

**COMMUNITISATION AND ITS ABILITY TO
ENCOURAGE SAFE SEX PRACTICES AMONG SEX
WORKERS IN INDIA**

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ABSTRACT:

In an effort to better understand the effectiveness of communitisation, a recently introduced process of shifting social service power from government systems to the benefiting communities, the Sonagachi Project was able to collect questionnaire responses from 482 sex workers as well as conduct physical examinations with participants. The data collected represented daily activities in the lives of sex workers as well as assessing their participation in various processes of communitisation such as community run health services, banking and educational services. After analyzing the responses there is a strong statistical relationship between participation in community organizing, advocacy, group learning and education, considered communitisation activities, and lower instances of STI's along with higher rates of condom use.

Keywords: HIV, Communitisation, Sexual Health, Sex Work, Community Lead Structural Intervention

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Introduction:

HIV transmission continues to be a global health concern and thus a focus of many interventions seeking to lower HIV rates in high-risk countries. Yet large scale health initiatives are just beginning to focus their attention on community led structural intervention programs meant to prevent the spread of HIV and improve overall sexual health outcomes (Zoysa & O'Reilly, 2012). The primary focus of such interventions and of communitisation, a methodology, centers on mobilizing a community to influence the outcome of HIV programming. A correlating, or indirect, outcome of this methodology is the formation of alternative identities separate from civil society's stigma faced by various high-risk communities. By engaging with this work, such communities are creating space outside of their prescribed identity and are creating a new identity for themselves within a broader societal context. Communitisation shifts the pervasive discourse within the immediate community leading to better overall public health outcomes as well as the common discourse in the larger civil society. This paper not only presents communitisation as a methodology for intervention but also explores the sexual health and empowerment outcomes of utilizing this approach when mobilizing a regularly stigmatized high-risk community of sex workers. Data collected from 482 sex workers is analyzed and discussed in the following text.

For the purposes of this research communitisation is defined as a process to bring the community to the center stage of intervention activities. Considering community as part of the solution (Jana 2012). Communitisation "calls for a paradigm shift...a shift to empower, harness, and strengthen the social capital of communities at the grassroots" (Communitisation, 2011). We see an excellent case example in the Indian region of Nagaland. Where in 2002 the first communitisation act was passed forming what one author called, "A democratic solution for inefficiencies of democracy" (Toko 2012). In essence the power of public institutions was granted to the community members with the hopes that it would create increased commitment and sustainability for such public programs as health care and education. In a presentation given about the progress of communitisation, Dr. Toko (2012) stated "Communitisation is halfway to privatization in the able hands of the user community".

All engagements for the purposes of this research were conducted under this framework with specific attention paid to understanding a community's increased attachment to behavior change when peers and fellow community members precipitate interventions. We seek to

uncover a correlation between major developmental activities under the communitisation process (e.g. micro credit, organization building, reduction of violence, education program, anti-trafficking, cultural activities etc.) and its possible impact on behaviour change, specifically service utilization, including condom use thus linking with HIV transmission among sex workers and their clients.

India has continued to be monitored over the last three decades for its HIV rates and has been the beneficiary of such targeted projects as Avahan, an initiative launched by the Bill & Melinda Gates Foundation to slow the spread of HIV focusing on six areas in the country (Galavotti et al 2012). In the Sonagachi neighborhood of Kolkata, West Bengal, The Sonagachi Project, as it is known, has been able to utilize the framework of a structural public health intervention as well as principles of communitisation to address HIV prevalence and promote collective identity. They not only offer regular health care at their many community clinics, but also have a peer led health program run by sex workers, a banking cooperative, Usha, also run by sex workers, and various educational activities for both women, men and their children. Sex workers are routinely denied access to civil society services thus as communitisation suggests, the community needed to create their own (Swendeman & Jana, 2013). The Avahan project was based initially on the Sonagachi Project model yet little work has been done to understand how community mobilization projects such as The Sonagachi Project and Avahan can lead to such behavior change (Zoysa & O'Reilly, 2012). This paper seeks to highlight preliminary evidence to demonstrate such an achievement

