ABSTRACT
Objective: to group and synthesize the studies that address the teaching of Incurable Sexually Transmitted Infections for undergraduate Nursing students in the world (1989-2020). Method: a scoping review according to the Joanna Briggs Institute. The search strategy was carried out in PubMed, CINAHL, Embase, Web of Science and LILACS. Two reviewers selected and extracted the data independently. Results: after searching and removing duplicates, 41 studies met the established criteria and were included. Content analysis resulted in three categories: Teaching Scenarios and Strategies; Teaching Focus; and Teaching Effectiveness. Final considerations: the educational actions were effective in increasing knowledge, reducing stigma and anxiety, and increasing sensitivity in promoting Nursing care. Teaching this theme is important in the profession’s work on epidemiological indices and in the training of Nursing students for prevention and promotion in health.

DESCRIPTORS: Sexually Transmitted Diseases; Nursing Education; Higher Education; Nursing Students; Infections.

HOW TO REFERENCE THIS ARTICLE:
INTRODUCTION

Sexually Transmitted Infections (STIs) have different etiologies and symptoms\(^1\). Transmission is through sexual contact with an infected person without using a condom, during pregnancy/delivery/breastfeeding, or through contact with mucous membranes or bodily secretions of infected individuals\(^2\).

The World Health Organization (WHO) points out that more than 1 million people acquire STIs daily in the world. STIs can have serious consequences and are among the 10 most frequent causes for seeking health services, in addition to having health, social and economic consequences\(^3\). When not properly treated, they exert a significant impact on health and can have serious consequences, such as cardiovascular and neurological diseases, infertility, miscarriages and stillbirths, among others\(^3\)\(^4\). They are commonly associated with issues such as stigma and domestic violence and negatively affect quality of life\(^4\).

Of the more than 30 bacteria, viruses and parasites, eight of these pathogens are associated with the highest incidence values of STIs. Four of them are curable: syphilis, gonorrhea, chlamydia and trichomoniasis; and four are incurable: hepatitis B, herpes simplex virus (HSV), HIV/AIDS and human papilloma virus (HPV). The focus of this study is directed to the Incurable STIs due to the high epidemiological rates\(^5\), and because, although there are treatments to reduce the aggravating symptoms, such STIs are incurable, which makes people use health resources throughout their lives.

Additionally, the importance of a qualified approach to these topics during health professionals’ undergraduate studies is highlighted, in particular from the Nursing area\(^6\). The university space is fundamental for scientific and technological development\(^7\), as well as for promoting a solid knowledge base for the students so that, among other aspects, they can include the social determinants of health in order to guarantee the quality of the educational process, guided by a curriculum plan consistent with the epidemiological reality. In this sense, the question is as follows: How has the teaching of Incurable Sexually Transmitted Infections been approached in Nursing Undergraduate Courses?

Therefore, the objective of the study is to group and synthesize the studies that address the teaching of Incurable Sexually Transmitted Infections for undergraduate Nursing students in the world (1989-2020).

METHOD

Study design

A scoping review conducted in accordance with the Joanna Briggs Institute (JBI). As recommended by the methodology, an \textit{a priori} protocol was prepared and published to guide this review\(^8\)\(^9\). Through rigorous and systematic procedures, scoping reviews aim at mapping the literature about a thematic area with the intention of providing a descriptive view of the reviewed studies\(^8\).

The research question was elaborated through the Population, Concept and Context (PCC) strategy for scoping reviews\(^8\). Therefore, \(P\) (Population) refers to undergraduate Nursing students; \(C\) (Concept) to the teaching of Incurable STIs; and \(C\) (Context) to the teaching scenario during undergraduate Nursing studies. Therefore, the guiding question was defined as follows: “How has the teaching of Incurable Sexually Transmitted Infections been approached in Nursing Undergraduate Courses?”.

