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Assessing Functional Health Status and Psychological Well-being of Sex Workers in Parbhani, India: A Mixed-Methods Approach

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Abstract: ***Background: This study aimed to assess functional health, psychological well-being, and self-esteem of adult female sex workers (FSWs) in Parbhani, India, living with or at high risk for contracting HIV/AIDS. Patient-reported outcomes (PROs) were quantified using the Short Form 12 Health Survey Version 2 Mental Health Enhanced (SF12v2 MH Enhanced) and Rosenberg Self-Esteem instruments. Analysis focused on identifying specific areas for interventions to improve quality of life components. Additionally, a custom feedback questionnaire was employed to gather qualitative feedback on Setu's interventions. Method: The study targeted 84 FSWs, averaging 37 years of age, representing 9.3% of the high-risk population in Setu's registry–a non-profit instituting HIV/AIDS related interventions in this region for 22 years. Participants were further divided into brothel-based workers (46/84), home-based workers (13/84), and Tamasha artistes (dancers, 25/84). Questionnaires were administered via physical prints in Hindi and Marathi by Setu-affiliated outreach workers and scored in accordance with the developer's algorithms. Results: From the SF12v2 MH enhanced survey, mean ($\bar{x}$) Physical Component Summary (PCS) score was 45, and mean Mental Component Summary (MCS) score was 43.2. Dancers had the lowest PCS ($\bar{x}$ = 44), and brothel-based workers reported the lowest MCS ($\bar{x}$ = 40.9); 57% of this brothel-based population was identified as possessing a high risk for depression. The Rosenberg self-esteem survey revealed low self-esteem among those afflicted with HIV/AIDS ($\bar{x}$ = 10.33<15, n = 15), while scores for the total sample indicated average self-esteem ($\bar{x}$ = 16.32>15, n = 84). In the feedback survey, 80% of respondents reported an improved quality of life. High PCS and MCS scores were linked to those who utilized Setu's assistance to gradually transition away from the sex-trade. Conversely, those with lower scores lacked familial or peer support or often suffered from chronic comorbidities. Conclusion: Despite Setu's interventions engendering significant reforms in a below poverty line community, the sex-worker population, presented as physically and mentally stunted with scores below normative levels (PCS 50 and MCS 52). Low Rosenberg scores among HIV/AIDS subjects indicate an evident stigma-burden limiting self-esteem. Additionally, brothel-based workers are at high risk for depression. Targeted interventions–especially for brothel-based–such as counseling and medical supervision, could improve their quality-of-life related components.***

Keywords: SF12v2 MH Enhanced, Rosenberg Self-Esteem Scale, functional health, psychological well-being, and self-esteem, Female sex workers, FSW, Physical Component Summary, PCS, Mental Component Summary, MCS, HIV/AIDS, NGO, Setu

1. Introduction

The first incident of HIV/ AIDS in India was reported in the city of Chennai, in the year 1986 [1]. Soon the virus transitioned into an epidemic, particularly concentrated in the states of Maharashtra, Andhra Pradesh and Karnataka. At its peak, national prevalence of HIV/AIDS was estimated at 0.55% in 2000, truncated to 0.32% in 2010, and further down to 0.21% in 2021 [2].

In the year 2019, it was estimated that Mumbai's HIV rate was 0.73% [3]. Suburban and urbanized areas in Mumbai, housing large numbers of sex workers, were particularly hard hit. Other towns in the state of Maharashtra with large sex worker populations were also adversely impacted, namely the towns of Sangli, Nagpur, and Nasik [4]. Parbhani became another hotspot for HIV/AIDS spread when deaths were reported in the year 2002 due to HIV/AIDS prognosis per Setu's 2002 project report; Setu is a non-governmental organization that has been working to combat stigma burdens, harassment, and oppression against those in the sex trade in this area for the past 22 years. Additionally, 15% of Parbhani's sex worker population presented with an STD during the same year (ascertained by Setu in their report to Maharashtra AIDS Control Society, MSACS). To ameliorate the escalating crisis, MSACS sought to partner with Setu to manage disease spread. In response, Setu conducted an initial survey to detail the problem in Parbhani in 2002.

