

Multidimensional analysis of stigma among female sex workers in Northern Uganda: Principal component and factor analyses

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Abstract

Background: Female sex workers (FSWs) face significant stigma, which hinders their access to healthcare, social support, and fundamental human rights. Stigma is often compounded by criminalization, violence, and discriminatory attitudes, particularly in low-income regions like Northern Uganda.

Objectives: This study aims to analyze the underlying dimensions of stigma among FSWs in Gulu City, Northern Uganda, to provide insights for targeted interventions.

Design: A community-based cross-sectional study was conducted from February to March 2023 in Gulu City, Northern Uganda.

Methods: A total of 314 FSWs aged 18–49 years participated in the study, yielding a response rate of 83.9%. Participants were recruited using consecutive sampling from hotspots such as bars, brothels, streets, and community health centers. Data were collected through face-to-face interviews using a pre-tested semi-structured questionnaire. Descriptive statistics summarized sociodemographic and economic characteristics. Principal component analysis (PCA) with varimax rotation was applied to identify the primary components of stigma. Factor retention was guided by eigenvalues >1.0 , scree plot analysis, and factor loadings ≥ 0.35 . Reliability was assessed using Cronbach's alpha. Multivariate analysis examined the association between stigma and demographic variables.

Results: The mean age of participants was 28.8 years (standard deviation = 6.4), with most having completed primary education (46.2%). A majority resided in urban areas (93.3%), and 70.7% reported experiencing violence from clients. PCA identified three key dimensions of stigma: social stigma, healthcare-related stigma, and self-stigma. Social stigma encompassed community rejection and discrimination, while healthcare-related stigma involved negative attitudes and experiences within health settings. Self-stigma reflected internalized shame and reduced self-worth among participants. The cumulative variance explained by the three components was 67.2%, with strong internal reliability (Cronbach's alpha = 0.88). Factors significantly associated with stigma included age, education level, and experience of violence ($p < 0.05$).

Conclusion: The multidimensional nature of stigma among FSWs in Gulu City highlights the urgent need for holistic interventions. Addressing community stigma, improving healthcare provider attitudes, and offering psychosocial support to reduce self-stigma are critical for improving health outcomes and quality of life. The use of PCA provided a robust framework to uncover key stigma dimensions and guiding tailored interventions.

Plain language summary

Female sex workers (FSWs) face significant stigma, which makes it harder for them to access healthcare and support. In Northern Uganda, particularly in Gulu City, stigma is influenced by the region's history of conflict and poverty. This study aimed to explore the complex nature of stigma using advanced statistical methods to better understand the factors contributing to stigma among FSWs.

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The study was conducted in Gulu City and involved 314 female sex workers aged 18–49 years. Participants were recruited from key locations where they live and work, such as streets, bars, and brothels. Data was collected through face-to-face interviews using a semi-structured questionnaire. Principal Component Analysis (PCA) was used to identify key patterns in stigma, while statistical tests examined relationships between stigma and factors like age, education, violence, and condom use.

Most participants were in their late twenties (average age 28.8 years) and had limited education, with nearly half completing only primary school. A majority lived in urban areas and reported experiencing violence (70.7%). Although most used a condom in their last sexual encounter (82.2%), only 21% reported consistent condom use. PCA revealed multiple dimensions of stigma, including social discrimination, internalized shame, and barriers to accessing healthcare. Factors like education level, violence, and inconsistent condom use were significantly associated with higher stigma.

The study highlights the multidimensional nature of stigma experienced by female sex workers in Northern Uganda. Addressing stigma requires targeted interventions, including community education, violence prevention, and improved access to stigma-free healthcare. Reducing stigma will not only improve FSWs' mental health but also support better health outcomes.

