Evaluation of Community Mobilization and Empowerment in Relation to HIV Prevention among Female Sex Workers in Karnataka State, South India

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Summary

Background: While community mobilization has been widely endorsed, there is little systematic documentation of its role in HIV prevention. Here we evaluate the role of a large-scale community mobilization program for HIV prevention among female sex workers (FSWs) in south India.

Methods: We interrogated case-studies of community mobilization in Karnataka using a theoretically derived empowerment framework, to document the impact of various strategies on FSW empowerment. We conducted a secondary analysis of three large representative surveys of FSWs to explore the associations between community mobilization, empowerment, social transformation, HIV risk and sexually transmitted infections (STIs).

Findings: Community mobilization takes various forms, which each act on different domains of power (power within, power with and power over). Community mobilization was associated with empowerment. Empowerment was associated with self-efficacy for condom and health service use. Empowerment and membership in a sex worker collective were associated with access to social entitlements and reduced violence and coercion. Membership in a collective was associated with lower prevalence of STIs.

Implications: The findings support the hypothesis that community mobilization empowers FSWs and strengthens HIV prevention. Future challenges include the need to develop social, political and legal contexts that support community mobilization of FSWs; and the problem of mobilizing young women early after initiation into sex work.

Background

Introduction

There is growing awareness that psychosocial and community-led processes underlie an individual's ability to access and adopt safer sexual behaviours, and there are "high risk environments" as opposed to "high risk groups"[1-7]. 'Highly active HIV prevention', with its emphasis on using a combination of interventions situated at the level of society (structural), and community (participation and empowerment), as well as at the individual level (cognitive, behavioural and biomedical), is an endorsement of this shift in thinking[6;8;9].

Interventions implemented though community mobilization are examples of community level interventions. The seemingly democratic nature of change that community action implies has led to widespread endorsement of empowerment as part of health promotion and community mobilization as a central tenet of many countries' national AIDS control plans[3;10;11]. However, how these community mobilization activities are conceptualized, defined and implemented varies widely. Moreover, the extent to which community responses have contributed to stemming the HIV epidemic has not been systematically and rigorously documented or assessed.

To address some of these needs, the World Bank, in partnership with DFID, has launched an evaluation of community responses in several countries. In this paper we evaluate the role of community mobilization and empowerment in programs for HIV prevention among female sex workers (FSWs) in Karnataka, south India.

Empowerment and HIV vulnerability in FSWs: Is there a need for a distinct conceptual framework?

There is an extensive literature on community mobilization and empowerment as a means to both improve the lives of poor and marginalized populations, and to address particular health and social issues facing these groups[12-14]. However, there is a lack of a consistent conceptual framework by which to document and analyze empowerment in the context of sex work. If empowerment is a process of politicization, wherein a sex worker moves from consciousness, to knowledge, to action, or from collective identity to collective efficacy to collective agency, the role of the social context and power structure, as potential barriers or facilitators to "empowerment", becomes apparent[3;15-19]. Thus structural vulnerabilities to HIV need to be acknowledged in any framework to evaluate community mobilization of FSWs.

Power imbalances that disadvantage FSWs: An important aspect of FSWs' vulnerability to HIV is their disadvantaged/marginalized position within numerous relations and structures of power[20]. These power imbalances exist in a number of mutually-reinforcing domains[16], that can be understood at three levels. Firstly, at the individual level, FSWs are likely to internalize their stigmatized position, resulting in low self-esteem and confidence. Secondly, at the community level, FSWs are disadvantaged by their unbalanced power relations that can lead to limited power over their sex work, exploitation, violence and coercion. This power imbalance is reinforced through stigma and discrimination. Stigma and discrimination are social and cultural phenomena which are not simply a product of individual behaviour, but can be seen as the actions of whole groups to legitimize their dominant position in society[20]. Thirdly, FSWs face societal-level power imbalances; these are a result of their limited access to social, economic and political capital, and are reinforced by poverty, low levels of literacy and an ambiguous legal status. These power imbalances ultimately constrain FSWs' power to act in ways that reduce their vulnerability and improve their lives and well-being.

Social exclusion of female sex workers in India: In most contexts, FSWs face extreme social exclusion stemming from societal power imbalances and related stigma and discrimination[20;21]. In India, to a large extent, the context of culture and power is shaped by the interplay of the caste system and gender inequality. In this context, FSWs are positioned as one of the most socially excluded groups because many come from low or "scheduled" castes, and women are also generally seen as inferior to men in society [22;23]. The Devadasi tradition is also still common in Karnataka, with nearly a third of FSWs in 2004 having entered the sex trade by being dedicated through marriage to different gods and goddesses[22]. In 1982, the Karnataka Devadasi Bill prohibited the dedication of girls to the tradition. This has tended to degrade the status of Devadasis without providing an economic alternative for them or their families[22]. Stigma and discrimination towards FSWs based on caste and gender are compounded by the cultural views of sex work as immoral, fear of sex workers as vectors of infection, and the varying degrees to which their work is criminalized[21;24;25].

Sexual risk and HIV vulnerability: Much of the evidence suggests that there is a relationship between the disadvantaged position of power and social exclusion described above, and HIV vulnerability[26-28]. Factors that have been found to contribute to this vulnerability include economic dependence on sex work, debt and lack of social entitlements, marginalization, frequent migration, violence, low self-esteem, lack of access to information, low social status, and lack of sexual autonomy[1;2;15;19;23;24;26;27;29;30].

Thus in order to effectively document and evaluate the role of community mobilization and empowerment in programs for HIV prevention among FSWs, we must first integrate the various domains of power and the pathways through which they mutually reinforce social exclusion and HIV vulnerability into a conceptual framework. This "integrated empowerment framework" will enable us to articulate how community-based initiatives address different aspects of power imbalances at the individual and collective levels. For example, at the individual level, they may expand the agency of FSWs through improving their capabilities and thereby improving their ability to negotiate relationships, and to access resources and entitlements. At the community level, collective efficacy may improve their economic power and control over sex work. Ultimately, individual and collective empowerment may challenge and modify oppressive social and legal power structures at the social level that stigmatize and marginalize FSWs, thereby addressing the source of their heightened HIV risk[19].

Aims and objectives

Our overall aim is to document and evaluate the role of community mobilization and empowerment programs for HIV prevention amongst FSWs in Karnataka. Specific objectives are:

1. Develop an integrated empowerment framework to describe and document models and strategies for community mobilization among FSWs.
2. Explore the association between community mobilization, empowerment, social transformation, and HIV risk.
3. Explore the impact of the community response on access to HIV prevention services, as well as on the prevalence of HIV and sexually transmitted infections.

Methods

Context:

Karnataka state in south India has a population of approximately 60 million, with an adult HIV prevalence of approximately 1% in several districts. The FSW population has been estimated to be over 100,000. This evaluation was conducted in the context of a broad set of HIV prevention programs for FSWs in Karnataka, implemented by the University of Manitoba and the Karnataka Health Promotion Trust (KHPT) as part of Avahan, the India AIDS Initiative of the Bill & Melinda Gates Foundation. Begun in 2004, the program, called Sankalp, has implemented comprehensive interventions to reduce risk and vulnerability among FSWs in 21 districts (83 project sites, 169 drop in centers, and 619 STI clinics), covering more than 60,000 FSWs in any given year (over 85% of the estimated total number of FSWs in these districts). Over the course of the project, well over 100,000 individual FSWs have been reached by the project. To date, nearly 40,000 individual FSWs have enrolled in sex worker collectives, illustrating the substantial scale of community mobilization activities in the project[31].

Interventions under this program include comprehensive outreach, education and other services to reduce the risk of HIV and STI through promoting behaviour change and access to STI services. In addition, the project has implemented and scaled up a range of community-based mobilization activities designed to reduce the vulnerability of FSWs by focusing on three main areas: 1) addressing factors in the macro level social environment that create structural barriers to empowerment among FSWs; 2) building individual capabilities to foster enhanced agency among individual FSWs to reduce their risk and vulnerability and; 3) fostering the development of collective identities, processes and capabilities so that FSW communities are able to address their collective needs, including HIV prevention.

Methods 1: Documenting the ways in which various strategies of community mobilization impact on domains of empowerment

1. **Developing an integrated empowerment framework to describe community mobilization**

   The germane literature on empowerment and specifically empowerment in the context of sex work, including knowledge gained by KHPT working with FSWs in Karnataka, was synthesized to provide the conceptual basis for an integrated empowerment framework for FSWs.

