

Stigma Among Sex Workers in Dakar, Senegal
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Abstract

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In Dakar, Senegal, the approach to sex work supervision is legalization and regulation. Sex workers can register in Senegal and can participate in sex work legally while in accordance with government policies which include regular testing and health screenings. In a study conducted in Dakar by Dr. Shanthi Manian, certification rates remained low among sex workers despite an intervention to incentivize registration. As stigma seemed to have influence in women's decisions to register, I analyzed factors which may lead to experiences with (1) community stigma and (2) internalized stigma. I looked at exposure factors such as age, educational attainment levels and parental status (number of children) and their potential associations with community and internalized stigma. I conducted analysis on the univariate and multivariate relationships between these exposures and outcomes to varying risks for experiencing community or internalized stigma. I found that increased educational attainment levels were associated with increased internalized stigma among sex workers in Dakar, Senegal.

Introduction

Specific Aims

This research was conducted amongst sex workers from Dakar, Senegal, where sex work has been legalized through certification of sex work since the late 1960s (Ito et al., 2018). Data was collected in the form of surveys by Dr. Shanthi Manian of Washington State University. This research focused on the demographic factors (age, and educational attainment levels, and parental status (number of children)) which were possibly associated with stigma as reported by Dr. Manian in her paper, *Health Certification in the Market of Sex Work: A Field Experiment in Dakar, Senegal* (Manian, 2017). Dr. Manian's study also sought to investigate the incentivization of certification for sex workers. However, in conducting her study, she found that most non-registered sex workers (the sample of non-registered sex workers all identified as women in this case) did not wish to be registered as a sex worker even after incentivization measures. The primary factor which seemed to be associated with this outcome was stigma. In this paper, I used a quantitative analysis approach to examine the factors which were potentially associated with stigma observed among sex workers in Dakar, Senegal through (2) Specific Aims:

Aim #1: Examine the associations between *community stigma* and:

- A. Age
- B. Educational Attainment Levels
- C. Parental Status (number of children)

Aim #2: Examine the associations between *internalized stigma* and:

- A. Age
- B. Educational Attainment Levels
- C. Parental Status (number of children)

Background and Significance

This research is a secondary analysis of data collected by Dr. Manian in *Health Certification in the Market of Sex Work: A Field Experiment in Dakar, Senegal* which sought to incentivize certification of unregistered sex workers. Dr. Manian's research focused on certification of non-registered sex workers in Senegal and the current research focused on one of the main barriers to certification which was self-reported community and internalized stigma.

According to The NSWP, Global Network of Sex Work Projects, Senegal has the most progressive sex work policy on the continent of Africa and is competitive with the most progressive sex work policies in the world (*Senegal | Global Network of Sex Work Projects*, n.d.). In Senegal, selling sex is legal if the sex worker is registered with the government and if the sex worker receives regular medical check-ups. Additionally, buying sex is not criminalized but

organized sex work, such as the use of ‘pimps’ and ‘brothels’ is criminalized (*Senegal | Global Network of Sex Work Projects*, n.d.).

While Senegal has a progressive policy around sex work, it does not mean stigma and discrimination do not exist in this context. In fact, individuals who engage in sex work in Senegal are severely stigmatized and often face discrimination (Foley, E. 2017). According to a study conducted by Ellen Foley on stigma and sex work in Senegal, general sentiments around sex work in Senegal are described as (1) morally troubling, (2) dangerous, and (3) negatively impacting those who engage in sex work and their dependents (Foley, E. 2017).

Discussing stigma in the African or Senegalese context cannot go without mentioning gender based violence which is prevalent in many communities across the continent (Mgbako & Smith, 2009). Gender based violence is relevant to sex workers in Africa (and around the world) through both personal avenues and abuse by the hands of the police. Abuse to sex workers can also be found in client-provider relationships as sex workers can be victims of abuse through the spreading of sexually transmitted infection (STIs) such as HIV. Much of the existing literature around stigma and sex work, especially in the African context, relates to HIV infection. Understanding factors which influence stigma can also help to keep sex workers safer as sex worker abuse further influences stigma around sex work and is likely tied to pre-existent stigma.

