% of respondents answered 'I don't think it's necessary'.

2. When assessing the *complexity* of using the chatbot, 87.0% of respondents indicated that the chatbot was easy to use, 11.7% found it difficult to

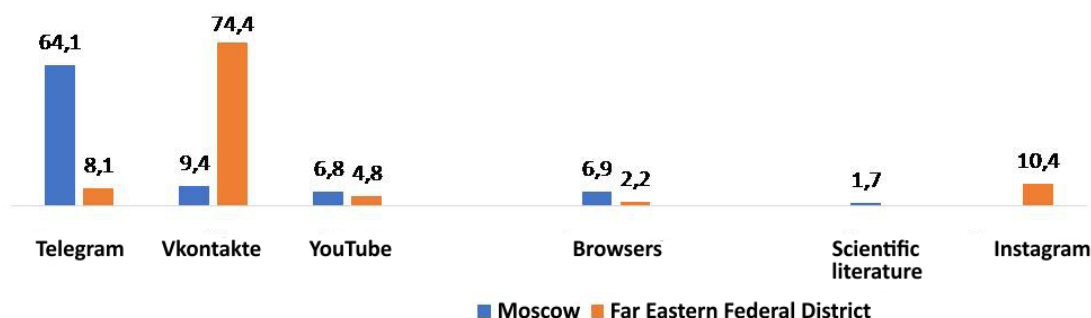


Fig. 1. Preferred social network to receive information on sexually transmitted infections prevention (per 100 respondents).

Note: FEFD — Far Eastern Federal District.

answer, and for 1.3% of respondents the chatbot was incomprehensible.

3. 84.4% of students found the information provided in the chatbot to be *useful* for students of 14–17, while 15.6% found it difficult to answer this question.

At the same time, 33.1% of students indicated that all sections of the chatbot seemed useful to them. Almost every fifth student (22.1%) indicated the usefulness of the section 'What to do if you suspect an STI', and 13.6% of respondents considered the section 'How not to get sick' to be most useful. Almost every tenth student (9.7%) highlighted the usefulness of the 'Online Reference' among the sections. The following

sections of the chatbot were much less often considered useful by the students: 'Consequences of diseases' (6.5% of respondents), 'Anatomy' and 'Frequently asked questions' (5.2% of respondents in each section), 'Transmission paths' was considered the least useful section of the chatbot by students (4.5% of respondents) (Figure 2).

Results of evaluation of the chatbot by parents:

63.6% evaluated their hygiene education and STI prevention knowledge as 'Knowledge of basic information', 29.5% answered they are well aware of this topic. Of importance is the fact that 6.8% of surveyed parents answered that they are not interested in the hygiene education.

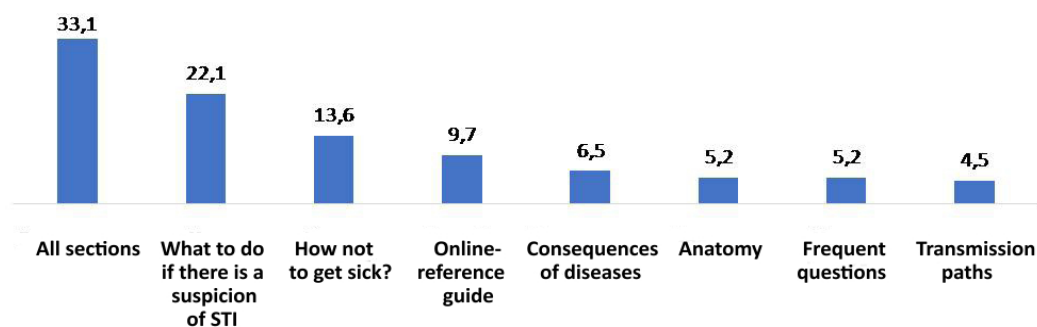


Fig. 2. Assessment of usefulness of the chatbot sections by students (per 100 respondents).

Note: STI – sexually transmitted diseases.

To note, 70.5% of surveyed parents when answering the question about the level of awareness of high school pupils of the matters of STI prevention,

responded that 'Schoolchildren have a vague idea of what STI prevention is'; 25.0% believe that schoolchildren do not know anything about STIs, and

Table 1. Assessment of the chatbot for adolescents by experts (per 100 respondents)

