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Structural determinants of dual contraceptive use among female sex workers in conflict-affected Gulu, northern Uganda

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Clinical Article Synopsis:

Female sex workers in northern Uganda are exposed to structural risks, which pose barriers to uptake of sexual and reproductive health services.

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ABSTRACT

Objectives
To describe the characteristics of female sex workers (FSWs) who do and do not use dual contraceptives (i.e. male condoms plus a non-barrier method) in Gulu, northern Uganda.

Methods
The present analysis was based on data gathered as part of a questionnaire-based, cross-sectional study conducted between May 2011 and January 2012. FSWs aged 14 years or older were recruited through peer-led or sex worker-led outreach and community-based services. Logistic regression was used to identify correlates of dual contraceptive use.

Results
Among the 400 FSWs who participated, 180 (45.0%) had ever used dual contraceptives. In the multivariate model, dual contraceptive use was positively associated with older age (adjusted odds ratio [AOR] 1.09, 95% confidence interval [CI] 1.04-1.15; P=0.001), prior unintended pregnancy (AOR 1.53, 95% CI 1.01-2.34; P=0.046), and HIV testing (AOR 5.22, 95% CI 1.75-15.57; P=0.003). Having to rush sexual negotiations owing to police presence was negatively associated with dual contraceptive use (AOR 0.65, 95% CI 0.42-1.00; P=0.050).

Conclusion
Although a history of unintended pregnancy and accessing HIV testing might promote contraceptive use, criminalized work environments continue to pose barriers to uptake of sexual and reproductive health services among FSWs in post-conflict northern Uganda. Integrated links between HIV and sexual health programs could support contraceptive uptake among FSWs.

Keywords: Condoms; Contraceptive use; Family planning; HIV; Sex workers; Uganda.

Word count: 200

INTRODUCTION

Female sex workers face disproportionate health and social inequalities, including poor reproductive and maternal health, HIV, and sexually transmitted infections (STIs), and physical and sexual violence[1]. Within sub-Saharan Africa, sex workers face a particularly high burden of HIV[1-5] gender-based violence[1], unintended pregnancy[6-9], and have limited access to sexual and reproductive health (SRH) services[10]. A global systematic review revealed that in sub-Saharan Africa, female sex workers face a 12 fold higher pooled odds of HIV infection compared to the general female population[10]. Despite the high burden of HIV among sex workers in Africa, and largely unmet reproductive health needs, there remain major gaps in data on structural determinants, among sex workers in sub-Saharan Africa[6,10-12,15].

Key structural determinants such as stigma, the criminalization of sex work, access to safe work environments, violence, migration, and gender inequalities can undermine access of SRH for sex workers[2,5,11]. Studies investigating factors associated with sexual and reproductive health SRH outcomes such as access to contraceptives among sex workers have often focused on behavioural determinants of unintended pregnancies and abortions[9], less often emphasizing the importance of structural determinants. However, previous research indicates that criminalization and policing of sex work in Africa can be critical determinants of access to health services, as sex workers often fear police and are unable to report physical or sexual violence from clients[1,15,16]. Non-barrier contraceptive use (i.e., birth control pills, Depo-Provera/injectables, implants, male/female sterilization, intrauterine devices) among sex workers has been linked to inconsistent condom use with clients[17], pointing to the potential role of structural barriers to condom negotiations (e.g., gendered power inequalities, violence).

Northern Uganda has experienced a two-decade long conflict between the Governments' Uganda's Peoples Defense Forces and the rebel Lord's Resistance Army (LRA). Local populations have suffered human rights violations including large-scale abductions of children and youth into the LRA[18]. Within conflict-affected environments, forced migration and displacement, exposure to violence, and unsafe working and living conditions can elevate risks for negative SRH outcomes[19]. A breakdown in social structures, poverty, food insecurity, lack of shelter, and high levels of sexual and physical violence can result in elevated vulnerabilities for HIV, STIs, and other SRH concerns such as unintended pregnancy and adverse obstetrical outcomes[20,21].

Previous studies suggests that sex workers in northern Uganda face high rates of workplace violence, criminalization by police, and conflict-specific experiences such as mental health issues as a result of abduction into the LRA[22-23]. Additional research indicates that sex workers in northern Uganda face high levels of discrimination and disproportionate HIV/STI risks[15]. Given limited understanding of contributing factors to contraceptive use among sex workers in

sub-Saharan Africa, *our objective was to describe the characteristics of female sex workers in Gulu, northern Uganda who used condoms and another method of contraception (i.e., dual contraceptive use) compared to those who did not.*

MATERIALS AND METHODS

This analysis drew on data from the Gulu Sexual Health Project, a community-based cross-sectional study in Gulu District, northern Uganda (May 2011-January 2012). The study was conducted by Canadian and Ugandan researchers in partnership with The AIDS Support Organization (TASO) and other local community partners. Service providers, sex workers and policy experts provided extensive input and guidance on the project and questionnaire. The study received ethical approval from the University of British Columbia Behavioural Research Ethics Board, TASO Institutional Review Board and is registered at the Ugandan National Council for Science and Technology.