2. **Exploring the role of various community mobilization strategies on strengthening the different domains of empowerment**

   Community mobilization behaves like a complex intervention which we can break down into its component parts. This enables us to postulate the ways in which the community mobilization activities may be acting to empower FSWs to transform their social context. It also provides a framework through which the various community mobilization models/strategies can be translated into a toolkit/blueprint of parts for implementation in other settings. To achieve this, we use the theoretically derived framework to interrogate community mobilization activities. We first illustrate the range of models and activities empirically, and produce comprehensive and descriptive “case studies” based on different district-level programs within Sankalp. The case studies were then deconstructed into parts according to their impact on the various components of power and social context in the empowerment framework.

Methods 2: Exploring the relationship between community mobilization, empowerment, social transformation and sexual health/HIV risk.

Study Population:

We conducted secondary analysis of three large surveys conducted in Karnataka between 2005 and 2010. These were a Behavioural Tracking Survey (BTS), conducted in 2010 in the five intervention districts of Belgaum, Gulbarga, Gadag, Dharwad and Solapur[1]; and two rounds of Integrated Biological and Behavioural Surveys (IBBAs), conducted in the districts of Belgaum, Bellary, Shimoga, Bangalore Urban and Mysore between 2005 and 2009.

The IBBA has been described in detail previously[23;32]. The five IBBA districts were chosen purposively based on Karnataka's socio-cultural regions and the size of the high risk populations. Bangalore the capital was included and had two sampling domains (street-based and non street-based). A probability-based method of sampling was used. Conventional cluster sample was used for FSWs where the population was stable, i.e. FSWs selling sex at home, or in brothels, lodges and dabhas (roadside eating places). Conventional time-location cluster sampling was used for street-based sex workers.

The five BTS districts were purposively chosen to include Sankalp intervention districts not covered by the IBBA[2], and representing different socio-cultural regions. The sampling strategy used was similar to the IBBA. Mapping exercises conducted prior to the survey identified the typology and geographical locations where FSWs work. This provided the sampling frame, from which conventional cluster samples were used for FSWs, where the population was stable, and time location cluster samples were used for FSWs who solicited in public places.

Measures:

Questionnaire: Data were collected using interviewer-administered culturally sensitive and context specific questionnaires, adapted from previous surveys and conducted in Kannada (the local language). Interviewees were trained researchers. Development of tools and data collection and management have been described in detail previously[33].

Laboratory methods: In the IBBA, only, blood samples were taken to test for HIV and syphilis, and urine samples were taken to test for gonorrhea and chlamydial infection[33]. All positive samples and 10% of negative samples were sent to the National AIDS Research Institute in Pune for quality assurance. Chlamydia and gonorrhea tests in Bellary, Belgaum, and Bangalore urban used the Gen-Probe Aptima assay (Gen-Probe Inc, San Diego, California, USA) and samples from Mysore and Shimoga used the Roche Amplicor system (Roche Molecular Diagnostic, Pleasanton, California, USA).

Data management:

Data from the IBBA were double entered into a Microsoft access database (Microsoft, Redmond, Washington, USA) and data from the BTS were entered using CS pro version 4(U.S. Census Bureau, USA). Both data sets underwent range and consistency tests.

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[1] This district is actually in Maharashtra and was included due to the high numbers of FSWs there, and to provide a comparison with the other districts, which are all in Karnataka.

[2] With the exception of Belgaum which is in both BTS and IBBA and was considered important due to the high prevalence of HIV in the FSWs.

Figure 1: **An integrated empowerment framework**

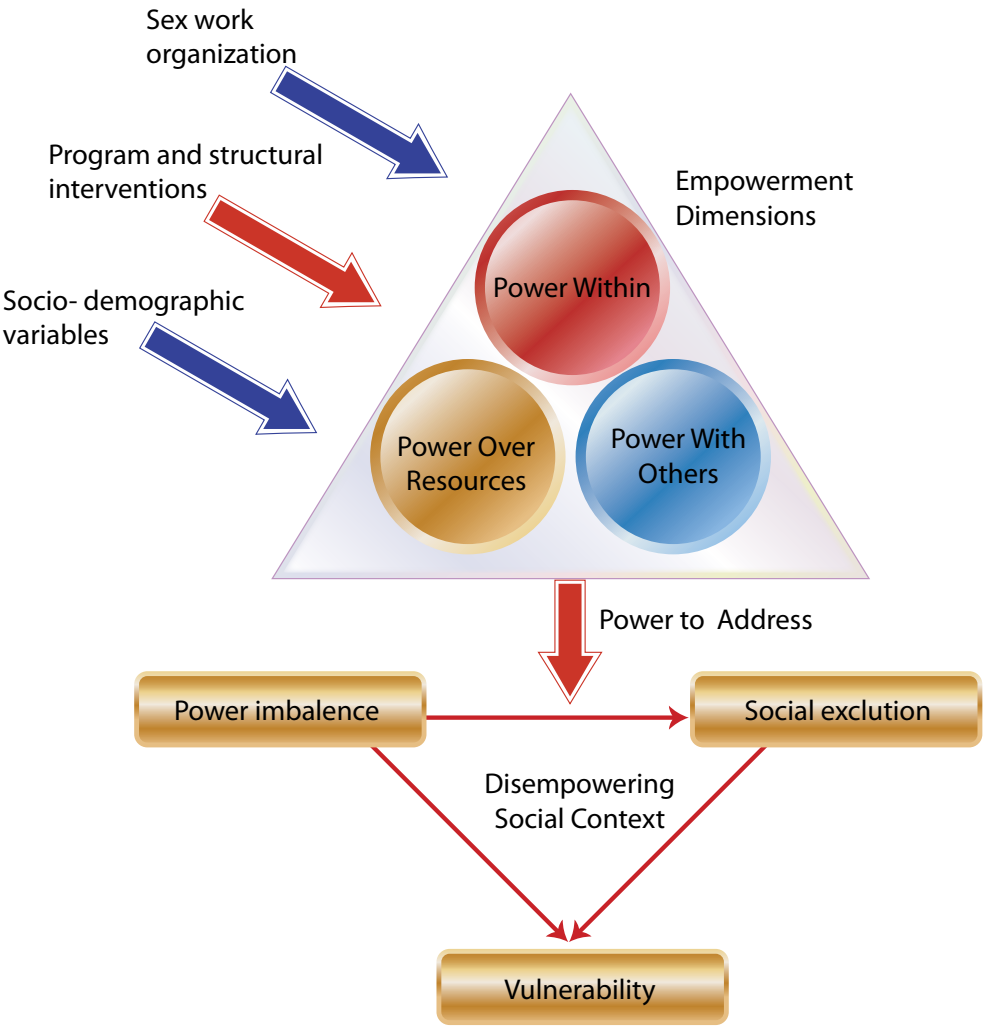

Figure 1: An integrated empowerment framework

Factor analysis using SPSS version 19 (IBM SPSS Statistics, Armonk, USA) was used to generate empowerment variables in the BTS survey.

Empowerment variables: These variables were created based on the above conceptual framework (Figure 1). The variable *power within* was created from variables that measured the degree to which the respondent did not feel ashamed to be identified as a FSW, and had confidence to seek advice and give their opinion in public. Three components explained 80% of the variance and were summed to create a single variable for power within.

The variable *power with* was created from variables that measured the respondent's confidence in the ability of sex workers to work together for various purposes, whether they could rely on other sex workers for support, whether they had a network of peers they could trust, and whether they were members of community groups and participated in public events. The factor analysis created nine components that were summed to create a single variable for power with.

The variable *power over* was created from a group of variables that measured social entitlement, e.g. ownership of a ration card, and having a bankcard or bank account. The factor analysis created one component that was labeled power over.

Social transformation and HIV risk: Using the components matrix, associations between common responses to various questions were grouped into six components. An item was considered to load on a given component if the factor loading was more than 0.4 for that component and less that 0.4 for other components. Questions that had many missing values were not used. From these component groupings, the variables in each component were re-coded so that a positive value logically corresponded with more empowerment. Then, the component scores were multiplied by the value each case received for the variable to calculate a composite score. The final power to variables derived were autonomy, violence or coercion from more powerful groups, self-efficacy for condom use with clients, self-efficacy for condom use with regular partners, and self-efficacy for service utilization. Measures of condom use and service utilization were analyzed in the same format as they were collected.

Statistical analysis:

Power calculations: The sample size of 400 per sampling domain in the IBBA was chosen to have 90% power to detect a 10-15% increase in self-reported condom use between surveys. The sample size of 320 per sampling domain in the BTS was chosen to have 90% power to detect a 15% change in self-reported condom use between surveys. Sample size calculations included a design effect for sampling strategies that were not random, such as time location sampling[32-34].

