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Original

Effects of an online course on young people's knowledge about sexually transmitted infections: quasi-experimental study

Efeitos de curso online no conhecimento de jovens sobre infecções sexualmente transmissíveis: estudo quase-experimental

Efectos de un curso en línea sobre el conocimiento de los jóvenes sobre las infecciones de transmisión sexual: un estudio cuasi-experimental

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Abstract

Objective: To evaluate the effect of online course on the knowledge of young people about sexually transmitted infections. **Method:** Quasi-experimental study divided into 5 stages: course planning; dissemination; recruitment, signing of informed consent form and pre-test; course implementation; post-test application. The sample consisted of 203 participants. Data were collected in Google Forms®, organized in Google Sheets® and analyzed in Jamovi®. McNemar's test was used to compare the groups. **Results:** The mean age of the participants was 24.6 years. There was a statistically significant difference in the knowledge of the participants before and after the intervention regarding the treatment and vertical transmission of HIV. Regarding sexual practices, there were differences in the frequencies of correct answers in the questions, especially in the performance of the rapid test for HIV. **Conclusion:** The online course was effective in increasing the frequency of adequate responses of knowledge and practice of young people after the intervention.

Descriptors: Sexually Transmitted Infections; Information Technology; Disease Prevention.

Whats is already known on this?
Online course is a low-cost and wide-ranging strategy for young people to promote an increase in the frequency of knowledge and appropriate practices in sexual health.

What this study adds?
There was a difference in participants' knowledge about the treatment and vertical transmission of HIV after the course. There was an increase in the frequency of correct answers in questions related to sexual practices.

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Resumo

Objetivo: *Avaliar o efeito de curso online no conhecimento de jovens sobre infecções sexualmente transmissíveis.* ***Método:*** *Estudo quase-experimental dividido em cinco etapas: planejamento do curso; divulgação; recrutamento, assinatura do Termo de Consentimento Livre e Esclarecido (TCLE) e pré-teste; implementação do curso; aplicação do pós-teste. A amostra foi constituída por 165 participantes. Os dados foram colhidos no Google Forms®, organizados no Google Sheets® e analisados no Jamovi®. Utilizou-se o teste de McNemar para comparação dos grupos.* ***Resultados:*** *A idade média dos participantes foi de 24,6 anos. Constatou-se diferença estatisticamente significante no conhecimento dos participantes antes e após a intervenção no que se refere ao tratamento e à transmissão vertical do HIV. No tocante às práticas sexuais, observaram-se diferenças nas frequências de acertos nas questões, sobretudo na realização do teste rápido para HIV.* ***Conclusão:*** *O curso online foi efetivo para aumentar a frequência de respostas adequadas de conhecimento e prática dos jovens após a intervenção.*

Descritores: *Infecções Sexualmente Transmissíveis; Tecnologia da Informação; Prevenção de Doenças.*

Resumén

Objetivo: *Evaluar el efecto de un curso en línea sobre el conocimiento de los jóvenes a respecto de las infecciones de transmisión sexual.* ***Método:*** *Estudio cuasi-experimental dividido en 5 etapas: planificación del curso; divulgación; reclutamiento, firma del formulario de consentimiento informado y pre-test; implementación del curso; aplicación posterior a la prueba. La muestra estuvo conformada por 165 participantes. Los datos se recopilaron en Google Forms®, se organizaron en Google Sheets® y se analizaron en Jamovi®. Se utilizó la prueba de McNemar para comparar los grupos.* ***Resultados:*** *La edad promedio de los participantes fue de 24,6 años. Hubo una diferencia estadísticamente significativa en el conocimiento de los participantes antes y después de la intervención con respecto al tratamiento y la transmisión materno-infantil del VIH. En cuanto a las prácticas sexuales, se observaron diferencias en la frecuencia de respuestas correctas a las preguntas, especialmente en la realización de la prueba rápida de VIH.* ***Conclusión:*** *El curso en línea fue efectivo para aumentar la frecuencia de respuestas adecuadas de conocimiento y práctica de los jóvenes después de la intervención.*

Descriptores*: Infecciones de Transmisión Sexual; Tecnología de la información; Prevención de enfermedades.*