As a community led structural intervention (CLSI), the Sonagachi Project utilizes methods of collective identity and community mobilization to engage sex workers residing in and around one of Kolkata's most infamous and largest red light areas (Ghose, Swendeman, George & Chowdhury, 2008). CLSIs are most often considered those community-led interventions that look at the structural links to disease prevention and vulnerability as well (Jana et al 2004; Swendeman & Jana 2013). The Sonagachi Project focuses much of its work on HIV intervention and education as well as issues sex workers regularly face (Ghose, Swendeman, George & Chowdhury, 2008). This paper recognizes *communitisation* as it pertains to community owned social systems and the subsequent positive effect seen in health seeking behaviors, development of collective identity, and collective bargaining ability within as well as exterior to sex work. These efforts of communitisation can be seen through such activities as

creation of a micro credit banking system, organization building, reduction of violence, educational programming, anti-trafficking, and various cultural activities. The findings highlight how structural interventions through communitisation can lead to improved health seeking behaviors and low rates of HIV infection.

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Background:

Structural interventions have most often been received with mixed reviews (Sweat & O'Reilly, 2013). Yet many agree that individual communities when asked to address their needs with added support will successfully come together (Lambert, 2012; Swendeman & Jana, 2013; Asthana & Oostvogels, 1996). What began as a program to address STI transmission and HIV rates has grown over two decades to become a social movement with a proven model for a community-led structural intervention (CLSI) including a strong empowerment component and proven success in lowering STI/HIV rates as well as sustained condom use (Swendeman, Basu, Das, Jana & Rotheram-Borus, 2009). Thus this framework to address public health concerns lays a strong foundation for the process of communitisation.

Community-led structural interventions (CLSI) encompass community participation, partnership, and ownership (Swendeman & Jana, 2013; Rodriguez-Garcia & Bonnel, 2012). With a principal need being community involvement and ownership it is easy to fit CLSI's under a communitisation model as outlined with our given definition (2013). Inherent in the work are conceptual challenges to showing linkages among community programs and behavior thus deterring many researchers from attempting (Zoysa & O'Reilly, 2012; Galavotti et al, 2012; Thomas et al, 2012). Particularly difficult to assess is the need for increased self-esteem and dignity. The communities in reference, specifically sex worker communities, are characterized by a high degree of shame, depression, and pervasive self-hatred (Pereira, Andrew, Pai, Pelto & Patel, 2007). Thus in order for elements of communitisation to happen work must first be done to establish collective identity and raise levels of self-esteem (Ghose, Swendeman, George & Chowdhury, 2008). By attaching to a new social and political identity as sex workers, the community is able to mobilize on a platform of self-respect and detachment from civil societies stigmatized labeling (Swendeman & Jana, 2013; Ghose, Swendeman, George & Chowdhury, 2008). Due to the success of communitisation this sense of self-respect and collective identity

work was completed by the Sonagachi Project over the course of the project and has thus provided an appropriate foundation for implementation. Social, political, and emotional climate indicates the ability for mobilization to occur (Guha et al, 2012). Without such foundations for implementation, communitisation would not have been effective and peer-led programs would never have occurred.

Implementation:

The Sonagachi Project sought to engage the community in the establishment of their own structure, activities, and campaigns around sex work (Swendeman & Jana, 2013). Although the initial goal was to promote positive sexual health education and behaviors among sex workers, non-health related activities such as community rallies, protests, conferences and public forums, offered visibility for sex workers among external parties such as police and government officials. They are creating a new political and social identity for themselves.

Once it was established that the Sonagachi red light area had a pervasive identity as a strong sex worker community, the elements of communitisation could unfold. By exercising control over their community, the sex workers engaged in their own efforts in activism, lead by members of the community. Such activism topics focused on addressing violence from internal and external community members as well as banking assistance and continued self-esteem building (Wheeler et al, 2012). The collective formed their own banking cooperative run by sex workers, offering banking options and loans for sex workers and their children. The ability to save was a big concern for sex workers and thus Usha Multipurpose Cooperative was formed.