The inclusion criteria were the following: studies aimed at teaching Incurable STIs...
(Hepatitis B, HSV, HIV or HPV) to undergraduate Nursing students; methodologies used in the teaching of the topic; studies available in full, free of charge, in Portuguese, English and Spanish; and qualitative and quantitative studies, mixed methods, guidelines, theses and dissertations. The exclusion criteria were as follows: studies aimed at educating Health or Nursing professionals; Nursing students’ knowledge and perceptions regarding STIs; technical level and graduate students in Nursing; studies whose focus was generalist on the teaching of STIs; and studies on the curriculum, course and/or academic discipline, which only contained a description and not the implementation of any educational action.

The time frame chosen for this review is associated with the emergence of the global HIV/AIDS epidemic with the first cases recorded in 1981 and studies published until December 2020 were included. It should be noted that, although the initial search period was 1981, it was only from 1989 that studies adhering to this scoping review were found.

Data collection and organization

A three-step-search strategy was developed by a librarian with experience in the health sciences. To determine the correct terms, a search was carried out in DeCS, MeSH and Embase’s Emtree tool where, in addition to the exact descriptors, alternative terms and synonyms are presented. The exact descriptors used were “Nursing Education”, “Sexually Transmitted Diseases”, “Nursing” and “Nursing Students”. Subsequently, alternative terms were added and, in the “Sexually Transmitted Diseases” descriptor, the exact and alternative descriptors of each Incurable STI were also included with the AND and OR Boolean operators.

The search strategies were applied on February 23rd, 2021, in PubMed, Web of Science, Embase, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS) (Chart 1).