INTRODUCTION

Sexually Transmitted Infections (STIs) are an ongoing collective health challenge and compromise the quality of life for individuals around the world. This group of pathologies has a profound impact on the lives of children, young people and adults, causing fetal and neonatal deaths, cervical cancer, infertility, increased risk of transmission of the Human Immunodeficiency Virus (HIV), in addition to the psychological, social and economic consequences.[1]

Estimates point to an increase in global trends in STIs – including syphilis, chlamydia, trichomoniasis and genital herpes, in addition to showing differences in trends by age groups, with emphasis on an increase in the young population.[2] Data on age-standardized incidence rates of these STIs increased by 1.70%, 0.29%, 0.27% and 0.40% per year from 2010 to 2019 worldwide, respectively.[2]

It can be seen that the higher incidence of STIs and Acquired Immunodeficiency Syndrome (AIDS) in the young population, because they are more vulnerable, due to less effective behaviors for the prevention of these diseases. This is due to the fact that young people are more likely to have inappropriate health behaviors, as this is a time considered to be a maturing period and a period of initiation of sexual life, where they often end up practicing unprotected sex.[3]

Given this panorama, it is evident that knowledge about the risks that follow from unprotected sexual relations is fundamental for young people to practice sex properly, ensuring the prevention of these infections.[4] In this perspective, health education practices arise in the sexual sphere, recognizing the opportunities offered by new technologies, so present in the lives of young people, since they allow programs that are much more economical than traditional face-to-face interventions.[5]

Information technologies have proven to be promising instruments for sexual promotion, since they allow young people to minimize their doubts anonymously.[6] In addition, online sexual health programs can be a particularly relevant way to offer information and teach with relative ease and high fidelity and have the potential to reach many users at low cost.

In this context, it is essential that health professionals recognize the opportunities that the digital environment can provide in health education and elucidate the various ways of using technologies as a means to cover young people in order to influence their health behaviors.[6]

Given the above, a course on STI aimed at young people, made available virtually through the internet, can be a strategy to promote empowerment of subjects through adequate knowledge that can guarantee a safe sexual practice. The relevance of the study is also evidenced by the possibility of enabling young people to be active in acquiring information that can modify their sexual practices, making use of

technologies widely disseminated in their midst. Thus, the objective was to evaluate the effect of online courses on young people's knowledge about sexually transmitted infections.

METHODS

This is a quasi-experimental study, developed in the period from January to December 2020, completely online, with evaluation before and after the educational intervention, being reported based on the Guidelines for reporting non-randomized studies of the Equator Network platform. In this study, the effects of an online course for young people on knowledge and practices related to sexual health were observed. The place of development of the materials for the course was in the municipality of Redenção, Ceará, Brazil.

The study was divided into 5 stages: 1) planning the course; 2) dissemination; 3) recruitment, signing of the informed consent form and pre-test; 4) implementation of the course; 5) application of the post-test.

In the first stage, a study of the literature was carried out to define the contents to be addressed in the online course. The themes found and based on the program content were divided into five modules for approach in the course: 1) concept and epidemiological data of STIs/AIDS in a global scenario; 2) definition of the main STIs and their clinical manifestations; 3) behavioral characteristics and situations of vulnerability; 4) transmission, consequences, treatment and prevention of STIs/AIDS; 5) importance of early diagnosis and testing of STIs. Paulo Freire's Liberating Practice was used as a reference for the construction of the videos, which lasted an average of 30 minutes. The methodological strategies that were used in the course were: storytelling, case studies, problem-based learning and Brainstorming. At this stage, the facilitators of each meeting were also defined, being nurses, with undergraduate, master's or PhD level, and also nursing undergraduate students. It should be noted that the team sought training on recording and editing videos, as well as on the organization of online courses.

In the second stage, the course was publicized. For this, a digital banner was created with data about the research, such as objective, relevance and inclusion criteria. This material was posted on the Instagram® social network, specifically on the profile of the research group that the authors participated in. This already had a significant number of followers and already provided content on the themes of sexual and reproductive health. It was requested to share the content by other profiles with similar themes. There was also disclosure of the social network WhatsApp®. It is emphasized that, next to this banner, a link was shared to accept participants to the research, providing their name, telephone contact and email.

