Published in final edited form as:
Int Nurs Rev. 2014 March ; 61(1): 55–63. doi:10.1111/inr.12080.

The development, feasibility and acceptability of an Internet-based STI–HIV prevention intervention for young Chilean women

N. Villegas, PhD, MSN, RN[1], **D. Santisteban, PhD**[1], **R. Cianelli, PhD, MPH, RN, FAAN**[1], **L. Ferrer, PhD, MSN, RN**[2], **T. Ambrosia, PhD, MSN, FNP-BC, FAAC**[3], **N. Peragallo, DrPH, RN, FAAN**[4], and **L. Lara, MSN, BSN**[5]

[1]Faculty, School of Nursing and Health Studies, University of Miami, Coral Gables, FL, USA

[2]Faculty and Director of Graduate Studies, Escuela de Enfermería, Pontificia Universidad Católica de Chile

[3]Associate Dean of the Master's Program and Faculty, School of Nursing and Health Studies, University of Miami, Coral Gables, FL, USA

[4]Dean and Faculty, School of Nursing and Health Studies, University of Miami, Coral Gables, FL, USA

[5]Faculty, Escuela de Enfermería, Universidad Del Desarrollo, Santiago, Chile

Abstract

Background—Young Chilean women between 18 and 24 years of age are at high risk of contracting sexually transmitted infection (STI) and human immunodeficiency virus (HIV). The literature shows a shortage of STI–HIV prevention interventions focused on this specific high-risk population and a unique set of barriers to receiving prevention messages. Internet-based interventions are promising for delivering STI–HIV prevention interventions and avoiding barriers to services.

Aims—The study aimed to develop a culturally informed Internet-based STI–HIV prevention intervention for Chilean women between 18 and 24 years of age, to investigate its feasibility and acceptability, and to compile recommendations on what would make the intervention more acceptable and feasible for these women.

Methods—The development of the Internet intervention was facilitated by a process that featured consultation with content and technology experts. A pre-post test design was used to test

Correspondence address: Dr Natalia Villegas, School of Nursing and Health Studies, University of Miami, 5030 Brunson Avenue, Miami, FL 33146, USA; Tel: 305-2849069; Fax: 305-2844249; nvillegasr@miami.edu.

Conflict of interest

The authors report no financial interests or potential conflicts of interest with grantors or other entities whose products or services are related to topics covered in this manuscript that could be construed as a conflict of interest.

Author contributions

NV: Study conception/design, data collection/analysis and drafting of manuscript. DS, RC and NP: Study conception/ design, drafting of manuscript, critical revisions for important intellectual content and supervision. LF and TA: Study conception/design, critical revisions for important intellectual content and supervision. LL: Data collection and critical revisions for important intellectual content.

the acceptability and feasibility of the intervention with 40 young Chilean women between 18 and 24 years of age.

Results—The intervention website consisted of four modules of content and activities that support learning. The intervention was feasible and acceptable for young Chilean women between 18 and 24 years of age.

Discussion and conclusion—This study demonstrated the value of engaging multiple expert panels to develop culturally informed and technology-based interventions. The results of this study support the feasibility and acceptability of conducting an Internet-based intervention with multiple sessions, yielding high participation rates in a population in which there are barriers to discussion of STI–HIV prevention and sex-related content.

Implications for nursing and health policy—The outcomes have implications for nursing education and clinical practice and they can be used for the legal and judicial systems to promote or reinforce policies that encourage STI–HIV prevention strategies among women.

Keywords

Developing Countries; Hispanic; HIV/AIDS; Infectious Diseases; Information Technology; Latina; Women's Studies

Background

Sexually transmitted infections (STIs), including human immunodeficiency virus (HIV), are a worldwide health problem affecting the health of young adults and especially women (World Health Organization 2007), and negatively impacting reproductive and maternal health (Joint United Nations Programme on HIV/AIDS 2013; World Health Organization 2013). In Chile, women represent approximately 60% of the STI cases in the country (Dides et al. 2009; Montero et al. 2008), have a faster increase of HIV rates compared with men and STI–HIV appears to be concentrated among young people (Chilean Ministry of Health 2012; Montero et al. 2008). The infection trends in women may be attributed to the fact that between 1987 and 1991, the ratio of men to women living with HIV was 6.6:1.0 and recently the ratio dropped to 4.4:1.0 (Chilean Ministry of Health 2012). Young Chilean women between 18 and 24 years old are a subgroup at particularly high risk of acquiring STI–HIV because of the high prevalence of syphilis, gonorrhoea, chlamydia and papillomavirus, and because of the high percentage (45%) of medical visits that are related to a STI (Peredo 2007; Santander et al. 2009).

