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Implementing Evidence-Based HIV Prevention for Female Sex Workers in Mexico: Provider Assessments of Feasibility and Acceptability

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Abstract

This study examined service provider perceptions of feasibility and acceptability of implementing evidence-based practices for preventing HIV/AIDS and STIs in female sex workers (FSWs) in Mexico. Semi-structured interviews were conducted with 124 directors, supervisors and counselors from 12 reproductive health clinics located throughout Mexico participating in a large randomized controlled trial to scale-up the use of a psychoeducational intervention designed to promote FSW condom use and enhance safer sex negotiation skills. Feasibility was based on assessment of personal, organizational and social costs, benefits, and capacity. Costs included anxiety over intervention competency, purchase of condoms and other supplies, expenses of laboratory tests for HIV/STIs, and stigma associated with FSWs. Benefits included increase in personal knowledge and experience, enhanced clinic reputation and service delivery capacity, and

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

Compliance with Ethical Standards

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

increased public health. Capacity was expressed in terms of provider skills to deliver the intervention and additional workload. Acceptability was expressed in terms of provider enthusiasm in delivering these services and FSWs willingness to receive the services. Service provider evaluations of feasibility and acceptability of implementing evidence-based prevention interventions are grounded in local contexts that define costs and benefits of and capacity for implementation and determine features of the intervention and its implementation that are acceptable.

Keywords

HIV prevention; female sex workers; Mexico; low and middle income countries; evidence-based interventions; implementation

Introduction

Women who engage in sex work, often referred to as female sex workers (FSWs), and who live in low and middle-income countries (LMICs), have been disproportionately affected by HIV and other sexually transmitted infections (STIs) since the beginning of the epidemic (Strathdee et al. 2013; World Health Organization [WHO] 2012). Unsafe working conditions, stigma, discrimination, criminalization, and social marginalization are some of the many risk factors that make FSWs in LMICs highly vulnerable to HIV and STIs (Baral et al. 2012; WHO 2012; Wilson 2015). A meta-analysis found FSWs were 13.5 times more likely to be infected with HIV when compared to all women of reproductive age across 50 LMICs (Baral et al. 2012).

To respond to this global health threat, low-cost, culturally appropriate, evidence-based interventions, such as test and treat (T&T) (Stover et al. 2014; WHO, 2010), pre-exposure prophylaxis (PrEP) (Abdool et al. 2010; Choopanya et al. 2013; Thigpen et al. 2012), community empowerment (Bekker et al. 2014; Kerrigan et al. 2013), and psychoeducational programs targeted to promote condom use and safer sex practices (Burgos et al. 2010; McCoy et al. 2010), have been implemented worldwide. However, successful implementation of these efforts in LMICs remains limited (Kerrigan et al. 2015; Kongelf et al. 2015; McMillan and Worth 2016; WHO 2012; Wilson 2015), due to limited financial resources, lack of qualified providers (medical personnel and outreach workers), lack of political will, weaknesses in the governance of national health systems, and cultural differences (Baral et al. 2012; McCoy et al. 2010; Samb et al. 2010; Wilson 2015). Although the decision to implement EBPs in high-income countries (HICs) has been tied to contextual factors, the intervention itself, and characteristics of the patients/clients and providers (Aarons et al. 2011; Damschroeder et al. 2009; Fixen *et al.* 2005; Greenhalgh et al. 2004), it remains uncertain whether similar factors operate in the assessment of feasibility and acceptability by providers in LMICs. For instance, we are unaware of any study conducted in an LMIC that has examined whether those responsible for implementation of an EBP take into consideration the characteristics of the intervention or the inner and outer setting and, if they do, how they prioritize these factors in their decision-making processes. Moreover, despite recent calls for tailoring implementation frameworks in LMICs and specific issues

like HIV prevention (Bhardwaj et al. 2015), the extent to which such frameworks are useful in understanding the local context in which EBP implementation occurs in LMICs is unclear. Such contexts are important to understanding the assessment of implementation costs and benefits (Authors 2017a).

A recent investigation of the implementation of Mujer Segura ("Healthy Woman"), an efficacious behavioral intervention for prevention of HIV and STDs among FSWs in Mexico (Authors 2008) provides the context for an examination of how medical personnel and outreach workers in LMICs assess the feasibility and acceptability of evidence-based prevention program implementation. An earlier study found that the cumulative incidence of STIs among FSWs randomized into Mujer Segura (MS) was reduced by 40%, with significant decreases in HIV and STIs, and concomitant increases in total numbers and percentages of protected sex acts and decreases in total numbers of unprotected sex acts with clients at six-month follow-up (Authors 2008). We partnered with the Mexican Foundation for Family Planning (MexFam), a non-governmental organization (NGO) that operates family planning clinics throughout Mexico and examined whether a "train the trainer" model of implementation (Weiss et al. 2015) could develop a network of HIV/STI prevention services for FSWs with self-sustaining levels of intervention fidelity and provider competency.