As mentioned, stigma research in the African context is typically associated with HIV. With the presence of HIV and stigma research in Africa, there are common predictors which are used to assess experiences with stigma (Pantelic et al., 2015). Some of these predictors include: age, race, social support, alcohol/drug use, and HIV status.

In addition to predictors, there is a base of literature which addresses the outcomes or consequences of stigma among sex workers in the African context (Fitzgerald-Husek et al., 2017). Some of these outcomes are addressed in stigma literature: depression/anxiety, lower self-esteem, poor academic achievement, decreased uptake of health and social services, and can impact laws, regulations, employment and policing.

Finally, stigma is measured in many different ways in the African context, but some common types of stigma described are (Kerrigan et al., 2021, Oga et al., 2022): internalized stigma, community stigma, enacted stigma (how sex workers are treated), anticipated stigma (relating to an individual’s dignity and worth), stigma from family, stigma from healthcare workers, and stigma from police.

Notably, Senegal is a religious country which is mostly made up of people who practice Islam. In Islam, as well as in other religions, ‘sexual promiscuity’ is forbidden. Also in Islam, there are practices which can be argued to create inequality between men and women (Speakman, 2012).

Further, marriage and childbearing is seen as a religious duty for women (Ahmad, 2018). As Senegal is predominantly Muslim and almost 100% of my study population practices Islam, identifies as a woman, and is unmarried, it is important to understand the religion and culture's relationship with sex and relationships. Sex workers in Africa work against cultural norms as many countries' cultures place significant importance on a woman's role in family and society. Women who are not married, cannot bear children or do not have children, and who have sex outside of marriage are often discriminated against. My study population; female, unmarried sex workers living in a predominantly Muslim country, are subject to much of this discrimination and thus face risks of experiencing stigma.

As learned from Dr. Manian's research, stigma in sex work is a hinderance to individuals adopting behaviors and utilizing resources which will keep sex workers safer and healthier. Thus, it is important to understand what factors are associated with these outcomes of stigma in order to combat further stigmatization.

Methods

Study Design, Study Setting and Subjects, Data Collection

The intent of Dr. Manian's intervention was to provide additional incentivization for sex workers to register with the government in addition to the benefits which are provided by the government. Participants were recruited in partnership with a community-based organization, *Association AWA*, which provides services to sex workers in Senegal, both certified and non-certified (*Sex Workers Promote AIDS Awareness in Senegal*, 2000). Respondent-driven sampling was the primary recruitment method which considers the anonymity that is desired among sex worker populations. Thirty-one "seeds" were originally chosen with 21 of these seeds registered as sex workers. Each seed was asked to recruit three more sex workers. Participants were compensated 5,000 FCFA (\$8.50) to participate in the study and an additional 2,500 FCFA (\$4.25) for each recruited participant who was eligible to participate in the study. In order to participate in the study, participants had to be uncertified and fit certification eligibility.

In order to get certified as a sex worker in Senegal, individuals must be 21 or older and have a valid ID. The certification process includes a one-time interview with a social worker, informed consent, a copy of the national ID or passport, and 3 passport photos. Once certified, sex workers must undergo regular health check-ups. To keep certification current, sex workers must attend monthly health visits which cost 1,000 FCFA (\$1.70). If an individual tests positive for a treatable STI, certification is suspended until the individual obtains treatment.

For this analysis, I used baseline and endline survey data collected by Dr. Shanthi Manian. At the beginning of the study in October 2015, data was collected for 400 uncertified sex workers in Dakar, Senegal. All of the participants identified as women. Of the 400 participants who were

recruited at the beginning of the study, 314 were randomized into control and treatment groups. Before randomization, all participants received baseline education about certification. Randomization then occurred in groups with participants choosing a colored ball from a sack. In total, there were 33 randomization sessions with 3-25 participants present. Within the treatment group, incentives and education were provided to participants to encourage certification within the sex worker registry in Senegal. The educational arm of the intervention included a 30-minute persuasive informational intervention and a cash incentive. The informational intervention component was held with peer educators who were certified sex workers and discussed the benefits of certification and answered any participant questions. The cash incentive was 6,000 FCFA (\$10.20) to anyone who obtained certification within 15 days of intervention beginning. This cash incentive was meant to cover regular health visit costs and transportation to and from health visits. Women who then expressed interest in certification were arranged a certification appointment either the same or next day and were accompanied by peer educators.