State of high-risk sex workers in 2002 as ascertained by Setu surveys and interviews:

In 2002, a survey by Setu identified 500 sex workers living in dire conditions in Parbhani. They resided in close proximity to garbage dumps, bus stands, movie theaters, and in low-lying flood-prone areas with poor sanitation and no access to clean water or electricity. Along with an elevated risk for HIV/AIDS, their living conditions increased their susceptibility to other infectious diseases. Societal alienation and harassment by law enforcement agencies, brothel owners, and partners discouraged these women from seeking help and undergoing regular HIV/AIDS testing. They were excluded from census surveys and systematically disenfranchised due to the absence of vital documents, including proof of residence, birth certificates, and Aadhaar Cards (equivalent to Social Security Numbers). This bureaucratic oversight led to their exclusion from Below Poverty Line (BPL) entitlements, government assistance, and educational opportunities for their children.

Following strong recommendations from the collector and the civil surgeon, Setu was appointed to collaborate with Maharashtra State AIDS Control Society (MSACS) to address the HIV/AIDS crisis in Parbhani. The MSACS initiative encompassed sex workers, migrant laborers, and truckers, who were identified as key vectors in disease transmission. The program's scope was limited to promotion of condom use, free STD testing at civil hospitals, and distribution of HIV-related medication. Despite the presence of comorbidities such as hypertension, diabetes, malnutrition, and diarrhea among Key Persons (KPs were identified by MSACS and Setu as possessing a "high-risk" for contracting HIV/ AIDS), medication was restricted to HIV/AIDS treatment.

Setu recognized the need for a more holistic program to improve quality of life for these women. To this end, Setu took to upskilling women through the institution of tailoring programs, provision of micro-loans, establishment of pre-primary schools offering free midday meals for the children of these FSWs, and creation of dispensaries providing free medicines in addition to basic health check-ups.

Setu's dedicated advocacy efforts led to all FSWs involved being classified as living Below Poverty Line (BPL) and thus deemed them eligible for welfare benefits. Such classification was pivotal in enabling their access to public distribution systems, healthcare facilities, schools, scholarship grants, free distribution of ration cards (food stamps), pensions for seniors, and voter ID cards. This integrated approach, blending social welfare with health initiatives, was pioneering. Setu's model became a benchmark that was adopted by MSACS across other such intervention programs.

Setu's intervention was particularly pertinent in eliciting community mobilization. After the institution of such reforms, clinic attendance for HIV and other STD testing gradually increased to almost 100%, with 3, 500 clinic attendances for testing and physical check-ups in 2023, and condom use rose, with 40, 000 packets provided in 2023, per Setu's report. Additionally, children began attending pre-primary and primary educational centers, with close to 100% enrollment in government-run schools.

With marked policy improvements, the objective of this study was to quantitatively assess functional health and psychological well-being of sex workers using standardized patient-reported outcome (PRO) instruments, including the SF-12v2 MH enhanced and Rosenberg self-esteem scales.

2. Methods

84 female sex workers of mean age 37 (ranging from 19 to 50 years old) were the targeted group for the PRO instruments–the SF12v2 MH Enhanced and Rosenberg Self-Esteem Scale. This sample size represented 9.3% of the total high-risk population in Setu's database. These FSWs were further divided into three groups based on the nature of their work and approximate presence in the total population: brothel-based workers (46/84), home-based workers (13/84), and Tamasha artistes (dancers, 25/84). Additionally, 15 people from this population were HIV/AIDS positive patients.

The administration of these questionnaires was conducted by Setu's outreach workers over a period of three weeks via physical prints distributed to sex workers and HIV/AIDS patients registered under Setu's database. The participants were provided detailed information about the purpose and objectives of the study including duration and risks and informed consent to participate was obtained prior to their inclusion in the study. The content of these surveys was translated into Hindi and Marathi, as most of this population lacks English literacy.