The aims of the current study were to examine service provider perceptions of feasibility and acceptability of implementing evidence-based practices for preventing HIV/AIDS and STIs in female sex workers (FSWs) in Mexico at the preparation stage of implementation (Aarons et al. 2011), and to explore the decision-making process of providers in weighing the potential costs and benefits of implementation. The absence of a widely accepted model of provider assessment of EBP implementation costs and benefits in LMICs like Mexico and the desire to examine the decision-making process in depth necessitated the use of qualitative methods to achieve both aims.

Methods

Design

Mujer Segura was a multi-site, randomized controlled trial (RCT), with a two-arm, wait-list design and a 50/50 allocation ratio of FSWs that tested a safer-sex intervention using a "train the trainer" model of implementation. The clinical intervention is a brief (35 to 40 minutes), single-session, intervention that combines principles of motivational interviewing (MI), social cognitive theory, and the theory of reasoned action (Bandura 1986; Miller and Rollnick 1991). MI techniques (e.g., key questions, reflective listening, summarization, affirmation, and appropriate use of cultural cues) are used to increase the participant's motivations to practice safer sex. In the context of sexual risk reduction counseling, "train-the-trainer" involves identifying a staff member who has some expertise in HIV/STI counseling and teaching that person how to train other staff in delivery of the counseling program. The "train the trainer" implementation strategy is considered a good choice for agencies with limited financial resources, such as family planning clinics and non-profit organizations (O'Brien et al. 2015). Complete details of the intervention and the RCT are

found elsewhere (Authors 2008; Authors 2012). The present study focuses on qualitative interviews conducted with participating clinic staff.

Participants

MexFam operates sexual and reproductive health programs in 22 of the 32 states in Mexico. Among its other community health programs, MexFam has worked to increase HIV prevention through advocacy, gender- and culture sensitive interventions, and educational media campaigns (Fundación Mexicana Para La Planeación Familiar A.C. 2016). To make the sample of sites representative, the research team collaborated with MexFam to include clinics with varying capacities, sizes, and geographic locations. Each site had to meet the following minimum criteria: a staff member qualified to be an internal trainer; a core of approximately six to eight staff members who could be trained as intervention counselors; a director willing to have staff trained in the intervention; a strong positive reputation in its community; the capacity to deliver professional peer-to-peer training; and strong cultural competency and willingness to work with FSWs. From 23 eligible clinics, 13 were randomly drawn for participation in this study. One site subsequently withdrew from the study, leaving 12 sites at the time of follow-up. Participants from each clinic included one internal trainer, approximately six to eight persons qualified to deliver the intervention, two supervisors, and the local clinic administrator. Approximately 76% of the participating clinic staff were women, the average age was 35 (S.D. = 10.7) years, and the average number of years of formal education was 1.6 (S.D. = 3.5). An internal trainer from each of the 13 sites received intensive training from the intervention developers and from counselors who delivered MS in the efficacy study. Then, the internal trainer trained other clinic staff to be counselors (Authors, 2017b).

Interviews were conducted with the director of each site since they directly influenced the implementation of the intervention. All other interviews were conducted with all staff who directly participated in the delivery of the intervention. The percentage of work time spent conducting MS counseling was recorded for all staff in each clinic (75 percent of staff spent > 50% of their work time providing counseling).

This study, including procedures for obtaining informed consent, was approved by Institutional Review Boards in the United States and Mexico. Written informed consent was obtained from study participants prior to data collection; all consents are on file.

Data collection

Data for this present study was obtained from semi-structured interviews conducted one month after project initiation and clinic recruitment with 124 clinic directors, supervisors and counselors participating in the RCT. Each interview was conducted in Spanish and lasted approximately 60 minutes. These interviews were informed by the Exploration, Preparation, Implementation, and Sustainability (EPIS) framework, a conceptual model for public sector implementation proposed by Aarons and colleagues (2011). Questions during the baseline interview elicited information about inner setting characteristics of the organization and provider attitudes towards implementing new and innovative practices in general. Questions were open-ended to allow respondents to elaborate on issues they

consider important or relevant. Sample questions included: How willing are you to try new types of therapy or interventions with clients? If you were to be involved in the implementation of a new program, would you have any concerns? What would be your biggest concerns? Are there any benefits to implementing a new treatment program here in your clinic that you can think of? What are they likely to be? Interviews were audio-recorded and transcribed for analysis.