As for data management, surveys were conducted among participants in the treatment group between October 2015 and February 2016. Surveys were administered by female social workers who had significant experience working with sex workers in Senegal. Surveys were conducted in a private room with closed doors and the nature of the conversation was relaxed. Survey questions were assessed and edited as the intervention progressed and as Dr. Manian learned that certification uptake was low. After this became clear, 21 more questions were added to the survey which attempted to understand why certification uptake was so low.

For this research, I conducted cross sectional analysis which included all 291 registrants who were followed from baseline to endline surveys. My primary outcomes of interest were (1) community stigma and (2) internalized stigma. I analyzed exposure variables which were possibly associated with community and internalized stigma such as age, level of educational attainment, and parental status (number of children).

Exposures

In assessing both aims #1 and #2, I used the following exposures to assess association between community and internalized stigma:

- Age
- Educational attainment level
- Parental status (number of children)

Survey response for “**Age** in years” was a write in option ___ ___ ___ years old. Age was collapsed into three groups, 21-29, 30-39 (reference group), or 40-59.

Survey response for “How many years of education have you completed?” or **educational attainment level** was a write in option ___ ___ ___ years. Years of education was collapsed into

three categories 0-3 years of education, 4-7 years of education (reference group), or 8-14 years of education.

Survey responses for “How many children under 18 do you have?” or **parental status** were a write in option ___ children, or multiple choice of (98) don’t know, or (99) refuse to answer. Number of children was collapsed into three categories 0 children, 1-3 children (reference group), and 4-10 children.

My 3 exposure variables; age, educational attainment level and parental status were continuous variables which I coded to be categorical. Each exposure variable broke down into 3 groups. Age is categorized as 20-29, 30-39 and 40-59. Age groups 40-49 and 50-59 were smaller and were combined to create more power for analysis. Educational attainment is categorized as 0-3 years of education, 4-7 years of education and 8-14 years of education. 8-11 years of school and 12-14 years of school were smaller and were combined to create more analytical power. Parental status (number of children) is categorized as 0 children, 1-3 children, and 4-10 children.

Outcomes

This study examined two primary outcomes. The first was community stigma and the second was internalized stigma. I chose 3 questions regarding stigma from the surveys administered in the original study by Dr. Manian to address (1) community stigma and (2) internalized stigma.

The questions which assessed stigma are Q65, Q65g, and Q49a in the Endline Survey Questionnaire:

- **Q65:** “Why have you not registered?”
- **Q65g:** “I am now going to read a list of reasons that someone might not register. Please tell me which of the following reasons apply to you.”
- **Q49a:** “Some women exchange sex for money or goods but are not sex workers”

	Type of Stigma	
Response to Question in Endline Survey Questionnaire	<i>Community</i>	<i>Internalized</i>
Response to Q65: “I am afraid someone will see me at the clinic”		

Response to Q65: “I am afraid someone will see the health card”		
Response to Q49a: Strongly agree or agree to the statement: “Some women exchange sex for money or goods but are not sex workers”		

Data Analysis

I created one combined variable to assess community stigma. Community stigma combines responses from Q65 “I am afraid someone will see me at the clinic” and Q65 “I am afraid someone will see the health card.”

Data analysis included chi-square tests for my bivariate analyses. These analyses created two tables (Tables 2 and 3) which addressed relationships between the 3 exposure factors, age group, educational attainment level, and parental status (grouped number of children) with outcomes of community and internalized stigma, respectively. I also analyzed multivariate relationships between these exposure factors and outcomes in Tables 4 and 5, utilizing logistic regression. From these analyses, I calculated odds ratios with 95% confidence intervals and (0.05) level of significance. For missingness, I excluded all missing variables from my calculations and did a complete-case analysis. These analyses were conducted using the statistical program R.

Results

Table 1 - Study characteristics of unregistered sex workers in Dakar, Senegal based on experiences with community and internalized stigma reported between October 2015 and June 2016, enrolled into a followup study of assessment of incentives to increase registration, (n = 291).