In the third stage, there was recruitment, signing of terms and pre-testing. The recruitment took place through the aforementioned social networks: Instagram® and WhatsApp®. Sampling was done voluntarily. It was considered that the study population consisted of young people aged between 18 and 29 years, regardless of geographic location or educational link. And the choice of this age group was due to being a vulnerable public for STIs.[3] The sample included young people aged 18 years and over and under 29 who had access to the internet. As an exclusion criterion, it was established to have less than 70% frequency of participation in the course and not answer the post-intervention questionnaire.

Upon being recruited, all participants received, by the email provided in the previous stage, a file for agreement to the informed consent form, made available as a document in Google Forms®.

Subsequently, the young people were submitted to the pre-test. It was an evaluative instrument on knowledge, attitudes and practices (KAP) in health about STIs. The questionnaire of the Survey of Knowledge, Attitudes and Practices in the Brazilian Population, prepared by the Ministry of Health, was used.[8]Although there is no evidence of validity of the instrument, a pre-test was carried out with 100 people in order to ascertain the quality of the answers. [8] Considering the extent of the instrument, with 135 items, and the objectives of this study, only the questions of knowledge and practices were collected, containing the variables related to sociodemographic conditions; knowledge about transmission of HIV and other STIs; prevention and control of STIs; HIV testing; and sexual practices, leaving 45 items. The pre- and post-test questions had the option of answering "yes", "no" and "I don't know/I don't want to answer". Pre- and post-test data collection (third and fifth stage) took place from July to October 2020.

In the fourth stage, educational activities were implemented. The intervention was a fully online course, with six meetings made by Google Meet® synchronously and four other asynchronous meetings, making the video classes available through Google Drive®. Synchronous classes were also recorded and made available. The themes addressed were the same as those stipulated in the first stage. These classes lasted an average of 30 minutes and were shared through the participants' email. In addition, we sought to

create an opportune space for participants to ask questions, through the Google form. Then, the facilitators recorded and emailed videos answering the questions. The intervention had a workload of 30 hours.

Finally, in the fifth stage, the post-test was applied at the end of 30 days after the beginning of the course. The choice of this period was made after reading other studies that used KAP surveys on sexual health issues. The same instrument was used in the third stage, except for sociodemographic issues. It is emphasized that the initial sample comprised 190 participants who responded to the pre-test instrument, but there was a loss of 25 participants who did not respond to the post-test, even though researchers actively searched for the missing ones by telephone contact via WhatsApp. Thus, the final sample consisted of 165 young people.

Data were collected in Google Forms®, organized in Google Sheets® and analyzed in Jamovi® software. Measures of centrality and dispersion were employed. The change in knowledge and practice occurred based on the difference in the frequency of adequate responses. Mcnemar's test was used to evaluate the association between nominal variables. A significance level of 5% was considered.

This study ensured the ethical precepts that govern research with human beings and was approved by the Research Ethics Committee, according to opinion 3.701.529 and CAAE 19713019.5.0000.5576. All participants signed the Informed Consent Form.

RESULTS

The mean age of the participants was 24.6 years (SD: 6.78). Of the participants, 82% (n=132) were female, 54.3% (n=89) lived without a partner, 80.5% (n=132) studied and 19.5% (n=32) worked. Regarding nationality, 74.4% (n=126) were Brazilian and 23.6% (n=39) foreigners.

There was a statistically significant difference in the knowledge of the participants before and after the intervention regarding the treatment and vertical transmission of HIV. Table 1 shows the distribution of knowledge of the participants.

Table 1. Distribution of correct knowledge before and after the educational intervention. Redenção, Ceará, Brazil, 2020.

Statements	Before	After	p-value
I can be infected with Hepatitis B, C or D virus by sharing razors and/or waxing blades	122 (90.4)	126(93.6)	0.317
I can become infected with Hepatitis B, C or D virus by performing any surgery.	89(73.6)	95(78.5)	0.257
The risk of HIV transmission can be reduced if a person has sex only with a fixed, uninfected partner.	123(78.3)	132(84.1)	0.095
A healthy-looking person may be infected with HIV.	157(98.1)	158(98.8)	0.655
Using a condom is the best way to prevent HIV from being transmitted during sexual intercourse.	161(98.8)	160(98.2)	0.564
I have a fixed partner. I don't need to use a condom.	149(92.0)	156(96.3)	0.052
A person can become infected with HIV by sharing cutlery, glasses and/or meals.	130(84.4)	129(83.8)	0.841
A pregnant woman with HIV and receiving treatment decreases the risk of vertical transmission	142(91.6)	152 (98.1)	**0.004**
When taking HIV treatment there is a lower risk of transmission	102(68.9)	115(77.7)	**0.009**
HIV is a chronic disease that can be controlled.	125(82.8)	135(89.4)	**0.033**

Source: Prepared by the authors (2020).