<p>| Chart 1 - Data search strategy. Florianópolis, SC, Brazil, 2021 |</p>
<table>
<thead>
<tr>
<th>Sources</th>
<th>Search strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PubMed, Web of Science, Embase and CINAHL</td>
<td>(“Education, Nursing”[Mesh] OR “Nursing Education” OR “Nursing Educations” OR “Nursing Faculty” OR “Nursing School” OR “Students, Nursing”[Mesh] OR “Nursing Students” OR “Nursing Student” OR “Nurse student” OR “Nurse students” OR “Pupil Nurses” OR “Pupil Nurse”) AND (“Sexually Transmitted Diseases”[Mesh] OR “Sexually Transmitted Disease” OR “STIs” OR “STI” OR “Venereal Diseases” OR “Venereal Disease” OR “Sexually Transmitted Infections” OR “Sexually Transmitted Infection” OR “STDs” OR “Papillomaviridae”[Mesh] OR “Papillomaviridae” OR “Human Papilloma Virus” OR “Human Papilloma Viruses” OR “Human Papillomavirus Viruses” OR “Human Papillomavirus Virus” OR “HPV” OR “HIV”[Mesh] OR “HIV” OR “Human Immunodeficiency Virus” OR “Human Immunodeficiency Viruses” OR “Acquired Immune Deficiency Syndrome Virus” OR “Acquired Immunodeficiency Syndrome Virus” OR “Human T Cell Lymphotropic Virus Type III” OR “Human T-Cell Lymphotropic Virus Type III” OR “Human T-Cell Leukemia Virus Type III” OR “Human T Cell Leukemia Virus Type III” OR “Lymphadenopathy-Associated Virus” OR “Lymphadenopathy Associated Virus” OR “Lymphadenopathy-Associated Viruses” OR “Human T Lymphotropic Virus Type III” OR “Human T-Lymphotropic Virus Type III” OR “HTLV-III” OR “LAV-HTLV-III” OR “Acquired Immunodeficiency Syndrome”[Mesh] OR “Acquired Immunodeficiency Syndrome” OR “Acquired Immunodeficiency Syndromes” OR “AIDS” OR “Acquired Immune Deficiency Syndrome” OR “Acquired Immuno-Deficiency Syndrome” OR “Acquired Immuno-Deficiency Syndromes” OR “Acquired Immuno Deficiency Syndrome” OR “Herpesvirus”</td>
</tr>
</tbody>
</table>
| LILACS | ((“Nursing Education” OR “Nursing Educations” OR “Nursing Faculty” OR “Nursing School” OR “Nursing Students” OR “Nursing Student” OR “Nurse student” OR “Pupil Nurses” OR “Pupil Nurse” OR “Educação em Enfermagem” OR “Curso de Enfermagem” OR “Cursos de Enfermagem” OR “Ensino de Enfermagem” OR “Estudantes de Enfermagem” OR “Estudante de Enfermagem” OR “Alunos de Enfermagem” OR “Aluno de Enfermória”) AND ("Sexually Transmitted Diseases" OR "Sexually Transmitted Diseases" OR "Sexually Transmitted Disease" OR "STIs" OR "STI" OR "Venereal Diseases" OR "Venereal Disease" OR "Sexually Transmitted Infections" OR "Sexually Transmitted Infection" OR "STDs" OR "Papillomaviridae" OR "Human Papilloma Virus" OR "Human Papilloma Viruses" OR "Human Papillomavirus Viruses" OR "Human Papillomavirus Virus" OR "HPV" OR "HIV" OR "Human Immunodeficiency Virus" OR "Human Immunodeficiency Viruses" OR "Acquired Immune Deficiency Syndrome" OR "Acquired Immune Deficiency Syndrome Virus" OR "Human T Cell Lymphotropic Virus Type III" OR "Human T-Cell Lymphotropic Virus Type III" OR "Human T-Cell Leukemia Virus Type III" OR "Human T Cell Leukemia Virus Type II" OR "Lymphadenopathy-Associated Virus" OR "Lymphadenopathy Associated Virus" OR "Lymphadenopathy-Associated Viruses" OR "Human T Lymphotropic Virus Type III" OR "Human T Lymphotropic Virus Type III" OR "HTLV-III" OR "LAV-HTLV-III" OR "Acquired Immunodeficiency Syndrome" OR "Acquired Immunodeficiency Syndromes" OR "AIDS" OR "Acquired Immune Deficiency Syndrome" OR "Acquired Immuno-Deficiency Syndrome" OR "Acquired Immuno-Deficiency Syndromes" OR "Acquired Immuno Deficiency Syndrome" OR "Acquired Immuno Deficiency Syndromes" OR "Human Herpesvirus 1“ OR “Human Herpes Virus 1“ OR “Herpes Simplex Virus Type 1“ OR “Herpes Simplex Virus Type 1” OR “HHV-1” OR “HSV-1” OR “HSV1” OR “HSV 1” OR “Hepatitis B”[Mesh] OR “Hepatitis B” OR “Type B Hepatitis” OR “Hepatitis Type B”) )

The references found were imported into the *Endnote X9®* software, where duplicates were removed and subsequently imported into the *Covidence®* reference management.
software. The titles and abstracts were first evaluated by two independent authors (S.P. and M.S.M.) and, in the 240 studies with divergent decisions, a third reviewer (A.R.S.) resolved the conflicts. The studies included in the first stage were read in full and included in and/or excluded from the review according to adherence to the study. There were 27 studies with divergence and the technique described above was followed.

Data analysis

For extraction of the results, an instrument was developed in order to identify the main characteristics of the studies found, such as the name of the author(s); year of publication; country of origin; objective/purpose; study population and sample size; methodology/method; type of intervention; results; and main discoveries. The data extracted were accessed using content analysis to find consensus across the records, as well as to summarize and synthesize results\textsuperscript{11}. The analysis took into account diverse information regarding the scenario where the educational activity took place, instruments and resources used, namely: STIs addressed, detailing how the activity took place, limitations encountered and results obtained. Thus, it was possible to find similarities in the development of these practices and list three categories: Teaching Scenarios and Strategies; Teaching Focus; and Teaching Effectiveness.