Study Characteristics		
Age (years)	Count (n=291)	Percentage
20-29	76	26.26%
30-39	103	35.40%
40-59	111	38.28%
<i>Missing</i>	<i>1</i>	
Sex Work as Main Job		

Sex Work as Main Job	264	91.35%
Sex Work not Main Job	25	8.65%
<i>Missing</i>	2	
Educational Attainment		
0-3 years (pre-school)	185	63.57%
4-7 years (elementary school)	78	26.80%
8-14 years (middle & high school)	28	9.62%
<i>Missing</i>	0	
Parental Status (Number of Children)		
0 children	56	19.4%
1-3 children	178	61.80%
4-10 children	54	18.8%
<i>Missing</i>	3	
Nationality		
Senegalese	290	99.67%
Not Senegalese	1	0.34%
<i>Missing</i>	0	
Religion		
Muslim	285	97.94%
Not Muslim	6	2.10%
<i>Missing</i>	0	
Sex Worker Registration Status at Study Endline		
Registered	15	5.15%
Not Registered	276	94.85%
<i>Missing</i>	0	
Marriage Status		
Married	4	1.37%
Not Married	287	98.63%
<i>Missing</i>	0	
Divorce Status		

Divorced	183	62.89%
Not Divorced	108	37.11%
<i>Missing</i>	<i>0</i>	

Stigma Characteristics

Community Stigma 1 (“I am afraid someone will see me at the clinic”)

Community Stigma	110	37.8%
No Community Stigma	181	62.1%
<i>Missing</i>	<i>0</i>	

Community Stigma 2 (“I am afraid someone will see the health card”)

Community Stigma	169	58.1%
No Community Stigma	122	41.9%
<i>Missing</i>	<i>0</i>	

Any Community Stigma (Reporting Either/Both Community Stigma 1 & 2)

Community Stigma	190	65.3%
No Community Stigma	101	34.7%
<i>Missing</i>	<i>0</i>	

Internalized Stigma (“Some women exchange sex for money or goods but are not sex workers”)

Internalized Stigma	62	21.3%
No Internalized Stigma	229	78.7%
<i>Missing</i>	<i>0</i>	

Any Community or Internalized Stigma

Any Reported Stigma	213	73.2%
No Reported Stigma	78	26.8%
<i>Missing</i>	<i>0</i>	

Overall, the study participants had an even distribution of age groups, most respondents report sex work as their main job, and most participants have somewhere between 1-3 children. Some notable distributions show that at endline, nearly 95% of the sample is still not registered as a sex worker, despite the intervention. Only about 10% of the sample attended school beyond 7 years. Almost 100% of the population is Senegalese, Muslim and unmarried. Overall, 73.2% of the study participants experienced stigma. Any community stigma was commonly experienced (65.3%), with 58.1% of participants being afraid that their health card would be seen and 37.8% of participants afraid of being seen at the health clinic. Internalized stigma was less common, being experienced by 21.3% of participants. There is not much missingness in the dataset overall. There is some missingness which is described in the study characteristics and there is no missingness in stigma data.

Table 2 - Bivariate analysis of sex workers in Dakar, Senegal based on experiences with **community** stigma reported, (n = 291).

	Reported Community Stigma		P Value	OR
	N	%		
Age (years)			0.416	
20-29	45	(45/76) 59.2%	0.351	0.75 (0.40, 1.38)
30-39	68	(68/103) 66.0%		Ref (1.00)
40-59	76	(76/111) 68.5%	0.703	1.12 (0.63, 1.98)
<i>Missing</i>	<i>1</i>			
Sum	189			
Educational Attainment			0.015	
0-3 years (pre-school)	111	(111/185) 60.0%		Ref (1.00)
4-7 years (elementary school)	55	(55/78) 70.5%	0.107	1.59 (0.90, 2.82)
8-14 years (middle & high school)	24	(24/28) 85.7%	0.008	4.00 (1.33, 12.00)
<i>Missing</i>	<i>0</i>			
Sum	190			
Parental Status (Number of Children)			0.379	
0 children	32	(32/56) 57.1%	0.213	0.68 (0.37, 1.25)

1-3 children	118	(118/178) 66.3%		Ref (1.00)
4-10 children	37	(37/54) 68.5%	0.761	1.11 (0.58, 2.13)
<i>Missing</i>	0			
Sum	187			

Overall, 190 of 291 participants reported experiencing community stigma, about 65.3% of the population. Of the three exposure variables, educational attainment level (p=0.015) showed significant association with community stigma while age and parental status (number of children) did not. Within educational attainment, a high level of education (8-14 years) was significantly associated with community stigma (OR=4.00, 95% CI = 1.33 to 12.00) compared to those with low education levels (0-3 years).