There are many interrelated risk factors for STI–HIV in young Chilean women between 18 and 24 years of age and that are barriers to prevention programmes. First, there are behavioural and attitudinal factors such as unplanned sexual intercourse and casual sex, multiple partners, and a decrease in the age of sexual initiation. Second is the frequent use of drugs and alcohol. Third are cultural factors such as marianismo, machismo, familism and the reluctance to discuss sexual issues and safer sex with partners and family. Fourth are psychological factors such as feelings of invulnerability. Fifth are barriers to accessing health care and formal sex education in schools and universities. Finally, stigma contributes to fear of discrimination and reluctance to seek medical attention (Cianelli et al. 2008, 2012;

Dides et al. 2009; Ferrer et al. 2007; Gonzalez et al. 2007; Latin American Center on Sexuality and Human Rights 2010; Instituto Nacional de la Juventud 2013).

Internet interventions in the prevention of STI and HIV

Prevention efforts among Chilean woman have been scarce and have typically failed to address barriers to service utilization such as inefficient access to early diagnosis and treatment, lack of testing confidentially and stigmatization of HIV-positive women (Cianelli et al. 2012). Technology-supported interventions that can help prevent STI and avoid common barriers to services are promising (Kiene & Barta 2006; McKleroy et al. 2006; Ritterband et al. 2009; Roberto et al. 2007).

STI and HIV Internet interventions have the potential to overcome barriers to face-to-face interventions and can be designed to address the culture-related factors outlined earlier. Internet interventions can provide easy access to culturally relevant and standardized information, reduce transportation and time burdens, and reduce the fear of embarrassment (Kiene & Barta 2006; Ritterband et al. 2009; Roberto et al. 2007). Specifically, Internet-based interventions have shown favourable behaviour change outcomes and have demonstrated success in drawing interest and achieving retention of young adults (Bull et al. 2007, 2009; Noar et al. 2009). Of course there are also challenges in the use of Internet interventions such as lack of time and interest leading to less than full compliance with the delivery of these interventions (Bull et al. 2009).

Chile is an excellent platform for innovative prevention studies using the Internet given the country's well-developed Internet and broadband connections (Internet World Stats 2013) and its severe shortage of quality STI–HIV prevention interventions (Cianelli et al. 2012). Few STI prevention interventions that include HIV prevention in Chile target the unique cultural characteristics and specific risk factors for this group of women (Cianelli et al. 2012; Vigil et al. 2005). Based on the need for a culturally informed STI–HIV prevention intervention for young Chilean women and the promise of technology for addressing barriers to services, the aims of this study were (a) to develop a culturally informed Internet-based STI–HIV prevention intervention (I-STIPI) for Chilean women between 18 and 24 years of age, (b) to investigate the feasibility and acceptability of the new intervention, and (c) to compile recommendations on what would make the intervention more acceptable and feasible to this population.

Method

Design

The data reported in this article were derived from two distinct stages. The first stage was the development of the I-STIPI based on the systematic utilization of expert panels, a method for developing and adapting interventions (Aho et al. 2011; Blackwood 2006; Rizvi et al. 2011). These panels provided their expertise on the development of content, technical features and the creation of the website. The second stage investigated feasibility and acceptability as well as recommendations for future Internet-based interventions from 40 young Chilean women who received the newly developed intervention.

The I-STIPI has as its foundation the Mano a Mano-Mujer intervention, which is a face-to-face group intervention that showed its effectiveness with Chilean women (Cianelli et al. 2012) and SEPA (Salud/Health, Educación/Education, Prevención/Prevention and Autocuidado/Self-Care) intervention, an HIV prevention intervention for Hispanic women (Peragallo et al. 2005). Neither intervention has been used in an Internet-based format.

