


# Adaptation and Pilot Evaluation of an Intervention Addressing the Sexual Health Needs of Gay Men Living with HIV Infection in Colombia

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## Abstract

Interventions addressing the sexual health need of HIV-positive men who have sex with men (MSM) in Latin America are scarce. We adapted and evaluated GPS, a group-based intervention led by peers, developed using the Information-Motivation-Behavioral (IMB) model and motivational interviewing (MI). We used McKleroy et al framework to culturally adapt GPS to MSM living with HIV infection in Colombia. Then, a one-armed pilot trial examined changes in depressive symptoms, loneliness, self-efficacy for engaging in sexual risk reduction behaviors, sexual sensation seeking and sexual compulsivity at pre-intervention, post-intervention, and 3-month follow-up. These results were complemented with semistructured interviews with participants 3 months after the intervention. GPS was identified to be culturally acceptable with few changes in materials and exercises. Facilitators showed high levels of adherence and fidelity to MI principles. Seven of 11 eligible participants finished the intervention; GPS positively influenced self-efficacy for condom negotiation, depressive symptoms, and condomless anal sex with partners of unknown HIV status. Exit interviews revealed that GPS was well-designed, relevant, facilitated discussion of sex in a nonjudgmental manner, and helped make positive changes in participants' sexual lives. These results provided preliminary evidence of an intervention to address sexual and mental health of MSM living with HIV in Latin America.

## Keywords

HIV prevention, people living with HIV, MSM, motivational interviewing, community-based intervention

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With people living with HIV infection (PLWH) having longer and more sexually active lives, it is of the utmost importance to have interventions available to address the psychosocial, physical, mental, and sexual needs of PLWH. Interventions to address these needs or *Prevention with Positives* demonstrate that providing education as well as comprehensive counseling strategies can reduce risky behaviors in men who have sex with men (MSM) living with HIV infection (Crepaz et al., 2006), and increase adherence to medications and retention to care (Crepaz et al., 2015). Positive prevention interventions have been effective in reduction of depression, isolation, stigma, and discrimination (Van Der Heijden et al., 2017). These interventions acquire greater relevance in contexts where structural barriers exist and where adherence to ART and retention to care are still below recommended goals, such as in the case of Colombia.

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It is estimated that 120,000 individuals, most of whom are MSM, are living with HIV infection in Colombia. Only 54% of people with HIV are currently receiving antiretroviral therapy and nearly 39% of them have detectable viral loads (Unaid, 2017). Structural and individual factors affect access and adherence to antiretroviral therapy in Colombia, with a lack of health insurance being among the greatest barriers. Few studies in Colombia have explored the psychosocial and sexual needs of people living with HIV, and these have reported high levels of stigma and depression (Mueses-Marin et al., 2019) and frequent inconsistent condom use (Zea et al., 2015). There is no established program in Colombia to promote HIV risk reduction in any population group (Mora-Rojas et al., 2017); antiretroviral used for Pre-exposure Prophylaxis was approved in Colombia in 2019.

The main purpose was to adapt and pilot the acceptability, appropriateness, and effectiveness of *Gay Poz Sex: Finding your own way* in Latino MSM. The study was conducted in an HIV clinic in Colombia and involved the collaboration of Canadian and Colombian HIV researchers, and experienced MSM living with HIV infection who had previously delivered the intervention in English.

## Methods

### GPS: Finding Your Own Way

GPS was developed to fill an important gap of *Prevention with Positives* in North America. GPS is a confidential, group-based, peer-led program that supports PLWH in making choices related to their sexual, mental, and physical health (Hart, Stratton et al., 2016). GPS is based on the IMB skills theoretical model (Fisher & Fisher, 1992) and uses Motivational Interviewing-based (MI) counseling (Miller & Rollnick, 2009). The IMB approach to change in health behavior asserts that information, motivation, and behavioral skills are fundamental determinants of a wide range of health-related behaviors. The MI component of GPS encourages participants to identify their own goals and make healthy decisions based on their own values, concerns, or beliefs (Hart, Willis et al., 2016). MI has been identified to be effective in other interventions to address the needs of PLWH (Adamian et al., 2004; Diiorio et al., 2008). GPS was demonstrated to be efficacious in a Canadian randomized controlled trial with 183 MSM living with HIV, showing significant reductions in sexual compulsivity and a 43% relative reductions in Condomless Anal sex (CAS) with HIV-negative partners compared to treatment-as-usual (Hart et al., In Press).

### Adaptation and Evaluation

This study was carried out in three phases: First, we adapted GPS for Latino MSM in both Canada and Colombia.

Second, we trained individuals to become GPS facilitators and third, we piloted the adapted GPS version. We used a mixed-methods approach with convergent design that included an adaptation design with predominantly qualitative methods, a single-arm trial design with quantitative assessments of intervention outcomes, and semistructured interviews done 3 months after intervention to assess participants' perceptions of GPS. The study protocol was approved by the (Blinded for Review). There were no protocol deviations or adverse events.

### Phase I: Adaptation Process

The adaptation process was based on the method described by McKleroy et al. (2006), which consists of five different steps: assess, select, prepare, pilot, and implement. The *first step* was to identify the priority populations, the intervention possibilities, the capacity of the organization(s), and the interest of the communities. This work was done in Canada in 2013 and in Colombia in 2014, where input from community leaders and researchers working on HIV related interventions were obtained about potential interventions. GPS was, then, selected (*second step*) for several reasons: first, peers delivered the intervention; second, it uses a broad concept of sexual health; and third, GPS had demonstrated efficacy. The *third step* of the adaptation was the preparation of the intervention. In this case, two Latino peer facilitators residing in Canada were selected to learn to become GPS facilitators. Both received a total of 48 hr of training that included experiencing GPS as participants, training in MI, and delivery of GPS back to their trainers. Two Canadian GPS facilitators, one of whom is a member of the MI Network of Trainers (MINT) (Wingood & Diclemente, 2008), delivered the training in GPS. During this training, both Latino facilitator trainees translated all GPS materials from English into Spanish and completed a preliminary adaptation of GPS. GPS was then refined and pretested in Canada with five Latino MSM living with HIV infection using a methodology called "theater testing," where the facilitators delivered GPS to the five "mock participants" (Wingood & Diclemente, 2008). Qualitative and quantitative data were obtained from the five "mock participants" at the end of each of the eight GPS sessions. Then, the intervention was further refined in Colombia. One of the Latino GPS facilitators residing in Canada traveled to Cali and delivered the GPS intervention using the "theater testing" process again with five participants living with HIV infection residing in Cali. During this process, the questionnaires and the implementation plan were adjusted. Comments from the participants were used to assess the initial appropriateness of the program and to make final adjustments to the adapted GPS version to be piloted (*step four of the McKleroy process*).