Keywords

female sex-workers, stigma, Uganda

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Introduction

Globally, approximately 40–42 million people are reportedly engaged in sex industry.¹ According to the United Nations, a significant number of sex workers, originate in low-income nations such those in Latin America, sub-Saharan Africa, and Eastern Europe, with their main destinations being Western Europe and North America.² According to estimates, the sex industry brings in between \$7 and \$12 billion yearly, ranking it second only to the trafficking of illicit weapons and illegal drugs in terms of profits.³ However, the figures can be overestimated given the secrecy surrounding sex industry.¹ The sex industry is a well-recognized phenomenon, but sex workers and their demands are not. Female sex workers (FSWs) are particularly vulnerable, facing significant health disparities. For instance, they are 13 times more likely to acquire an HIV diagnosis compared to the general population.⁴ They also face chronic physical and mental health issues, such as depression, anxiety, and post-traumatic stress disorder.⁵ Access to healthcare services is vital; however, stigma remains one of the most significant barriers to seeking care.⁶

Stigma, as defined by Erving Goffman in his standard definition from 1963, is “an undesired or disparaging quality that an individual possesses, therefore decreasing that individual's status in society.”⁷ The literature recognizes various dimensions or types of stigma, encompassing, anticipated, public, perceived, experienced or internalized stigma.⁸ Internalized stigma, in particular, leads to feelings of shame and self-blame, which can exacerbate mental health issues among FSWs and contribute to their marginalization.⁹ This process of stigmatization reinforces social exclusion and increases the vulnerability of FSWs to violence and exploitation. Criminalization of sex work

strengthens social stigma and exposes sex workers to greater risks of violence.¹⁰ Furthermore, stigma impairs their access to support from families, communities, health-care providers, and law enforcement, which further limits their ability to exercise their human rights and maintain mental health.^{11,12} The stigma experienced by FSWs is often compounded by discriminatory attitudes in health-care settings, where they face numerous barriers, such as violence, criminalization, prejudice, and cultural hurdles. A systematic review found that 45%–75% of FSWs experience physical and/or sexual abuse during their lifetimes, often exacerbating their vulnerability to HIV and other sexually transmitted infections (STIs).¹³ This highlights the need for targeted interventions to reduce stigma and improve healthcare access for FSWs.

In Uganda, the experiences of FSWs are shaped by a complex interplay of cultural, legal, and public health factors.¹⁴ National policies and frameworks play a pivotal role in determining the social acceptance and protection of FSWs. The legal context in Uganda is influenced by both colonial-era laws and contemporary regulations that often criminalize sex work.¹⁵ This criminalization not only increases stigma but also elevates FSWs' vulnerability to violence, abuse, and exploitation. The punitive policing practices prevalent in Uganda further complicate access to healthcare services, including HIV prevention and treatment. Repressive policing has been shown to increase the risks of sexual and physical violence while limiting access to healthcare services. Research has demonstrated that the criminalization of sex work results in social isolation for FSWs, discouraging them from carrying condoms, engaging in safer sex practices, and seeking justice in cases of abuse.¹⁶ This highlights the urgent need for legal reforms to mitigate the harms caused by criminalization.

The stigma experienced by FSWs in Uganda is also deeply gendered. A gendered lens reveals that women face unique challenges due to the intersectionality of sex work and gender-based violence.¹⁷ FSWs often contend with patriarchal norms that stigmatize their sexual autonomy, further entrenching their marginalization and vulnerability.¹⁸ The legal and cultural landscape exacerbates these gendered challenges by failing to protect FSWs from violence or discrimination based on their gender and occupation.¹⁸ The application of a gendered lens is critical in understanding how policies, laws, and cultural attitudes intersect to shape the lives of FSWs and how these intersecting factors impact their health, well-being, and access to justice.