In addition, the information-motivation-behavioural skills conceptual model with a focus on behavioural change (Fisher & Fisher 1992) guided the development of the I-STIPI. These authors described the three components as determinants of STI–HIV preventive behaviour: (a) information, related with knowledge concerning the threat of STI–HIV and how to prevent them; (b) motivation, which reflects both personal motivation (attitudes and intentions towards performing preventive behaviour) and social motivation (social norms regarding preventive behaviours); and (c) behavioural skills, which refers to objective competencies for STI–HIV prevention.

Development of the intervention

The development of the I-STIPI included bringing together two panels of experts that could guide the development activity along three important dimensions: (a) development of content of the I-STIPI, (b) development of the technical features of the I-STIPI and (c) creation of the I-STIPI website. The panels included experts from multiple parts of the United States and experts working and living in Chile.

The content expert panel required experts ($n = 4$) who were familiar with Mano a Mano-Mujer and expertise in working with young adults. These experts worked to expand the Mano a Mano-Mujer content/activities to STI and refined the intervention's content/activities to the context of young Chilean women.

The technical features and website development expert panel ($n = 3$) consisted of experts in technology and distance learning who participated in the development of the technical features and creation of the website, improving feasibility of the Internet intervention and developing innovative and useful online features. Finally, experts in technology helped to guide the development of the website and provided technical assistance on the technological features.

Each content expert who was familiar with Mano a Mano-Mujer separately recommended which content/activities needed to be maintained, deleted or modified and then met as a group to discuss their feedback. After this meeting, the first draft of the I-STIPI that incorporated the expert's feedback was created. Later, three 1-h meetings with the content experts were conducted to create the final structure of the I-STIPI. In each meeting an improved draft of the intervention was discussed to arrive at the final structure of the I-STIPI. Simultaneously, three meetings of 1 h each were scheduled with the technical features and website development expert panel to get detailed information about the feasibility of the Internet intervention and how to develop the intervention online with different features. When the content, material and the technical features were ready, the researcher conducted meetings with the Chilean experts in technology to oversee the

development of the website (10 meetings of 30 min each). In addition, the experts provided assistance on the technological features to deliver the content of each session.

At the end of this development stage, I-STIPI was ready for the second stage that included data collection that focused on the investigation of feasibility and acceptability as well as the collection of recommendations for intervention improvements from participants who received the newly developed intervention.

Collection of feasibility, acceptability data and recommendations for improvements

Setting and participants—The data collection for this stage was conducted from May to July 2011. Forty young Chilean women between 18 and 24 years old received the newly developed I-STIPI intervention. Participants (a) were living in Santiago de Chile, (b) self-identified as an Internet user (a person who uses the Internet least once a week), (c) had access to Internet from any place comfortable for them such as home, (d) self-identified as sexually active in the last 6 months and (e) were able to read and write in Spanish. The recruitment was conducted in Santiago, the capital and the largest city of the country with 6,685,685 or the adequate journal format (Instituto Nacional de Estadísticas Chile 2013).

Participants reported a mean age of 19.9 ± 1.99 years. The majority of participants were single (97.5%) and were students (82.5%). Regarding participants' sexual history, the mean of sexual partners lifetime was 3.10 ± 3.5 partners (range 1–20 sexual partners). Table 1 displays detailed descriptive information regarding participants' characteristics.

Data collection and ethical issues—Prior to recruitment, the University of Miami and Escuela de Enfermería-Pontificia Universidad Católica de Chile Institutional Review Boards approved the study. Recruitment was initiated by the research team (composed of two Spanish-speaking nurses) who posted flyers with information (phone and e-mail) about the study in different public places in Santiago where young Chilean women gathered in the community such as grocery stores and computer centres (i.e. cyber cafes). Young women who called or sent an e-mail to the study team had the study briefly explained to them and after a verbal consent protocol they were screened for inclusion criteria and contact information.