Regarding sexual practices, the average age of the participants' first sexual intercourse was 17.3 years (SD:17.3). There was an increase in the frequencies of correct answers in the questions related to the practices, especially in the performance of the rapid test for HIV, which showed a statistically significant difference. Table 2 shows the distribution of correct answers of the items before and after the intervention.

Table 2. Distribution of sexual practices before and after educational intervention. Redenção, Ceará, Brazil, 2020.

Sexual practices	Before	After	p-value
Have you ever been tested for HIV in your life?	99(64.3)	104(67.5)	0.166
Have you been tested for HIV in the last 12 months?	49(31.0)	54 (34.2)	0.317
Have you ever been tested for HIV and the results came back on time?	75(48.7)	82(53.2)	**0.035**

Sexual practices	Before	After	p-value
Thinking about the last sexual intercourse, did you use a condom?	63(47.0)	69(51.5)	0.201
Do you and your sexual partner always use a condom?	38(28.8)	39(29.5)	0.782
Do you agree with the following statement: "The use of alcohol and/or drugs can cause people to have sex without using a condom"?	135(89.4)	136(90.1)	0.782

Source: Prepared by the authors (2020).

DISCUSSION

Knowledge about the risks of inappropriate practices during sexual intercourse is fundamental for individuals to experience sexuality in an appropriate and healthy way. Therefore, after applying the educational action, it was perceived a higher frequency of correct answers by the participants in most questions about knowledge. In only two items on HIV prevention and transmission there was a reduction of one hit.

Regarding the forms of transmission of some infections, such as Hepatitis B, C and D, there was an increase in correct answers after the intervention in the participants, when they stated that there is a possibility of transmission by fomites, such as razor blades and/or during depilation, from the materials used. Among the forms of transmission of Hepatitis B, C and D are unprotected sexual intercourse, sharps sharing, contaminated blood transfusion and vertical transmission.[8] Thus, it is noted that the participants were able to obtain theoretical support to avoid possible contamination by these sources of transmission, throughout their lives, being able to guarantee fewer exposures.

With regard to transmission through sexual contact with the uninfected fixed partner, they stated, after educational action, that there is a reduction in HIV transmission when compared to situations of multiple contacts and/or infected people. In one study, a relationship was observed between a lower adherence to stable (fixed) relationships by men - when compared to women - and a significant increase in HIV spread by young men, up to 30 years old.[9] Thus, it can be seen that the dissemination of information on risk factors for STIs, such as sexual practice with multiple partners, becomes an essential tool for less infections due to this practice.

When asked if there is a possibility or not of a person who looks good being infected with HIV, a small increase was seen in the number of participants who stated that "yes" after the intervention, being a worrying fact, as HIV contamination goes beyond physical appearance, race, color, ethnicity, education and religion, mainly covering the harmful and inappropriate behavior of the individual in society.[10] It is important to emphasize that the profile, standardized over the centuries, of people with HIV/AIDS should be disregarded by the population. Therefore, the scientific knowledge that any individual can be transmitter and/or be contaminated facilitates the process of reducing cases.

Regarding the knowledge about the appropriate treatment for a pregnant woman with HIV, in order to reduce the risk of vertical transmission, the participants demonstrated an improvement in their knowledge by stating that there is a reduction in transmission after the intervention. In this sense, it is worth mentioning that the educational level of the parents of the children presents itself as a social determinant of health, since higher levels of knowledge provide more adequate care.[11]

Therefore, the sharing of correct information about the forms of prevention for this condition enables, in the medium and long term, a decrease in high rates. But for this, it is important that there are greater investments in the management of the work process and continuing education of professionals who work in care, in order to provide continuous training on HIV management and clinical counseling, in order to reduce the rates of vertical transmission.[12]

The same applies to HIV treatment as a way to minimize the risk of transmission. It is observed that there was a significant increase in the number of students who showed that this condition is true. Correct use of preventive strategies such as condom use and HIV pre-exposure or post-exposure therapies are effective for breaking the transmission cycle.[13] Thus, the use of health education as a tool to resolve doubts regarding treatment and, consequently, disseminate knowledge to the entire population, indirectly facilitates adherence to treatment effectively by people living with this pathology.