Data Analysis

A thematic analysis methodology of "Coding Consensus, Co-occurrence, and Comparison" (Willms et al. 1990), developed specifically for prevention research, was used to analyze the semi-structured interviews. Audio-recorded interviews were transcribed and reviewed by three investigators, who individually developed and applied a series of "open" codes to describe the information contained in the transcripts (Straus and Corbin 1990). These codes were subsequently discussed, matched and then integrated into a single codebook. Each text was independently coded by at least two investigators and disagreements in assignment or description of codes were resolved through discussion between investigators and enhanced definition of codes. The final list of codes, or codebook, constructed through a consensus of team members, consisted of a list of themes, issues, accounts of behaviors, and opinions that related to MS adoption and implementation. Inter-rater reliability in the assignment of specific codes to specific transcript segments was assessed for a subset of randomly selected pages from 10 transcripts. For all coded text statements, the coders agreed on the codes 98% (range = 96% – 100%) of the time, indicating good reliability in qualitative research (Boyatzis 1998). The Dedoose qualitiave data management program was used for coding and generating a series of categories arranged in a treelike structure connecting text segments as separate categories of codes or "nodes." These nodes and trees were used to further the process of axial and pattern coding (Straus and Corbin 1990) to examine the association between different a priori categories based on EPIS framework domains and emergent categories related to the topic of MS implementation. English translations of text segments were reviewed by bilingual investigators for accuracy.

Results

Analysis revealed two sets of considerations associated with MS implementation: feasibility of implementation, which was further divided into an assessment of costs, benefits, and capacity to implement, and acceptability of the EBP. Each of these sets is examined in detail below.

Feasibility: Costs and Benefits

Several costs and benefits were identified by study participants that were grouped into three categories: personal, organizational and social. Personal costs were the most frequently cited costs to Mujer Segura implementation. Several of the counselors expressed some anxiety over their ability to administer the Mujer Segura intervention with competence. As one counselor noted, "It can be said that all that is new is scary, but you also have to confront the fear and the new challenges." Counselors appeared to have set high expectations related to

their own performance, thus experiencing “a certain nervousness for wanting to do things correctly.”

> “More than a concern, it is about the responsibility, right? The concern would be on doing things in the right way, right? Methodically, organized....with certitude and honestly with capacity, with delivery, with effort and maybe the word that it is missing would be “sacrifice”, right? Because we also have to give something of ourselves to our society” (counselor).

Likewise, counselors expressed anxiety over whether FSWs would accept the MS intervention. When asked if she had any concerns related to implementing the intervention, one counselor replied:

> “Well, I think that first with a little bit of fear right? To say it like this, how the clients are going to accept it? I don’t know if they are going to support it well, but I know the group of women I work with. I believe that is like everything when something new arrives, right? But, equally, I do worry.”

Lack of client acceptance or interest in participating in the intervention, in turn, could seriously jeopardize the long-term success of the implementation effort. According to one clinic leader: “No, the only concern [I have] would be [client] non-compliance because I don’t like to fail, and because, yes, sometimes it has occurred, to projects [that were well implemented]. That is the only thing that would worry me.”

In addition to FSW acceptance and interest, long-term success is also viewed as being dependent on willingness of the clinic to sustain the intervention.

> “Those were the disadvantages that I see that I was telling you yesterday, that it’s not being followed up. Regrettably, the migrants project went well… but when the project was finished, it was like it was never implemented. Once it was completed, it was like you say ‘Oh, there, that’s it. It is finished’ and that you are no longer going to give out information for prevention, that is, like the disadvantage, eh, maybe the contact is done and then afterwards the project disappears or that project stops working and that line of health promotion is no longer followed” (counselor).

A third source of counselor anxiety was related to concerns that the intervention may not produce the desired outcomes: “If the objective is not met as it should be, that would be my concern” (counselor).

> “I believe that a change is good if at the end this change is beneficial to the patients. And of course, at first there is an uncertainty about a change because we just don’t know the outcome. But, if it is going to be beneficial, then we need to adapt to the new changes” (counselor).

Related to concerns over personal competence in delivering the intervention and that the intervention may not produce desired outcomes was a concern that personal efficiency might suffer as a result of the additional responsibilities that came with implementing the Mujer Segura intervention. As one counselor stated: “What for me would be disturbing is the time that would take me with the patient in not finding the rest of the time of the other patients that I’m in charge of in counseling and the other doctors. In that case I would be worried.”

Other counselors worried whether they would be compensated for the addition to their workload:

> "When there is talk about there is going to be something new that something different has to be implemented I think that there is always a little reaction of fear and a bit of resistance also because you question if we are going to be able to do it or not going to be able to do it. If more work has to be done and, obviously, with the same salary" (counselor).

Another source of anxiety had to do with concerns over personal safety and security. Some counselors expressed a fear of going into neighborhoods where the FSWs worked, especially in communities with reputations for drug-related violence. As one counselor explained it:

> "I'm going to be honest with you and I do have some concerns about implementing specifically this project here in San Luis Potosi in regards to security issues, and I'm thinking about the safety issue in the whole state of San Luis Potosi because I've heard that in dealing with female sexual workers, we'll be also dealing with the possibility of having to deal with the organized crime perhaps at an indirect level, so this has been a little bit of my concern."