A total of 400 female sex workers were recruited through peer/sex worker-led outreach to on- and off-street sex work venues such as bars, brothels, hotels and truck stops. Time-location sampling was used as a method to enroll members of a hidden population at times and places where they congregate, with physical spaces rather than persons as the primary sampling unit. The sampling frame was based on ethnographic mapping and outreach planning by TASO. Other recruitment strategies supplement this approach, including outreach to former internally displaced persons (IDP) camps, recruitment at TASO clinics, and referral from local community agencies (e.g., Gulu Refugee Committee). Eligibility criteria included: ≥ 14 years old, exchanged sex for money or resources (e.g. food, cell phone air time, clothing, shelter, etc.) in the previous 30 days, and able to provide informed consent. As per ethics approval, parental consent was waived for participants aged 14-17 who were living in absence of guardianship and considered mature/ emancipated minors; they underwent an adapted consenting procedure that included special safeguards to assess ability to provide informed consent.

Interviewer-administered questionnaires *were conducted* by trained Acholi research assistants *at the TASO-Gulu Clinic, or at an alternative, confidential location of participant's choosing.* The questionnaire covered topics including socio-demographic factors, sex work experience and history, trauma and violence, SRH, mental and physical health, and HIV testing and treatment. *Study participants received a standard monetary reimbursement of 10,000 UGX (~$4CAN) aligned with TASO research studies. Trained research assistants offered voluntary HIV testing and counseling, although this was not required for study participation. Referrals for food security programs and other health services were provided.*

A binary variable was derived to measure dual contraceptive use, defined as ever using male condoms and at least one non-barrier form of modern

contraceptives (i.e., birth control pills, Depo-Provera/injectables, implants, male/female sterilization, intrauterine devices) for pregnancy prevention. This variable was derived from the question, “Which of the following contraceptives have you used as pregnancy prevention?” Dual contraceptive use was coded as “yes” (used male condoms as well as at least one type of non-barrier modern contraceptive) vs. “no” (used only male condoms or non-barrier contraceptives, but not both; used no contraception; or used other contraceptive methods such as Lactational Ammenorrhea Method, Periodic Abstinence, Withdrawal, or Folk Method). *Female condoms were not included as a method of contraception due to lack use and availability in northern Uganda.*

Individual characteristics included age, place of birth, and HIV serostatus. Variables related to reproductive history included prior unintended pregnancies and the number of children participants had. Partner/interpersonal risks included weekly average client volume, drug and alcohol use with clients, client condom use and refusal (i.e., coerced by any clients into sex without a condom), and types of partners (e.g., having an intimate non-commercial partner). Structural variables included conflict-related experiences (e.g., abduction by the LRA, lived in an IDP camp), workplace physical/sexual violence, places of service and solicitation, and policing. Policing included whether police presence resulted in changes to where one worked or having to rush negotiations with clients (e.g., “In the last six months, how often have you rushed your negotiation with a customer in a public space due to police presence?”). SRH uptake included whether participants had ever been taught to put on a condom properly or had received testing for HIV or other STIs.

We calculated descriptive statistics***(p<0.05)*** for individual, partner/interpersonal, and structural factors between participants who used dual contraceptives and those who did not. Wilcoxon rank-sum test for continuous variables and Pearson’s Chi-squared test (or Fisher’s exact test) were used for binary variables in the bivariate analysis. Variables which were hypothesized ***a priori*** to be related to dual contraceptive use and which had $p<0.10$ in bivariate analyses were considered for inclusion in the multivariate logistic regression analysis. Model selection was performed using a backwards selection approach. Akaike information criterion was used to determine the most parsimonious model. All analyses were performed using SAS version 9.3 (SAS, Cary, NC).

RESULTS

Among 400 female sex workers, 180 (45%) reported lifetime dual contraceptive use (i.e., use of male condoms and non-barrier contraceptives). Overall, 10.3% (n=41) of participants had never used condoms for pregnancy prevention, and only 49.8% (n=199) had ever used hormonal contraceptives (i.e., birth control pills, Depo-provera/injectables or implants). The most common forms of non-barrier contraception used alongside condoms were Depo-

Provera/injectables (80.00%), followed by birth control pills (15%) and implants (12.8%)(Table 1).