Women who met the inclusion criteria were invited to a face-to-face appointment at participants' preferred place. During this appointment, the research team obtained the informed consent. After participants signed the consent form, they completed a baseline assessment online using the team's laptop with Internet mobile access and with the research team available for support. After, an I-STIPI orientation was conducted with the purpose of familiarizing the participant with the technology. Over the next month the participants received the I-STIPI intervention that was designed during the development stage. At the end of the modules, participants completed a follow-up assessment approximately 1 month after a baseline questionnaire.

Measures—The measures of direct relevance to this article on the development of the I-STIPI provided data on feasibility, acceptability and recommendations for improvements. The measures were administered immediately after the participation in the I-STIPI

(approximately 1 month after a baseline questionnaire) using an online structured questionnaire in Spanish with an estimated length of 30 min. Participants received instructions to access and answer the questionnaire. Translation and back translation (English-Spanish-English) were conducted to ensure the validity of the acceptability and recommendation for improvements questions in Spanish. The translators were familiar with the language and culture of the participants.

Feasibility: This variable was measured by (a) participation in the I-STIPI modules and (b) retention in the entire study. If participants completed at least one of the two monitored activities in each module (quiz or blog activity), it was considered that participants completed that module. After participants completed the modules, their percentage of participation was estimated. Rates of retention in the entire study were measured as the percentage of participants who completed questionnaires at baseline and after the participation in the I-STIPI.

Acceptability: This variable was measured by participants' satisfaction with the intervention. The questions used to measure acceptability were adapted from the tools for building culturally and competent HIV prevention programmes (Card et al. 2008). Participants answered nine items reporting their satisfaction regarding the accessibility, design, content and activities, and assistance received from the facilitator. Accessibility was measured with two questions: (a) how easy was to find information on the website (five answer options: 5 = very easy, 4 = easy, 3 = average, 2 = difficult, 1 = very difficult; total score 1–5 points) and (b) site performance (five answer options: 5 = very satisfied, 4 = satisfied, 3 = neutral, 2 = dissatisfied, 1 = very dissatisfied; total score 1–5 points). The satisfaction with the design included a question about participants' overall impression of the website (four answer options: 4 = very good, 3 = good, 2 = bad, 1 = very bad; total score 1–4 points).

The satisfaction with the content and activities was measured with five questions: (a) satisfaction with the contents and activities (one question with five answer options: 5 = very satisfied, 4 = satisfied, 3 = neutral, 2 = dissatisfied, 1 = very dissatisfied; total score 1–5 points) and (b) understanding and level of comfort with the content and activities (four questions with a numeric scale of 5 points, from 1 = lowest satisfaction to 5 = highest satisfaction; total score 1–5 points). Finally, one question measured the assistance received from the facilitator (five answer options: 5 = very satisfied, 4 = satisfied, 3 = neutral, 2 = dissatisfied, 1 = very dissatisfied; total score 1–5 points). In all these questions, a higher score represented a higher level of satisfaction.

Recommendations for improvements: At the end of the study, participants answered two items reporting (a) whether the intervention met their initial expectations (one question with three answer options: yes/no/partially) and (b) how the intervention could be improved (one open-ended question).

Data analysis—The Predictive Analytics SoftWare version 18.0 (IBM, SPSS Inc., Chicago, IL, USA) was used for data analysis. Descriptive statistics were used to analyse socio-demographic information and the questions regarding the feasibility and acceptability

of the intervention. Quantitative content analysis was used to analyse user recommendations for improvement. Participant's recommendations for improvement were analysed in Spanish and then translated into English.

Results

Development of the intervention

Based on the content expert panel, the adaptations made were (a) expanding of the contents to STI such as the incorporation of content related to STI surveillance and importance of preventing STI; (b) making the intervention more appropriate and interesting for a younger population by adding content centred on peer norms, updating some language terms and the incorporation of different features (e.g. quiz, blog, links); and (c) adding content about drugs and alcohol, especially the relationship among substance use, peer norms and risk of acquiring STI–HIV. In addition, these experts suggested (a) the reduction in the number of content modules (from 6 to 4) and their length (from 2 h face to face to 40–50 min each week), and (b) maintaining a similar structure for module activities and keeping them open during the entire length of the intervention.