In addition to the costs to providers, costs to the clinics were also cited as potential barriers to implementation. One such cost was the laboratory tests associated with conducting HIV testing as part of the intervention. According to one clinic director:

> "What causes me a lost of restlessness is with respect to the laboratories, right? There are tests. I mean, I have the previous experience of being a clinical laboratory technician, I know the price. I know the management of everything in the laboratory, and that is not cheap. Then, if we are going to offer [Mujer Segura] within the clinic, these tests must be made. Who is going to pay for them?"

Along with these costs, there was concern expressed by some participants of further dependence upon MexFam for support: "I mean it is not our deal, we are not handling the resource, we don't have available financing as such but we would be depending on MexFam [headquarters], then that part does concern me more than the operations part" (supervisor).

The primary benefit of participation in the Mujer Segura Project and using the intervention with FSWs was personal in nature. Almost every participant cited the increased knowledge and experience gained from having been trained in the intervention and participating in the project. As one counselor stated: "I am willing because it is something that I am learning right. And it is always like a benefit for oneself to learn new things and in this type of projects even better, right?"

Related to the benefit of increased knowledge was the benefit of using a practice that was evidence-based. For instance, according to one of the counselors:

> "I think that the scientific investigation it's at least for me the basis of everything and that everything has an order and an organization, and if all of this is respected well it will have success and if there won't be modifications that can alter the results in any manner because I think that depending on whether each team member is doing a good job, it will give us a good result in which programs that can be

> applied to the community can be identified, but as long as it is really made with responsibility and honesty with a good criteria and with ethics. Because if we don't do it with all of that, then I think that the results won't be real and the program that is applied is not going to be in reality the one that the community needs. But, if it is to be done correctly, it is truly important that it has a scientific evidence based."

Along with the increase in knowledge and experience, counselors noted the personal satisfaction that came with delivering the intervention. This satisfaction is illustrated in the following:

> "Because the more programs the community has, it's better for the society, for our town, for all the persons that live here, especially women, right? Then, for me, the fact that I am here and knowing that I am participating to achieve benefits for ourselves, I would even include myself, right? That satisfies me" (counselor).

> "Well then, I think that reflects the knowledge that I have and the opportunity to acquire new knowledge, new abilities and well a personal satisfaction because well at least for me I feel that those satisfactions are more fulfilling sometimes than the financial benefits. Because, honestly, with the experiences that I have had, maybe I don't have a lot of money but I have a lot of satisfaction. So, as a human being it is the best. And if I can participate in something that will benefit the community, well for me, it is very important" (counselor).

The second most frequently cited benefit to implementing Mujer Segura was organizational. A few of the clinic leaders and counselors cited a potential increase in the number of clients and services offered to them: "Well, mainly, the clinic will have more patients because more people will be coming for these services and for testing and then as we provide these services we'll acquire more knowledge and we'll be able to help more patients, right?" (counselor). More clients and services, in turn, would also likely bring an increase in revenues generated by the clinic: "If we see it in an unemotional way, yes, well more money because if more people now about the clinic well it an financial benefit for the organization … (counselor).

Another benefit to the organization associated with Mujer Segura implementation was improved delivery of services, both in terms of improved quality and greater efficiency. One counselor asserted that adopting a new intervention like MC "because that way we would move faster and spend less time with the patient." Another counselor reported feeling glad to implement an intervention that gave FSWs "more options of care, and also so they can see that we are concerned about their needs, and to provide a better service."

Perhaps the most important benefit to the organization, however, was the enhanced reputation of the clinic and its sponsor, MexFam. As explained by one counselor:

> "Well, whenever a project is included in MexFam or that kind of thing, I feel it helps a lot. It helps a lot because it promotes MexFam. MexFam is already an institution with several years [of experience], but also there are a lot of people who don't know it, and being developing new programs is reaching to people that we

have not worked with before and at the end that people get to know us, and we know they are going to stay here, right?" (clinic director).

As illustrated by this statement, particular benefits to individual clinics and the local level included recognition of the staff and greater stability and self-sufficiency. However, the enhanced reputation was perceived to occur at the national as well as the local level. Ccording to one of the clinic directors: "… But I also think that it [Mujer Segura] will be good for the [MexFam] organization. I think that it will give it more…, it will lay the foundation of being an organization that also works with larger theory-based projects of a higher scientific level, and I also think that this will help the organization."

The third most frequently cited benefit was to the community at large. Social benefits included improved health outcomes for FSWs and promotion of the public health of the community as a whole.

"The benefit above all should be the goal of benefiting the population, right? First, to the population that is going to be the subject of the study in giving them new alternatives, a better health status, and that would be the most important thing or the most relevant thing about a new treatment. Second, in regards to the operative part of this new study or new program, it would be good for the community to know that these programs will benefit our society and that would generate trust for our services…" (counselor).

Feasibility: Capacity

In addition to assessing costs and benefits associated with the implementation of MS, participants also evaluated the capacity to implement the intervention. As with costs and benefits, capacity was assessed at the level of the individual, the organization, and society at large. Capacity at the level of the individual counselor related to concerns about whether counselors were adequately trained and supported.