## Phase 2: Training of Colombian Facilitators

To be eligible to participate as a GPS facilitator in Cali, a participant had to identify as MSM and be living with HIV infection, be over 18 years of age, and have Spanish-language fluency. Two facilitators were chosen among ten candidates that applied. They received 15 hr of training in MI (over 2 days), which was delivered by a professional psychologist with experience in working with PLWH (DC), and experienced GPS as participants. Finally, they received three additional days of training where they delivered GPS to each other and practised basic techniques of MI. To maintain the fidelity of the MI and the GPS intervention, the psychologist who delivered the MI training rated each facilitator's adherence to motivational interviewing (Moyers et al., 2010). Fidelity scores were 25/25 for one facilitator and 23/25 for the other facilitator,

## Phase 3: Piloting the Adapted Version of GPS

**Quantitative Data Collection.** Individuals who were eligible to participate were invited through local advertisements displayed at the CLS clinic and advertisements in MSM organizations. To be eligible, participants needed to identify as MSM, report engaging in CAS with another male during the past 3 months, self-report as living with HIV infection, and be at least 18 years old. All participants provided written informed consent at the beginning of the study. Participants attended eight weekly 2-hr group sessions led by the two Colombian facilitators. Individuals who consented to participate in the pilot phase were assessed at baseline, at the end of GPS sessions, and 3 months later using the same questionnaire.

The questionnaire included the *sociodemographic* characteristics of participants, including employment status, education level, annual income, and years since HIV diagnosis. If the participant was on ART, he was asked about his viral load (i.e., detectable, undetectable, or unknown). Similar to previous research on GPS, we assessed six *psychosocial constructs* at each timepoint (details are provided in Table 1): depression, fear of being sexually rejected, self-efficacy, Sexual Sensation Seeking, loneliness, and sexual compulsivity. The final scales translated in Spanish and used in the study are available upon request. The final set of questions related to *sexual behavior*. As per the original GPS program in English, a primary outcome of GPS is reducing the point-prevalence of CAS with partners of HIV-negative or unknown status. CAS in the last 3 months was defined as *having at least one insertive or receptive anal sex encounter without a condom*. Based on this definition the following outcomes were defined, CAS with: (a) regular partner, (b) casual partner living with HIV infection, (c) casual partner not

living with HIV infection, and (d) casual partners of unknown HIV status.

Quantitative data analyses were conducted using STATA (Stata, 2013). Frequencies and univariate analyses were calculated for sociodemographic variables, sexual behaviors, and for each psychosocial measure used in these analyses. The data are reported for each time period: baseline, post-intervention, and 3-month follow-up. Given the lack of power to conduct t-paired or mixed models, only descriptive analysis over time is presented.

**Qualitative Data Collection.** Semi-structured one-to-one interviews were conducted 3 months after the intervention to collect detailed information about the participants' perceptions of GPS. Only those who completed the intervention were invited, with six of them providing information. Participants were approached by phone by the research team and invited to a face-to-face or phone interview. Face to face interviews were done in private in CLS. The interview was guided by the following questions: What aspects of GPS did or did not work for you? What was your goal for change in GPS? How did GPS help you to achieve that goal? Would you recommend GPS to friends? Which aspects of GPS would you change? The authors and reviews provided the interview guide by all the research team before its application. An independent researcher (outside of this research team) with social-science background conducted the interviews, each of which lasted 30 min. Interviews were audio recording. The same person performed and transcribed the interviews. Analyses were performed by one of the researchers (BEA). Data were analyzed using thematic analysis (Fereday & Muir-Cochrane, 2006). Descriptive codes were used to summarize aspects related to three predefined themes: appropriateness, acceptability, and effectiveness of GPS (Proctor et al., 2011). With those themes in mind, we read the interviews, coded them, and identified other codes and themes. The qualitative software program, NVivo 12 (Nvivo, 2019) was used to facilitate coding and retrieving of data. In order to improve the trustworthiness of the analysis (Elo et al., 2014), we describe our sample thoroughly, including demographic, sexual and psychosocial characteristics. Two of the researchers (BEA and JLM) read the interviews and discussed relevance and meaning of results before sharing with other authors (Elo et al., 2014). Finally, quotations were used systematically to represent information that the participants provided. Translation of the interview extracts was performed by BEA, reviewed by an English editor, and then by another bilingual member of the team (BDA), in order to accurately represent the voices of participants. The checklist criteria for reporting qualitative studies as applied to the current study are presented in supplementary file (Tong et al., 2007).

**Table 1.** Summary of Psychosocial Variables Assessed in Pilot Intervention of GPS in Latino MSM Living with HIV Infection in Cali, Colombia.

Instrument	Measurements	Psychometric properties in the current study
Depression, CES-D, validated scale in Spanish by Mueses-Marin et al. (2019)*	4-point Likert-type scale (ranging from 0 = rarely or none of the time to 3 = most or all of the time) Total scores range: 0–60 with higher total scores denoting higher depressive symptomology	Cronbach's $\alpha$ coefficients of 0.89. Valid in a sample of PLWH in Cali, Colombia
Fear of Sexual rejection, original scale in English translated and back translated by Authors	5-point Likert-type scale (ranging from 1 = strongly disagree to 5 = strongly agree) Total scores range from 8 to 40 with higher total scores indicating greater concerns about sexual rejection	Cronbach's $\alpha$ coefficients of 0.90. No data on validity in the current sample
Social cognitive theory constructs, original scale in English translated and back translated by Authors	4-point Likert-type scale (ranging from 1 = strongly disagree to 4 = strongly agree). Total scores for self-efficacy range from 8 to 32 with higher total scores indicating higher self-efficacy	Cronbach's $\alpha$ coefficients of 0.82. No data on validity in the current sample
Sexual Sensation seeking, validated scale in Spanish by Teva et al. (2008)*	4-point Likert-type scale (ranging from 1 = not at all like me to 4 = very much like me) Total scores range from 11 to 44 with higher total scores indicating greater sexual sensation seeking and a propensity to seek out novel and uninhibited sexual stimulation	Cronbach's $\alpha$ coefficients of 0.62; four items were excluded because of low correlation, including 2, 6, 7, and 8, rendering alpha to 0.72. No data on validity in the current sample
Loneliness, UCLA, validated scale in Spanish by Borges et al. (2008)*	4-point Likert-type scale (ranging from 1 = never to 4 = often) Total scores range from 20 to 80 with higher total scores indicating higher loneliness	Cronbach's $\alpha$ coefficients of 0.85. No data on validity in the current sample
Sexual compulsivity scale, original scale in English translated and back translated by Authors	4-point Likert-type scale (ranging from 1 = not at all like me to 4 = very much like me) Total scores range from 10 to 40 with higher total scores indicating higher sexual compulsivity	Cronbach's $\alpha$ coefficients of 0.70. No data on validity in the current sample