Analysis 1: In the BTS, secondary analysis of the relationship between the domains of empowerment, community mobilization, social transformation and HIV risk was conducted using SPSS Version 19. First, the responses to each composite variable were clustered into categories of low and high around the median for which the crude empowerment means for each of the power domains were calculated. Differences of means were compared using ANOVA tables.

In multivariate analysis, each of the downstream variables was used as a dependent variable in a binary logistic regression analysis with the domains of power as a covariate, along with upstream variables. The relationship between domains of power and upstream variables were analyzed using a generalized linear model. The associations were calculated for all women and then disaggregated by intensity of the community mobilization efforts, i.e. between those with higher intensity and longer duration of community mobilization (Belgaum, Gulbarga and Gadag) and those with lower intensity and shorter duration of community mobilization (Dharwad and Solapur).

Analysis 2: In order to explore the association between membership in a community-based organisation (CBO) and health and social outcomes, we conducted a secondary analysis of data from all three surveys using STATA 10TM (Stata Corporation, College Station, TX, USA). As there have been active community mobilization programs in all districts surveyed, CBO membership is not a random phenomenon and could be associated with systematic selection bias. To address this concern, we used propensity score matching (PSM) to generate a set of “controls” (individuals who were not members of a CBO) corresponding to “cases” (individuals who belonged to a CBO). Specifically, individuals who were members of a CBO were matched to individuals having no membership with similar predicted probabilities (propensity score) of being a member, conditional on a set of observable characteristics. The key assumption in this approach is that conditional on the propensity score, assignment to be a case (member) or control (non-member) could be taken to be random[35]. If this is the case, then the difference in outcomes between cases and controls can be directly compared to give the effect of "treatment". The test of this assumption is that conditional on the propensity score, the observable predetermined characteristics of the two groups have similar distributions.

We used four different procedures, all of which use propensity scores to assess "nearness" between control and treated cases: the stratification method, nearest neighbour method, radius method and the kernel method36. These methods all yielded very similar estimates of the impact of community membership on behavioural outcomes, HIV and STIs. We therefore report the results for only the "nearest neighbour" method in this paper. The method essentially amounts to picking, for each case, a control that has a propensity score closest to it. Cases and controls were further restricted to common support; this eliminates cases in which the nearest neighbour may be quite far away[37]. The "propensity score" on which these individuals were matched was constructed by a logistic regression of treatment status on observable parameters that included age, education, migration status, source of other income, place of solicitation, duration in sex work, client volume, duration of program exposure, and duration living in the district. Other important variables, such as condom use behaviour, duration of sex work in the district, and place of residence were also included, but they did not satisfy the balancing property and were therefore dropped while generating the propensity score.

Ethical considerations

The surveys received ethical approval from the Institutional Ethical Review Board at St. John's Medical College and Hospital, Bangalore, India, and the University of Manitoba Health Research Ethics Board, Winnipeg, Canada

Findings

The findings will be presented in two sections. In the first section we will describe the derivation of the conceptual framework and expand on the ways in which the actual community mobilization strategies impacted on the various domains of empowerment. In the second section we will present the secondary analysis of the three surveys exploring the relationships between community mobilization, empowerment, and social transformation, HIV risk, and sexually transmitted infections.

Findings 1: The evaluation of strategies and models of community mobilization in relation to domains of empowerment:

Theoretical basis for the conceptual framework: The overall goal of KHPT's empowerment strategies, as well as other HIV prevention programs working with FSWs, has been to improve their ability to make decisions and act on them so that they may address power imbalances at the individual, collective and societal levels[16;26;38]. This is supported by general theories of women's empowerment, although these generalized theories of empowerment do not always take into account the heightened social exclusion and the complexity of power relations that FSWs experience[12;15;26]. Within the context of KHPT programs, this may mean increasing FSWs' individual and collective power to achieve different outcomes, such as increasing their autonomy, addressing sources of violence or coercion, gaining improved access to social entitlements, and reducing HIV risk through improved self-efficacy to use condoms and program services. Using the concept of power to make decisions and act on them as the overall goal of empowerment, sub-processes of empowerment within a program can be seen to operate in the following interrelated power domains that contribute to increasing FSWs' power: power within, power with (others), and power over (resources).

Power within: Numerous studies on programs to empower FSWs emphasize the importance of developing power within as a means to build FSWs' self-esteem, motivation and confidence[15;16;27;28]. This element of empowerment is supported by the theories of Sen and Kabeer, who note that women may internalize social conventions that maintain power imbalances[12;13]. Kabeer argues that for women to gain the power to take action, they must first have a sense of agency, or "power within". She draws on Paulo Freire's theories on critical reflection and action that help women recognize and challenge oppressive power relations.

Power with: It is being increasingly recognized that individual empowerment (power within) is not sufficient to address the entrenched power imbalances or to achieve broader goals on a societal level[12]. Developing power on a collective basis is therefore necessary to allow FSWs to address multi-leveled sources of vulnerability[15-18;26;28;39]. This has been termed power with[40-42]. In this view, power with is an important means by which power within can be achieved. In Anisur Rahman's theories on collectivization as a social development strategy, he also stresses the importance of creating a collective consciousness or identity to strengthen the power of marginalized groups[14]. This may be particularly important to sex workers; a heterogeneous group of women, with diverse interests, who often view each other as economic competitors rather than fellow members of a community[6;15;26;27;43-45]. A recent qualitative study in Karnataka found that collectivization among FSWs was related to improved power within, through the development of a collective identity and mutual support. This helped them deal with sources of their vulnerability, both on the interpersonal level, as well as the community and societal levels[24].

Power over (resources): In both the theory and the empirical literature on community mobilization and empowerment strategies, it has been noted that the domains of power within and power with must be complimented by the ability to exert power over resources in order to give marginalized groups the power to make decisions and act in ways that will reduce their vulnerability and change their society[13;15;24]. According to Amartya Sen's entitlement approach, women's empowerment may occur by expanding their access to social entitlements such as alternative sources of income, education, and rights from the state. Other theorists of empowerment have emphasized the important role of both material and non-material resources for expanding women's power to improve their lives[12;14;42]. This has informed a variety of programmes that focus on increasing FSWs' social entitlements to education, ration cards, bank accounts, voting ID and other rights from the state [27;46]. Some programs have found that this may improve women's ability to negotiate power relations on an individual basis[47-49]. In addition, the ability to mobilize power over is reinforced by strategies to strengthen power with through collectivization. Not only can material and non-material resources be distributed more widely among previously hard-to-reach women, but collectivization has been found to be an important way to help FSWs access information, to more easily change their behaviour, and improve their bargaining power with clients and policemen[10;23;24;31;33]. It has also been suggested that power over resources can strengthen the power with others by improving the collective members' ability to support each other and to collectively challenge power imbalances on a community and societal level. There remains, however, considerable uncertainty with some suggestions that collectivization (or power with) is the main precondition for social transformation rather than power over resources, in groups that are highly excluded and socially marginalized15 [14;47;48].

In summary, power with, power within and power over are useful ways to envisage the process of empowerment; however, these distinctions are somewhat artificial and the three domains are closely interrelated.

Structural interventions: In addition to the empowerment strategies working directly with FSWs, it is increasingly recognized that in the context of heightened social exclusion and power imbalances faced by FSWs, strategies are required by external change agents to directly address societal-level factors. This is supported by the theoretical views of Amartya Sen and Naila Kabeer, which emphasize moving beyond empowerment for the individual, to welfare enhancement for achieving lasting social transformation[12;13;50]. As Asthana and Oostvogels have commented in relation to the Sonagachi program in Kolkata, empowerment strategies among FSWs should be "an integral part of – and not a substitute for – efforts to bring about comprehensive changes in the social, economic, legal and political structures that led to disempowerment in the first place"[15]. This has been confirmed by other empirical studies[4;5]. A review of interventions in the brothel context found that successful interventions did not just target the FSWs and their immediate community, but also the underlying context that shapes the power imbalances and social exclusion, and their resultant vulnerability. Examples described include the Sonagachi Project, the 100% condom program in Thailand, the IMPACT project in Cambodia, the Shakti project in Bangladesh, the STD project in Kenya, SWEAT in South Africa, and Prerana in India[21]. Similarly, a comparison between two intervention areas in the Dominican Republic found that there was an important role for changing the policy environment in addition to brothel-based inteventions4. This underlines the importance of addressing power imbalances and social exclusion, and related HIV vulnerability, through a multi-dimensional strategy of community mobilization to develop long-term leadership by FSWs themselves, as well as structural interventions to achieve social transformation.