"Well, it's like [name of the participant] was commenting on, my concern and my question are: How much support are we going to be getting for participating in this project? Because we are going to learn a lot of things and a lot of things are going to come out and I like to investigate and I would like to know how much support are we going to be receiving and how far are we going to go to reach a solution? " (Counselor).

"I just think that it's more about the training and as long as we all agree that we need to learn while receiving training and as long as it works, then there is no problem" (counselor).

Individual capacity was also expressed in terms of willingness to adapt to new policies and procedures, as illustrated in the following:

"Because for example, X, who will be here shortly, she was telling us that she went to a bar and she was talking about the project, and a man got too close to her and he grabbed her leg. She said that he had confused her with a sexual worker, so then it is like we are going to have to adapt or change the way we talk to people like the bar owners about the project that deals with the sexual workers. So, this is

> something very different than talking about breast cancer, right? We are going to be providing HIV lab testing, but that's when we have to get involved in recruiting these women to participate in this project. And I feel that this is a great project and each one of us need to adapt to each project from the implementation point of view in regards of handling the project in this clinic, right? (counselor).

However, as with most forms of EBP implementation, counselors expected to also adhere to the intervention as designed: As expressed by one counselor: "In this case, well, a program developed by an investigator that has been approved and is effective, to implement it you must follow a manual exactly."

Finally, the capacity to implement the intervention was consistent with an individual counselor's willingness to keep up with latest practice developments. According to one of the clinic supervisors:

> "Always, always…as physicians we are living a constant evolution of training, a constant revision of bibliography and experience, not only here, but also around the whole world. And if we don't keep up with the medical findings based on the evidence that if I've been practicing my profession for the last 20 years, but if I've not evolved with the new findings, then I would have been treating patients in an old fashion way." (supervisor).

Capacity at the level of the organization was assessed by providers in terms of an organizational culture and climate supportive of implementing new practices, availability of staff necessary to conduct the intervention and support the clinical testing of FSWs for HIV and STIs, and resources to treat patients found to be infected. Several participants cited experiences with implementing other EBPs as the basis for their assessment of the clinic's ability to implement MS, as in the following instance:

> "Here at Mexfam, we have several projects that come to us. For example, it is breast cancer awareness that we were talking about these days where we are teaching the community about three very important steps where the ladies involved were sensitized very well, where they participated along with their husbands and we taught them about the three ways in which they can detect breast cancer… I thought we did a good job. Originally, I was afraid since I was the coordinator because I wasn't sure about how many women from this area were going to participate, but … in the areas participating in the breast cancer project, there were many people involved, like the municipal agents from each community and the departments VIPs and also the Mexfam personnel, which the nurses and the physicians were also conducting Pap smear testing free to the community… And each project includes many of the same steps as I've already mentioned, and for example, right now we are going to be dealing with the sexual workers, which in the past we have not been involved with them and the way to reach them is very different and on how we talk to them about the project."

Adequate staffing was considered to be another potential barrier to MS implementation. When asked about her experience with implementing the intervention, one counselor told of delays in "submittal of blood samples, changes in the formats, and the manner of how to tag

or sometimes the shipment of the supplies, this slowed us a bit." Another counselor stated she "would have liked to have had a little more staff support." Another element of organization capacity mentioned by participants related to the level of support for the intervention from the organization's leadership:

> "I think that the administration or the supervisor helped us a lot, and well I think that basically all of this was done because she was there helping us, supporting us, orienting us, cheering us so that we wouldn't get discouraged, so that we would keep going and continue, making us understand that this project was very significant, not only for the people, but personally it was going to be very significant for us" (counselor).

Use of the MS intervention was also viewed as likely to increase the number of FSWs in need of treatment, and concern was expressed over the capacity of the clinic to provide that treatment.

> "Everyone has different motives for feeling stress; I think that it's different to everyone, right? For example, in the medical area, the stress is sometimes related to when we get seriously ill patients and the commitment that the nurses feel towards this patient in order to provide the best possible care by following the physician's indications. In the administrative area, the stress can be related to finding ways of providing the resources that are needed here in order for us to provide our services to the patients, because sometimes we lack some resources and we can't provide the needed services to the patients. And sometimes we need to make adjustments that at times are not within the protocol in order to respond to the lack of resources so we can provide the needed services, so we have to adjust to certain issues in the best possible way" (counselor).

Capacity at the community level was expressed in terms of government and community support. For instance, one clinic director noted the importance of securing the support of the community where FSWs live and work and of community leaders:

> "On the one hand, we have established a presence in the neighborhood [where FSWs live and work] where we have been particularly working in the institution of birth control methods. On the other hand, we have been looking at who could be the leaders that can facilitate the way and I have planned also to speak with the local Municipal president and that he sees this as a positive possibility eh… for the population even for him and then sell him the idea that he must do something very good that we need to have support from him."

Capacity was also expressed in terms of access to the FSW population. For instance, one counselor commented on the inability to work in the community at a time when a widely viewed event, the Pan American Games, was being held.