Note. \*Mueses-Marin HF, Martinez Cajas JL, Montano-Agudelo D, Galindo J, Alvarado-Llano BE. Propiedades psicométricas y validez de la escala de depresión del Center for Epidemiological Studies (CES-D) en personas atendidas en una clínica de HIV en Cali, Colombia. *Biomedica*. 2019;39(1); Teva I, Paz M. Adaptación Castellana Y Propiedades Psicométricas De La Escala De Búsqueda De Sensaciones Sexuales En Adolescentes Españoles. *Revista Mexicana de Psicología*. 2008;25(1):129–37.; Borges A, Prieto P, Ricchetti G, Hernandez-C., E. r-N. Validación cruzada de la factorización del Test UCLA de Soledad. *Psichotema*. 2008;20(4):924–7.

## Results

### Sample

A total of 40 MSM living with HIV infection contacted the facilitator and were screened for GPS. Between June 2014 and May 2015, 11 MSM were eligible and provided baseline information. There were two groups of four participants each and one group with three participants. Of the 11, seven (63.3%) completed the intervention. The main reason for excluding potential participants was that they did not meet the “at least one CAS in the previous three months” criterion. The main reasons for not completing the program were related to work or other activities that conflicted with attendance.

Of the seven who finished the intervention, three had at least university education, four did not have their own income; four were on ART, and three reported detectable viral load at baseline; five used recreational drugs, including tobacco. Four of the participants were within first 2 years of diagnosis with HIV infection, two had

been living with HIV infection for 3 years, and one for 7 years.

### Adaptation of GPS

All participants in the adaptation session provided positive feedback about the order or sessions, the content, and the materials and exercises of the GPS program. The only changes suggested during the adaptation process were the inclusion of more role-play activities and information about the history of the LGTBQ rights movement in Colombia. The final number of sessions and a summary of the activities of the adapted GPS remained unchanged as per the original GPS and are presented in Table 2. The final GPS manual is available upon request from the first author.

### Quantitative Findings

Figure 1 presents the results in terms of CAS. The number of participants engaging with different partners was