Table 3 - Bivariate analysis of sex workers in Dakar, Senegal based on experiences with **internalized** stigma reported, (n = 291)

	Reported Internalized Stigma	%	P Value	OR
	N			
Age (years)			0.139	
20-29	21	(21/76) 27.6%	0.045	2.10 (1.01, 4.27)
30-39	16	(16/103) 15.5%		Ref (1.00)
40-59	25	(25/111) 22.5%	0.194	1.58 (0.79, 3.17)
<i>Missing</i>	0			
Sum	62			
Educational Attainment			0.008	
0-3 years (pre-school)	30	(30/185) 16.2%		Ref (1.00)
4-7 years (elementary school)	21	(21/78) 26.9%	0.045	1.90 (1.01, 3.59)
8-14 years (middle & high school)	11	(11/28) 39.3%	0.004	3.34 (1.42, 7.85)
<i>Missing</i>	0			
Sum	62			

Parental Status (Number of Children)			<0.001	
0 children	24	(24/56) 42.9%	0.001	3.18 (1.66, 6.07)
1-3 children	34	(34/178) 19.1%		Ref (1.00)
4-10 children	3	(3/54) 5.6%	0.017	0.25 (0.07, 0.85)
<i>Missing</i>	0			
Sum	61			

Table 3 shows significance at some level between each exposure and internalized stigma. Overall, the relationship between age and internalized stigma is not significant, but for those aged 20-29 there is a 2.10 (1.01, 4.27) greater odds of experiencing internalized stigma as compared to the reference group 30-39 years old. The overall relationship between educational attainment and internalized stigma is significant at a 0.008 significance level. Specifically, there is a 1.90 (1.01, 3.59) greater odds of experiencing internalized stigma for those in the 4-7 years of education group compared to the reference group 0-3 years. As education levels get higher, there is an even greater odds (OR=3.34, 95% CI=1.42 to 7.85) of experiencing internalized stigma as compared to the reference group of 0-3 years of education. Overall, the relationship between parental status (number of children) and internalized stigma is also significant at <0.001. Those with no children have a higher odds (OR=3.18, 95% CI=1.66 to 6.07) of experiencing internalized stigma as compared to those with 1-3 children. Inversely, those with more children (4-10) have a lower odds (OR=0.25, 95% CI=0.07, 0.85) of experiencing internalized stigma than the reference group (1-3) children.

Table 4 - Multivariate analysis of sex workers in Dakar, Senegal based on experiences with **community** stigma reported, (n = 291)

	P Value	OR (95% CI)
Age (years)		
20-29	0.564	0.82 (1.30, 3.55)
30-39		Ref (1.00)
40-59	0.613	1.16 (0.65, 2.09)

Educational Attainment		
0-3 years (pre-school)		Ref (1.00)
4-7 years (elementary school)	0.676	1.30 (0.64, 2.02)
8-14 years (middle & high school)	0.649	1.13 (0.52, 3.09)
Parental Status (Number of Children)		
0 children	0.103	0.64 (0.37, 1.09)
1-3 children		Ref (1.00)
4-10 children	0.536	0.75 (0.31, 1.91)

In multivariate regression, none of the three factors were associated with community stigma.

Table 5 - Multivariate analysis of sex workers in Dakar, Senegal based on experiences with **internalized** stigma reported, (n = 291)

	P Value	OR (95% CI)
Age (years)		
20-29	0.091	1.97 (0.90, 4.36)
30-39		Ref (1.00)
40-59	0.157	1.68 (0.83, 3.51)
Educational Attainment		
0-3 years (pre-school)		Ref (1.00)
4-7 years (elementary school)	0.017	2.20 (1.14, 4.21)
8-14 years (middle & high school)	0.015	3.08 (1.21, 7.59)

Parental Status (Number of Children)

0 children	0.676	0.87 (0.46, 1.64)
1-3 children		Ref (1.00)
4-10 children	0.469	0.62 (0.14, 1.99)

In multivariate regression (Table 5), higher levels of education (OR=2.20, 95% CI=1.14 to 4.21 for 4-7 years of education and OR=3.8, 95% CI=1.21 to 7.59 for 8-14 years of education compared to the reference 0 to 3 years) remained significantly associated with internalized stigma.