> "There was a day when we could work well, yes, but because it was when the Pan Americans [Games], and that they were going to have an event here in the Morelos park, really, well, that day we couldn't work because they took out all of the sex workers, so we didn't find anyone."

Similarly, access to clients is affected by their high mobility. As one counselor observed: “Many of these sex workers are, are a mobile population… Many of them come from Central America. They come through here then they leave. This is one barrier, how to keep these women, right?” Another counselor identified lack of residential continuity as a potential barrier to implementation: “because we must contact them again in a period of six months.”

Acceptability

The final theme related to implementation of the Mujer Segura intervention related to its acceptability to counselors and FSWs alike. As noted earlier, counselors were in agreement as to their perceived benefits of the intervention that extended to themselves, their clinics and society at large. As one counselor noted at the outset of the study, “there is a lot of excitement to implement the project.” Nevertheless, some counselors admitted that this excitement was not shared by every clinic staff member.

Acceptability of the intervention to individual counselors was based on characteristics of the intervention and capacity to implement it. As explained by one of the counselors, “as long as they are based on evidence, excellent, Right?, and as long as I have like the, the tools as well as the training.” Acceptability was also assessed in terms of evidence of positive outcomes. As stated by one counselor:

> “Personally, I would prefer it if the program is well defined on what it is going to be based on. I like the qualitative and statistical investigations and all of that. And also later on, once we have been implementing the new program or project to get the feedback on how the program is going and if it is working out, too.”

Acceptability was also associated with willingness of counselors to work with FSWs. According to one of the clinic supervisors:

> Like I tell them [staff], “look, your personal beliefs, with respect to… if they profess some religion or any other situation that you are against it, you leave it there at the door, because people that come here do not come here to be judged, do not come here to be criticized, do not come here for any of that, they come to receive a service, and if you meddle for two pesos, that is your problem, not the clients”.

However, of greater concern was whether the intervention would be acceptable to the FSWs. As noted earlier, several counselors admitted they were anxious because of the uncertainty of whether the FSWs would be interested in the intervention or coming to the clinic to receive it. As one counselor stated: “The barrier [to implementation] I think would be the [sex] worker, right? That she would [not] have confidence in the institution, in the people that are going to be working with her, and most importantly that she would [not] have full confidence that they will be in good hands, that they will have a benefit, actually both, it is going to be a mutual benefit.” Such acceptance was, in part, based on FSW trust in the clinic, as noted by one counselor: “I think also that there is trust in the name of the institution and they were saying that this population [of FSWs], they were saying, ‘who is going to do the tests? MexFam staff, or other people? Well, if it is MexFam staff, we will go

because we trust them, we know that the information is not going to get out'." However, acceptance is also tied to the perceived stigma of being a FSW, which prevents them from seeking services: "The acceptance of the people, because since we are still close minded here, because of the type of population that is in this area that is still a little bit closed to acceptance, we have enabled them [FSWs] to be seen, but there are still things that are hard for them" (supervisor).

Concern about the acceptability of the intervention extended to those in the community who managed the sex trade, i.e., pimps.

> "Well, barriers it could be eh… maybe the ladies' leaders… Sometimes, they are distrustful. The only risk I can see is that eh… we have to be very careful with the leaders or coordinators that handle them [i.e., the FSWs] so not to put some people [i.e., counselors] in any risk. That would be my opinion" (counselor).

Discussion

In this study, we identified service provider assessments of the feasibility and acceptability of implementing an HIV prevention intervention for FSWs in a LMIC such as Mexico. Feasibility was evaluated in terms of perceived costs and benefits of the intervention and its implementation and the capacity for implementation. Costs and benefits of implementing Mujer Segura were personal, organizational, and social in nature. Personal costs included anxiety over personal competence and FSWs' potential non-compliance of the intervention, concern over long-term support and sustainability of the intervention, fear of not producing desired outcomes, having to assume additional responsibilities, and concerns over personal safety. The primary personal benefits were the provider's satisfaction in meeting the needs of both clients (i.e., FSWs) and the larger community, increased knowledge and experience, and use of a practice that was based in scientific evidence. Organizational costs identified were costs associated with conducting HIV tests and concerns of depending on MexFam's support, whereas organizational benefits were a potential increase in the number of clients and services, increased revenues, improved quality and efficiency of services, enhanced reputation of the clinic, and staff recognition for their work with this population. Perceived social benefits were improved health outcomes for FSWs and promotion of the community's public health as a whole. Capacity was also expressed in terms of the personal, organizational, and social level: perceived personal capacity was expressed in terms of adequacy of training of counselors and willingness to both adapt practice behavior and implement with fidelity; organizational capacity was a supportive organizational culture and climate, availability of staff, support from clinic leadership, and resources to treat HIV positive clients; and social capacity was government and community support, and access to FSWs.