Ethical aspects

For being a literature review, this study was not submitted to any Ethics Committee for Research involving Human Beings; however, Resolution No. 466/12 of the National Health Council was respected, with regard to analysis and sharing of the results.

RESULTS

A total of 3,687 results were found in the initial search, 2,796 after removing duplicates, with inclusion of 41 studies in this review. Specific details of the study selection stages are shown in the \textit{Preferred Reporting Items for Systematic Reviews and Meta-analyses Extension for Scoping Reviews} (PRISMA-ScR) flowchart\textsuperscript{(12)} (Figure 1).
With regard to the 295 studies excluded, it is worth noting the difficulty accessing articles in full and their access availability due to the initial time frame dating back to the 1980s. Of these, 176 studies were not available despite going through a screening process by a librarian. The remaining 119 studies were excluded for not meeting the inclusion criteria. The full description of the articles included can be found in Chart 2.

Chart 2 - Characterization of the sources that make up the study sample. Florianópolis, SC, Brazil, 2021

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of source</th>
<th>Type of study</th>
<th>Date published</th>
<th>STIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>Articles</td>
<td>Quantitative</td>
<td>1989 - 1999</td>
<td>HIV/AIDS</td>
</tr>
<tr>
<td></td>
<td>n=35 (85.37%)</td>
<td>n=31 (75.61%)</td>
<td></td>
<td>n=35 (85.37%)</td>
</tr>
<tr>
<td></td>
<td>PhD theses</td>
<td>Qualitative</td>
<td>2000 - 2009</td>
<td>HPV</td>
</tr>
<tr>
<td>Brazil</td>
<td>n=5 (12.20%)</td>
<td>n=9 (21.95%)</td>
<td></td>
<td>n=3 (7.32%)</td>
</tr>
<tr>
<td></td>
<td>(13,16,28,30,49)</td>
<td>(13,16,28,30,49)</td>
<td></td>
<td>(36,43,46)</td>
</tr>
<tr>
<td></td>
<td>n=3 (7.32%)</td>
<td>n=9 (21.95%)</td>
<td></td>
<td>n=3 (7.32%)</td>
</tr>
<tr>
<td>Country</td>
<td>Specific STI</td>
<td>No. of studies (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------</td>
<td>--------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>MSc dissertation</td>
<td>3 (7.32%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quantitative</td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2010 - 2020</td>
<td>20 (48.78%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hepatitis B</td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td>2 (4.88%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USA/India</td>
<td></td>
<td>2 (4.88%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
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<tr>
<td>Saudi Arabia</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td></td>
<td>1 (2.44%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The authors (2021).

As a way to evaluate the educational actions/interventions, 32 studies (78.05%) used the pre- and post-test with instruments available in the literature and prepared by the authors (Chart 3).

**Chart 3 - Instruments used to evaluate the educational actions. Florianópolis, SC, Brazil, 2021**

<table>
<thead>
<tr>
<th>Instrument</th>
<th>No. of studies in which it was used</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS Attitude Scale (AAS)</td>
<td>4</td>
</tr>
<tr>
<td>AIDS Education Information Questionnaire</td>
<td>1</td>
</tr>
<tr>
<td>AIDS Health Care Belief Scale</td>
<td>1</td>
</tr>
<tr>
<td>AIDS Information Survey</td>
<td>1</td>
</tr>
<tr>
<td>AIDS Knowledge &amp; Attitude Questionnaire (AKAQ)</td>
<td>1</td>
</tr>
<tr>
<td>AIDS Knowledge</td>
<td>1</td>
</tr>
<tr>
<td>AIDS Knowledge Questionnaire</td>
<td>1</td>
</tr>
<tr>
<td>AIDS Knowledge Scale (AKS)</td>
<td>2</td>
</tr>
<tr>
<td>AIDS Knowledge, Attitudes, and Concerns Instrument</td>
<td>1</td>
</tr>
<tr>
<td>Attitude Survey Instrument</td>
<td>1</td>
</tr>
</tbody>
</table>
The findings indicate various methodologies and educational actions/interventions carried out for undergraduate Nursing students at the global level. Through content analysis, it was possible to define three categories: Teaching Scenarios and Strategies; Teaching Focus; and Teaching Effectiveness.