**Table 2.** Final Content of GPS Sessions Implemented in Latino MSM Living with HIV Infection in Cali, Colombia.

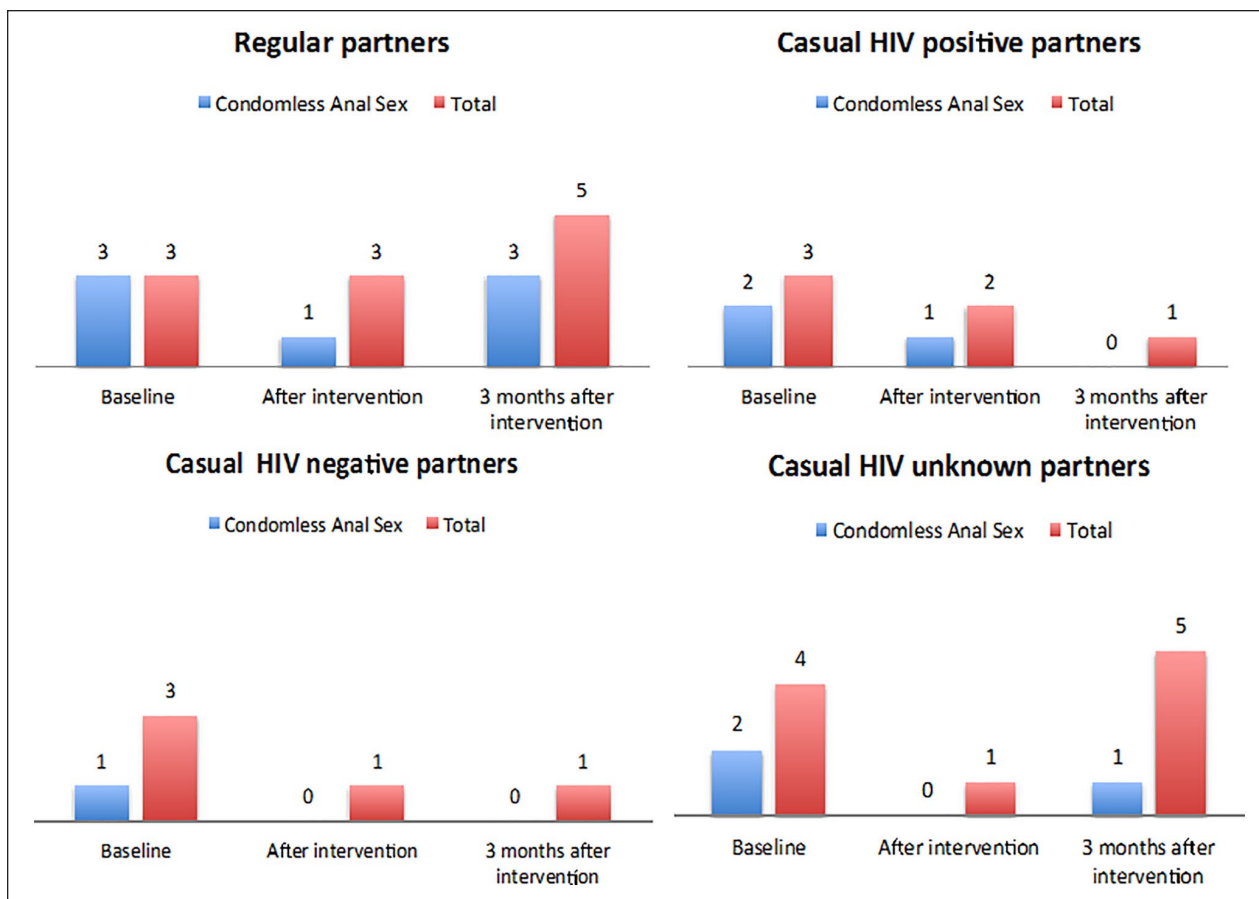
Session number	Outline of activities
1.	<ol style="list-style-type: none"> <li>1. Orientation to GPS Latino</li> <li>2. Establishing group norms</li> <li>3. Exercise to get to know each other better</li> <li>4. Discussion about “what sex means to me,” “participants’ sexual ideal”</li> <li>5. History of gay rights movement in Colombia</li> <li>6. Information about sexual behaviors and the potential sex risks</li> <li>7. Introduction to a sex diary, a tool to elicit self-awareness before, during and after sexual activity</li> </ol>
2	<ol style="list-style-type: none"> <li>1. Check-in: reflection on the sex diary from the previous week</li> <li>2. Discussion about HIV disclosure</li> <li>3. Role play behavior change with a focus on disclosure and sex in risky locations (saunas, bars, internet dating sites)</li> <li>4. Risk and disclosure exercise</li> <li>5. Stress assessment exercise about the impact of stressors on sexual health and well-being</li> <li>6. Explanation of stages of change using the trans-theoretical model and recognition of participants’ own readiness for change</li> </ol>
3	<ol style="list-style-type: none"> <li>1. Behavioral self-monitoring and sex exploration through use of a sex diary</li> <li>2. Decisional balance exercise regarding benefits and problems associated with current behaviors vs. desire to change behavior ambivalence</li> <li>3. Goal identification</li> </ol>
4.	<ol style="list-style-type: none"> <li>1. Behavioral self-monitoring and sex exploration through use of a sex diary</li> <li>2. Continuation of the decisional balance exercise</li> <li>3. Validation of positive aspects of the participants’ sexual lives</li> <li>4. Key question exercise: helps participants to translate values-based goals into concrete observable actions and clarify hopes and fears</li> </ol>
5	<ol style="list-style-type: none"> <li>1. Review of weekly sex diary</li> <li>2. Key question exercise</li> <li>3. Discussion of the importance of goals and confidence</li> <li>4. Fears and expectations exercise:</li> <li>5. Exercise: my next steps</li> </ol>
6	<ol style="list-style-type: none"> <li>1. Review of weekly sex diary</li> <li>2. Review of my next steps: identification of triggers, which are barriers to making changes, and counters, which are personal statements that support change; identify environmental controls that facilitate goal-oriented behavior; learn the value of rewards that can positively reinforce steps towards change</li> <li>3. Identify community and personal support sources</li> </ol>
7.	<ol style="list-style-type: none"> <li>1. Review of weekly sex diary</li> <li>2. Role play behavior change with a focus on using strategies and counters; self-validation</li> <li>3. Established increase awareness of how assertiveness impacts one’s ability to communicate his/her sexual goals</li> </ol>
8.	<ol style="list-style-type: none"> <li>1. Review and validate progress toward participants’ sexual goals</li> <li>2. Closure exercise</li> </ol>

variable throughout the study (see “total” in Fig. 1). However, after 3 months of the intervention, only one participant engaged in CAS with a casual HIV-unknown partner as opposed to three participants at baseline. In terms of psychosocial constructs at baseline (see Fig. 2a and b), five of the seven participants had a CES-D score 16 or more, suggesting high levels of depressive symptoms. Levels of loneliness, fear of rejection, and sensual sensation seeking were mild/moderate at baseline; the self-efficacy distribution was towards high levels; no one achieved the highest score at baseline. Most of the distributions overlapped across timepoints with variability in

the experiences of participants. The median of depressive symptoms, fear of being rejected, and loneliness were lower in the follow-up than at baseline, while the self-efficacy scale median was higher in the follow-up than in the baseline, suggesting a possible gain in self-efficacy over time (Fig. 2a b).

### Qualitative Findings

Of the seven participants who finished the intervention, six were interviewed. Table 3 presents themes and selected quotations from narratives of participants.



**Figure 1.** Frequency of condomless anal sex at three different points in time by type of partner. Figure presents in “blue” the number of participants with condomless anal sex, and in “red” the total number of participants with partners in each type of partner category.

**Appropriateness.** All six participants agreed that GPS was a program that was needed for MSM living with HIV infection. None of them had ever been exposed to a program like GPS and none had ever experienced being part of individual or group counseling. Participants mentioned the need to acquire knowledge on: prevention, avoiding alcohol and drug use, increasing their use of condoms, and acceptance of their diagnosis (see Table 3 for examples of narratives).