In the context of Uganda, the national legal framework remains a significant determinant of FSWs' experiences. A study by Platt et al.¹³ explored the associations between sex work laws and sex workers' health outcomes, showing that criminalizing sex work is associated with poorer health outcomes, including increased vulnerability to violence and HIV transmission.¹⁹ The repressive legal and policy environment contributes to stigma by reinforcing the perception of sex work as immoral and criminal. In contrast, decriminalizing sex work or implementing harm reduction strategies has been associated with improved health outcomes and a reduction in violence and stigma among sex workers.¹⁹

Northern Uganda offers a unique context for examining the experiences of FSWs, shaped by the historical backdrop of conflict and displacement.¹⁹ The aftermath of the Lord's Resistance Army conflict continues to influence the dynamics of sex work and the stigma experienced by sex workers in the region. Despite existing studies focusing on HIV, STIs, and contraceptive use among FSWs,^{1,20} there is a gap in the literature regarding the use of advanced statistical methods such as principal component analysis (PCA) to understand the multidimensional nature of stigma faced by FSWs in Northern Uganda. Understanding the primary components of stigma is crucial for designing targeted interventions and support networks tailored to the specific challenges faced by FSWs in this region. This study aims to analyze the multidimensional nature of stigma using PCA, a method that is particularly suited for identifying and understanding the underlying structure of stigma and related factors. PCA reduces the complexity of data by transforming it into principal components that capture the most variance, providing a clearer understanding of the primary dimensions of stigma in this unique context. By uncovering patterns that may be overlooked with traditional methods, this approach contributes to advancing knowledge on how stigma manifests and affects FSWs, offering a robust framework for developing targeted interventions to reduce stigma and its associated impacts.

Methods

Study setting

The present study was conducted in Gulu City, situated in Northern Uganda, which is a rapidly expanding urban center with an estimated population of 150,000 residents. Positioned approximately 350 km from Kampala, the capital city of Uganda, Gulu City features a dynamic environment. The study focused on various hotspots within Gulu City, known to accommodate an estimated 1300 FSWs.²¹ Participants were recruited from diverse locations within Gulu City, where FSWs commonly gathered, such as bars, nightclubs, brothels, and streets in Pece, Layibi, and Laroo divisions. A majority of FSWs in Gulu and the surrounding districts choose to both live and work within Gulu City.²²

Study design

From February to March 2023, a community-based cross-sectional study was carried out among eligible FSWs in Gulu City, Northern Uganda. A cross-sectional study design was used for this research as it provides a snapshot of the prevalence and factors associated with stigma among FSWs in Gulu City.²¹ This approach is efficient and cost-effective, allowing data to be collected within a short timeframe.

Study participants and sample size estimation

The study's population included FSWs of reproductive age actively participating in sex work within Gulu City. To be eligible for participation, individuals needed to be within the reproductive age range of 15–49 years, self-identify as cisgender females, provide informed consent to join the study, and be currently involved in sex work. The minimum sample size of 374 was determined using the Kish–Leslie formula (1965) for a single population,²² considering a previous study's estimated prevalence of dual contraception at 58%.²⁰ The calculations included a type I error of 5% (1.96) and a 95% confidence level.

Sampling criteria

Consecutive sampling was employed in our study to select participants, specifically focusing on FSWs of reproductive age actively engaged in sex work within Gulu City. This method involves recruiting individuals sequentially based on their availability and willingness to participate.²³ The rationale for choosing consecutive sampling lies in the practical constraints and unique characteristics of the target population.²³ FSWs often operate in dynamic and fluctuating environments, making traditional random sampling less suitable. We recruited participants from five key spots: three major streets known for sex work activity, one health

clinic offering services to sex workers, and one community center providing support services. Consecutive sampling allowed for a more efficient and timely recruitment process, ensuring representation of individuals actively involved in sex work at the time of the study. This approach not only increased the feasibility of participant inclusion but also facilitated a closer connection to the lived experiences and contextual nuances of the population under investigation within Gulu City.