**Teaching Scenarios and Strategies**

In the 41 studies it was possible to identify a description of the scenarios and strategies used in the development of educational actions/interventions for undergraduate Nursing students. Among these, the approaches were the following: internship environments (n=2), extension activities (n=2), strategies to promote students teaching other students (n=4), program of multidisciplinary activities for female students in the health area (n=1), lectures for carrying out educational activities (n=09), comparative teaching methods (n=9), program of multidisciplinary activities for female students in the health area (n=1), lectures for carrying out educational activities (n=09), comparative teaching methods (n=9), training scenarios aimed at teaching HIV/AIDS (n=7) and HPV (n=1), event focused on HIV/AIDS as an optional activity (n=1), and educational actions in the form of workshops (n=5).
The use of technologies (e.g., computers with scenarios) was also pointed out to assist in the educational actions and role-playing to train Nursing students. Additionally, nine studies included people with HIV+ to participate in their educational activities, integrating students into this population. Contact with HIV+ people created opportunities for the students to face their myths, fears and prejudices, as well as to improve their understanding and awareness about the discrimination suffered by people with HIV.

Additionally, some studies included other health professionals with the intention of increasing the knowledge range and introducing multidisciplinary work to people with HIV, participation of an expert nurse in the area, an expert teacher in the area, and a specialist in infectious diseases. In 20 studies it was possible to identify the description of resources that have been used to assist in the implementation of educational actions aimed at Nursing students (Figure 2).

Teaching Focus

In 33 studies it is possible to identify the focus of their educational actions/interventions. Various aspects stand out in the studies related to HIV/AIDS, namely: the history of AIDS (n=3), statistics and epidemiological data (n=9), questions associated with treatments (n=11), basic precautions (n=5);
knowledge about prevention \((n=6)\)^{16,19,25,30,34,41}; transmission means \((n=8)\)^{16,19,30,41,45,49,51}; clinical manifestations and signs and symptoms \((n=7)\)^{16,19,41,44-45,47}; risk factors \((n=3)\)^{16,18,44}; pathophysiology \((n=3)\)^{28,45,49}; HIV-related diseases \((n=2)\)^{27,47}; and instructions regarding exams and tests \((n=3)\)^{37,45,51}.

The studies addressed ethical issues related to the infection and to the health care for this population\(^{14,24,29,35,45,47}\), the psychosocial impact exerted by the infection\(^{27,29,51}\), Nursing care for people with HIV/AIDS\(^{15,18,27-28,35,44,49}\), health needs\(^{14,25}\), pre-delivery/intrapartum/postpartum and newborn care\(^{35}\), current problems and challenges in caring for clients with HIV/AIDS\(^{22}\), ART use in adults and children and palliative care for PLHIV\(^{47}\); and pre- and post-exposure prophylaxis, sexual health education, violence and transgender populations\(^{51}\).

Stigma appeared as the learning focus associated with health care in three studies. The approach of increasing knowledge to decrease fears about the possibility of HIV transmission during casual contacts, information about HIV epidemiology, transmission misconceptions and ways to prevent the disease, including (PPE) use in the hospital, was found in one study\(^{39}\); and another study resorted to an intervention to reduce HIV stigma for Nursing students and ward staff via tablets\(^{52}\), social stigmas and work relationships with individuals with HIV\(^{29}\).