Describing KHPT community mobilization strategies and their impact on the domains of empowerment:

Structural interventions: KHPT and partners have implemented and supported a program of structural interventions to improve the overall risk environment. This has been described previously[31], and includes the following domains: engagement with policy makers; addressing stigma and discrimination; addressing violence and harassment (sensitization of the police, legal empowerment, and crisis management); and addressing social inequity. All of the strategies and models of community mobilization described below function against the backdrop of structural interventions.

Strategies and models of community-based activities among FSWs in Karnataka: Case studies of the various community-based organizations in Karnataka suggest that there are four main models and strategies of community mobilization; the cooperative model; the self-help (savings) model; the support group model; and the cultural intervention model. Here we critically interrogate the case studies to describe the various permutations with which the domains of empowerment (power with, within and over) can impact upon power to.

The cooperative model (Swathi Jyoti in Bangalore): Swathi Jyoti is a micro-finance institution managed by Swathi Mahila Sangha, an FSW collective in Bangalore City, linked with Swasti, a non-governmental health resource organization. Swathi Jyoti arose to tackle the issues of social inequity among FSWs, since sex workers generally cannot utilize saving schemes through banks and other organized credit facilities. This model of community mobilization is centered on FSWs' need to be financially independent i.e. have power over resources to achieve empowerment. Close analysis of the structure and functioning of this CBO shows the various ways in which the goal of achieving power over financial resources improves power with and power within.

Power over: The cooperative society offers two savings services to its members, a deposit scheme and a savings account facility. The cooperative also provides loans to members for items that formal banks will not provide, e.g. medical expenses of parents and other family members, expenses during festivals, children's education, house repairs, and lending to friends and lovers. The cooperative offers a much lower interest rate than money lenders, thus protecting women from the vicious cycle of debt.

Power with: The democratic organizational structure of the cooperative provides many mechanisms to strengthen power with for over 4000 members. Firstly, membership of the CBO is compulsory for availing of the services of the cooperative, thus encouraging the collectivization of FSWs. The CBO has a democratic structure with elected representation to zonal committees, which then elect the zonal board and representatives to the central board. The interests of vulnerable women are safeguarded through the separate election of two women who are living with HIV, homeless and lacking familial support. The cooperative has a separate democratic organization, with zonal groups and a governing board.

One of the main challenges in this model is that the committees are large, and although efforts are made to ensure that the more vulnerable women have a voice, the size of the forums can be a barrier to participatory democracy. However, there are other mechanisms that support power with. Members have to form a Common Interest Group (CIG) to avail any of the credit services. A CIG is a three-member group from the day of availing the loan to the day of its closure by a member. The group can be formed by any three members who know each other. The group has to save for three months before the members apply for a loan, and this mechanism provides a smaller and more intimate context for women to develop power with. The entire venture is based on mutual trust and thus fosters greater cohesiveness (power with) in the CBO.

Power within: A cooperative helps women to access financial services (savings and loans) with dignity, confidentiality and trust. This in turn supports an increased self-confidence and self-esteem.

Power to: Through membership of the CBO, women have the power to access services such as sexual health, legal empowerment and education services, as well as other social entitlements. The close physical proximity of the financial services and sexual health services further facilitate improved health seeking behaviour.

The self-help group model (Soukhya Belaku in Bellary district): Although the empowerment strategy in this model is centered on power within, all three domains are closely interconnected.

Power within: The core of this CBO, support by the non-governmental organization (NGO) Myrada, is small self-help groups (SHGs) of 8-15 female sex workers who undergo a ten-module program over two years. The long

duration of training reflects the importance placed on power with, to help FSWs to respond to both the HIV risk and vulnerability of its members. The SHGs are saving groups that meet weekly.

Power with: The CBO is organized as a federation of the SHGs (168 in Bellary), as well as FSWs who are not members of an SHG. The structure of the CBO offers good representation of the community from the ground level, through to the town, and district. The model has also incorporated a method to represent FSWs who are not members of an SHG. The small numbers in the groups support a truly representative CBO which facilitates power with.

Power over: As noted above, the SHGs are saving groups, and so power over financial resources is integral to the empowerment strategy of this CBO. The saving groups provide access to microfinance.

Power to: The groups engage in HIV prevention, crisis management, support for income generation, and in building linkages with government departments for various entitlement schemes.

Support group model (Sadhane in Shimoga district): The empowerment strategy here, supported by the NGO Action AID, centers on strengthening the power with, in order to strengthen power within and power to. There is little focus on power over resources.

Power with: FSWs are organized into 77 site-level groups of 10-15 members, based on type of sex work and geographical proximity. The emphasis is on providing the space that enables women to build a cohesive group that can discuss problems and find solutions together. The group provides a safe place for members to express themselves; a support network that gives emotional, psychological, health-related, economic, and legal support, and relevant information. The collective has a three-tier democratic structure with support groups at the sites, electing representation to the committees at the taluk and district level.

Power within: The discussions in the group are centered on issues of health, self-respect, and understanding of one's life situation and acceptance of sex work as a profession. The women undergo a 10- to 15-day "Stepping Stone" training, beginning with self-esteem and professional identity[51].

Power to: Unlike the previous two models, these groups are not involved in savings or credit. The groups are involved in information dissemination, training and skills building. Women together address instances of violence seen within the group in the given geography. The support groups are also sources of emotional support for victims of violence.

The cultural intervention model (Samraksha in Raichur district): This model of community mobilization was developed by Samraksha for a very heterogeneous and geographically scattered population of FSWs. The core empowerment strategy of Nam jeeva (our lives) is centered on power within.

Power Within: The program started by bringing women together in cultural celebrations, religious festivals, birthdays, and impending motherhood (pregnancy) or cradle ceremonies. The idea was to bring women together around a joyful event in which they could participate as individuals with dignity. Widows and deserted women were encouraged to participate, to be respected, and to celebrate their womanhood.

Power with: Personal and collective problems were shared on the festival platform. This led to the formation of crisis support teams at the district and sub-district levels. Successful crisis reactions to two events catalyzed the formation of a CBO. The smallest units of the CBOs are unstructured site-level groups, each having between 10-60 women, depending on the geography and density of FSWs. All site-level groups are members of the cluster-level group. The cluster-level groups elect representation to the taluka (sub-district), which in turn elects representatives to the board of the district collective.

Power to: This model has also avoided any involvement with savings or microcredit programs. The main focus of the collective is on improving access to HIV prevention services, other health care, daughters' education and crisis management (violence, discrimination, illness, children's issues and lack of access to social entitlements).

Findings 2: Exploring the relationships between community mobilization, empowerment, social transformation, sexual health and HIV risk:

Study population:

The characteristics of the FSWs surveyed in the IBBA and BTS were similar. The IBBA has been well described in previous publications by this group[32-34]. In summary, 4699 women participated (2312 in Round-1 and 2387 in Round-2). The median age was 30 (inter-quartile range 19-41) and two-thirds were unable to read or write. Two-thirds had initiated sex before the age of 15 and one-quarter had started sex work before the age of 20. Just over half were street-based sex workers and one-third worked from home. The majority (80%) had been selling sex for more than two years. Measures of program exposure were high, and increased in the second round of the IBBA. By the second round, more than 95% had been contacted by an outreach worker and 85% had visited a sexual health clinic. Membership of a community-based organization (CBO) was 37.5% in total (22% in the first round and 53% in the second round). Baseline prevalence of infection was high (2005): HIV prevalence of 20%, syphilis 10%, and chlamydial/gonorrheal infection 9%.

1750 women were surveyed in the five districts covered by the BTS. Table 1 summarizes the baseline characteristics. The mean age was 32, the majority (75%) were unable to either read or write, and 10% had initiated sex work before the age of 18. Two-thirds were street-based sex workers and one-quarter solicited by phone. Ninety percent had been in sex work for more than 2 years. Program coverage was high: 80% had been in contact with KHPT for more than a year and 76% were members of a CBO.

The nature of sex work and the duration and intensity of program vary by district, so we also present the baseline characteristics in the BTS survey broken down by district in Table 1. There were three times FSWs aged between 18 to 21 years in Solapur when compared to the other districts. A greater proportion of FSWs in Belgaum and Solapur initiated sex work before the age of 18 and a third of women from Belgaum had been in sex work for more than ten years. Dharwad had a greater proportion of women who had been in sex work for less than two years. Brothel-based sex work, client volume and total number of sex partners was highest in Solapur.