The SF12v2 MH Enhanced instrument, consisting of 15 questions, encompasses eight distinct domains: physical functioning, role limitations due to physical health, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional health, and mental health [5]. The normative benchmark for the sample population surveyed with mean age 37 can be best estimated with an MCS score of 52 and a PCS score of 50, per the findings from a similar Spanish population of mean age 49–in establishing a benchmark for comparison, it is pertinent to exclude significantly older people who tend to report poorer PCS scores, so these normative scores serve as a conservative benchmark [6]. The SF12v2 MH Enhanced survey is a globally standardized PRO instrument [5].

The Rosenberg Self-esteem scale, developed in the 1960s, captures feelings of self-worth [7]. It is a 10-item scale that quantifies self-esteem by ascertaining both positive and negative feelings about the self [8]. All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree, and item response values are summed to obtain a total scale score that ranges from 0 and 30 [8]. A cut point score of 15 and below indicates low self-esteem [8].

Additionally, a qualitative feedback survey was developed in consultation with on-site project managers and peer educators to determine specific successes and failures of Setu's intervention in Parbhani and common themes among those with healthy SF12v2 MH enhanced and Rosenberg self-esteem scores.

Scoring for the SF12v2 MH Enhanced survey was accomplished using QualityMetric' s Smart Measurement System, PRO Insight–a professional PRO analytics software [9]. Data were transcribed from physical surveys into an online directory to extract site specific MCS and PCS scoring.

3. Results

The following tables summarize data obtained from the survey respondents–84 FSWs with mean age 37 (ranging from 19 to 50 years old), including a sub-sample of HIV/AIDS patients isolated for the Rosenberg self-esteem scale (Table 3).

Table 1: Condensed summary of PCS and MCS scores obtained from the SF12v2 MH Enhanced instrument for each FSW site and the total sample population. See Table 2 for elaboration of moderate/high bodily pain.

	Number of Respondents	Mean Mental Component Summary (MCS)	Mean Physical Component Summary (PCS)	Risk of Depression (% respondents under MCS of 42)	Percent of Population suffering from mod/high bodily pain
Brothel-based workers	46	40.9	45.1	57%	70%
Home-based workers	13	49.4	46.5	8%	38%
Tamasha artistes (dancer community)	25	44.2	44	32%	60%
Total Population	84	43.2	45	42%	62%

Table 2: Detailed PRO analytics scores obtained from the SF12v2 MH Enhanced scoring algorithm, including FSW sites and sub-component scores. Those with moderate to high pain impacts reported bodily pain interfering either "quite a bit" or "extremely" with physical functioning in their questionnaires. Similarly, those reporting work and activity problems indicated that their physical condition impeded their jobs and other activities.

	Brothel-based	Tamasha artistes (dancers)	Home-based	Cumulative
Mean Physical Component Summary	45.1	44	46.5	45
Physical Functioning	42.2	42	45	42.5
Role Physical	42.2	43.4	43.8	42.8
Bodily Pain	41.5	40.8	46.6	42.1
General Health	46.8	46.2	51.3	47.3
Mean Mental Component Summary	40.9	44.2	49.4	43.2
Vitality	48.8	50.6	54.4	50.3
Social Functioning	40.1	44.1	47.3	42.4
Role Emotional	36.9	38	45.1	38.5
Mental Health	41.5	44.2	47.9	43.3
Risk of Depression	57%	32%	8%	42%
Moderate/ High Pain Impact	70%	60%	38%	62%
Work/ Activity Problems	35%	32%	23%	32%

Table 3: Rosenberg self-esteem response summary in the cumulative vulnerable sex worker population (n = 84) and HIV/AIDS patients (n = 15).