Two studies addressed more than one STI, in the form of an educational theatrical piece in the style of a comedy written in partnership with teachers, students from the Group to Combat Drugs and AIDS, and students from the theater group\(^{38,50}\). In turn, three studies focused on interventions for HPV, with activities aimed at teaching HPV, cervical cancer risk factors, prevention and signs and symptoms\(^{36,43,46}\). As for the approach to knowledge and awareness about various aspects of Hepatitis B and C, one study addressed the etiology, transmission means, diagnosis, prevention, treatment and information sources\(^{42}\).

The teaching focus for Incurable STIs covers aspects related to epidemiology, transmission and treatment, among others. It manages to go further and addresses important issues such as stigma, students’ anxiety and management of people with HIV. It is noted that the first studies covering the end of the 1980s and the 1990s focused on introducing the theme of AIDS in order to introduce the students to what the epidemic was about.

There are few studies that address the teaching of HPV or hepatitis B and no study has addressed HSV, evidencing that teaching has been mostly associated with HIV/AIDS in the last 40 years.

### Teaching Effectiveness

The studies used different teaching methodologies to promote knowledge about the theme. In 40 studies it is possible to identify a description of the outcome enabled by the action/intervention in promoting the teaching of the theme for Nursing students.

Studies using internships showed positive results in improving the students’ concerns, fears and discomfort\(^{15,51}\). The use of extension projects eased the students’ understanding of autonomy in the health-disease process and collective health\(^7\), as well as knowledge about STIs and the need to maintain training and expand discussions\(^{50}\).

Didactic teaching and experiential learning with HIV+ people and role-playing brought about an increase in knowledge, empathy or attitudes towards HIV\(^{24,33}\). An educational intervention on stigma and HIV transmission showed an increase in the students’ general mean knowledge level\(^{39}\). In a participatory learning activity followed by the lecture method, there was also an increase in the knowledge level\(^{41}\).

Studies aimed at controlling the anxiety level in the students showed that using lectures on HIV/AIDS\(^{26}\) and participation in anxiety awareness exercises in an experimental
format are positive for reducing anxiety and contributing to learning.

The knowledge and attitudes towards AIDS through lectures indicate that there were significant differences in relation to the homophobia degree and knowledge about AIDS. Also regarding HIV knowledge, a number of studies pointed to an increase in the number of correct answers and greater knowledge gain in relation to HIV prevention, treatment and general knowledge. As for the care of patients with HIV, a study points out that the educational intervention carried out by specialist professionals in the area and PLHIV was positive in terms of care provision.

There are also positive results regarding an optional course on HIV/AIDS where conversations with PLHIV contributed a remarkable experience for the students. The students indicated greater knowledge and impact of the experience in their lives participation in a specific event on the theme of AIDS means that the students developed empathy with individuals and families; and the course resulted in the students feeling comfortable providing basic Nursing care to people without knowing whether or not they were HIV+. There are also positive evaluations about the peer-multiplier format, with important changes in the stigma level scores for the students who had no experience with people with HIV/AIDS. After the intervention, in a workshop format, a considerable increase in the perception of stigma is evidenced. The study used body mapping, a tool to ease the students’ understanding of the experiences of living with HIV and a strategy to educate PLHIV about their own health, and brought about students’ reflections on the unawareness of their stigmas and relevant information regarding HIV.

There is also the use of comparative methods to assess which strategy exerted the greatest influence on the students’ knowledge level. Lectures on AIDS and the use of structured controversy indicate that the students who participated in the structured controversy were more positive about the intention to provide care to HIV+ patients. However, when the lecture and discussion is compared to video and discussion, the former was more effective in knowledge acquisition.

Additionally, in HIV teaching, when lecture and discussion is compared to lecture and experiential learning method, the former is more effective; lecture (basic educational content on HIV) and lecture plus experimental method that included role-playing presented a weak, although statistically significant, relationship between the perception and willingness to provide care to patients with HIV.