Sex workers who reported dual contraceptive use were older in comparison to those who did not (median: 23 vs. 20; Odds Ratio (OR): 1.10; 95% Confidence Interval (CI): 1.05-1.16)(Table 2). Most women were born in Gulu (65.8%, n=263). HIV and acute self-reported STI prevalence were extremely high, measured at 22.3% and 40.3%, respectively. In bivariate analysis, HIV-positive women were slightly more likely to use dual contraceptives (24.1% vs. 19.1%, p=0.093). Women who used dual contraceptives were more likely to have children (87.2% vs. 64.1%; OR: 3.83; 95% CI: 2.28-6.41) and report a history of unintended pregnancy (51.1% vs. 37.7%; OR: 1.73; 95% CI: 1.16-2.59), compared to women who did not.

94.8% (n=379) of sex workers had an intimate (non-commercial) partner, and those using dual contraceptives were more likely to have an intimate partner (OR: 2.75; 95% CI: 0.99-7.65). Participants serviced a median of 7 clients (inter-quartile range (IQR): 4-12) weekly. Overall, 64% (n=256) of the sample reported using drugs or alcohol while working in the last six months. Barriers to negotiating condom use with clients were common, including high risks of client condom refusal (i.e., coercion to have sex without a condom) in the last 6 months (81.8%, n=327); and the majority of participants reported that they would face violence from clients (74.5%, n=298) or their intimate partners (60.3%, n=241) if they asked them to wear a condom.

Sex workers who used condoms and other contraceptives were more likely to work in non-entertainment indoor establishments (brothels, lodges, hotels and rented rooms) compared to those who did not use dual contraceptives (91.1% vs. 84.1%; OR: 1.94; 95% CI: 1.04-3.63). Over 1/3 of participants reported that police presence affected where they worked. Additionally, 37.3%, n=149 worked in environments where police presence resulted in rushed negotiations with customers, with those using dual contraceptives less likely to report that police presence resulted in rushed negotiations with clients (31.1% vs. 42.3%; OR: 0.62; 95% CI: 0.41-0.93). Most women reported a history of conflict-related migration, included having ever lived in an IDP camp (66.5%, n=266), while almost a third had been abducted into the LRA (30.8% n=123).

Lifetime HIV testing was relatively high across the sample, and was more likely among women who used dual contraceptives (97.8% vs. 87.3%; OR: 6.42; 95% CI: 2.21-18.66) in comparison with those who had not. Of the 400 participants, 70.3% (n=281) reported having ever received a condom demonstration.

In a multivariate model (Table 3), older age (Adjusted Odds Ratio (AOR): 1.09; 95% CI: 1.04-1.15), history of unintended pregnancy (AOR: 1.53; 95% CI: 1.01-2.34), and prior HIV testing (AOR: 5.22; 95% CI: 1.75-15.57) were significantly and positively associated with dual contraceptive use, whereas

having to rush negotiations with clients due to police presence (AOR: 0.65; 95% CI: 0.42-1.00) was negatively associated.

DISCUSSION

Female sex workers in post-conflict northern Uganda are exposed to numerous structural risks, such as unsafe and criminalized work environments, which undermine *uptake* to SRH, and pose barriers to contraceptive use.

While high levels of unintended pregnancies typically indicate unmet need for SRH services(8,9), our study documented a high prevalence of unintended pregnancy (43.75%) among sex workers in northern Uganda was associated with increased contraceptive use. It is possible that women who previously experienced an unintended pregnancy were linked to SRH services within this context (e.g., information and resources for family planning). Over 50% of participants reported difficulty accessing condoms or contraceptives, and about one-third had never seen a condom demonstration. The substantial unmet need for SRH services in this study is similar to research with sex workers in other sub-Saharan African countries, such as Madagascar, where similar proportions of participants faced unmet need for contraception[8]. As women in this study were more likely to use dual contraceptives if they had accessed HIV testing, opportunities to facilitate SRH though integrated linkages with HIV programs for sex workers should be scaled-up. Linking HIV and SRH services has been found to be feasible and beneficial, showing lowered rates of HIV/STIs and increased condom use and HIV testing[24]. However, further research is needed to further evaluate the impacts of integrated HIV and SRH services (e.g. contraception, pap smears) for sex workers, while safeguarding their autonomy, rights and choices, and to ensure non-stigmatizing approaches.