Rosenberg Self-esteem survey	All Subjects	15 HIV/ AIDS Positive Subjects only
	% (Strongly Agree + Agree)	% (Strongly Agree + Agree)
On the whole, I am satisfied with myself.	70	13
2. At times I think I am no good at all.	54	100
3. I feel that I have a number of good qualities.	62	27
4. I am able to do things as well as most other people.	68	7
5. I feel I do not have much to be proud of.	58	100
6. I certainly feel useless at times.	62	93
7. I feel that I'm a person of worth, at least on an equal plane with others.	54	0
8. I wish I could have more respect for myself.	71	93
9. All in all, I am inclined to feel that I am a failure.	39	73
10. I take a positive attitude toward myself.	86	80
Rosenberg Mean score	**16.32**	**10.33**

Table 4: Qualitative impact assessment of Setu's support on sex workers and their families

Initiation and Current Status	**% (Agree)**
Entered the sex trade willingly	60%
Currently in the profession by choice	97%
Family Approval and Support	
Full family support	45%
Limited family support	27.5%
No family support	27.5%
Sole Providers/ Head of household	83%
Compensation: Limited compensation from clients	69%
Enhanced Quality of Life: Setu's Impact	
Recognize Setu's role in providing financial stability	84%
Assisted Health Services: Support in regular HIV and STD testing at government hospitals	100%
Reported inadequate supply of free condoms	92%

Increased willingness to purchase condoms for safe sex practices because of increased awareness and counseling	70%
Protection and Advocacy by Setu	
Protection from police raids, harassment from brothel owners, clients, partners, family, and other threats from locals	100%
Government recognition and eligibility for relief programs due to Setu's intervention	
Received ration cards, voter IDs, SSNs, and bank accounts	100%
Access to most of the eligible government schemes	90%
Government Issued IDs and Certificates for family: Mothers reporting assistance from Setu	81%
Mentoring and Guidance from Setu Volunteers	
Children receiving strong mentoring	64%
Children receiving limited mentoring	25%
Impact of Setu counseling on Emotional Status and Security	
Increased willingness to discuss personal health risks and seek emotional support	80%

4. Discussion

Analyzing the data presented in Table 1 and Table 2, it is evident that the sex worker community in Parbhani as a whole present as physically stunted within every sub-group studied. Compared to the normative PCS of 50 for a Spanish population of similar mean age (see *Methods*), the Setu FSW community, with a mean PCS of 45, falls well below this figure, indicating limited physical health, general health, vitality and high body pain. Brothel-based workers and dancers presented with particularly low PCS scores. Over 70% of brothel-based workers and 60% of dancers scored below 40 on the PCS scale, indicating moderate/high chronic pain and substantial physical limitations [5].

It is also pertinent to interpret these PCS scores in the context of other HIV vulnerable populations. A population of 112 Canadians in Ontario, with Caucasian men of mean age 49 as the majority demographic, surveyed at a clinic specializing in HIV/AIDS care scored a mean PCS of 47.7 [10]. Though this score is higher than that of the women in India, it is important to note here that this population was relatively affluent and under regular medical supervision and rehabilitation during the course of the study; they were well-managed. Conversely, a study conducted on 86 members of a low-income population not under medical supervision prior to the study in Indianapolis (Indiana, United States), again comprising a Caucasian male majority, reported a mean PCS of 41.0 [11]. Though the lack of SF12-v2 MH enhanced surveys on HIV/AIDS vulnerable populations prevents any conclusion as to the condition of FSWs in Parbhani, mean PCS ranging from 44 to 46.5 in different FSW sites indicates room for improvement in habilitation efforts while also potentially ascribing merit to Setu's interventions within a population in which all members reside below India's poverty line. Nevertheless, it is important to note that this PCS range is one typically seen in older adults aged 65 and above, making the findings especially concerning [6].