In the dialoged lecture, the Intervention Group had access to a hypermedia about STIs, and it is stated that the students had limited knowledge about them and that few mentioned experience in the course or previous internship in an STI assistance service. Expository teaching and the concept mapping method increased the scores of both groups; however, the scores using the conceptual mapping technique for attitudes towards patients with HIV/AIDS were higher than those obtained with the lecture method.

As for the use of technologies in teaching, there were positive results regarding the attitudes related to the care of HIV+ people, in relation to Informatics in Nursing. Students who participated in the class using a computer program had higher scores in less time than those who participated in the lecture and discussion; just as the use of an educational computer program in two formats pointed to concept mapping as a tool with positive results on the theme of AIDS. Another study that used educational sessions via tablets shows an increase in knowledge, a decrease in misunderstandings and less concern with acquiring HIV in the workplace.

Regarding the use of clinical simulation, in a training program for Chilean students using actors on the theme of HIV treatment, improvements were shown in terms of knowledge, increased risk perception and decreased stigma and discrimination. A research study with Nursing students who participated in simulation through role-playing and music resulted
in significant improvements in knowledge about AIDS; however, in the attitudes related to AIDS, there was an improvement only in the Intervention Group\textsuperscript{23}.

As for the educational actions aimed at HPV, in an educational intervention in the form of an educational program about HPV and cervical cancer, an increase in the knowledge level after the intervention was pointed out\textsuperscript{36}. A research study conducted with Nursing students as peer-multipliers indicated a statistically significant increase in knowledge after the intervention\textsuperscript{38}. A program of activities carried out with health courses brought about positive results regarding the educational intervention focused on HPV; and the students were able to identify effective preventive measures for cervical cancer after the campaign\textsuperscript{46}.

General knowledge about Hepatitis B and C improved after an intervention in a lecture, more specifically in the following aspects: etiology and transmission mean; age group commonly affected; and blood, sexual fluids and needle prick as transmission routes\textsuperscript{42}.

These results show that most of the studies are effective in their educational interventions, contributing significant improvements in terms of knowledge, attitudes, perception, anxiety and stigma, among other factors.

Despite the various promising results regarding the educational interventions, two studies show that their interventions did not obtain positive results. With regard to comfort in providing care to patients with HIV/AIDS, there was no difference between the pre- and post-test scores, concluding that the intervention in the workshop format did not affect the students’ general comfort degree to provide care\textsuperscript{18}. Another study showed that using high-fidelity simulation (HFS) as a teaching strategy for knowledge about HIV did not present statistical significance\textsuperscript{49}.

**DISCUSSION**

Teaching Incurable STIs requires the teachers’ pedagogical competence to articulate different types of knowledge and motivate students to assume (co)responsibility for the learning process. To choose the best teaching methods, it is important to consider several aspects, such as educational objectives, teachers’ experience and types of students, among others\textsuperscript{53}.

In the studies found, it is possible to identify different ways of promoting teaching for Nursing students, with the following among them: lectures, theoretical-practical fields, extension projects, events (training, programs, workshop), and use of technologies (simulation, tablet, computer programs), among others. Among the strategies adopted in the teaching-learning process, some teachers still prioritize methodological procedures centered on the traditional expository strategy, with the use of audiovisual resources such as a projector and videos\textsuperscript{54}.

Although there is a guideline for the implementation of active methodologies, it is still possible to observe lack of knowledge, resistance and difficulties in the use of such methodologies in the teaching practice in health\textsuperscript{54}. Breaking away from traditional teaching requires skills and competencies, as well as a desire to innovate. Professors need to learn new methodologies that assist in the development of teaching capable of transforming Nursing practices. The use of active methodologies stimulates and develops the students’ critical capacity and, as health technology advances, the expectations of new graduated nurses also increase\textsuperscript{53,55}.

Nursing students need stimuli to develop clinical reasoning and prioritization and respond to the patients’ changing needs\textsuperscript{55}. However, despite being considered traditional
teaching, lectures related to educational interventions in the face of incurable STIs also present positive results in terms of their effectiveness in building Nursing students’ knowledge. In comparative studies, for example, lectures appear as a more effective methodology than the intervention methodology\textsuperscript{28,30}.