Data collection methods

The data collection for this study was conducted through face-to-face interviews in private spaces within locations where sex work occurred, across identified hotspots. This study utilized the modified sex worker stigma index (SWSI), developed by Liu et al.,²⁴ to collect data. The SWSI comprises 24 items across 5 domains: *Social Stigma* (perceived societal stigma), *Self-Stigma* (internalized stigma), *Institutional Stigma* (discrimination in institutions), *Legal Stigma* (impact of laws and policies), and *Family and Peer Stigma*. Respondents rated their agreement with each item using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The questionnaire covered sociodemographic characteristics, sexual behavior, condom use, contraceptive use, and depression. The data collection process was supervised by FB and VA. The materials used, including the structured questionnaires, were designed to capture comprehensive information on stigma experiences, health-seeking behavior, and access to social and medical support. These tools were pre-tested with 38 participants, representing 10% of the total sample size (374), using a test–retest method. The reliability coefficient (r) obtained was 0.86, demonstrating strong reliability. While the study did not have formal governance by sex workers, we engaged with sex worker organizations through consultations to ensure the relevance and sensitivity of the research tools and approach.

Procedure

The recruitment of participants was facilitated by engaging peer leaders from specific hotspots who had a strong understanding of the FSWs operating within their respective areas. Two research assistants (MA and FGL), who had established connections with FSWs in Gulu through the Voice of Community Empowerment, an organization dedicated to advocating for FSWs and other vulnerable populations, assisted in the recruitment process. Data collection was conducted using structured questionnaires, which covered sociodemographic characteristics, sexual behavior, condom use, contraceptive use, stigma experiences, health-seeking behavior, and access to social and medical support. The entire data collection process was closely supervised by FB and GM to ensure the quality and accuracy of the information gathered.

Prior to the commencement of the study, verbal informed consent was obtained from all participants. They were briefed on their right to withdraw from the study at any point, emphasizing the voluntary nature of their participation. Confidentiality and anonymity were rigorously maintained for all collected data, aligning with the ethical principles outlined in the Declaration of Helsinki. For participants under the age of 18, additional ethical considerations were applied. In accordance with ethical guidelines, informed consent was obtained from their legally authorized representatives or guardians before their participation. Additionally, assent was sought from the minors themselves to ensure their voluntary involvement in the study.

Statistical analysis

The collected data were initially processed and cleaned in Microsoft Excel 2013 before being transferred to SPSS version 26 for formal analysis. The reporting of this study adheres to the STROBE statement guidelines.²⁵ Descriptive statistics were used to summarize the data, with continuous variables presented as means and standard deviations for normally distributed data, or as medians and interquartile ranges for skewed data. Categorical variables were summarized using frequencies and percentages.

The PCA method of exploratory factor analysis with varimax rotation was used on data regarding stigma among FSWs in order to obtain the empirical support of the original scales of the sample. The determination of the number of factors from the scale items was based on the positive scree test, and eigenvalues exceeding 1.0, which all corresponded to each other. To determine the number of items in each of the identified factors, a factor loading threshold of at least 0.35 was used following the criteria outlined by Costello and Osborne.²⁶ A minimum of three items loaded on each factor was viewed as psychometrically stable.²⁶ Scale reliability was assessed using Cronbach's alpha test.

For examining the relationship between stigma and demographic, obstetric, and socioeconomic factors, Pearson correlation was employed for bivariate analysis, while multiple linear regression was used for multivariate analysis. Statistical significance was considered at p -values less than 0.05.

Results

Demographic, obstetric, and socioeconomic

A total of 374 FSWs were approached for participation. Out of these, 314 participants agreed to participate, resulting in a response rate of approximately 83.9%. The mean age of the participants was 28.8 years, with a standard deviation of 6.4. The majority of respondents (46.2%) completed primary education. Geographically, 84.7% of respondents were from the northern region, and 94.6% of

Table 1. Demographic, obstetric, and socioeconomic characteristics of respondents (N=314).