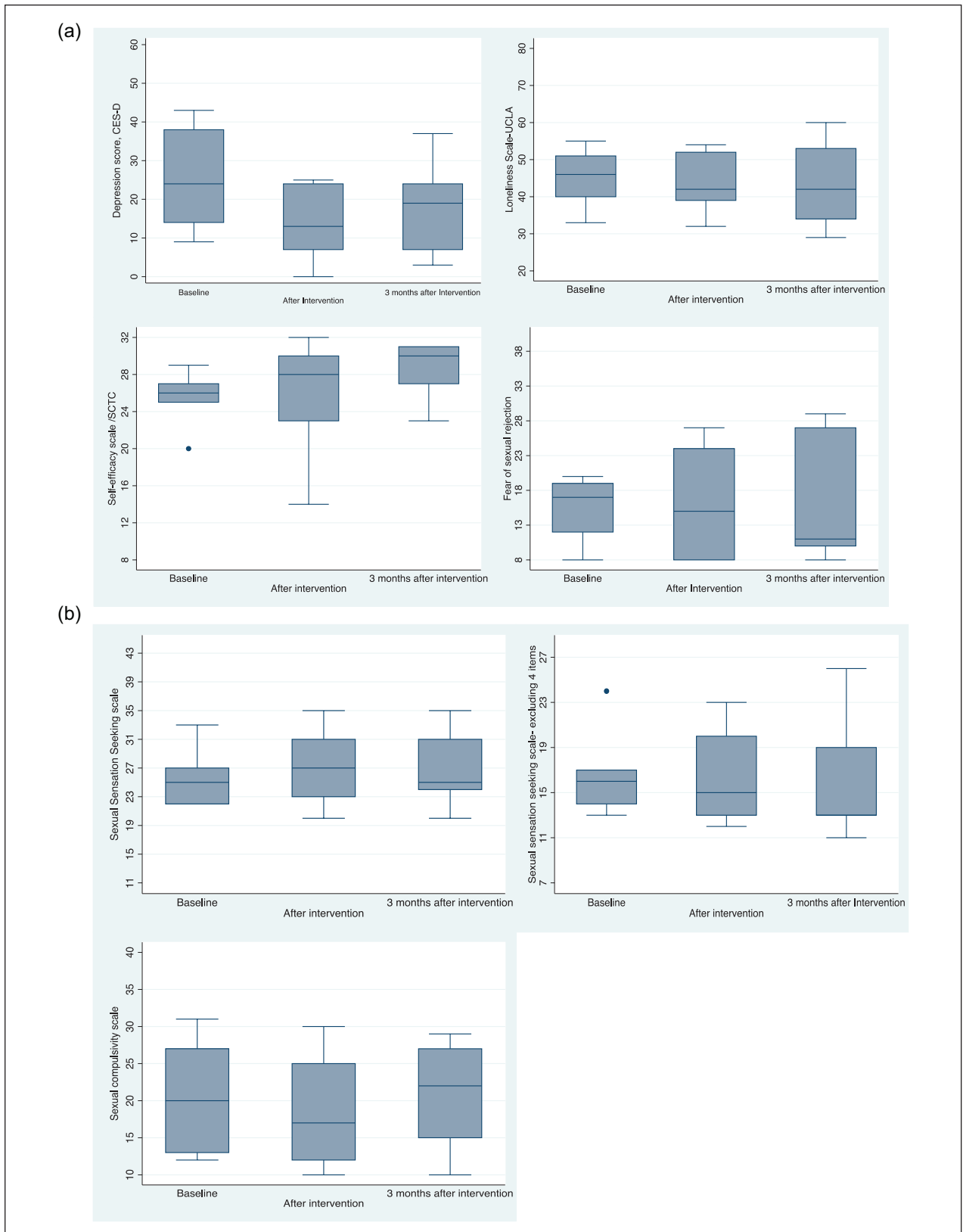
All participants perceived the group-based approach as useful. They recognized that the experiences of other participants facilitated their behavior change. Two participants recommended a bigger group and longer discussion to gain knowledge of other experiences. One participant offered a recommendation to create groups with participants of the same age. When participants were asked about aspects of the program that may not have worked for them, one participant stated that the program was too much about sex, “*I felt uneasy because we talked too much about sex, sex, sex. . .*” (MSM, under 12 years of education, 1 year living with HIV infection); and

another stated that the program was too much about condoms.

One aspect of the project seemed not to meet participants needs. Participants reported that they do not have other friends living with HIV infection and felt isolated as PLWH. In this regard, participants reported they had the expectation of establishing friendships during the project. Participants indicated that having follow-up activities and additional meetings would have helped further to reduce their isolation.

**Acceptability:** All agreed that GPS was well designed. Subthemes included positive attitudes towards the materials and exercises, the knowledge and experience of facilitators, and the program structure. One participant offered suggestions about the materials, such as adding more audiovisual information and videos. Self-monitoring tools, such as the sexual diary to monitor change over time, was perceived as an important tool to encourage behavior change (see Table 3 for examples of narratives).

All the participants agreed that having a facilitator who lives with HIV infection was a positive aspect of the



**Figure 2a and 2b.** Boxplot of the score of the psychosocial variables in the complete sample at three different points of time. For the sexual sensation seeking scale, the distributions with the complete scale and the scale excluding four items are presented.

**Table 3.** Themes and Quotations from Qualitative Interviews with Participants of GPS Intervention in Cali, Colombia.

Appropriateness	Relevance and suitability of GPS
Program was needed	<p>Well, before the project I did not have knowledge or want to have. Apart from that, I used to take drugs, I went out every night to take a drink, I had more drink than I drink now. Before the project, when I realized my diagnosis, I stopped having sex because I was afraid to infect someone. (MSM, less than 12 years of education, 1 year living with HIV)</p> <p>Well, before the project I had a syphilis infection because I did not have any information. I was in treatment and everything. In the project I found out what was the possible cause of the infection. (MSM, more than 12 years of education, 3 years living with HIV)</p> <p>The program worked, helps me to have the knowledge I was lacking at the moment, and help me to have a direction (MSM, 12 years of education, 1 year living with HIV infection)</p>
The group approached was well-received	<p>I feel that my experience was very useful to my other colleagues (MSM, more than 12 years of education, 3 years living with HIV infection)</p> <p>One in the project learns a lot to appreciate and to love, in fact there was one of those who participated in the program that before was despised a lot as a person and I saw that he changed completely. So that helps a lot to generate trust, to be able to talk with other people (MSM, more than 12 years of education, 3 years living with HIV)</p> <p>I would have liked it if there were more people and it was longer. More time to have more knowledge because there are many things for one to learn, many more. Above all I would have liked to be with more people, we were very few (MSM, less 12 years of education, 1 year living with HIV)</p> <p>It would be good if there had been more participants. There were 4 of us, one left and then we had 3. When they asked us how many people we would like, I said 6. I would have liked a larger group because one can enrich oneself from the life experiences of the others (MSM, more than 12 years of education, 3 years living with HIV infection)</p> <p>...that's why it is important that people who participate are of the same age, because that make it possible for them to share thoughts at the same level, since young people do not think the same way as adults do. (MSM, more than 12 years of education, 3 years living with HIV)</p>
Need of continuity	<p>These days, I wanted to comment on something, and I had no one. . . none of my friends know that I have HIV and I do not have contact with the GPS guys. I felt that when the project was finished, that's it, no more. Only once did I meet one of them on the street, I greeted him and that was all (MSM, more than 12 years of education, 3 years living with HIV infection)</p> <p>After the project, did you see anybody you knew again? . . . No. The day we said goodbye we exchanged numbers, Facebook, but none of them have spoken to me or seen me since then. I would have liked it because I do not have friends that I know who have HIV, so I did want us to leave and keep being friends. But I have no contact with any of them (MSM, less 12 years of education, 1 year living with HIV)</p>
Acceptability Content	<p>. . . well until now I thought the project was very well formed, all the tools were within our reach. Maybe add a few more audiovisual tools; There was audiovisual information in the project, but I think it needs more. (MSM, more than 12 years of education, 3 years living with HIV)</p> <p>When they do the exercises of disclosure situations, it would be good to use something audiovisual - a video- so as to break get to know how one may express that situation. (MSM, more than 12 years of education, 3 years living with HIV infection)</p> <p>Sure, my strategy was to write in the sexual diary that was given to us and that helped me remember what kind of relationships I had and I noticed a change. when I started the sexual diary I always went with other people and in the end, when we finished the program, I noticed that in the last month it was only with my partner and I felt at peace (with myself), a feeling of freshness (MSM, more than 12 years of education, 3 years living with HIV)</p> <p>So it helped me a lot when they talked in the project how to say it, how to explain it because there are people who have no knowledge of the subject; Before participating in the project I did not know about that. So it is a help. (MSM, less 12 years of education, 1 year living with HIV)</p> <p>I found great interest in goals for change, becoming more responsible about my sexual health, taking care of myself. . . (MSM, more than 12 years of education, 3 years living with HIV infection)</p>