Discussion

The main finding in this study is the association between educational attainment and stigma. In regards to internalized stigma, the more education a woman has, the higher odds she has of reporting internalized stigma. Those with more than 3 years of education felt 2 to 3 times more stigma than those with only 0-3 years of education. Univariately, this trend was also observed in relation to community stigma, however, this trend was not significant in the multivariate analysis. Univariately, this study showed relationships between age and internalized stigma when comparing the 20-29 age group to the 30-39 age group, and between parental status (number of children) when comparing both the 0 children group and the 4-10 children group with the 1-3 children group. This study did not show evidence that there is an independent relationship between age and parental status with either community or internalized stigma. The univariate relationships which did not stay consistent when examining multivariate relationships suggest that there were likely confounding factors which impacted univariate analysis. Many of my study's findings had wide confidence intervals due to lack of study power and a small sample size.

Educational Attainment and Internalized Stigma

Educational attainment has associations both univariately and independently with the outcome of internalized stigma. In this population, it is observed that sex workers with higher levels of education have an increased risk of experiencing internalized stigma. The relationship between education and stigma might be better understood while acknowledging specific contextual factors related to this population. While I discuss higher levels of education, it is worth noting that the highest level of education achieved among this group was a high school education. Without further examining the culture of Senegal and the demographic characteristics of these populations, it might not intuitively make sense that higher levels of education would be

associated with higher levels of internalized stigma. In fact, this would be a contrary belief to previous literature which discusses sex work and stigma more generally. In a paper by Allison Grittner about social stigma and sex work, they find that educational programs among sex workers reduces internalized stigma (Grittner, A. L., & Walsh, C. A. 2020). While this study did not specifically examine sex workers' years of education and stigma, it does suggest a relationship where educational exposure reduces stigma among sex workers, a relationship which has been found to be significant in additional studies examining similar populations (Benoit et al., 2017).

Additionally, it is important to come back to the underlying impact that the culture and religion of Senegal could have on sex workers' demographic factors such as educational attainment and parental status (number of children) and those relationships with stigma. 98% of this study population practices Islam and according to many interpretations of the Quran, women are seen to have a duty to get married and bear children (Ahmad, 2018). For girls and women who did not get married, they may face significant community and religious stigma and could be ostracized from their communities, a trend which also has been reported in prior work in Senegal (Newman, A., 2020). While my analysis did not show overall and independent significance for a relationship between parental status (number of children) and internalized stigma, there were associations at the univariate level. Those with no children were more likely to experience internalized stigma than those with 1-3 children and those with 4 or more children were more likely to experience less internalized stigma. This could suggest that women who do not have children face more internalized stigma or shame than those who have children due to religious and cultural reasons. According to a study on predictors for internalized stigma or shame, it is found that community or public stigma is a predictor for experiencing internalized stigma (Vogel et al., 2013). This possible stigma and discrimination from culture and religion in Senegal could have led to women entering the field of sex work with significant internal shame already, leading to reports of higher internalized stigma.

In examining published research, there is a lack of research that examines demographic factors which might influence stigma in sex work. To my knowledge, this is the first study to conduct analysis which looks into this question.

Strengths and Limitations

This study had a sufficient sample size to assess factors which influence stigma in sex work in Dakar, Senegal. The data was localized and specific to this population which can provide valuable information to this community. The data was collected with experts who are very involved and connected to the sex worker community in Dakar which likely led to accurate data with limited bias. It also speaks well to the community of sex workers in Dakar that with respondent-driven sampling, researchers were able to start with a nearly 400 person population. As Senegal is well-known for having one of the most progressive regulation policies in Africa

and in the world, there is a lot of research on sex work in the Senegalese context which helps to contextualize my findings. My study utilized multivariate analysis to assess the independent relative importance of age, educational attainment level and parental status (number of children).

As for limitations, it is important to note that the dataset had limitations in regards to stigma analysis. The data was not originally collected to assess levels of stigma, so there is a ceiling in regards to weight of data available to assess stigma which prevented me from exploring nuance and variation in stigma. For a study to properly assess stigma outcomes among sex workers using this model, there would need to be more questions asked to assess factors which influence stigma. Dr. Manian originally assessed community stigma using 4 variables.