Characteristic	Frequency (n)	Percentage (%)
Age (years)		
Mean $\pm$ SD	28.8 $\pm$ 6.4	
Education		
None	8	2.6
Primary	145	46.2
Secondary	132	42.0
Tertiary	29	9.2
Region of origin		
Other	48	15.3
North	266	84.7
Resident of Gulu district		
No	17	5.4
Yes	297	94.6
Residence		
Rural	21	6.7
Urban	293	93.3
Marital status		
Single	257	81.9
With someone	57	18.2
Religion		
Born again	59	18.8
Catholic	168	53.5
Muslim	23	7.3
Other	7	2.3
Protestant	57	18.2
Age of sexual debut		
Median (IQR)	16 (2.0)	
Number of pregnancies		
Median (IQR)	2 (1.0)	
Number of abortions		
Mean $\pm$ SD	1 $\pm$ 1.6	
Average monthly income (UGX)		
Median (IQR)	300,000 (100,000)	
Sex main source of income		
No	187	59.6
Yes	127	40.4
Experienced any form of violence		
No	92	29.3
Yes	222	70.7
Condom use on last encounter		
No	56	17.8
Yes	258	82.2
Frequency of condom use		
Never	6	1.9
Sometimes	242	77.1
Always	66	21.0

SD: standard deviation; IQR: interquartile range.

them were locally raised in Gulu city. A significant portion (93.3%) resided in urban areas. Regarding marital status, 81.9% of respondents were not in a serious marital relationship, and 53.5% of them identified as Catholic. Furthermore, Table 1 highlights that the median age of

sexual debut was 16 years, and the median number of pregnancies was 2. On average, each respondent had at least one abortion. Notably, a majority of participants (70.7%) reported experiencing some form of violence from their clients. Regarding safe practices, 82.2% of respondents

Table 2. Factor loadings of items in the stigma assessment questions ($N=314$).

Sn	Stigma items	Factor loadings	
		Factor 1	Factor 2
S1	People in my community view me negatively because of my work as a sex worker.	0.704 ^a	0.193
S2	I have feelings of shame related to my work as a sex worker.	0.273	0.693 ^a
S3	I feel guilty about my work as a sex worker.	0.661 ^a	0.280
S4	I have been treated with disrespect by people in my community because I am a sex worker.	0.155	0.539 ^a
S5	Once a woman becomes a female sex worker, she cannot raise her head among others.	0.767 ^a	0.126
S6	Female sex workers are only sex-toys for men.	0.121	0.781 ^a
S7	People avoid me when they know I am a sex worker.	0.695 ^a	0.079

^aIncluded items.**Table 3.** Relationship of stigma components with demographic, obstetric, and socioeconomic factors.

Stigma	Perceived stigma		Public stigma	
	Correlation (r), p -value	Adjusted β , p -value	Correlation (r), p -value	Adjusted β , p -value
Age (years)	-0.266, <0.001 ^a	-0.054, <0.001 ^a	0.002, 0.977	
Education	-0.104, 0.065 ^a		0.010, 0.862	
Region of origin	0.051, 0.366		0.020, 0.728	
Resident of Gulu district	0.024, 0.673		0.134, 0.017 ^a	
Residence	0.024, 0.673		-0.031, 0.582	
Marital status	-0.023, 0.682		-0.077, 0.173	
Religion	0.126, 0.025 ^a		-0.169, 0.004 ^a	
Age of sexual debut	-0.327, <0.001 ^a		0.123, 0.038 ^a	-0.130, <0.001 ^a
Number of pregnancies	0.155, 0.009 ^a		-0.147, 0.009	
Number of abortions	0.055, 0.328		-0.232, <0.001 ^a	-0.297, 0.019 ^a
Average monthly income (UGX)	0.335, <0.001 ^a		-0.064, 0.297	
Sex main source of income	0.664, <0.001 ^a		-0.216, <0.001 ^a	
Experienced any form of violence	0.282, <0.001 ^a	0.245, 0.029 ^a	-0.227, <0.001 ^a	
Condom use on last encounter	0.018, 0.757		-0.092, 0.104 ^a	
Frequency of condom use	-0.481, <0.001 ^a		0.044, 0.436	
R^2		0.312		0.191

 r : Pearson correlation, β : regression coefficient.^aDenotes significant variable.

used a condom in their last sexual encounter, although only 21.0% of them reported consistent condom use.

Stigma among FSWs

Table 2 displays the two-factor loadings for the seven items employed in measuring stigma among FSWs, resulting in a scale reliability coefficient of 0.71. Two factors were derived from these items: perceived stigma (factor 1, comprising four items) and public stigma (factor 2, comprising three items).