Table 1:	Description of key socio-demographic, sex work and environmental factors in the BTS

Characteristic	Belgaum n=383	Gulbarga n= 374	Gadag n=288	Dharwad n=385	Solapur n=361	All Districts n=1751
Unable to read or write	74.6%	79.1%	79.4%	76.3%	64.4%	74.8%
Marital status						
Never married	23.6%	11.2%	12.2%	0.9%	13.2%	12.5%
Currently married	39.3%	41.6%	43.6%	48.0%	54.5%	45.3%
Separated/widowed	37.2%	47.2%	44.2%	51.1%	31.9%	42.1%
Start sex work aged less than 18	11.3%	6.7%	6.6%	6.4%	12.9%	8.9%
Duration in SW less than 2 years	7.3%	10.4%	7.7%	18.6%	9.4%	10.7%
Type of SW						
Street or other public place	52.8%	65.2%	71.4%	59.6%	50.1%	59.3%
Brothel	1.0%	1.6%	0.3%	0.0%	7.0%	2.1%
Home	9.7%	3.2%	7.7%	16.3%	16.0%	10.6%
Contacted by phone	35.2%	29.9%	20.2%	22.4%	10.4%	24.0%
Client no. last seven working days						
Less than 5	74.2%	64.3%	87.5%	62.2%	9.7%	58.5%
5-9	24.0%	30.9%	11.5%	31.4%	30.4%	26.2%
More than 10	1.8%	4.8%	1.0%	6.4%	59.9%	15.2%
Member of CBO	85.1%	77.5%	86.8%	70.9%	62.2%	76.2%
Contacted by program more than one year ago	91.7%	88.1%	93.0%	79.4%	57.3%	81.8%
Ever been arrested	6.5%	4.3%	3.1%	15.1%	37.2%	13.5%
Police coercion over past 6 months (given anything to police to avoid trouble)	13.7%	12.0%	12.2%	16.0%	34.6%	18.2%
Physical violence past 6 months	12.8%	9.4%	16.0%	18.8%	52.9%	22.1%
forced sex past 6 months	10.7%	10.7%	12.2%	16.%	34.5%	16.9%
In debt	61.6%	63.6%	64.5%	69.2%	66.0%	64.9%
Possess ration card	78.3%	73.5%	81.5%	65.1%	38.0%	66.8%
Possess bank account	56.1%	42.5%	43.7%	29.7%	49.7%	44.8%
Possess voter id	82.0%	71.9%	73.8%	74.7%	51.4%	70.7%
Always use condoms with clients	99.3%	98.3%	99.4%	96.4%	87.1%	95.4%
Always use condoms with regular clients	96.9%	97.3%	94.1%	95.5%	82.9%	93.3%
Always use condoms with regular (non-paying) male partner	49.0%	47.8%	44.7%	36.1%	30.2%	41.2%

There were differences in coverage and duration of community mobilization in Solapur and Dharwad compared with the other districts, and we subsequently refer to these district programs as lower intensity programs/ districts. In Solapur (62%) and Dharwad (71%), reported membership in a CBO compared to more than 80% in the other districts, while only one-third and one-half of FSWs in Solapur and Dharwad respectively reported first contact with an NGO more than two years ago, compared to three-quarters of the women in the other districts. This difference was also reflected in less contact with the program in Dharwad and Solapur compared to the other districts. More FSWs in Solapur and Dharwad reported violence, coerced sex, and arrest than in Belgaum, Gulbarga and Gadag. Fewer women in Solapur had bank accounts, ration cards and voter IDs. Fewer women in Solapur and Dharwad reported always using condoms with clients and regular partners, and they reported fewer visits to health clinics.

The relationship between measures of empowerment and upstream variables

Table 1: Adjusted empowerment Means for socio-demographic, sex work and program variables after adjustment

Characteristic	Belgaum Gulbarga & Gadag			Dharwad & Solapur			All districts		
	Power within	Power with	Power over	Power within	Power with	Power over	Power within	Power with	Power over
Age									
18-21	0.42	0.11	-0.46	-0.97	-0.47	-0.90	-0.15	-0.08	-0.61
22-25	0.40	0.002	-0.44	-0.76	-0.55	-0.80	-0.09	-0.20	-0.56 ‡
26-30	0.27	0.08	-0.03 **	-0.56 *	-0.33	-0.46 *	-0.10	-0.07	-0.18 ‡
31-35	0.32	0.03	0.30 ‡	-0.52 *	-0.38	-0.22 **	-0.04	-0.14	0.12 ‡
36 +	0.36	0.18	0.60 ‡	-0.40 *	-0.36	0.04 ‡	0.03	-0.03	0.39 ‡
District									
Belgaum (ref)	0.40	0.20 **	0.16				0.28‡	0.26	0.17
Gulbarga	.15 ‡	0.05 ‡	-0.14 **				0.06‡	0.11	-0.13 ‡
Gadag	0.51 **	-0.01	-0.03 ‡				0.42‡	0.04	-0.01‡
Dharwad				-0.16	0.06	-0.20	-0.15‡	-0.05	-0.19 ‡
Solapur				-1.13 ‡	-0.89 ‡	-0.73 ‡	-0.96	-0.87	-0.68 ‡
Type of sex work									
Street based (ref)	0.32	0.14	-0.02	-0.61	-0.58	-0.52	-0.04	-0.16	-0.20
Home	0.17	-0.03 **	-0.03	-0.55	-0.50	-0.45	-0.07**	-0.18	-0.16
Contacted by phone	0.18 **	0.15	-0.02	-0.75	-0.35 *	-0.43	-0.18	-0.08	-0.17
Brothel, vehicle, bar/ nightclub	0.74 ‡	0.07 *	0.05	-0.66	-0.25 *	-0.48	0.02	0.01	-0.14
Client no. past 7 working days									
< 5 (ref)	0.44	0.03	0.07	-0.81	-0.53	-0.41	-0.07	-0.18*	-0.10
5+	0.26 *	0.13 *	-0.08	-0.47 **	-0.30	-0.52	-0.06	-0.03	-0.23

Member of CBO									
No (ref)	0.34	0.04	-0.02	-0.64	-0.54	-0.48	-0.06	-.018	-0.16
Yes	0.36	0.12	0.01	-0.65	-0.30 **	-0.45	-0.07	-0.03**	-0.17
Time since program contact									
6-12 months ago	0.33	0.07	-0.0003	-0.62	-0.44 **	-0.51	-0.10*	-0.15**	-0.19
1-2 years ago	0.38	0.14	0.04	-0.71	-0.26 ‡	-0.55	0.02‡	0.04	-0.20
>2 years ago	0.50 *	0.27 *	0.01	-0.55	-0.26 ‡	-0.40	0.11‡	0.12	-0.14
Number of times contacted by peer educator in past 6 months									
<10 (ref)	0.14	-0.11	0.02	-0.53	-0.68	-0.51	-0.19	-0.37	-0.20
10-14	0.13	0.02	-0.09	-0.73	-0.66	-0.28 **	-0.20	-0.20**	-0.11
15-19	0.35 *	0.15 *	0.05	-0.61	-0.61	-0.50	-0.06*	-0.05	-0.14
20-24	0.42 **	0.20 **	0.06	-0.34	-0.42 *	-0.30 *	0.02**	0.02	-0.08
25-29	0.38 *	-0.08	0.04	-0.61	-0.73	-0.75	-0.09	-0.07**	-0.21
30 +	0.69 ‡	0.29 ‡	-0.10	-0.60	-0.75	-0.47	0.12‡	0.05	-0.24
Adjusted means and p-values obtained from a binary logistic regression analysis for each downstream variable with the Empowerment variables and all significant upstream variables. *p<0.05, **p<0.01, ‡p<0.001									

Table 2 presents the empowerment means adjusted for socio-demographic, sex work practice and program intervention variables for all districts, and districts disaggregated by the intensity of community mobilization.

Here we present the key findings of the multivariate analysis of the relationship between power with, power within and power over with socio-demographic, program, and sex work variables.

Socio-demographic domain: All three domains of power were lower in the lower-intensity districts (Solapur and Dharwad). Power over increased with age in all districts.

Sex work and program intervention domains: Membership in a collective was associated with power with in all women, as well as women in low-intensity areas. Time since first visited the program and an increased number of contacts by the program were associated with power within and power with in Belgaum, Gulbarga and Gadag and power with in Dharwad and Solapur. Power over was not significantly associated with program contact. None of the sex-work-related variables were associated with power domains.