Additionally, all the recommendations of the technical features and website development experts were incorporated. The I-STIPI was developed in a password-protected website that provided access to the content only to the subjects involved in the research. This website had its own web hosting service and online domain (http://www.i-stipi.cl). In addition, the experts suggested different website features (i.e. orientation section, frequently asked questions and home page).

The newly intervention—The I-STIPI consisted of four modules in Spanish with a length of 40–50 min each. Each module had the following activities: (a) a flash video presentation (Adobe Flash Player, Adobe Systems Inc., San Jose, CA, USA) with the content of the module (10–15 min), (b) a quiz with five questions about the content of the flash presentation (5 min), (c) a video clip that showed a testimony or a situation related with the content of each module (5 min), (d) and finally, a blog where participants discussed their experiences, how to prevent STI–HIV and reduce their risk behaviours based on what they learned in the modules (20–30 min). Each module had a window of 1 week to complete the activities (available 24 h a day) although participants were able to access the contents of the module after the week had ended (only to the content and the videos, but not the discussion blog). The modules covered an overview of STI and HIV in Chile; transmission, impact and prevention of STI including HIV; partner negotiation and communication; prevention and control of domestic violence; and substance abuse. Each module followed the constructs of the information-motivation-behavioural skills model by providing information (knowledge) about STI–HIV and related topics (e.g. partner negotiation), motivation for behavioural changes (e.g. discussing attitudes and intentions towards preventive behaviour and peer norms), and promoted behavioural skills and preventive behaviours through provision of new information, use of testimonies and discussion blogs.

In the I-STIPI, all the activities were reviewed individually. The only group activity in the intervention was the blog activity, in which participants were nested in groups of 10

participants. In the blog activity, the facilitator monitored the participants' comments and she interacted with the participants, ensuring that members of each group participated regularly. Participants received a reimbursement of $20 in assessments for their participation.

Feasibility

In general, participation in the I-STIPI was high but decreased with the number of modules (85% completed the first module, 80% the second module, 75% the third module and 70% the last module). The majority of the participants (27 out of 40) completed the four modules of the intervention (67.5% of the sample). In terms of retention at the end of the study, all the participants enrolled in the study ($n = 40$) completed the baseline questionnaire and 37 (92.5%) participants completed the questionnaire after they participated in the intervention.

Acceptability

Participants reported their satisfaction with the different I-STIPI components. In general, all the questions about the acceptability were close to the maximum scores. The highest levels of satisfaction were reported in the assistance received from the facilitator (4.73 ± 0.65 points, range 1–5 points). Participants reported the lowest levels of satisfaction with finding information on the website (3.89 ± 1.27 points; range 1–5 points). Twenty-five participants (67.6%) found it 'very easy/easy' to find information on the website, seven participants (18.9%) rated the ability to find information on the website as 'average' and five (13.5%) found it 'very difficult/difficult'. Table 2 displays information regarding the levels of satisfaction.

Recommendations for improvements

Participants were asked whether the intervention met their initial expectations. Of the 37 participants who completed the questionnaire after they participated in the intervention, 35 (94.6%) participants mentioned that the intervention met their initial expectations. Only two participants (5.4%) mentioned that the intervention met their initial expectations partially (one of these participants did not complete any of the I-STIPI modules).

Finally, participants had many good recommendations for improvement. Thirty participants (81.1%) suggested improvements to the intervention. Four participants (10.81%) mentioned that some existing content should be improved by providing more information about STI. For example, one participant mentioned, 'It would be good to provide more information about the STI. . .personally I'm still having questions about specific STI and their prevention (such as gonorrhea or Chlamydia)'.

Four participants (10.81%) mentioned that some existing features should be improved. These features included reducing the number of passwords and changing some features of flash presentations. One participant wrote, 'Maybe in the videos of the modules you can add more examples'. In addition, one participant (2.7%) suggested new content that should be added. The participant mentioned, 'I would like to include more issues related to self-knowledge to deal with low self-esteem and knowledge about our sexuality'. Finally, 13 participants (35.14%) mentioned that new features should be added. These features were

related with adding more images, more designs and changing the colour of the website; including games as activities; and incorporate a question-and-answer forum. One participant wrote, 'I would say it was a good idea to implement a forum to ask questions about these issues, so we can answer the questions everyone feels closer and with this help women who have doubts about a specific topic'.