Mental Component Summary scores also revealed prevalent mental adversity in Parbhani's HIV/AIDS vulnerable population. Compared to the normative mean MCS of 52 for a mean age of 37 (see *Methods)*, the Parbhani sex worker community scored significantly lower at 43.2 [6]. Such a score indicates limited social functioning, psychological distress, and a heightened risk for depression. Brothel-based workers particularly presented with substantial mental adversity, scoring an average of 40.9. Such a result is concerning because MCS scores below 42 indicate a high risk for depression, which 57% of the brothel-based workers fell under–significantly higher than rest of India's normative 28% depression risk for the general population [12]. This correlation between MCS scores lower than 42 and a high risk for depression is derived from studies correlating an MCS of 42 with the greatest sensitivity and specificity in identifying patients with a known diagnosis of clinical depression [13]. Interpreting this data in the context of the same HIV/AIDS vulnerable populations alluded to above, mean MCS in the "well-managed" Canadian (Ontario) and unmanaged low-income Indianapolis populations were 44 and 41.9, respectively [10]. Once again, Parbhani's population, having undergone several years of intervention but lacking specialized care facilities, falls in between the two samples. Additionally, it is important to note that in all three populations MCS scores deviate more significantly from normative data than PCS scores, potentially indicating that the mental adversities associated with HIV/AIDS may not be as targeted for rehabilitation as physical ailments are.

Per the Rosenberg data (Table 3), the larger FSW community scored 16.32, which indicates average self-esteem. Such outcomes can be ascribed to Setu's advocacy and holistic interventional approach: in the qualitative feedback survey (Table 4), more than 80% of survey respondents indicated improved financial, physical, and emotional stability because of Setu's role in facilitating the procurement of vital official documents such as Voter IDs, providing education and food for their children, and protecting FSWs from police raids and harassment from brothel owners and other authoritative figures (see Table 4). However, isolating the Rosenberg data to the 15 respondents suffering from HIV/AIDS, reveals a mean score of 10.33, far below 15–the benchmark for low self-esteem on a 0 to 30 scale (see *Methods).* This lack of self-esteem can be attributed to factors like a lack of familial and peer support systems, financial security, and mental counseling among many of these women (Table 4 and determined after post-survey follow up interviews with consenting respondents and community educators).

Though the sex worker community in Parbhani is challenged with physical, mental, and self-image adversities as ascertained by data from the SF12v2 MH enhanced and Rosenberg self-esteem questionnaires, remediation is possible through further intervention. Particularly, HIV de-stigmatization, support systems, and mental health counseling for women with the illness have been evidenced to return Rosenberg scores to normative levels [14]. Additionally, it is important to mention that certain women had exceptionally high MCS and PCS scores. These women were typically those who used Setu's micro-loan programs to start artisanal businesses and engaged with self-help groups, with some even becoming peer educators for Setu.

5. Conclusion

The sex worker population in Parbhani remains limited in both physical condition and psychological well-being as indicated by the SF12v2 MH enhanced survey, though the scores obtained may be expected in the context of other HIV vulnerable populations. Particular adversity is found in the brothel-based community, in which 57% of respondents presented with a high-risk for depression (significantly greater than India's normative 28% risk for the general population). Additionally, 70% of respondents in this sub-group indicated suffering from moderate to intense chronic pain in their physical evaluations. Such extreme results demonstrate the need for targeted interventions like expanded self-help programs that are common among high MCS scoring respondents in this community and regular medical supervision and interventions that have been shown to increase PCS in "well-managed" populations, such as the one sampled from a specialized clinic in Ontario, Canada.

In regard to self-esteem, while the larger FSW community does not have alarming issues with self-image as measured by the Rosenberg self-esteem scale (reporting a mean score of 16.32), those suffering from HIV/AIDS all exhibited low self-esteem, with a mean score of 10.33–well below the benchmark of 15. Studies have proven a return to normative self-esteem in HIV patients through targeted mental counseling and HIV/AIDS awareness and education campaigns in relevant communities is possible. Though explicit requests for housing, child-care, and job security, mentioned in the free response of the feedback survey, may be beyond the scope of Setu's interventional program in Parbhani, there is still room for targeted interventions that can improve the quality of life for this population, including cementing community-based organization (CBO) culture for demographics lacking familial support systems such as the brothel-based workers. By expanding self-help groups, focusing on mental counseling, and empowering women to advocate for their rights and health, Setu can further foster sustainability and long-term well-being in this vulnerable population.

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