The relationship between measures of empowerment, social transformation and HIV risk

In Table 3 we present the association between the dimensions of power with self-efficacy, autonomy, violence, and HIV risk, after adjustment, for all women, and disaggregated by intensity of community mobilization.

Table 3:	The association between empowerment, social transformation and HIV risk, adjusted for background characteristics

Characteristic	Belgaum Gulbarga & Gadag			Dharwad & Solapur			All districts		
	Power within	Power with	Power over	Power within	Power with	Power over	Power within	Power with	Power over
Social Transformation									
Autonomy	-0.14	0.2*	0.06	0.04	0.006	0.13	-0.07	0.08	0.07
Violence or abuse by more powerful groups	-0.12	0.29*	0.002	0.02	0.04	0.16	-0.04	0.12	0.06
Self-efficacy for Condom use with regular partner	0.24*	-0.08	0.05	0.25*	0.08	0.06	0.23‡	0.03	0.07
Self-efficacy for Condom use with clients	-0.19	0.29**	-0.05	0.2	0.23*	0.22	-0.07	0.27‡	-0.03
Self-efficacy for service utilization	1.14‡	0.54‡	-0.004	0.53‡	0.17	-0.02	0.91‡	0.34‡	0.01
Social entitlements	-0.02	0.06	-	0.2	-0.01	-	0.09	0.04	-
HIV Risk									
Condom use at last sex with occasional client	0.11	62.63	-1.82	0.04	-0.01	0.90	0.03	0.166	0.46
Frequency of condom use with occasional clients	-0.43	0.2	0.18	0.1	0.62‡	-0.23	0.02	0.62‡	-0.15
Condom use at last sex with regular client	-0.08	0.94‡	-0.12	-0.1	0.5**	-0.97**	-0.08	0.65‡	-0.49*
Frequency of condom use with regular clients	0.13	0.82‡	0.218	-0.14	0.59‡	-0.59**	-0.04	0.67‡	-0.18
Condom use at last sex with regular partner	0.21	0.08	-0.03	0.002	0.18	0.17	0.03	0.16*	0.07

Frequency of condom use with regular partner	0.43**	0.06	-0.05	0.09	0.19	0.20	0.15	0.18*	0.07
Number of times in last six months visited health clinic for health problems	0.05	-0.002	-0.08	0.23*	0.04	0.08	0.15*	-0.04	-0.01
B and p-values obtained from a Binary Logistic regression for each downstream variable with the Empowerment variables and all significant upstream variables. *p<0.05, **p<0.01, ‡p<0.001									

Social transformation: Power within and power with were both associated with self-efficacy for service utilization, power within was associated with self-efficacy for condom use with regular partners, and power with was associated with self-efficacy for condom use with clients. The findings were similar after disaggregation of districts by intensity of community intervention. However, greater autonomy and reduced violence were associated with power with only in the high-intensity districts (Belgaum, Dharwad, and Gadag).

HIV risk: Power with was associated with condom use with occasional and regular clients in all districts. This finding was similar after disaggregation by intensity of community mobilization. However, power over was associated with less condom use with regular clients in Dharwad and Solapur.

Membership of a Community Based Organization, health and social outcomes

In this section, we present the findings of the propensity score matching of both the BTS and IBBA data to explore the relationship between individual FSW membership in CBOs, social transformation, HIV risk and STIs.

The relationship between CBO membership and downstream factors:

Figure 2: **Differntials in outcomes by CBO membership status, BTS, 2010**

Figure 2 above shows that FSWs who were members of a CBO were more likely to have obtained a government-issued ID and less likely to have recently experienced violence or police coercion

Figure 3: **Differentials in outcomes by membership status, IBBA, 2008-10**

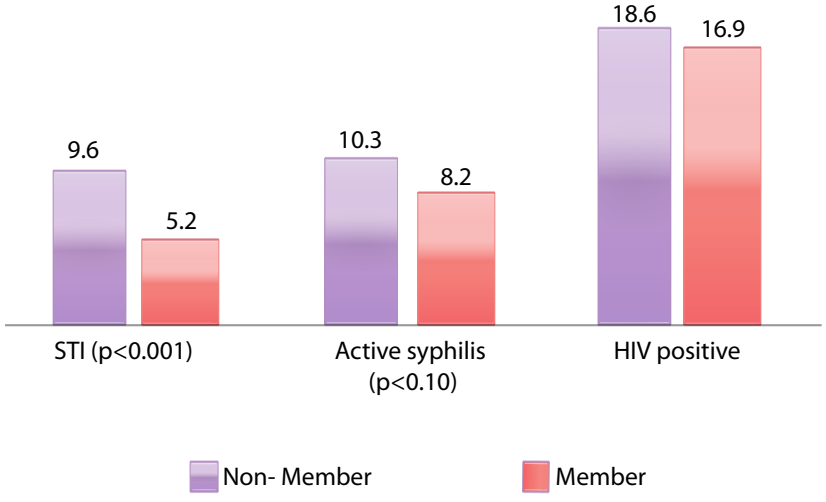

Figure 3 shows that the prevalence of STIs and active syphilis were lower in members of CBOs. Although the prevalence of HIV was lower among the members compared to non-members, this difference was not statistically significant.

Propensity Score Matching

In order to reduce the effect of selection bias in the differences between CBO members and non-members, we used the propensity score matching method, using the nearest neighbourhood method.

Table 4 presents the relationship between CBO membership and condom use, violence, coercion and social entitlement, based on the sample of matched case and control groups from the BTS. CBO membership was associated with condom use with regular partners, less experience of violence and police coercion, and more access to social entitlements.

Table 4: **PSM analysis: effect of CBO membership on different outcomes among matched FSWs, BTS, 2010**

Outcomes	Average treatment effect		AOR	P value
	CBO	No CBO		
Condom use with regular partner	0.547	0.497	1.05	p<0.10
Consistent condom used all clients/partner	0.892	0.867	1.02	-
Experienced violence in past 6 months	0.222	0.317	0.92	p<0.001
Beaten or forced to have sex in the past one year	0.176	0.238	0.97	-
Given nothing to police to avoid trouble in past 6 months	0.875	0.823	1.05	p<0.001
Obtained an id in the last 5 years	0.705	0.651	1.06	p<0.05

Note: treatment (CBO member), control (non-member), AOR: adjusted odds ratio

Table 5 presents the relationship between CBO membership and STIs based on a sample of matched cases and controls from the IBBA

Table 5: **PSM analysis: Effect of membership on different outcomes among matched FSWs, IBBA, 2005-08**

Outcomes	Average treatment effect		AOR	P value
	CBO	No CBO		
STI (CT/NG)	0.057	0.106	0.95	p<0.001
Active syphilis	0.084	0.103	0.98	p<0.05
HIV positive	0.162	0.173	0.99	-

Note: treatment (CBO member), control (non-member), AOR: Adjusted odds ratio

Findings suggest that the prevalence of STIs (CT/NG) and v were significantly lower among the CBO members compared to non-members.

Discussion

These findings suggest that community mobilization takes a multitude of forms, which each act on different domains of empowerment (power with, power within and power over). However, even if the focus of the intervention is on only one of the domains of power, for example power over, in microfinance and saving groups, the effects 'spill over' into the other domains. This suggests that while the partition of empowerment into domains is a useful tool to describe and document community mobilization, the interpretation is complex. The intimate connection between these three mutually reinforcing domains presents methodological challenges in understanding the relationship between the community, empowerment and health outcomes. Nevertheless, our analysis of large representative surveys of FSWs in Karnataka does suggest there are associations between community mobilization, empowerment, particularly power with and power within, and improved health and social outcomes.

In this analysis, we have critically appraised some of the existing community mobilization programs for HIV prevention in Karnataka. The strength of this evaluation is that we used a multitude of methods, including interrogating case studies and secondary data analysis of large and representative surveys of FSWs with relatively high HIV and STI prevalence.

Our findings suggest that the theoretically derived integrated empowerment framework is a useful tool to understand the mechanisms by which the community mobilization strategies implemented in Sankalp address the various domains of FSW empowerment (power within, power with and power over), as well as recognizing the disempowering social context. Critical appraisal of the various models of community mobilization shows that there have been different implementation models in different districts. These have led to differences in emphasis and implementation. However, they all impact on one or more of the various domains of empowerment (power with, power within and power over) to achieve power to. One of the predictors of success in community interventions was the intensity of CBO programming. Although there are clearly limitations to artificially separating domains of power that are closely interconnected, this framework provides the means to systematically describe a complex intervention and thus inform implementation in other settings[31;51;52]. Moreover, it can be used to develop measures and process indicators to monitor and evaluate intervention delivery in a systematic and reproducible way.