Seven participants (18.91%) mentioned that they did not think that the intervention needed improvements and they provided positive feedback about the characteristics of the intervention in regard with the information that was provided, the relationship with the facilitator and the videos with information.

Discussion

The I-STIPI had several features described in the literature as major advantages provided by the Internet interventions. These include standardization of the content, reduction of the fear of embarrassment because the website provided privacy and anonymity, and the opportunity to access the intervention from any place that was convenient (Kiene & Barta 2006; Ritterband et al. 2009). Also, the I-STIPI as an internet intervention was more cost-effective than face-to-face interventions. Face-to-face interventions usually require the presence of the facilitator and participants at the same place and time, and they have associated costs such as transportation, refreshments, the cost of a place to meet, and lost staff time when participants do not show up. Additionally, it was possible to have different groups of participants in the I-STIPI modules at the same time.

The majority of the participants indicated that the website provided appropriate content and features. This finding may be related with the incorporation of different features in the design of the I-STIPI (videos, blogs, links). In addition, the I-STIPI provided special features for conducting research that differ from other environments such as the flexibility in the completion of the modules (24 h/7 day a week) and the possibility of interaction with other women and the facilitator.

The results of this study reflect that it is feasible to conduct a multiple session intervention with high participation and retention rates. The majority of the participants reported that the intervention was acceptable and it met their initial expectations. These findings are crucial because it reinforces the idea that young women felt comfortable with the technology used in this study. In addition, participants' feedback about the intervention was positive and the areas of improvement mentioned were very helpful in terms of continuing refinements to the I-STIPI intervention.

Limitations

Data collected were based on women's self-report, which could influence the outcomes of the study because of poor recall. In addition, other limitations of this study are the lack of randomization and the sampling method. A convenience sample was used, and even when efforts were made to include women that were representative of the population (i.e. recruiting women from different locations), this type of sampling could have resulted in a sample that was not representative of all Chilean young women.

Implications for nursing and health policy

The results of this study can help guide nurses and other healthcare professionals in the delivery of content for prevention among this group of women. Future research using this intervention can provide training for clinical nurses and other healthcare professionals in the use of the I-STIPI as a source of information for their clients. In addition, these findings provide information that can be used within the legal and judicial systems to promote or reinforce policies that encourage prevention strategies among women.

Conclusions

This was the first study that evaluated the feasibility and acceptability of an intervention delivered through the Internet in Chile focused on STI–HIV prevention. Indicators of I-STIPI acceptability and feasibility show it to have great promise as an Internet-based intervention in a health domain that has been difficult to address in this population.

Acknowledgments

This research was supported by the Center of Excellence for Health Disparities Research: El Centro, National Center on Minority Health and Health Disparities grant number P60MD002266 and Sigma Theta Tau International, Beta Tau Chapter. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

References

Aho AL, Åstedt-Kurki P, Tarkka M, Kaunonen M. Development and implementation of a bereavement follow-up intervention for grieving fathers: an action research. Journal of Clinical Nursing. 2011; 20:408–419.10.1111/j.1365-2702.2010.03523.x [PubMed: 20946447]

Blackwood B. Methodological issues in evaluating complex healthcare interventions. Journal of Advanced Nursing. 2006; 54:612–622. [PubMed: 16722959]

Bull S, Phibbs S, Watson S, McFarlane M. What do young adults expect when they go online? Lessons for development of an STD/ HIV and pregnancy prevention website. Journal of Medical Systems. 2007; 31:149–158.10.1007/s10916-006-9050-z [PubMed: 17489508]

Bull S, et al. Effects of an Internet-based intervention for HIV prevention: the Youthnet trials. AIDS and Behavior. 2009; 13:474–487.10.1007/s10461-008-9487-9 [PubMed: 19037719]

Card, J.; Solomon, J.; Berman, J. Tools for Building Culturally Competent HIV Prevention Programs. Springer Publishing Company; New York: 2008.