Respondents	Per 100 respondents
<i>Third-year students</i>	
Consider it absolutely necessary to increase the level of awareness of populations of issues of hygiene education and sexually transmitted infections prevention	76.6
Consider the chatbot understandable in use	87.0
Consider the information presented in the chatbot useful for schoolchildren of 14–17 years of age	84.4
<i>Senior high school students' parents</i>	
Consider themselves to have a good knowledge of issues of sexually transmitted infections prevention	29.5
Think the schoolchildren poorly understand what sexually transmitted infections prevention is	70.5
Consider it necessary to raise the level of adolescent awareness of issues of reproductive behavior and sexually transmitted infections prevention through use of online technologies	93.2
Consider the chatbot useful for schoolchildren of 14–17 years of age	84.1
<i>Teachers</i>	
Assessed their readiness to carry out activity to inform students in the field of hygiene education and training to the maximal score	42.1
Assessed the need to raise the level of public awareness of matters of hygiene education and prevention of sexually transmitted infections to the maximal score	90.0
Assessed the necessity of informing senior schoolchildren about sexually transmitted infections prevention to the maximal score	95.0
Assessed the reliability of chatbot to the maximal score	55.0
Assessed the usefulness of the information presented in the chatbot to the maximal score	63.2
Assessed the need for further study and subsequent implementation of similar online resources to inform students aged 14–17 to the maximal score	80.0

4.5% answered that 'Schoolchildren are well informed in this issue'.

When asked whether it is necessary to increase the level of awareness of adolescents in matters of reproductive behavior and STI prevention using online technologies, 93.2% of parents surveyed answered 'Yes, of course. Online technologies will help attract the attention of adolescents'; 4.5% of respondents answered 'No, children already know what they need'; the least frequently indicated option was 'This information should be provided by a doctor in person' (2.3%).

When asked whether this chatbot is useful for adolescents aged 14–17, 84.1% of parents answered positively, 13.6% found it difficult to answer; only 2.3% of surveyed parents answered that they consider the chatbot useless.

Results of Expert Assessment of the chatbot by teachers:

1. Assessment of readiness to carry out activities to inform students in the field of hygiene education and training.

As response options, experts were given a scale from 1 to 5 points, where the answers were presented according to the increasing degree of readiness: 1 — 'Significant preparation will be required', 5 — 'I have a high level of readiness for such activities'. At the same time, 42.1% of respondents indicated having a high level of readiness as experts in assessing the chatbot, 31.6% of respondents indicated that they would need minor preparation for this, 5.3% indicated the need for significant preparation for such activities, but 21.1% of teachers found it difficult to answer.

2. Assessment of the current need to increase the level of public awareness of matters of reproductive behavior and STI prevention.

In the scale of answers offered to respondents, the options were distributed on a scale from 1 point — 'Categorically not necessary' to 5 points — 'Absolutely necessary'. The overwhelming majority of respondents indicated the 'Absolute necessity' of increasing the level of public awareness of these matters (90.0% of the teachers surveyed), 5.0% of respondents in this group answered 'It would be useful', and 5.0% found it difficult to answer the question.

3. Assessing the need to inform adolescents about STI prevention.

The answer scale contained gradations from 1 — 'Categorically not necessary' to 5 — 'Absolutely necessary'. When answering this question, 95.0% of the teachers surveyed believe that it is absolutely necessary to raise awareness of adolescents of STI prevention, 5.0% answered 'It would be useful'.

4. Assessing the reliability of the information presented in the chatbot on a response scale from 1 — 'Strongly disagree with the statement' to 5 — 'Fully agree with the statement'. To note, 55.0% of respondents completely agree with the statement about the reliability of the information, 25.0% of respondents indicated 'Rather yes than no', 15.0% of respondents found it difficult to answer, and only 5.0% of respondents chose the value 'Rather no than yes'.

5. Assessment by teachers of the usefulness of the information provided in the chatbot using a scale from 1 ('Strongly disagree with the statement') to 5 ('Fully agree with the statement'). To note, 63.2% of teachers fully agreed with the statement about usefulness of the information in the chatbot, 10.5% rather agreed with this statement, but 26.3% of respondents found it difficult to answer.

6. Assessment by teachers of the need for further study and subsequent implementation of similar online resources to inform students aged 14–17.

On the scale, option 1 meant 'Strongly disagree with the statement', 5 — 'Fully agree with the statement'. At the same time, 80.0% of experts indicated their full agreement with the statement, 15.0% of respondents

indicated the option 'It would be useful', and 5.0% chose the option 'I see no need'. Thus, three groups of respondents (students, parents of senior high school students, teachers) gave a positive assessment of the proposed chatbot aimed at informing adolescents in the area of reproductive behavior and STI prevention (Table 1).

CONCLUSION

Informing schoolchildren about sexually transmitted infections prevention is an important task of hygiene education and upbringing of the modern young generation. The use of the Internet resources in educational programs on prevention of sexually transmitted infections can become an effective tool to increase awareness and form responsible attitude towards the issues of health and reproductive behavior.

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