In this study, rushing negotiations with clients due to policing was negatively associated with dual contraceptive use. Our research contributes to evidence highlighting how the criminalization of sex workers in East Africa, as in other contexts, can undermine sex workers' right to health. Stigma and lack of protection from police and other authorities places sex workers at increased risk of violence from clients, as rushed negotiations can lead to an inability to properly screen clients or negotiate the terms of a transaction (e.g., condom use). In settings where sex work is criminalized, ability to negotiate for safer sex practices is jeopardized when sex workers are forced to provide services in remote or unsafe occupational environments[2,25]. Participants in this study faced high levels of sexual and physical violence from clients (78.5%).

Ugandan law criminalizes activities associated with sex work as 'crimes against morality'[15]. Given that prior research continues to indicate the need for structural changes (e.g., legal and policy shifts) to increase sex workers' uptake to HIV prevention and SRH[4,11], addressing structural barriers such as criminalization remain critical components of comprehensive and rights-based care. In light of evidence that criminalization in sub-Saharan Africa continues to

undermine sex workers' health and human rights, this threatens progress that has been made in scaling-up access to HIV/STI prevention and care[12].

There are several limitations to be considered when interpreting these findings. As this was a cross-sectional analysis, data cannot be used to infer causality; future longitudinal studies investigating structural determinants of SRH *uptake and utilization of services* in sub-Saharan Africa are recommended. *Furthermore, contraceptive use was not the main focus of the study and having insufficient power for L6M analysis, we chose to use lifetime dual contraceptive use in order to increase the power of our analysis. A temporal relationship between rushing negotiations with police and dual contraceptive use was not possible to do limitations in available data in terms of timeframe.* Given the challenges of sampling hard-to-reach and criminalized populations, our results may under-represent more marginalized women, which could have led us to underestimate gaps in contraceptive *uptake*. Future studies involving broader cohorts of marginalized women and men within and outside the sex industry (e.g., women living with HIV, young women involved in transactional sex, male sex workers) and which compare access to care of these vulnerable groups with the general population are recommended.

Female sex workers living in conflict-affected northern Uganda are exposed to numerous structural risks, including negative interactions with police, which undermine *uptake of* SRH. Although previous unintended pregnancies and accessing HIV testing services were positively associated with dual contraceptive use, criminalized work environments continue to pose barriers to contraceptive use for sex workers, and younger women continue to face barriers in contraceptive use. Future research to understand and address sex workers' SRH needs in sub-Saharan Africa remains needed, alongside policy changes to promote *utilization of* SRH, health and safety. Integrated HIV and SRH services developed in partnership with sex workers should be considered to reduce barriers to contraceptive *uptake* and promote sexual and reproductive health and rights.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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Table 1: Lifetime contraceptive usage among 400 female sex workers in Gulu, northern Uganda, 2011-2012

Types of Contraceptives	Total (N=400) n (%)	Dual contraceptive use (N=180) n (%)
Barrier Contraceptives		
Male condoms	359 (89.8)	180 (100.0)
Hormonal Contraceptives		
Depo-provera/injectables	162 (40.5)	144 (80.0)
Oral contraceptive pills	28 (7.0)	27 (15.0)
Intrauterine devices (IUDs)	8 (2.0)	6 (3.3)
Implants	25 (6.3)	23 (12.8)
Permanent Contraceptives		
Tubal ligation (female sterilization)	2 (0.5)	2 (1.1)
Male sterilization	1 (0.3)	1 (0.6)

Table 2: Characteristics and unadjusted odds ratios related to lifetime dual contraceptive use among 400 female sex workers in Gulu, northern Uganda, 2011-2012