Chilean Ministry of Health. [accessed 15 August 2013] Informe Nacional: Evolucion VIH SIDA, Chile 1984–2011. 2012. Available at: http://epi.minsal.cl/epi/html/bolets/reportes/VIH-SIDA/InformePais_1984-2011_vih_sida.pdf

Cianelli R, Ferrer L, McElmurry B. Issues on HIV prevention among low-income Chilean women: machismo, marianismo and HIV misconceptions. Culture, Health and Sexuality. 2008; 10:297–306.10.1080/13691050701861439

Cianelli R, et al. Mano a Mano Mujer an effective HIV prevention intervention for Chilean women. Health Care for Women International. 2012; 33:321–341.10.1080/07399332.2012.655388 [PubMed: 22420675]

Dides, C.; Benavente, C.; Morán, J. [Accessed 30 August 2013] Estado de la vinculación de la salud sexual y reproductiva, VIH y SIDA e ITS en Chile. 2009. Available at: http://www.flacsochile.org/publicaciones/estado-de-la-vinculacion-de-la-salud-sexual-y-reproductiva-vih-y-sida-e-its-en-chile/

Ferrer L, et al. Chilean university students: knowledge and concern about HIV/AIDS. The Journal of the Association of Nurses in AIDS Care. 2007; 18:51–56.10.1016/j.jana.2007.07.001 [PubMed: 17889325]

Fisher J, Fisher W. Changing AIDS-risk behavior. Psychological Bulletin. 1992; 111:455–474. [PubMed: 1594721]

Gonzalez E, et al. Comportamientos sexuales y diferencias de género en adolescentes usuarios de un sistema público de salud universitario. Revista Médica de Chile. 2007; 135:1261–1269.10.4067/S0034-98872007001000005 [PubMed: 18180832]

Instituto Nacional de Estadísticas Chile. [accessed 25 December 2013] Resultados XVIII censo de población 2012. 2013. Available at: http://www.emol.com/documentos/archivos/2013/04/02/20130402145438.pdf

Instituto Nacional de la Juventud. [accessed 29 October 2013] Séptima encuesta nacional de la juventud: principales resultados. 2013. Available at: http://www.injuv.gob.cl/portal/wp-content/files_mf/septimaencuestanacionainjuvcorr2.pdf

Internet World Stats. [accessed 15 July 2013] Usage and Population Statistics. 2013. Available at: http://www.internetworldstats.com/stats.htm

Joint United Nations Programme on HIV/AIDS. AIDS Epidemic Update. 2013. Available at: http://www.unaids.org/en/media/unaids/contentassets/documents/epidemiology/2013/gr2013/UNAIDS_Global_Report_2013_en.pdf

Kiene S, Barta W. A brief individualized computer-delivered sexual risk reduction intervention increases HIV/AIDS preventive behavior. The Journal of Adolescent Health. 2006; 39:404–410.10.1016/j.jadohealth.2005.12.029 [PubMed: 16919803]

Latin American Center on Sexuality and Human Rights. [accessed 20 August 2013] Educación sexual en Chile. 2010. Available at: http://www.clam.org.br/publique/cgi/cgilua.exe/sys/start.htm?infoid=1357&sid=7

McKleroy VS, et al. Adapting evidence-based behavioral interventions for new settings and target populations. AIDS Education and Prevention. 2006; 18 (4 Suppl A):59–73.10.1521/aeap.2006.18.supp.59 [PubMed: 16987089]

Montero A, Gonzalez E, Molina T. Salud sexual y reproductiva de los y las adolescentes en Chile. Revista Chilena de Salud Pública. 2008; 12:42–47.10.5354/0717-3652.2008.2076

Noar S, Black H, Pierce L. Efficacy of computer technology-based HIV prevention interventions: a meta-analysis. AIDS. 2009; 23:107–115.10.1097/QAD.0b013e32831c5500 [PubMed: 19050392]

Peragallo N, et al. A randomized clinical trial of an HIV-risk-reduction intervention among low-income Latina women. Nursing Research. 2005; 54:108–118. [PubMed: 15778652]

Peredo, C. [accessed 29 October 2013] Infecciones de transmision sexual en los adolescentes chilenos. V congreso de Obstetricia y Ginecologia Infantil y de la Adolescencia. 2007. Available at: http://www.mednet.cl/link.cgi/Medwave/PuestaDia/Congresos/1263