We found an association between the amount and duration of exposure to community mobilization and greater empowerment, particularly power with. At the district level, power was associated with the coverage and duration of community mobilization, and at the individual level with the amount and duration of program exposure. There was also an association between measures of empowerment and self-efficacy for condom use and health service use, improved access to social entitlements, and reduced violence and coercion. These findings were more consistent for measures of power with and power within than power over. Similarly, membership in a collective was associated with reduced STI prevalence, greater access to social entitlements, and a more enabling environment (less violence and coercion). This pattern of associations supports the theoretical supposition that community mobilization leads to greater power with, power within and power over, which in turn gives FSWs greater power to access services and improve their risk environment[6;12-15;19;53].

However, several of the findings were less consistent with this narrative. There was less evidence for an association between CBO membership and either condom use or HIV prevalence. This may be in part a reflection of the very high levels of self-reported condom use. In addition, most of the women in the survey had been sex workers for some time, and other studies from the area suggest that HIV infection often occurs

early after sex work initiation, and is a marker of longer term sexual risk. Reduced STI prevalence, which is a marker of more recent sexual risk, was associated with CBO membership. This highlights a real challenge for community mobilization as an HIV prevention strategy for FSWs. Unless FSWs are "empowered" soon after initiation, the FSW intervention may protect the community (as evidenced by the declining HIV prevalence and incidence in India), rather than the sex workers themselves[54;55].

This study has several limitations that should be taken into account. First, this is secondary analysis of cross-sectional surveys that were not specifically designed to answer the research questions posed. Being cross-sectional, we cannot ascertain the direction of causality; for example, it could be that more empowered and lower risk sex workers are more likely to join a collective than their more high-risk and disempowered colleagues. Second, as there was no pre-identified control group, there is potential for participation bias, both in terms of the type of sex worker who becomes "empowered" and the type of risk environment that facilitates empowerment. For example, it may be that the same factors that make Solapur less conducive to collectivization render it a higher risk environment for the sex workers who work there. Even though effort was made with propensity scoring to match cases with similar controls, there may be residual differences that we did not measure between women who are collectivized and those who are not, which make them vulnerable to HIV. Third, although we put a great deal of effort into defining and creating meaningful variables for power with, power within and power over, there are some unresolved issues. For one, we tried to ascertain a collective experience, e.g. power with, by questioning individuals. Furthermore, the information provided was self-reported, and this could lead to misclassification or social desirability bias. If the process of community engagement "teaches" FSWs the discourse of empowerment and an expected "desirable" response, it is possible that there could be systematic bias in measurement.

Another difficulty in looking for program effect in this setting is that CBO membership and program coverage, particularly at the time of the BTS, was very high. Moreover, there had been extensive work done by KHPT to improve the risk environment, e.g. active engagement with policy makers; addressing stigma and discrimination; addressing violence and harassment, through sensitization of the police, legal empowerment workshops and crisis management teams; and addressing social inequity. This could dilute some of the perceived effects of community engagement, as even those FSWs without direct involvement with CBOs or direct contact with the program would benefit from the indirect effects of structural changes to the risk environment.

Based on this evidence, and on evidence suggesting that FSW interventions may have had an impact on mitigating the HIV epidemic in south India[54;55], it would seem desirable to reproduce these interventions in other settings with concentrated epidemics. However, there are aspects of the Indian context that may have been conducive to community mobilization, which may be absent (or less developed) in other settings. India has a strong tradition of grass-roots and participatory democracy, as well as movements of the oppressed. Although aspects of sex work are criminalized in India, sex work itself is not illegal, and people have the right to mobilize and register their community-based organizations. Indian states in which collectivization of FSWs has been effective, such as Kerala, Tamil Nadu and West Bengal, also have a long tradition of unionization and workers' organizations[11;15;27]. In settings where some of these political and legal pre-conditions are absent, there may be barriers to exporting the lessons learned from empowered FSWs implementing effective interventions in India[11;15;25].

In any case, the integrated empowerment framework can be a useful tool in prospectively tracking community mobilization in a systematic and reproducible way. It can provide an opportunity to measure the associations between collectivization, empowerment and health outcomes in cohorts of FSWs exposed and unexposed to community mobilization, in order to better understand the direction of effect. Perhaps the largest challenges are to replicate these interventions in areas where political and legal conditions are less conducive to community mobilization of female sex workers, and, where effective programs exist, to reach women early after initiation into sex work.

Reference List

1. Blanchard JF, Halli S, Ramesh BM, Bhattacharjee P, Washington RG, O'Neil J et al. Variability in the sexual structure in a rural Indian setting: implications for HIV prevention strategies. Sex Transm Infect 2007; 83 Suppl 1:i30-i36.

2. Blanchard JF, O'Neil J, Ramesh BM, Bhattacharjee P, Orchard T, Moses S. Understanding the social and cultural contexts of female sex workers in Karnataka, India: implications for prevention of HIV infection. J Infect Dis 2005; 191 Suppl 1:S139-S146.

3. Campbell C. Selling sex in the time of AIDS: the psycho-social context of condom use by sex workers on a Southern African mine. Soc Sci Med 2000; 50(4):479-494.

4. Kerrigan D, Moreno L, Rosario S, Gomez B, Jerez H, Barrington C et al. Environmental-structural interventions to reduce HIV/STI risk among female sex workers in the Dominican Republic. Am J Public Health 2006; 96(1):120-125.

5. Kerrigan D, Ellen JM, Moreno L, Rosario S, Katz J, Celentano DD et al. Environmental-structural factors significantly associated with consistent condom use among female sex workers in the Dominican Republic. AIDS 2003; 17(3):415-423.

6. Gupta GR, Parkhurst JO, Ogden JA, Aggleton P, Mahal A. Structural approaches to HIV prevention. Lancet 2008; 372(9640):764-775.

7. Wight D, Plummer ML, Mshana G, Wamoyi J, Shigongo ZS, Ross DA. Contradictory sexual norms and expectations for young people in rural Northern Tanzania. Soc Sci Med 2006; 62(4):987-997.

8. Coates TJ, Richter L, Caceres C. Behavioural strategies to reduce HIV transmission: how to make them work better. Lancet 2008; 372(9639):669-684.

9. Padian NS, Buve A, Balkus J, Serwadda D, Cates W, Jr. Biomedical interventions to prevent HIV infection: evidence, challenges, and way forward. Lancet 2008; 372(9638):585-599.

10. Halli SS, Ramesh BM, O'Neil J, Moses S, Blanchard JF. The role of collectives in STI and HIV/AIDS prevention among female sex workers in Karnataka, India. AIDS Care 2006; 18(7):739-749.

11. Evans C, Jana S, Lambert H. What makes a structural intervention? Reducing vulnerability to HIV in community settings, with particular reference to sex work. Glob Public Health 2010; 5(5):449-461.

12. Kabeer N. Resources, agency, achievements: Reflections on the measurement of women's empowerment. Development and Change 1999; 30(3):435-464.

13. Sen Amartya. Women's Agency and Social Change. Development as Freedom. New York: Anchor Books; 1999. 188-203.

14. Rahman Anisur. People's self development. Dhaka: The University Press Limited; 1993.

15. Asthana S, Oostvogels R. Community participation in HIV prevention: problems and prospects for community-based strategies among female sex workers in Madras. Soc Sci Med 1996; 43(2):133-148.

16. Cornish F, Ghosh R. The necessary contradictions of 'community-led' health promotion: a case study of HIV prevention in an Indian red light district. Soc Sci Med 2007; 64(2):496-507.

17. Cornish F, Shukla A, Banerji R. Persuading, protesting and exchanging favours: strategies used by Indian sex workers to win local support for their HIV prevention programmes. AIDS Care 2010; 22 Suppl 2:1670-1678.

18. Cornish F, Campbell C. The social conditions for successful peer education: a comparison of two HIV prevention programs run by sex workers in India and South Africa. Am J Community Psychol 2009; 44(1-2):123-135.

19. Blankenship KM, West BS, Kershaw TS, Biradavolu MR. Power, community mobilization, and condom use practices among female sex workers in Andhra Pradesh, India. AIDS 2008; 22 Suppl 5:S109-S116.