Another example of the Sonagachi community taking ownership of public services is seen in the creation of the Self-Regulatory Board (SRB), which monitors underage sex trafficking. Through involvement in community needs and attachment to a sex worker identity, the data discussed bellow illustrates positive health outcomes. As one study noted, community members when given control have been able to illuminate the elements of risk, which would include condom use and other sexual and social health behaviors (Wheeler et al, 2012)

Galavotti et al (2012) argues that there are components to mobilization, a key foundation of communisation. Those components include: 1) identification with others 2) collectivization and 3) ownership. Ownership is integral to the success of communitisation and thus to its ability to positively affect health outcomes and program development. While the other aspects of communitisation lead to an attachment to the work they do not directly assume or indicate a

leadership position or ownership to the work (Galavotti et al, 2012). Thus by including this as a necessary component, the organizations created and networks established are not only influenced by the community but are owned by them. Such activities as the peer education program, anti-trafficking program, the anti-discrimination protests and the cultural group have been created and owned by the sex workers through the communitisation process. This connection between CLSIs and indirect community engagement in broader organizing activities is illustrated in the data that follows. By creating space for ownership and empowerment, there is room for sustainability and activity success (2012; Guha et al 2012).

Methods:

Sex workers were selected from the study area using random sampling methodology. In the first stage, random samplings of the brothels in Sonagachi area were done. All sex workers in the selected brothels were part of the study sample. In the present study, the target group for sampling was enumerated according to the present field operational zones. A total of 482 sex workers participated in the study. Yet with an expected 5% non-participation rate and 5% non-response rate, the sample size must be adjusted upwards. When multiplying the sample by 1.1 we have an adjusted n of 533 – 535 when rounded. Multistage random sampling was followed to select brothel-based sex workers (starting with the unit of the brothel, then the sex worker) who participated in the study. A sample of 559 brothel-based sex workers participated in the survey, reflecting 5 percent of the total population (10,000) of general sex workers working in the Sonagachi intervention area in the city of Kolkata at that time.

The questionnaire was designed to gather data from one-on-one interviews and to record findings of clinical examinations given to the participating sex workers. The tool was developed in collaboration with the DMSC field workers, trained sex workers, to collect socio-demographic characteristics from participants including, health seeking behaviours, sexual practices, knowledge and awareness on STIs and AIDS and other related information. The questionnaire was pre-tested to identify any incongruity, incompleteness, ambiguities etc. The impact of communitisation on HIV intervention outcome was assessed with the use of appropriate statistical tools and methodology for example odd ratio and multi-variate analysis.

In addition to community-development indicators, the survey involved socio-demographic variables and HIV-related behavioural outcome measures such as consistent condom use.

The survey interviews were conducted by the field workers, under the guidance of the research officers and the PI. Survey interviewers were recruited from among the more experienced and educated Peer Educators, sex workers, of the Sonagachi Project to assist in conducting the survey interviews. Sex worker respondents found it easier to disclose the realities of their everyday lives to other sex workers, without having to worry about transgressing established boundaries of social class and sexuality when speaking with a member of their community.

Once all of the interviewers were recruited, a 5-day training workshop was held, in which other sex worker members also participated. In this workshop the research team and the other participants were familiarized with the objectives and ethical procedures of the study. During the workshop, mock interviews were also carried out and feedback was provided to each interviewer to improve their interviewing skills. The research officers screened all questionnaires as they came in and the principal investigator screened a random 10% of them at the end of a given week. Errors, miscodes and missing information were identified and addressed.

Sex workers were first interviewed by the field workers and then sent to the Medical Officer for clinical examination. The physical examination consisted of inspection and palpation of external genitalia for ulcers, warts and enlargement of inguinal lymph nodes, inspection of the vaginal walls and posterior fornix, visualization of the cervix with the use of speculum. Blood was also taken from each participant and tested for various STIs and the presence of HIV.

Frequencies and other descriptive statistics were generated and univariate, bivariate and multivariate analyses were conducted using the epi-info program. Data collected from the pre-tested questionnaire were verified on the same day by the field workers followed by entry of the data which was done on a regular basis. After the completion of the data entry, cleaning of data was undertaken followed by analysis and triangulation of data. Odds ratio in addition to single and multivariate analysis for quantitative data was utilized.

Qualitative data collected in the field were analysed using appropriate software. Findings of the community mobilization outcome (e.g. increase of self-esteem, membership of the collective, participation in the credit and saving scheme, decision making in family and in sex trade etc.) were compared with the intervention program outcome data to find out any association with community mobilization and HIV transmission. The broad data sheets

highlighting major findings were developed and were shared with the participants of the study in groups.