Factors associated with stigma among FSWs

Table 3 summarizes the findings from bivariate and multivariate analyses exploring the associations between extracted stigma scales and various demographic,

obstetric, and socioeconomic factors. Perceived stigma was significantly linked to age and experiences of violence, while public stigma was associated with the age of sexual debut and the number of prior abortions.

Discussion

The study aimed to analyze stigma among FSWs in Northern Uganda using principal component and factor analyses. Among the 314 participants (mean age 28.8 years), most had primary-level education, resided in urban areas (93.3%), and reported experiencing violence from clients (70.7%). Factor analysis identified two components of stigma: perceived stigma (personal shame and societal disapproval) and public stigma (external blame and objectification), with a scale reliability of 0.71. Perceived stigma was significantly associated with age,

experience of violence, and reliance on sex work for income, while public stigma was linked to the age of sexual debut, number of abortions, and experience of violence. The findings highlight the multidimensional nature of stigma, emphasizing the need to address violence, societal attitudes, and economic dependency to reduce stigma among FSWs in Northern Uganda.

The findings of our study highlight two distinct dimensions of stigma among FSWs in Northern Uganda: *perceived stigma* and *public stigma*. Perceived stigma encompasses internalized experiences of shame and societal disapproval, reflecting the psychological burden that these individuals face due to societal norms and cultural biases.²⁷ Public stigma, on the other hand, captures the external blame and objectification imposed by the broader community, illustrating the structural and interpersonal challenges that exacerbate marginalization.²⁷ These results align with previous studies which also reported internalized and externalized stigma as critical barriers to well-being among marginalized populations.^{28–31} However, our findings diverge from literature in contexts where stigma dimensions are intertwined with legal and institutional discrimination, suggesting that in Northern Uganda, stigma is predominantly driven by social and cultural norms rather than formal structures. Addressing *perceived stigma* requires psychosocial support programs to foster resilience and self-acceptance, while mitigating *public stigma* demands community-level strategies, including awareness campaigns and policy reforms, to challenge stereotypes and reduce societal discrimination against FSWs.

Our findings reveal that perceived stigma among FSWs in Northern Uganda is significantly associated with age, experience of violence, and reliance on sex work for income. Younger sex workers may experience heightened stigma due to societal expectations regarding age-appropriate roles and behaviors, while those who rely heavily on sex work for survival face greater internalized shame stemming from economic vulnerability. Additionally, experiences of violence exacerbate perceived stigma, as they reinforce feelings of powerlessness and societal disapproval. These results align with studies which demonstrate that stigma is compounded by socioeconomic precarity and exposure to violence, creating a vicious cycle of marginalization.³² However, while previous research in other contexts often emphasizes public stigma, our findings emphasize the salience of perceived stigma, particularly within economically constrained settings like Northern Uganda. These findings are critical: interventions must adopt a multidimensional approach, targeting both the structural drivers of violence and poverty and the internalized stigma experienced by FSWs. Holistic programs that offer economic empowerment, psychological support, and violence prevention could mitigate perceived stigma and improve the overall well-being of this vulnerable population.

Our results indicate that *public stigma* among FSWs in Northern Uganda is significantly associated with the age of sexual debut, number of abortions, and experiences of violence. Early sexual debut may amplify societal disapproval, as it challenges cultural norms surrounding sexuality and morality, placing these individuals under greater scrutiny. Similarly, a higher number of abortions intensifies stigma due to entrenched social and religious attitudes that condemn reproductive choices, further objectifying and marginalizing FSWs. Experiences of violence exacerbate public stigma, as victim-blaming attitudes within communities often shift the blame onto survivors rather than addressing the perpetrators. These findings resonate with existing literature which demonstrate how reproductive health experiences and violence contribute to public stigma in low-resource settings.³³ However, our results emphasize the interconnectedness of violence and reproductive health in shaping stigma, which may be more pronounced in Northern Uganda due to cultural and societal norms. The targeted interventions should address harmful cultural perceptions and gendered violence through community sensitization programs and policies that protect FSWs' reproductive rights. Additionally, violence prevention initiatives and access to non-judgmental healthcare services are essential to dismantle public stigma and reduce marginalization.