Acceptability was expressed as provider enthusiasm for delivering the services, based on characteristics of the intervention and capacity to implement, evidence of positive outcomes, and willingness to work with a stigmatized population. It was also expressed and the willingness of both FSWs' and their managers (i.e., pimps) to have these services delivered. These issues are consistent with implementation frameworks that are being applied in

LMICs (Authors 2015; Bardwaj et al. 2015) and for identifying and assessing important implementation outcomes (Proctor et al. 2011).

During the development phase of the implementation study, our expert panel of binational researchers and community consultants identified a number of anticipated barriers or costs associated with implementation of the EBI. These included financial and economic concerns, competition from other service providers, concerns that the EBI would take time away from other activities, and concerns about ongoing support and commitment to the long-term sustainability of the program. The findings of the providers in the 12 sites, especially those related to costs, reflect many of the expectations that were considered, discussed, and problem-solved during the development phase of the research.

Many of these assessments have been identified in previous studies of HIV interventions implemented in LMICs, such as positive provider and client assessments of the intervention itself (Leon et al. 2013), appropriate numbers of staff and their training (Leon et al. 2013), having strong leadership and champions (Milat et al. 2015), need for increased funding (Wilson 2015), and challenges in accessing highly mobile FSWs and in retaining them until the follow-up phase (WHO 2012). Some factors identified in previous studies were not featured in our study. For example, the new intervention's congruence or fit with existing clinical practices was mentioned as a key element of implementation in another study (Leon et al. 2013). Although participants in this study expressed fears about implementing a new intervention with a higher evidence-based standard of service, it appeared that they were focused more on personal satisfaction in gaining more knowledge and experience and anticipated positive impacts on FSWs, clinics, and the wider society. In addition, lack of political will and national policies (Milat et al. 2015; Wilson 2015) was not explicitly featured in our study; however, this was indirectly expressed when our participants noted that Mexican society is still close minded about FSWs and HIV, and when a director stated that he was looking for a local municipal president who could support the intervention. This is consistent with other findings in HIV prevention implementation in LMICs (Aarons et al. 2016; Authors 2015; Shahmanesh et al. 2008).

Findings of this study exhibit several similarities to current implementation models and frameworks. For instance, the need for financial resources, concerns of further reliance on their sponsor (MexFam) for administrative and financial support, and promotion of the public health of the wider community reflect components of the outer setting of implementation (Aarons et al. 2011; Damschroeder et al. 2009; Greenhalgh et al. 2004). A supportive organizational culture and climate, potential increase in the number of clients and quality of services, enhanced reputation of the clinic, recognition of the staff, and support from organizational leadership reflect the inner setting of implementation; confidence in the scientific evidence base of MS, improved health outcomes for FSWs reflect characteristics of the intervention itself; concerns about acceptability of and access to FSWs indicate characteristics of the clients; and satisfaction associated with delivering the intervention and anxiety over counselors' competence mirror characteristics of the providers (Aarons et al. 2011; Damschroeder et al. 2009).

To some degree, our study findings were consistent with the themes that were identified to influence the decision of providers to adopt EBPs in HICs like the United States: costs and benefits associated with adoption, capacity for adoption, and acceptability of new practices (Authors 2017a). However, our results provide additional perspectives about how providers in low-resource settings decide to implement evidence-based and innovative practices. First, they illustrate the importance of understanding the local context in which the EBP is implemented, which is consistent with prior research (Authors 2015; Milat et al. 2015). Participating clinics were concerned that they would have to continue relying on MexFam's headquarters because their sites could not finance all the costs associated with the intervention and lacked sufficient staff to administer the intervention, but at the same time, they stated that FSWs might be more likely to accept the intervention because of their trust in MexFam as an organization. This reflects a tension between desired self-sufficiency and self-determination and the need for depending on the central offices of MexFam to foster the implementation of Mujer Segura. Another tension was found when many participants expressed some anxiety over their ability to conduct a new intervention, while almost every participant mentioned the benefits of acquiring new knowledge and experience and gaining personal satisfaction from delivering the new intervention. Local context was also portrayed in participants' fear of potentially being stigmatized for working with FSWs while recognizing the need for securing support from the community and government, fear for their safety when implementing MS in neighborhoods where FSWs lived and worked, and the emphasis placed on the anticipated benefits of implementation for individual clinics and MexFam as an organization.

Second, findings of this study illustrate the interconnected nature of feasibility and acceptability, similar to previous studies (Chimeddamba et al. 2015; Authors 2017a). Participants' assessments of benefits were viewed as the opposite of costs in most respects. For example, the anxiety of delivering the intervention with competence (personal costs) was in contrast to the anticipation of increased knowledge and expertise gained from participating in the project (personal benefits), which could be mediated by adequate training of staff (personal capacity). Likewise, the expenses associated with purchasing condoms and conducting laboratory tests (organizational costs) were contrasted with the potential increase in revenues due to more clients and services (organizational benefits); and additional workload of staff (personal and organizational costs) could be reconciled with increased staff support to administer the intervention (organizational capacity), so that it does not compromise the desired outcomes of the intervention (personal costs). In addition, improved health outcomes for FSWs and the society at large (social benefits) appeared to impact personal satisfaction (personal benefits), growth of the clinic and its enhanced reputation (organizational benefits), which, in turn, was likely to be connected to obtaining government and community support (social capacity). Further, such increased support could contribute to increased trust in the clinic among FSWs and their managers (i.e., pimps) (acceptability of clients). However, further research is needed to confirm the direction of causality and determine whether certain factors could mediate the relationships as mentioned above.