Outcomes

Due to the connection between condom use and “positive perception of community collectivism and support” (Guha et al, 2012) the data collected allows us to draw connections between improved sexual health and the occurrence of sex worker led programs and interventions such as those programs held by Durbar, the street processions, and the banking program, the USHA Multipurpose Cooperation, run by the sex workers. Analysis shows that slightly less than half (44.2%) of the sample attended programs related to community development organized by DMSC while 15.6% had attended at least one non-health training and consultative program not related to an HIV intervention program. Almost 31% (30.9%) of the sample attended a street procession.

When compared, condom usage rates are significantly higher among those attending at least one procession (OR: 1.736 and CI: 1.097 – 2.748) while STI infections reported over the last year were less frequent (OR: 0.201 and CI: 0.131 – 0.307) among the same group. When asked about general events, 37.2% had attended a function organized by Durbar which when compared to those who had not, the data illustrates that STI infection among was significantly less (OR: 0.250 and CI: 0.171 – 0.366) (see tables 1-2).

Table 1: Condom usage among those who attended any street procession over the last year

Attended street procession organized by Durbar		Condom usage		Total
		Not always users	Always users	
No	Count	100	286	386
	%	25.9%	74.1%	100.0%
Yes	Count	29	144	173
	%	16.8%	83.2%	100.0%
Total	Count	129	430	559
	%	23.1%	76.9%	100.0%

OR: 1.736

CI: 1.097 – 2.748

Table 2: Rates of STI infection among those who attended street processions

Attended street procession organized by Durbar		Incidence of STI during last 1 year		Total
		No	Yes	
No	Count	174	212	386
	%	45.1%	54.9%	100.0%
Yes	Count	139	34	173
	%	80.3%	19.7%	100.0%
Total	Count	313	246	559
	%	56.0%	44.0%	100.0%

OR: 0.201

CI: 0.131 – 0.307

This paper and various scholars alike argue that interventions are much more effective in a community when it is run by the user community of the intervention. Thus to highlight the effectiveness of communitisation, respondents were asked specifically about sex worker led events. When compared, condom use was higher among those attending sex worker organized functions over the last year such as mass gatherings or joining in the deputation (OR: 1.928 and CI: 1.010 – 3.680) as opposed to those who have not participated in such programs (table 3). It can also be seen that the more frequently sex workers attend activities organized by the collective, lower rates of STIs are reported (Table 4). In reference to participation in the open ground fairs, which allow sex workers to share their views in an open, inclusive space, STI infection in the last year was significantly less (OR: 0.165 and CI: 0.100 – 0.270). Condom use was also found to be significantly higher (OR: 1.703 and CI: 1.034 – 2.803) (tables 5-6).

Table 3: Condom usage among those attending sex worker organized functions

Attended sex worker organized function in last one year		Condom usage		Total
		Not always users	Always users	
<= 3 nos.	Count	117	359	476
	%	24.6%	75.4%	100.0%
4 and above	Count	12	71	83
	%	14.5%	85.5%	100.0%
Total	Count	129	430	559
	%	23.1%	76.9%	100.0%

OR: 1.928
CI: 1.010 – 3.680

Table 4: Instances of STI infection among those attending sex worker organized functions

Attended sex worker organized function in last one year		Incidence of STI during last 1 year		Total
		No	Yes	
<= 3 nos.	Count	235	241	476
	%	49.4%	50.6%	100.0%
4 and above	Count	78	5	83
	%	94.0%	6.0%	100.0%
Total	Count	313	246	559
	%	56.0%	44.0%	100.0%

OR: 0.063
CI: 0.025 – 0.157

Table 5: Instances of STI infection among those who attended any open ground fair

Attended any fair organized by Durbar		Incidence of STI during last 1 year		Total
		No	Yes	
No	Count	196	224	420
	%	46.7%	53.3%	100.0%
Yes	Count	117	22	139
	%	84.2%	15.8%	100.0%
Total	Count	313	246	559
	%	56.0%	44.0%	100.0%