(continued)



**Table 3. (continued)**

Appropriateness	Relevance and suitability of GPS
Facilitators	<p>And really, the people who participated in the project saw that the facilitators studied a lot and that gives them a lot of confidence because they know what they are doing and what they want to generate for the people <i>(MSM, more than 12 years of education, 3 years living with HIV)</i></p> <p>Yes, in fact, I think it is a fundamental aspect (to continue to have peers as facilitators) because that way they understand the situation more. Comments from them, from their daily lives, help a lot to build trust. Thus, this would be very <i>important (MSM, more than 12 years of education, 3 years living with HIV)</i></p> <p>There is more trust. They also have all the experience on the subject. (They have) very good and extensive knowledge <i>(MSM, 12 years of education, 1 year living with HIV infection)</i></p> <p>The gay world is sometimes very superficial. One feels very lonely, drugs, alcohol . . . I, for example, was very open. I commented that I had low self-esteem, that I went to Alcoholics Anonymous and that I was not afraid of anything. I did not feel singled out. <i>(MSM, more than 12 years of education, 3 years living with HIV infection)</i></p>
Effectiveness Achieving sexual goals	<p>Well, before that I didn't care to use a condom or not, now I do. Let's say I do it for the project, and mostly for myself. But in the project they told me a lot about how to do it and now it's easier to do it <i>(MSM, less 12 years of education, 1 year living with HIV)</i></p> <p>During the project, I understood many things about my sexual relationships, I learned to protect myself more, to take care of myself more, and to take more care of my body . . . In fact, one of the goals that I set was to be able to leave social networks and go to the gym. <i>((MSM, more than 12 years of education, 3 years living with HIV)</i></p> <p>I had the goal of not going to saunas, . . . it is a way to protect my sexual health; it is better not to go because there it is easy to have sex and you can get other diseases. <i>((MSM, more than 12 years of education, 3 years living with HIV infection)</i></p> <p>During the project, I had sex because they explained to me how to do it and I protected myself. I stopped drinking liquor like I did before. I no longer use drugs. Now when I have sex, I protect myself. The only thing I need to say is that I protect myself 100% and that the project worked for me completely. <i>(MSM, less 12 years of education, 1 year living with HIV)</i></p> <p>Changing the image I had of myself, healing my self-esteem. Low self-esteem was leading me to consume alcohol, and under the effects of alcohol I did not use a condom. That was risky behavior through which I got infected with HIV. I got hepatitis B and I can get other diseases. That goal I have reached. <i>(MSM, more than 12 years of education, 3 years living with HIV infection)</i></p> <p>Right now I feel happy, I feel very well, I have my partner and that is what I wanted most. I feel very good about health too. So that was what motivated me most in the project. Feeling the physical and inner changes that were really generated by the project <i>((MSM, more than 12 years of education, 3 years living with HIV)</i></p>
Disclosure	<p>So that doesn't worry me [disclosure]. I learned that one can disclose to someone who is HIV negative, it all depends on how much that person likes you. Now that I have a stable partner and I have not wanted to open up to other people, it has not been necessary for me to reveal my HIV status <i>(MSM, more than 12 years of education, 3 years living with HIV)</i></p> <p>I learned that if I am going to build a stable relationship at some point, it is healthy for me to reveal my diagnosis at the right time, but so far this opportunity has not happened <i>((MSM, more than 12 years of education, 3 years living with HIV infection)</i></p>

program. Narratives include that they were very knowledgeable about the prevention topics and about the intervention. Participants reported a good level of engagement and trust with the facilitators; they felt that having someone who understands their circumstances and who had lived through similar situations served as motivation to make changes.

Interestingly, despite the program running for 8 weeks with sessions of approximately 2 hr, there was no concern that the program was a burden timewise for participants. The participants instead thought that the program should be extended in terms of the time dedicated to each session and number of sessions. For all participants, continuing the program was important, especially if it was provided in the HIV clinic as part of routine care.

*Effectiveness:* The sexual goals participants wanted to achieve during GPS varied and included: using condoms; having a stable partner; reducing high-risk behaviors, such as alcohol or drug use; and increasing self-esteem. For all of them, either their goals were met or they were working to achieve them. Participants attributed changes in their sexual life to GPS (see Table 3 for examples of narratives). A common experience of most of the participants was gaining knowledge and confidence in protected sex, which is consistent with the quantitative findings. Participants attributed to GPS clear benefits in terms of identifying high-risk situations, such as reducing the use of apps, internet sites, going to saunas or clandestine sites, drug use and abuse of alcohol.

## Discussion

In this study, we culturally adapted a Prevention with Positives intervention, GPS, in a high-priority population in Colombia. The adapted version for MSM in Colombia required minimal changes, mostly related to the need to have more audiovisual and role-playing exercises. We hypothesize that the minimal need for changes in GPS is partially due to the use of motivational interviewing, which allows each participant to identify his own personal motivations to achieve his sexual goals. As such, this adapted version of GPS was highly appropriate for the population for which it was adapted. Participants felt that the program was needed, was relevant for their lives, and helped them to make changes. Participants highlighted the fact that GPS was well designed, offered a safe space to talk, and was effective in helping them achieving their sexual goals. Our study identified that adequately trained Colombian peers could effectively deliver GPS to individuals in their communities: All informants perceived facilitators as skilled, knowledgeable, and helpful counselors. Participants highlighted the need for more audiovisual material for future implementation of GPS, the importance of continuity, longer

exercise sessions, and the preference for groups of similar age composition.