Finally, upon conclusion of the RCT, the 12 sites were expected to assume responsibility for continued training of counselors to use the Mujer Segura intervention with female sex

workers, with support from MexFam, as the investigators were not funded to provide ongoing training and technical support beyond the timeframe of the RCT. An earlier study based on the follow-up interviews and focus groups identified five requirements for sustainability of Mujer Segura: 1) characteristics of the provider, including competence in delivering the intervention, need for continued technical support and assistance from outside experts, and satisfaction with addressing the needs of this population; 2) characteristics of the clients (i.e., FSWs), including client need and demand for services and incentives for participation; 3) characteristics of the organization, including its mission, benefits, and operations; 4) characteristics of the outer setting, including financial support and relationship with the community-based organization's central offices, and transportation and security in areas where FSWs live and work; and 5) outcomes associated with the intervention itself, including a reduction of risk through education and increased outreach through referrals from FSWs who received the intervention (Authors, 2015). However, additional research is required to assess the extent to which the sites have been able to sustain the Mujer Segura intervention and the extent to which provider assessments of costs and benefits identified in this study contributed to sustainability. Although the literature of intervention sustainability has highlighted the importance of implementation outcomes at earlier stages (Chambers et al. 2013; Cooper et al. 2015; Feinberg et al. 2008), as the EPIS framework illustrates, different aspects of the outer and inner context may be more prominent or manifest differently during different phases such that the factors that may be associated with earlier stages of exploration, adoption and implementation may not be the same as the factors associated with sustainability (Aarons et al. 2011).

Our findings and their significance must be evaluated with caution as this study was subject to several limitations. First, as a qualitative study, the generalizability of these findings is limited by the purposeful selection of study participants representing directors, supervisors and counselors from clinics connected to one national NGO that serves FSWs and other women in Mexico. However, this concern could be somewhat mitigated by the very high proportion of eligible clinic staff who participated in this study. In addition, the specific needs and perspectives of this stakeholder group must be kept in mind when evaluating the significance of their assessments of factors that influenced their decisions to implement innovative programs and practices. Other stakeholders, such as MexFam central administration and local, state and national health officials, nonclinical staff, and clients may identify additional non-overlapping factors based on their respective roles. Generalizability of these results could be assessed by administering a more systematic survey of a random sample of each group. Moreover, it is possible that participants responded in ways to meet the expectations of the researchers (i.e., social desirability bias) by overstating benefits and understating costs of implementing the intervention to a stigmatized population, particularly when they represent personal level factors. Our focus on factors influencing the implementation of an individual-level behavioral intervention targeting sexual risk reduction in Mexico might also limit our ability to generalize to other evidence-based HIV prevention approaches in other LMICs.

Lastly, this study did not examine whether assessments of feasibility and acceptability and decision-making processes were associated with intervention effectiveness or implementation outcomes. An earlier study found that at lower levels of fidelity, negative

condom attitudes predicted greater condomless sex acts, whereas at higher levels of fidelity, the effect of condom attitudes became weaker (Authors, 2017b). Complete fidelity was observed in only 15 percent of the sample of FSW/counselor sessions and more than half of the sessions achieved at least 90 percent fidelity. However, the study did not examine any predictors of fidelity or any other implementation outcomes. Moreover, the RCT was not designed to evaluate the effectiveness of the implementation strategy as neither study sites nor counselors within each site were randomized on the basis of exposure to the train-the-trainer strategy. Along with the sustainability of Mujer Segura as noted earlier, future research should be conducted to determine whether provider assessments of feasibility and acceptability and costs versus benefits predict for implementation fidelity."

Conclusions

Concentrating on prevention and interventions targeted for the most at-risk populations such as FSWs in LMICs is one of the most cost-effective approaches to reducing the spread of HIV infection (Hecht et al. 2010). In this respect, the findings of this study provide insight as to service provider assessments of factors that influence the implementation of HIV prevention programs targeting FSWs in LMICs like Mexico, where FSWs are 35 times more likely to live with HIV than all Mexican women of reproductive age (Baral et al. 2012). A number of factors were identified as critical for participating providers, clinics, and clients and for the wider community. Although provider considerations for implementing interventions like Mujer Segura are consistent with the factors identified in many implementation frameworks and models, the results illustrate the importance of local context in assigning priority to these factors and suggest that feasibility and acceptability are not discrete entities but interconnected.

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