OR: 0.165
CI: 0.100 – 0.270

Table 6: Condom usage among those who attended any open ground fair event

Attended any Fair organised by Durbar		Condom usage		Total
		Not always users	Always users	
No	Count	106	314	420
	%	25.2%	74.8%	100.0%
Yes	Count	23	116	139
	%	16.5%	83.5%	100.0%
Total	Count	129	430	559
	%	23.1%	76.9%	100.0%

OR: 1.703

CI: 1.034 – 2.803

In terms of savings, 77% of the sex workers saved a part of their income and among them 36% saved in USHA. By having a stake in their own financial futures and stability it is believed that this implementation of the communitisation model will thus lead to more successful HIV/STI outcomes. The data shows that of those saving money in USHA, they reported having suffered less STIs over the last year (OR: 0.052 and CI: 0.028 – 0.099) when compared to the population not saving their money in the sex worker owned cooperative. The data also reflects that 74% of sex worker collective members responded they would support HIV affected people while nonmembers were less enthusiastic about lending such assistance. This positive response lends support to the theory that with increased principles of communitisation, a community is much more likely to take care of its own and thus assist in the success of interventions, specifically when related to HIV.

Discussion

This research presents preliminary insights into the importance of community lead interventions for stigmatized communities and the possibility of sustained behavior change and effective civil society engagement. By owning the HIV intervention program through the Sonagachi project, the sex workers were able to create other initiatives and programs to empower their community. We see that engagement in larger activities leads to increased attachment to positive health behaviors. By participating in and leading rallies for collective concerns such as, sex worker rights, access to medical care, and freedom from police brutality, participants showed a strong sense of identity in the face of common adversity. The sex worker community established ownership over their community needs such as sexual health education, through sex worker led protests, public forums, and non-health related trainings. We see these activities as increasing the likelihood for condom use and causing the instances of STIs and STDs to diminish.

This engagement also leads to larger ownership with regards to structural programs. Such initiatives as economic freedom and sustainability have been born within this context as indirect effects of the communitisation process. By owning the communities health initiative, members of the sex worker community have been better able to own other such programs. Not only is a new civil society identity created but also an increased engagement in activities seen as a part of

mainstream civil society. Cultural programs, banking initiatives, book publication and professional networking, are all accepted forms of social engagement within pervasive social discourse. The sex worker community thus takes ownership of such engagements and subsequently moves into acceptable social spaces.

It is vital for the global community to recognize the difference between community lead interventions, through such methods as communitisation, and community-imposed interventions. Although, generally considered well intentioned it is easy to understand that when seeking long-term change the global welfare community must allow ownership and direction to come from the community itself. Further research comparing the two models is needed but in the immediate the data outlines how community attachment to an identity and a self-articulated need has increased public and sexual health benefits, which cannot be overlooked.

The study design and measures present some limitations. The questionnaire provides only preliminary insight into the connection between health behavior and community participation. Thus drawing conclusions from the data is merely a beginning step to indicate need for future research. And more representative sample and purposeful methodology is required. To gather a more extensive view of the behavior effects related to communitisation, a longitudinal study is recommended. The point-in-time data collected is not representative of the sustainability of such work. The research also illustrates a need to gather data from the civil society in an effort to understand their perception based on such engagements with the broad community outside of the sex worker context. The questionnaire lacks follow up in certain areas, which may have drawn strong statistical connections between events and outcome data. This was necessary due to the nature of the study but informs the need for greater detail in future research.

Conclusion

This work takes a percussive glance at the ability for sex workers to challenge traditional values and create new identities through acts of structural intervention and program ownership. By being given the opportunity to direct and lead activities within their own communities, change is pervasive. Rather than instructing communities of their needs and their objectives, external leaders and funders must recognize the inherent ability for communities and individuals to manage their own social programs. By utilizing the CLSI framework, sustained behavior change and real movement from the margins is possible. Moving away from a public health framework, addressing community need in the form of banking systems, violence prevention and

community outreach, we see an increased ability for members to work together and build increased mobilization and agency.

With continued research, allowing for longitudinal data, we can see the true sustainability of such methodologies. An increased utilization of communitisation and programs like it will allow for greater social change and positive outcomes among communities seeking a change. By shifting implementation responsibilities and decision making to the community itself not only are positive health and welfare behaviors possible but an last behavior shift that has the potential to remain long after the implementing organization has departed.