To be consistent with other interventions in PLWH (Yin et al., 2014), we assessed the effects of GPS on CAS. The sample size rendered our study underpowered to detect statistical effects of GPS on CAS. At 3 months post-intervention, only one participant engaged in CAS with partners of unknown HIV status, the median levels of perception of self-efficacy were higher, and the median levels of depressive symptoms were lower. Depression affects 53% of patients attending the HIV clinic where participants were recruited (Mueses-Marin et al., 2019), and is highly prevalent in other MSM Latino living with HIV infection. Given the negative influence of depression in high-risk behaviors and adherence to antiretrovirals in PLWH (Mueses-Marin et al., 2019), these results show that GPS is promising for the sexual health of MSM living with HIV infection.

Various mechanisms could have contributed to those findings. First, all participants agreed that GPS provided knowledge on HIV prevention and other sexually transmitted diseases and this knowledge helped them make changes, consistent with the knowledge aspect of the IMB model (Cruess et al., 2018; Kalichman et al., 2008; Newcomb & Mustanski, 2013). Second, it is possible that the use of role-play scenarios facilitated maintenance or initiation of safer sexual practices (Kalichman et al., 2001). Third, MI has been associated with greater self-efficacy in PLWH: as the number of MI sessions increases (>131 min), the self-efficacy in safer sex increases (Chariyeva et al., 2012).

Importantly, we reported that peer interventions could be an effective way of delivery of information and counseling to Latino MSM, especially in PLWH. The group approach as well as the motivational interviewing format of GPS may have favored the discussion of sexual health with the facilitators (Golin et al., 2010). The training of peers in MI was feasible and they effectively delivered MI to participants. While other studies effectively used MI interventions for PLWH (Adamian et al., 2004; Naar-King et al., 2012) few have done so using peer facilitators (Hart et al., In Press). Due to issues around cost and sustainability of professional workers, peer-delivered behavioral MI interventions, including the GPS program (either attached to HIV clinics or in community organizations), therefore constitute appropriate alternatives to promote HIV prevention in Colombia and other Latin American settings.

## Limitations

Our study is limited by our sample size. Our initial sample was 60, or 10 groups of six participants each, but it proved not possible to either recruit this sample nor to effectively schedule all participants for group sessions.

We sought to recruit MSM with CAS in the previous 3 months, but only 27% of potential study respondents reported this. This means that implementation trials of GPS in Colombia will likely require sampling from several clinics around the country. Due to the small sample, we were not able to validate the Spanish translations of three of the psychosocial scales. Validated translations were not available at the time of our study. We measured participants using the same scales at each data point, which may underestimate the effects of the intervention over time. Finally, some of the criteria to establish trustworthiness of the qualitative data were not met in our study (Elo et al., 2014). We have included the perceptions of six of the seven participants who finished the intervention, and these experiences may not reflect the experience of those who did not complete the study or of other PLWH. Besides, our sample of PLWH may not reflect the social and behavioral characteristics of other MSM in Cali and other cities in Colombia (transferability). We have described the sample in different ways (credibility), and we know that the experiences of our participants are unique, as they have not received any other intervention during the time the study was conducted (dependability).

## Conclusions

Overall, GPS is a community-based intervention that has the potential to reduce risky behaviors in PLWH, improve self-efficacy in negotiation of condom use, and decrease depressive symptoms. Given the lack in Colombia and the scarcity in other Latin American interventions to improve the sexual health of MSM living with HIV infection (Maiorana et al., 2016; Vu et al., 2015), our study suggests that GPS can potentially fill this gap. Including an intervention as part of the care in HIV clinics would be beneficial for HIV prevention and improving the quality of life of MS who live with HIV. Future evaluations of the effect and implementation of GPS in other Latino MSM community settings are needed.



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## Supplemental Material

Supplemental material for this article is available online.

## References

- Adamian, M. S., Golin, C. E., Shain, L. S., & DeVellis, B. (2004). Brief motivational interviewing to improve adherence to antiretroviral therapy: Development and qualitative pilot assessment of an intervention. *AIDS Patient Care STDS, 18*(4), 229–238.
- Chariyeva, Z., Golin, C. E., Earp, J. A., & Suchindran, C. (2012). Does motivational interviewing counseling time influence HIV-positive persons' self-efficacy to practice safer sex? *Patient Education Counseling, 87*(1), 101–107.
- Crepaz, N., Baack, B. N., Higa, D. H., & Mullins, M. M. (2015). Effects of integrated interventions on transmission risk and care continuum outcomes in persons living with HIV: Meta-analysis, 1996–2014. *AIDS, 29*(18), 2371–2383.
- Crepaz, N., Lyles, C. M., Wolitski, R. J., Passin, W. F., Rama, S. M., Herbst, J. H., Purcell, D. W., Malow, R. M., Stall, R., & HIV/AIDS Prevention Research Synthesis (PRS) Team. (2006). Do prevention interventions reduce HIV risk behaviours among people living with HIV? A meta-analytic review of controlled trials. *AIDS, 20*(2), 143–157.
- Cruess, D. G., Burnham, K. E., Finitis, D. J., Goshe, B. M., Strainge, L., Kalichman, M., Grebler, T., Cherry, C., & Kalichman, S. C. (2018). A randomized clinical trial of a brief internet-based group intervention to reduce sexual transmission risk behavior among HIV-positive gay and bisexual men. *Annals Behavioral Medicine, 52*(2), 116–129.
- DiIorio, C., McCarty, F., Resnicow, K., McDonnell Holstad, M., Soet, J., Yeager, K., Sharma, S. M., Morisky, D. E., & Lundberg, B. (2008). Using motivational interviewing to promote adherence to antiretroviral medications: A randomized controlled study. *AIDS Care, 20*(3), 273–283.
- Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014, January–March). Qualitative content analysis: A focus on trustworthiness. *Sage Open, 4*(1), 1–10.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*.
- Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin, 111*(3), 455–474.
- Golin, C. E., Davis, R. A., Przybyla, S. M., Fowler, B., Parker, S., Earp, J. A., Quinlivan, E. B., Kalichman, S. C., Patel, S. N., & Grodinsky, C. A. (2010). SafeTalk, a multicomponent, motivational interviewing-based, safer sex counseling program for people living with HIV/AIDS: A qualitative assessment of patients' views. *AIDS Patient Care STDS, 24*(4), 237–245.
- Hart, T., Willis, A. C., Simpson, S. H., Julien, R. E., Hoe, D., Leahy, B., Maxwell, J., & Adam, B. D. (2016). Gay poz sex: A sexual health promotion intervention for HIV-positive gay and bisexual men. *Cognitive and Behavioral Practice, 23*(4), 517–529.
- Hart, T. A., Noor, S. W., Skakoon-Sparling, S., Lazkani, S. N., Gardner, S., Leahy, B., Maxwell, J., Julien, R., Simpson, S., Steinberg, M., & Adam, B. D. (In Press). GPS: A randomized controlled trial of sexual health