Ritterband L, et al. A behavior change model for internet interventions. Annals of Behavioral Medicine. 2009; 38:18–27.10.1007/s12160-009-9133-4 [PubMed: 19802647]

Rizvi SL, et al. A pilot study of the DBT coach: an interactive mobile phone application for individuals with borderline personality disorder and substance use disorder. Behavior Therapy. 2011; 42:589–600.10.1016/j.beth.2011.01.003 [PubMed: 22035988]

Roberto A, et al. The effects of a computer-based pregnancy, STD, and HIV prevention intervention: a nine-school trial. Health Communication. 2007; 21:115–124.10.1080/10410230701306990 [PubMed: 17523857]

Santander E, et al. Normas de manejo y tratamiento de las Infecciones de Transmisión Sexual (ITS), primera parte. Revista Chilena de Infectología. 2009; 26:174–190.10.4067/S0716-10182009000200012 [PubMed: 19621151]

Vigil P, Riquelme R, Rivadeneira R, Aranda W. TeenSTAR: Una opción de madurez y libertad. Programa de educación integral de la sexualidad, orientado a adolescentes. Revista Médica de Chile. 2005; 133:1173–1182. [PubMed: 16341368]

World Health Organization (WHO). [accessed 18 October 2013] Global Strategy for the Prevention and Control of Sexually Transmitted Infections: 2006–2015: Breaking the Chain of Transmission. 2007. Available at: http://whqlibdoc.who.int/publications/2007/9789241563475_eng.pdf

World Health Organization (WHO). [accessed 27 October 2013] Sexually Transmitted Infections. 2013. Available at: http://www.who.int/mediacentre/factsheets/fs110/en/

Table 1

Characteristics of Chilean women in the study (n = 40)

Variables	n (%)	M ± SD (range)
Socio-demographic		
Age (years)		19.90 ± 1.99 (18–24)
Relationship status		–
Single	39 (97.5)	
Married	1 (2.5)	
Educational level		–
Completed elementary school	1 (2.5)	
High school education	18 (45)	
Technical education	3 (7.5)	
University education	18 (45)	
Whom they live		–
Parents	28 (70)	
Spouse or partner	5 (12.5)	
Other (i.e. relatives, alone)	7 (17.5)	
Main occupation*		–
Student	33 (82.5)	
Employee	13 (32.5)	
Housewife	5 (12.5)	
Health and sexual history		
Age of sexual initiation (years)		16.20 ± 1.98 (12–20)
Number of sexual partners (lifetime)		3.10 ± 3.50 (1–20)
Number of sexual partners (last month)		1.30 ± 0.79 (1–5)
Drug use (lifetime)		–
Yes	32 (80)	
No	8 (20)	

*Some participants reported more than one occupation/activity.

SD, standard deviation.

Table 2

Participants' satisfaction with the I-STIPI (n = 37)

Area	Satisfaction levels				
	n	%	M	SD	Score range
Accessibility					
Find information on the website			3.89	1.27	1–5
Very easy/easy	25	67.6			
Average	7	18.9			
Very difficult/difficult	5	13.5			
Current site performance			4.41	0.76	1–5
Very satisfied/satisfied	33	89.2			
Neutral	3	8.1			
Very dissatisfied/dissatisfied	1	2.7			
Design					
Website features (overall)			3.54	0.65	1–4
Very good	26	70.3			
Good	11	29.7			
Bad/very bad	0	0			
Content and activities					
Overall satisfaction			4.54	0.65	1–5
Very satisfied/satisfied	34	91.9			
Neutral	3	8.1			
Very dissatisfied/dissatisfied	0	0			
Understanding of the information			4.24	0.83	1–5
Understanding of the questions asked in the study			4.27	0.93	1–5
Level of comfort with the examples, pictures and stories			4.49	1.02	1–5
Degree to which the intervention talks about issues and problems that people of their age confront			4.46	0.90	1–5
Assistance from the facilitator			4.73	0.65	1–5
Very satisfied/satisfied	35	94.6			
Neutral	1	2.7			
Very dissatisfied/dissatisfied	1	2.7			

I-STIPI, Internet-based STI–HIV prevention intervention; SD, standard deviation.