1. Afraid someone will see me at the health clinic
2. Afraid someone will find the health card
3. Whether the subject has ever been to registration clinic
4. Whether subject ever solicits or completes transactions in public.

Data for question #3 “whether the subject has ever been to registration clinic” was not originally included in my dataset. With the limited time I had, it was not feasible to retrieve and include this data. Data for question #4 was difficult to use as almost the entire dataset reported “no” to soliciting or completing transactions in public. This would have made analysis difficult as nearly every respondent would have been included in the reported community stigma category. Additionally, I believe there are many factors which would influence a woman’s decision to avoid soliciting and completing transactions in public (including physical safety concerns) and is not representative of community stigma alone (Lyons et al., 2020).

At the exposure level, marriage was also going to be used as an exposure variable but almost the entire dataset was unmarried which would have made for an uninteresting analysis. As I theorize that marriage could possibly explain experiences with internalized stigma, it would be valuable to understand women’s experiences with marriage in this dataset regarding separation, widowhood, divorce, etc., but this was not available in the current data. At the demographic level, it would have been valuable to know about women’s places of birth across different regions of Senegal as this could help to explain trends that may connect to the cultural norms of Senegal. Previous literature suggests that marriage and motherhood are expectations of women, especially in rural areas. It is possible that much of my dataset, while living in Dakar, moved from different parts of the country to find work. As many studies related to stigma and sex work in Africa focus on the impact HIV might have on this relationship, it would have also been valuable to understand and analyze its prevalence among this population. HIV status was included in Dr. Manian’s study, but was not reported within my dataset. It is well known that there is stigma associated with being HIV positive and a study on HIV among sex workers in Senegal found that older women and those with less education are more likely to be HIV positive. It is possible that

there were women in my study population that were HIV positive, which could have impacted their stigma reporting (Wang et al., 2007).

Additionally, Dr. Manian divided stigma into 3 categories, not 2 as is reflected in this paper. The third category (aside from community and internalized stigma) which I did not include in this analysis was direct confidentiality concerns as this is not a typical type of stigma analyzed in stigma research. For example, in the paper *Experienced Sex-Work Stigma in Male and Female Sex Workers in Kenya: Development and Validation of Scale*, authors Oga et al. examined stigma through 4 different sources. These included stigma from community, stigma from family, stigma from healthcare workers and stigma from police (Oga et al., 2020). The current research only has data to analyze community and internalized stigma.

Finally, this study population brings up questions of generalizability. The population only includes women, which could be difficult for generalizing results to larger populations as men engage in sex work in different parts of the world. Senegal is the only country in Africa to legalize buying and selling sex which makes it a unique area to study. As stigma is largely tied to societal feelings around a certain behavior, data from Senegal may or may not be generalizable to other parts of the world or continent. The population sampled is somewhat homogeneous in exposures as most women are not married and report fewer years of education. Finally, all sex workers in this study were unregistered at baseline and mostly also unregistered at endline which brings up questions of generalizability to sex workers who are, in fact, registered.

Implications

As uptake of the original intervention to increase registration among sex workers in Dakar, Senegal was not as high as researchers would have hoped, it is crucially important to understand what factors influence this hindrance in uptake. Dr. Manian reported stigma to be a significant factor thus it is important to understand the ways in which stigma impacts sex workers in the African context. Senegal is unique in this context as it is the only African country which legalizes and regulates sex work in the way that it does. However, stigma around sex work is common in the African context and understanding how to mitigate this stigma is important (Cort, D. A., & Tu, H. F. 2018). My data was certainly limited as it was not originally intended to be collected for the purpose of analyzing stigma. Further research could expand on these research questions to examine what factors truly and most significantly influence stigma in the sex worker context. Further, research could be conducted which considers the role of religion and culture in stigma associated with sex work as it is possible these are major underlying factors which influence the exposures I examined in this study. Understanding which factors influence stigma would allow for tailored interventions to reduce stigma among sex worker populations. Additionally, understanding stigma would keep sex workers safer as it is likely wider audiences would be reached when providing education and resources for sex workers if those providing

interventions understand what barriers exist for these populations and how to eliminate or reduce these barriers.

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