- counseling for gay and bisexual men living with HIV. *Behaviour Therapy*.
- Hart, T. A., Stratton, N., Coleman, T. A., Wilson, H. A., Simpson, S. H., Julien, R. E., Hoe, D., Leahy, B., Maxwell, J., & Adam, B. D. (2016). A pilot trial of a sexual health counseling intervention for HIV-positive gay and bisexual men who report anal sex without condoms. *PLoS One*, *11*(4), e0152762.
- Kalichman, S. C., Picciano, J. F., & Roffman, R. A. (2008). Motivation to reduce HIV risk behaviors in the context of the Information, Motivation and Behavioral Skills (IMB) model of HIV prevention. *Journal of Health Psychology*, *13*(5), 680–689.
- Kalichman, S. C., Rompa, D., Cage, M., DiFonzo, K., Simpson, D., Austin, J., Luke, W., Buckles, J., Kyomugisha, F., Benotsch, E., Pinkerton, S., & Graham, J. (2001). Effectiveness of an intervention to reduce HIV transmission risks in HIV-positive people. *American Journal of Preventive Medicine*, *21*(2), 84–92.
- Maiorana, A., Kegeles, S., Salazar, X., Konda, K., Silva-Santisteban, A., & Cáceres, C. (2016). 'Proyecto Orgullo', an HIV prevention, empowerment and community mobilisation intervention for gay men and transgender women in Callao/Lima, Peru. *Global Public Health*, *11*(7–8), 1076–1092.
- McKleroy, V. S., Galbraith, J. S., Cummings, B., Jones, P., Harshbarger, C., Collins, C., Gelaude, D., Carey, J. W., & ADAPT Team. (2006). Adapting evidence-based behavioral interventions for new settings and target populations. *AIDS Education & Prevention*, *18*(4 suppl A), 59–73.
- Miller, W. R., & Rollnick, S. (2009). Ten things that motivational interviewing is not. *Behavioral Cognitive Psychotherapy*, *37*(2), 129–140.
- Mora-Rojas, R. B., Alzate-Posada, M. L., & Rubiano-Mesa, Y. L. (2017). Prevención de la infección por el virus de la inmunodeficiencia humana (VIH) en Colombia: Brechas y realidades. *Revista Gerencia y Políticas de Salud*.
- Moyers, T. B., Martin, T., Manuel, J. K., Miller, W. R., & Ernst, D. (2010). Revised Global Scales: Motivational Interviewing Treatment Integrity 3.1.1. University of New Mexico Center on Alcoholism, Substance Abuse and Addictions (CASAA).
- Mueses-Marin, H. F., Montaña, D., Galindo, J., Alvarado-Llano, B., & Martínez-Cajas, J. (2019). Propiedades psicométricas y validez de la escala de depresión del Center for Epidemiological Studies (CES-D) en personas atendidas en una clínica de HIV en Cali, Colombia. *Biomedica*, *39*(1), 33–45.
- Naar-King, S., Parsons, J. T., & Johnson, A. M. (2012). Motivational interviewing targeting risk reduction for people with HIV: A systematic review. *Current HIV/AIDS Reports*, *9*(4), 335–343.
- Newcomb, M. E., & Mustanski, B. (2013). Cognitive influences on sexual risk and risk appraisals in men who have sex with men. *Health Psychology*.
- Nvivo. (2019). Nvivo Plus. Q. International, QSR international. 12.
- Proctor, E., Silmere, H., Raghavan, R., Hovmand, P., Aarons, G., Bunger, A., Griffey, R., & Hensley, M. (2011). Outcomes for implementation research: Conceptual distinctions, measurement challenges, and research agenda. *Administration and Policy in Mental Health*, *38*(2), 65–76.
- STATA. (2013). STATA, statistics/Data Analysis. S. corp, STATA corp. 13.1.
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal Quality Health Care*, *19*(6), 349–357.
- UNAIDS. (2017). COLOMBIA: Treatment cascade. <http://aidsinfo.unaids.org/>
- van der Heijden, I., Abrahams, N., & Sinclair, D. (2017). Psychosocial group interventions to improve psychological well-being in adults living with HIV. *Cochrane Database Syst Rev*, *3*(3), CD010806.
- Vu, L., Nieto-Andrade, B., DiVincenzo, A., Rivas, J., Firestone, R., Wheeler, J., & Lungo, S. (2015). Effectiveness of behavior change communications for reducing transmission risks among people living with HIV in 6 countries in Central America. *AIDS Behaviour*, *19*(7), 1203–1213.
- Wingood, G. M., & DiClemente, R. J. (2008). The ADAPT-ITT model: A novel method of adapting evidence-based HIV interventions. *Journal of Acquire Immune Deficit Syndrome*, *47* Suppl 1, S40–S46.
- Yin, L., Wang, N., Vermund, S. H., Shepherd, B. E., Ruan, Y., Shao, Y., & Qian, H.-Z. (2014). Sexual risk reduction for HIV-infected persons: A meta-analytic review of "positive prevention" randomized clinical trials. *PLoS One*, *9*(9), e107652.
- Zea, M. C., Reisen, C. A., del Río-González, A. M., Bianchi, F. T., Ramirez-Valles, J., & Poppen, P. J. (2015). HIV prevalence and awareness of positive serostatus among men who have sex with men and transgender women in Bogota, Colombia. *American Journal of Public Health*, *105*(8), 1588–1595.