20. Parker R, Aggleton P. HIV and AIDS-related stigma and discrimination: a conceptual framework and implications for action. Soc Sci Med 2003; 57(1):13-24.

21. Bourcier E, Girma M, Downer A, Gonzales V, Weaver M, Douglas E et al. Room for Change: Preventing HIV Transmission in Brothels. In: The Synergy Project, editor. Transmission Settings, part III brothels. Seattle: University of Washington Centre for Health Education Research; 2002.

22. O'Neil J, Orchard T, Swarankar RC, Blanchard JF, Gurav K, Moses S. Dhandha, dharma and disease: traditional sex work and HIV/AIDS in rural India. Soc Sci Med 2004; 59(4):851-860.

23. Beattie TS, Bhattacharjee P, Ramesh BM, Gurnani V, Anthony J, Isac S et al. Violence against female sex workers in Karnataka state, south India: impact on health, and reductions in violence following an intervention program. BMC Public Health 2010; 10:476.

24. Pillai P, Bhattacharjee P, Ramesh B.M, Isac S. Impact of Two Vulnerability Reduction Strategies - Collectivisation and Participation in Savings Activites- on Risk Reduction among Female Sex Workers. 1-110. 2011. Bangalore, Karnataka Health Promotion Trust.

25. Shahmanesh M, Wayal S, Andrew G, Patel V, Cowan FM, Hart G. HIV prevention while the bulldozers roll: exploring the effect of the demolition of Goa's red-light area. Soc Sci Med 2009; 69(4):604-612.

26. Busza J, Schunter BT. From competition to community: participatory learning and action among young, debt-bonded Vietnamese sex workers in Cambodia. Reprod Health Matters 2001; 9(17):72-81.

27. Swendeman D, Basu I, Das S, Jana S, Rotheram-Borus MJ. Empowering sex workers in India to reduce vulnerability to HIV and sexually transmitted diseases. Soc Sci Med 2009; 69(8):1157-1166.

28. Ghose T, Swendeman D, George S, Chowdhury D. Mobilizing collective identity to reduce HIV risk among sex workers in Sonagachi, India: the boundaries, consciousness, negotiation framework. Soc Sci Med 2008; 67(2):311-320.

29. Shahmanesh M, Cowan F, Wayal S, Copas A, Patel V, Mabey D. The burden and determinants of HIV and sexually transmitted infections in a population-based sample of female sex workers in Goa, India. Sex Transm Infect 2009; 85(1):50-59.

30. Halli SS, Blanchard J, Satihal DG, Moses S. Migration and HIV transmission in rural South India: an ethnographic study. Cult Health Sex 2007; 9(1):85-94.

31. Gurnani V, Beattie TS, Bhattacharjee P, Team C, Mohan HL, Maddur S et al. An integrated structural intervention to reduce vulnerability to HIV and sexually transmitted infections among female sex workers in Karnataka state, south India. BMC Public Health 2011; 11(1):755.

32. Ramesh BM, Moses S, Washington R, Isac S, Mohapatra B, Mahagaonkar SB et al. Determinants of HIV prevalence among female sex workers in four south Indian states: analysis of cross-sectional surveys in twenty-three districts. AIDS 2008; 22 Suppl 5:S35-S44.

33. Reza-Paul S, Beattie T, Syed HU, Venukumar KT, Venugopal MS, Fathima MP et al. Declines in risk behaviour and sexually transmitted infection prevalence following a community-led HIV preventive intervention among female sex workers in Mysore, India. AIDS 2008; 22 Suppl 5:S91-100.

34. Ramesh BM, Beattie TS, Shajy I, Washington R, Jagannathan L, Reza-Paul S et al. Changes in risk behaviours and prevalence of sexually transmitted infections following HIV preventive interventions among female sex workers in five districts in Karnataka state, south India. Sex Transm Infect 2010; 86 Suppl 1:i17-i24.

35. Rosenbaum PR, Rubin DB. The bias due to incomplete matching. Biometrics 1985; 41(1):103-116.

36. Becker S, Ichino A. Estimation of average treatment effects based on propensity scores. Stata Journal 2002; 2(4):358-377.

37. Mahal A, Canning D, Odumosu K, Okonkwo P. Assessing the economic impact of HIV/AIDS on Nigerian households: a propensity score matching approach. AIDS 2008; 22 Suppl 1:S95-101.

38. Blanchard JF, Bhattacharjee P, Kumaran S, Ramesh BM, Kumar NS, Washington RG et al. Concepts and strategies for scaling up focused prevention for sex workers in India. Sex Transm Infect 2008; 84 Suppl 2:ii19-ii23.

39. Campbell C, Cornish F. How Can Community Health Programmes Build Enabling Environments for Transformative Communication? Experiences from India and South Africa. AIDS Behav 2011.

40. Kabeer Naila. Gender Equality and Women's Empowerment: A critical analysis of the Third Millennium Development Goal. Gender Mainstreaming in Poverty Eradication and the Millennium Development Goals: A Handbook for Policy-Makers and Other Stakeholders. London: Commonwealth Secretariat; 2003. 13-24.

41. Kabeer Naila. Gender Equality, Poverty Eradication and the Millennium Development Goals: Promoting Women's Capabilities and Participation. Women in Development: Discussion Paper Series. Sussex: Institute of Development Studies; 2003. 1-26.

42. Rai SM, Parpart J, Staudt K. (Re)defining Empowerment, Measuring Survival. Workshop on Empowerment: Obstacles, Flaws, Achievements. Ottowa: Carlton University; 2007.

43. Gupta J, Acevedo-Garcia D, Hemenway D, Decker MR, Raj A, Silverman JG. Intimate partner violence perpetration, immigration status, and disparities in a community health center-based sample of men. Public Health Rep 2010; 125(1):79-87.

44. Yi H, Mantell JE, Wu R, Lu Z, Zeng J, Wan Y. A profile of HIV risk factors in the context of sex work environments among migrant female sex workers in Beijing, China. Psychol Health Med 2010; 15(2):172-187.

45. Tran TN, Detels R, Long HT, Lan HP. Drug use among female sex workers in Hanoi, Vietnam. Addiction 2005; 100(5):619-625.

46. Wojcicki JM, Malala J. Condom use, power and HIV/AIDS risk: sex-workers bargain for survival in Hillbrow/Joubert Park/Berea, Johannesburg. Soc Sci Med 2001; 53(1):99-121.

47. Pronyk PM, Hargreaves JR, Kim JC, Morison LA, Phetla G, Watts C et al. Effect of a structural intervention for the prevention of intimate-partner violence and HIV in rural South Africa: a cluster randomised trial. Lancet 2006; 368(9551):1973-1983.

48. Kim JC, Watts CH, Hargreaves JR, Ndhlovu LX, Phetla G, Morison LA et al. Understanding the impact of a microfinance-based intervention on women's empowerment and the reduction of intimate partner violence in South Africa. Am J Public Health 2007; 97(10):1794-1802.

49. Panchanadeswaran S, Johnson SC, Sivaram S, Srikrishnan AK, Latkin C, Bentley ME et al. Intimate partner violence is as important as client violence in increasing street-based female sex workers' vulnerability to HIV in India. Int J Drug Policy 2008; 19(2):106-112.

50. Sen Amartya. Gender and Cooperative Conflicts. 1987. Helsinki, World Institute for Development Economics.

51. Bradley JE, Bhattacharjee P, Ramesh BM, Girish M, Das AK. Evaluation of stepping stones as a tool for changing knowledge, attitudes and behaviours associated with gender, relationships and HIV risk in Karnataka, India. BMC Public Health 2011; 11:496.

52. Mohan HL, Diddappa M, Moses S, Schroeder J. Community Mobilization for female sex workers. Southern D, editor. 2010. Bangalore, India, Karnataka Health Promotion Trust.

53. Blankenship KM, Burroway R, Reed E. Factors associated with awareness and utilisation of a community mobilisation intervention for female sex workers in Andhra Pradesh, India. Sex Transm Infect 2010; 86 Suppl 1:i69-i75.

54. Ng M, Gakidou E, Levin-Rector A, Khera A, Murray CJ, Dandona L. Assessment of population-level effect of Avahan, an HIV-prevention initiative in India. Lancet 2011.

55. Moses S, Ramesh BM, Nagelkerke NJ, Khera A, Isac S, Bhattacharjee P et al. Impact of an intensive HIV prevention programme for female sex workers on HIV prevalence among antenatal clinic attenders in Karnataka state, south India: an ecological analysis. AIDS 2008; 22 Suppl 5:S101-S108.

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