References

- Asthana, S. and Oostvogels R. (1996) Community participation in HIV preention: problems and prospects for community-based strategies among female sex workers in Madras. *Social Science & Medicine*, 43: 133-48.
- Communitisation: The Third Way of Governance. (2011). *Community Development Journal*, 46: 147-149.
- De Zoysa, I., and O'Reilly, K. (2012). Community mobilisation for prevention in India: What difference does it make? *Journal of Epidemiology & Community Health*, 66: 1-2.
- Galavotti, C., Wheeler, T., Kuhlmann, A. S., Saggurti, N., Narayanan, P., Kiran, U., and Dallabetta, G. (2012). Navigating the swampy lowland: a framework for evaluating the effect of community mobilisation in female sex workers in Avahan, the India AIDS Initiative. *Journal of Epidemiology & Community Health*, 66: 9-15.
- Ghose, T., Swendeman, D., George, S., and Chowdhury, D. (2008). Mobilizing collective identity to reduce HIV risk among se workers in Sonagachi, India: the boundaries, consciousness, negotiation framework. *Social Science & Medicine*, 67: 311-20.
- Guha, M., Baschieri, A., Bharat, S., Bhatnagar, T., Sane, S. S., Godbole, S. V., ... Collumbien, M. (2012) Risk reduction and perceived collective efficacy and community support among female sex workers in Tamil Nadu and Magarashtra, India: the importance of context. *Journal of Epidemiology & Community Health*, 66: 55-61.
- Jana, S., Basu, I., Rotheram-Borus, M.J., and Newman, P.A. (2004) The Sonagachi Project: a

- sustainable community intervention program. *AIDS Education and Prevention*, 16: 405-14.
- Jana, S. (2012) Community mobilisation: myths and challenges. *Journal of Epidemiology & Community Health*, 66: 5-6.
- Lambert, H. (2012). Balancing community mobilisation and measurement needs in the evaluation of targeted interventions for HIV prevention. *Journal of Epidemiology & Community Health*, 66: 3-4.
- Pereira B, Andrew G, Pai R, Pelto P, Patel V. (2007). The explanatory models of depression in low income countries: Listening to women in India. *Journal of Affective Disorders*, 102: 209- 218.
- Rodriquez-Garcia, R. and Bonnel, R. (2012) Increasing the evidence base on the role of the community in response to HIV/AIDS. *Journal of Epidemiology & Community Health*, 66: 7-8.
- Sweat, M. and O'Reilly, K. (2013). Ideological barriers to structural interventions: Toward a model of values-based interventions. In M. Sommer & R. Parker (Eds.), *Structural Approaches in Public Health* (63-75). Abingdon, Oxon: Routledge.
- Swendeman, D. and Jana, S. (2013). The Sonagachi/Durbar Programme: A prototype of a community-led structural intervention for HIV prevention. In M. Sommer & R. Parker (Eds.), *Structural Approaches in Public Health* (130-144). Abingdon, Oxon: Routledge.
- Swendeman, D., Basu, I., Das, S., Jana, S. and Rotheram-Borus, M.J. (2009) Empowering sex workers in India to reduce vulnerability to HIV and sexually transmitted diseases. *Social Science & Medicine*, 69: 1157-66.
- Thomas, T., Narayanan, P., Wheeler, T., Kiran, U., Joseph, M.J. and Ramanathan, T.V. (2012) Design of a community ownership and preparedness index: using data to inform the capacity development of community-based groups. *Journal of Epidemiology & Community Health*, 66: 26-33.
- Toko. (2012). *Presentation on Communitisation* [PowerPoint slides]. Retrieved from <http://gad.bih.nic.in/Gallery/Dr-Toko-Presentation-on-Communitization.pdf>
- Wheeler, T., Kiran, U., Dallabetta, G. Jayaram, M., Chandrasekaran, P., Tangri, A., ...

Alexander, A. (2012) Learning about scale, measurement and community mobilisation: reflections on the implementation of the Avahan HIV/AIDS initiative in India. *Journal of Epidemiology & Community Health*, 66: 16-25.