Characteristic	Dual contraceptive use†		Odds Ratio (95% CI)	*p* – value
	Yes N=180 (45%)	No N=220 (55%)		
Individual Factors				
Age, years (med, IQR)	23 (20-26)	20 (18-24)	1.10 (1.05-1.16)	<0.001
Born in Gulu				
yes	121 (67.2%)	142 (64.6%)	1.13 (0.74-1.71)	0.575
no	59 (32.8%)	78 (35.5%)		
Average weekly income from sex work, 1,000 Ugandan shilling (med, IQR)	82.5 (50-135)	75 (42-138)	1.00 (1.00-1.00)	0.202
Years in sex industry (med, IQR)[b]	4 (2-6)	3 (2-5)	1.03 (0.97-1.10)	0.089
HIV positive				
yes	47 (24.1%)	42 (19.1%)	1.50 (0.93-2.40)	0.093
no	133 (73.9%)	178 (80.9%)		
Had children [b]				
yes	157 (87.2%)	141 (64.1%)	3.83 (2.28-6.41)	<0.001
no	23 (12.8%)	79 (35.9%)		
Prior unintended pregnancy [bc]				
yes	92 (51.1%)	83 (37.7%)	1.73 (1.16-2.59)	0.007
no	87 (48.3%)	136 (61.8%)		
Partner/Interpersonal-level Factors				
Has an intimate partner [a]				
yes	175 (97.2%)	204 (92.7%)	2.75 (0.99-7.65)	0.045
no	5 (2.8%)	16 (7.2%)		
Weekly client volume (med, IQR)[a]	7 (4-13)	7 (4-12)	1.00 (0.98-1.02)	0.706
Used drugs/alcohol while working [a]				
yes	118 (65.6%)	138 (62.7%)	1.13 (0.75-1.71)	0.558
no	62 (34.4%)	82 (37.3%)		
Client condom refusal [a]				
yes	153 (85.0%)	174 (79.1%)	1.50 (0.89-2.53)	0.128
no	27 (15.0%)	46 (20.9%)		
Most clients would get violent if asked to use a condom				
yes	130 (72.2%)	168 (76.4%)	0.81 (0.51 – 1.26)	0.345
no	50 (27.8%)	52 (23.6%)		
Intimate non-commercial partner would get violent if asked to use a condom[c]				
yes	106 (58.9%)	135(61.4%)	0.79 (0.52-1.20)	0.258
no	69 (38.3%)	69(31.4%)		
Structural Factors				

Serviced at indoor (non-entertainment) establishments[a]				
yes	164 (91.1%)	185 (84.1%)	1.94 (1.04-3.63)	0.036
no	16 (8.9%)	35 (15.9%)		
Financially supports dependents[b]				
yes	169 (93.9%)	190 (86.4%)	2.43 (1.18-4.99)	0.014
no	11 (6.1%)	30 (13.6%)		
Abducted by Lords Resistance Army[b]				
yes	61 (33.9%)	62 (28.2%)	1.31 (0.85-2.00)	0.219
no	119 (66.1%)	158 (71.8%)		
Lived in an IDP camp[b]				
yes	119 (66.1%)	147 (66.8%)	0.97 (0.64-1.47)	0.882
no	61 (33.9%)	73 (33.2%)		
Client physical/sexual violence[a]				
yes	148 (82.2%)	166 (75.45%)	1.51 (0.92-2.46)	0.101
no	32 (17.8%)	54 (24.6%)		
Rushed negotiations with clients due to police presence[a]				
yes	56 (31.1%)	93 (42.3%)	0.62 (0.41-0.93)	0.022
no	124 (68.9%)	127 (57.7%)		
Police presence affected work location				
yes	50(27.8%)	65(29.6%)	0.92(0.59-1.42)	0.698
no	130(72.2%)	155(70.5%)		
Tested for HIV[b]				
yes	176 (97.8%)	192 (87.3%)	6.42 (2.21-18.66)	<0.001
no	4 (2.2%)	28 (12.7%)		
Tested for STI[a]				
yes	83(46.1%)	91(41.4%)	1.21(0.82-1.81)	0.341
no	97(53.9%)	129(58.6%)		
STI infection[a]				
yes	76(42.2%)	85(38.6%)	1.16(0.78-1.73)	0.467
no	104(57.8%)	135(61.4%)		
Difficulty accessing condoms[a]				
yes	116(64.4%)	121(55.0%)	1.5(0.99-2.22)	0.056
no	64(35.6%)	99(45.0%)		
Taught how to put on a condom[b]				
yes	132 (73.3%)	149 (67.7%)	1.31 (0.85-2.02)	0.222
no	48 (26.7%)	71 (32.3%)		

Note: CI=confidence interval; med=median; IQR=inter-quartile range

[a] In last 6 months

[b] In lifetime

[c] Percentages do not necessarily sum to 100% as variable was limited to women with intimate non-commercial partners

Table 3: Multivariate logistic regression analysis of factors independently associated with lifetime dual contraceptive use among 400 female sex workers in Gulu, northern Uganda, 2011-2012

Variable	Adjusted Odds Ratio (AOR)	95% Confidence Interval (CI)	*p* - value
Age			
(per year older)	1.09	(1.04-1.15)	0.001
Tested for HIV[b]			
(yes vs. no)	5.22	(1.75-15.57)	0.003
Prior unintended pregnancy[b]			
(yes vs. no)	1.53	(1.01-2.34)	0.046
Serviced at indoor (non-entertainment) establishments[a]			
(yes vs. no)	1.86	(0.96-3.59)	0.065
Rushed negotiations with clients due to police presence[a]			
(yes vs. no)	0.65	(0.42-1.00)	0.050

[a] In last 6 months
[b] In lifetime