When asked about the veracity of HIV having treatment for its control, a greater number of participants said yes, after completing the course. Around the 1990s, the introduction of treatment with antiretroviral therapy enabled patients living with HIV to increase their quality and life span.[14] In view of the above, the results obtained suggest an effective strategy to address the contents, enabling correct and

healthy practices within the sexuality aspect, ensuring the promotion of young people's health and the prevention of possible diseases.

With regard to sexual practices, there was an increase in the frequency of HIV diagnostic tests, especially in the performance of the rapid test, being statistically significant. In this sense, the importance of pre and post-test counseling is reinforced, as well as the training of the professionals involved, with a view to sharing knowledge in carrying out educational activities.[15] It is also noteworthy that educational actions for young people and adolescents aim not only to transmit knowledge, but should provide reflections on the subject, considering economic, political and cultural aspects.

After the intervention, there was a reduction in people who reported having sex in the last 12 months and in the last month. Due to the COVID-19 pandemic and related containment measures, studies show a decrease in sexual desire and satisfaction and the frequency of sexual relations, as well as a deterioration in relations with partners during the pandemic.[16-17] Among the motivations for this finding are related to greater family supervision or interference, less personal freedom in general and mental health problems and relationships with partners probably contribute to these changes in sexual behavior[16]. In addition, the large amount of psychological stress during this specific period, such as anxiety, fear, boredom and disappointment, possibly contribute to this change in sexual behavior.[17]

Although less significant, there was an increase in the proportion of people who used a condom at the last sexual intercourse, as well as at all times. One study pointed out that, in line with its contexts, young people used condoms the last time they had sex as a vulnerability management tactic. Less protected sex was reported among young people married or living with a partner. Condoms are used more frequently in occasional and homo affective sex among men, and, in the female public, the delay in the beginning of sexual relations has been shown to be a stimulating factor for safe sexual practice. The study also reinforced that for protected sex, it is important to consider access to free condoms for both sexes.[18]

Thus, it is clear the need to promote intersectoral actions that involve communication strategies and health education through appropriate methods, analyzing the technological innovations that contemporaneity requests when considering, in particular, the link with the preferences and probabilities shown by young people.[19]

It is noteworthy that there is an urgent need to discuss with managers the importance of implementing this resource to prevent STIs and promote sexual health. In addition, it is reflected on the use of online courses in health education in situations where face-to-face interventions are unfeasible, such as in periods of social isolation.

As limitations of the study, it is presented that the sampling did not consider the knowledge and practices linked to socioeconomic conditions, since the sampling took place voluntarily. In addition, the preparation of the course did not include a process of validation of the contents to be addressed. It is recommended to conduct randomized and controlled studies that evaluate the impact of online interventions with regard to technologies for the prevention of diseases in adolescents and young people.

This study contributes to health care by presenting a digital tool that can be used by professionals to assist in the promotion of sexual health in a playful and accessible way for the youth category. In addition, the proposed technology is a means to disseminate appropriate guidelines to the target audience, providing opportunities to promote sexual health remotely.

CONCLUSION

The online course was effective in promoting changes in the sexual life of young people, by increasing the frequency of adequate responses to their knowledge and practice after the intervention. It was observed a statistically significant change in knowledge about treatment, vertical transmission and HIV control and in practice about the performance of rapid HIV testing. Given this, the development and implementation of online educational technologies, such as the course proposed in the study, is a low-cost and wide-ranging strategy for young people to promote knowledge and appropriate practices in sexual health, in addition to providing empowerment.

CONTRIBUITIONS

Contributed to the conception or design of the study/research: Jardilino DS, Tavares TT, Maciel NS, Campos LR, Chaves AFL, Costa CC. Contributed to data collection: Jardilino DS, Tavares TT, Maciel NS, Campos LR, Chaves AFL, Costa CC. Contributed to the analysis and/or interpretation of data: Jardilino DS, Tavares TT, Maciel NS, Campos LR, Chaves AFL, Costa CC. Contributed to article writing or critical

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