It is also important to highlight the use of technologies for the development of educational interventions. Ease of access to information coming from the Internet and its immense availability of digital resources ends up configuring a new profile of students, the digital natives, with the need for quick answers to questions and the expectation that technologies will be incorporated into the teaching environment\textsuperscript{56}.

Faced with this reality, the use of simulated, and virtual realities with increasingly complex manikins arises, with the objective of preparing future Nursing professionals, as well as providing safety before effectively initiating the practices with humans. Using these technological resources allows recognizing possible errors in the procedures, which can be corrected before being applying them to a patient. These strategies enhance the students’ critical thinking\textsuperscript{57}. These experiences become opportune to ease understanding and self-awareness of the limitations\textsuperscript{51}.

With regard to the reduction of new HIV/AIDS cases, access to health care and reduction of disparities and inequalities in health related to HIV, nurses and Nursing students can and should play an important role in achieving these objectives. A number of research studies point out that Nursing students’ attitudes, fears and negative perceptions are associated with lack of knowledge, and education about AIDS, for example, can develop positive attitudes in care provision\textsuperscript{58-60}. To this end, it becomes necessary for Nursing educators to equip their students with knowledge and understanding about the topic, as well as that assist in the development of clinical skills during undergraduate studies\textsuperscript{48}. On the other hand, they also have a professional duty to develop strategies that reduce negative attitudes and disseminate preventive education to reduce the individual and social risk of society in general. Appropriate education can reduce fear of contagion, discrimination and stigma and promote positive attitudes towards the care to be provided to this population\textsuperscript{60-61}.

There are some limitations related to this scoping review that should be mentioned. The fact that it was a study with a wide time scope rendered access to the full content of studies published in the 1980s and 1990s more difficult, being discarded as potential results. The scoping review focus is to provide breadth rather than depth of evidence on some particular area or topic; therefore, scoping reviews are inherently limited. In addition to that, a scoping review depends on the quality and availability of the diverse information reported in the studies included, which can vary considerably across studies and affect reliability of the results. The study selection process and the synthesis of the results depend on the reviewers’ subjective interpretation, which can introduce bias and limit validity of the results. Finally, scoping reviews do not include a critical assessment of the methodological quality of the studies included, which may affect reliability of the conclusions and practical implications.

It is hoped that these findings help visualize the world panorama of how the teaching of the theme has been introduced to undergraduate Nursing students and influence the conduction of future studies. That brings about reflections on the need for teaching HPV, Hepatitis B and HSV, which appeared in evidently smaller numbers when compared to teaching HIV/AIDS.

**CONCLUSION**

The findings meet the objective of this research and evidence that Incurable STIs are in fact being taught. Undergraduate Nursing students are being introduced to the topic
of HIV/AIDS, in the vast majority, and occasionally to HPV and Hepatitis B. As for HSV, no study was evidenced in this review. In this way, management and concern with HIV/AIDS continues to be a protagonist in teaching the theme of incurable STIs.

Varied resources and strategies were found in the educational activities, which shows the advancement of methodologies and inputs to qualify teaching. As for the topics that have been addressed in the educational activities targeted at incurable STIs, different approaches are identified, but with focuses much more centered on the care clinic than on the care relationships between Nursing professionals and people with incurable STIs. It is worth noting the studies that focus on the importance of the profession with regard to prevention and promotion in health and in the students’ training as a whole.

As for the effectiveness of the interventions, all of them show important results in the development of Nursing students’ knowledge, attitudes, reduction of stigma and care provision to people with HIV/AIDS. Some studies place Nursing students in the role of peer-multipliers, that is, more committed to this theme and, from their undergraduate studies, to improving their role in health promotion in the face of STIs.

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