Strength and limitations of the study

Utilizing PCA to discern perceived and public stigma factors, the research provides an understanding of the multifaceted nature of stigma experienced by FSWs. The study's relevance and timeliness are underscored by its focus on a global issue—sex work and associated stigma—while specifically addressing the unique sociocultural context of Northern Uganda. This specificity enhances the applicability and significance of the findings to the local population. The robust methodology, featuring a community-based cross-sectional design with a sizable sample size of 374 FSWs, bolsters the generalizability of results.

While the study has notable strengths, it is not without limitations. The reliance on self-reported data, susceptible to social desirability bias, raises concerns about the accuracy of responses on sensitive topics. Excluding transgender women from the study may restrict the inclusivity of findings, overlooking the unique challenges faced by this subgroup within the sex worker community. Additionally, the study defined sex work based on self-identification, which, while clear and consistent, may inadvertently exclude individuals engaged in opportunistic or survival sex work. The sample size of 314 did not meet the minimum target of 374 participants, potentially affecting the statistical power of the study. The reduced sample size may lead to wider confidence intervals and a higher margin of error, potentially limiting the robustness and

generalizability of the findings. The study acknowledges potential confounders, but a more exhaustive examination could strengthen the validity of identified associations. The moderate reliability coefficient of 0.64 for stigma assessment questions, while acceptable, signals room for improvement in future research to enhance the robustness of the findings.

Conclusion

This study highlights the multidimensional nature of stigma among FSWs in Northern Uganda, with perceived stigma linked to age, reliance on sex work, and experiences of violence, while public stigma is associated with age of sexual debut, reproductive choices, and violence. These findings emphasize the role of cultural and societal norms in driving stigma, creating significant psychological and social burdens. Addressing stigma requires targeted interventions, including psychosocial support, economic empowerment, violence prevention, and community sensitization programs. Additionally, policy reforms and non-judgmental healthcare services are essential to reduce marginalization and improve the well-being of FSWs.

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Ethical considerations

The research obtained ethical approval from the Gulu University Research Ethics Committee (approval number: GUREC-2022-414) and clearance from the Uganda National Council for Science and Technology (UNCST) (approval ID: UNCST-NS134ES), ensuring compliance with national research ethics standards. Verbal informed consent was obtained from all participants due to the sensitive nature of the study and potential concerns about confidentiality, stigma, and literacy barriers. This approach ensured a more culturally and contextually appropriate method of obtaining informed participation. Participants were briefed on their right to withdraw at any time, emphasizing the voluntary nature of their involvement. Confidentiality and anonymity were rigorously maintained, aligning with the ethical principles outlined in the Declaration of Helsinki.

Consent to participate

For participants under the age of 18, additional ethical considerations were applied. In accordance with ethical guidelines, informed consent was obtained from their legally authorized representatives or guardians before their participation. Additionally, assent was sought from the minors themselves to ensure their voluntary involvement in the study. The study team ensured that

all participants, including minors, understood the purpose, risks, and benefits of the research. Participants in need of sexual and reproductive health services were provided with counseling and referred to the suitable health facility.

Author contributions

Amir Kabunga: Writing – original draft; Methodology; Writing – review & editing; Supervision; Validation; Conceptualization.

Felix Bongomin: Conceptualization; Investigation; Methodology; Funding acquisition; Writing – original draft; Visualization; Validation; Supervision.

Vella Ayugi: Conceptualization; Investigation; Funding acquisition; Validation; Methodology; Formal analysis; Data curation.

Eustes Kigongo: Formal analysis; Methodology; Visualization; Writing – review & editing; Writing – original draft.

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Data availability statement

The datasets used and analyzed during the present study are available from the corresponding author on reasonable request.

Supplemental material

Supplemental material for this article is available online.

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