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3 **Factors associated with utilization of services among female sex workers receiving a**
4 **targeted comprehensive HIV Enhanced Prevention Intervention in Kampala, Uganda:**
5 **findings from a cross-sectional study**

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27 **Abstract**

28 **Background:** In Uganda, the HIV prevalence among Female Sex workers (FSWs) ranges
29 between 33% and 37% compared to 7.6% of the Ugandan general female population.
30 However, their access to and utilization of HIV services remains limited. We estimated the
31 prevalence and factors associated with the utilization of a dedicated HIV prevention, care and
32 treatment service for FSWs in Kampala, Uganda.

33

34 **Methods:** Between October 2017 to January 2018, we conducted a cross-sectional study
35 among FSWs aged ≥ 14 years old at a research clinic. The women were enrolled through
36 routine three monthly clinic visits. At each visit, women received a comprehensive HIV
37 prevention, care and treatment package, peer-led health education sessions, psycho-social
38 support, sexually transmitted infections (STIs) screening and treatment, general health care
39 and reproductive health services. We defined utilization as the use of the HIV prevention, care
40 and treatment services by FSWs at least once within the last six months. Data on socio-
41 demographic characteristics, clinic attendance, HIV sero-status, sexual behaviour, and alcohol
42 use were collected. We used the log-binomial model to identify factors associated with
43 utilization of clinic services.

44

45 **Results:** Eight hundred and seventy-four women were included in the analysis. Mean age was
46 32 years ($SD \pm 6.98$). The overall prevalence of utilization of clinic services was 81%. Forty
47 percent reported poor accessibility to the clinic, and of these, 69% reported high transport-
48 costs challenges. All women (100%) knew their HIV status, of these 53% were HIV positive, of
49 whom 98% were receiving anti-retroviral therapy (ART). Seventy-six percent had been treated
50 for STIs in the last three months, 58% reported using family planning services and 52%

51 reported partner violence. In the adjusted analysis, utilization of clinic services was more
52 likely among HIV positive women (aRR=1.19; 95%CI: 1.11-1.28) and those who had been
53 treated for STIs in the last three months (aRR= 1.32; 95%CI: 1.18-1.48).

54

55 **Conclusions:** The prevalence of utilization of clinic services was high. Those who utilized the
56 clinic were more likely to be living with HIV and those who had been screened or treated for
57 STIs. Dedicated services for FSWs are required to support their utilization of HIV and STI care.

58

59 **Key words:** HIV, enhanced prevention, female sex workers, utilization, intervention

60

61 **Background**

62 Globally, female sex workers (FSWs) remain at heightened risk of HIV infection with more
63 than 14 times increased odds of HIV infection than women in the general population (1, 2).
64 The HIV prevalence among FSWs worldwide is 12% (1). While there is a significant regional
65 variation in HIV prevalence among FSWs, sub-Saharan Africa (SSA) contributes the greatest
66 burden with a pooled prevalence of 37% (1, 3). In Uganda, an estimated 16% of new HIV
67 infections are attributed to FSWs and their clients (4). The prevalence ranges between 33%
68 and 37% compared to 7.6% of the general female population in Uganda (5-7). The World
69 Health Organization (WHO) and UNAIDS recommend that FSWs access comprehensive HIV
70 prevention, testing, and treatment services that meet their needs (8, 9). However, the limited
71 and infrequent utilization of health care services due to a range of factors including stigma
72 and discrimination among FSWs, pose significant challenges to achieving the WHO and
73 UNAIDS goal (10).

74

75 Recognizing the importance of FSWs in HIV control, WHO developed consolidated guidelines
76 for comprehensive HIV prevention, care, and treatment services among key populations
77 including FSWs (11). Across SSA, HIV programs for FSWs have used various strategies to
78 deliver HIV services, including facility-based approaches, stand-alone clinics, and community
79 approaches (12). These targeted interventions along with the other efforts to increase access
80 and utilization of HIV services for FSWs will likely result in a reduced likelihood of HIV
81 transmission. In Benin, targeted HIV interventions with sex workers have prevented
82 approximately 63% of new HIV infections compared to 51% among women in the general
83 population (13). In Uganda, although sex work is illegal, FSWs have been prioritised for
84 focused, tailored services in the National HIV/AIDS strategic plan (14). Furthermore, Uganda

85 has also identified several targeted HIV prevention strategies including the promotion of
86 condom use, efforts to test and treat HIV positive FSWs with anti-retroviral therapy (ART)
87 regardless of CD4 counts, and oral pre-exposure prophylaxis (PrEP) for HIV negative women
88 to reduce HIV acquisition (15). The ability to control HIV infection among FSWs is thus an
89 important component of SSA's management of its HIV epidemic.

90

91 However, the design and implementation of these interventions are complex mainly due to
92 the difficulty in reaching this population. FSWs continue to experience complex social and
93 structural challenges including social stigma, criminalization, violence, and discrimination (16,
94 17). Evidence from SSA suggests that the increasing HIV burden among FSWs coexist with low
95 healthcare utilization and access (10). For example, in Cameroon, only 43% of FSWs accessed
96 and utilized the HIV prevention services during the program implementation period (18).
97 However, in South Africa and Zimbabwe among the enabling factors associated with HIV care
98 utilization among FSWs were being HIV positive, community involvement, and the use of peer
99 -to- peer support approach (19, 20). Hence, a combination of HIV prevention strategies which
100 include behavioural, biomedical, and structural interventions that can increase utilization of
101 HIV services among FSWs are crucial and of high priority (11). This would provide not only
102 individual benefits to FSWs but could also help reduce HIV transmission at the population
103 level.

104

105 Despite the growing burden of HIV and the increasing importance of HIV services among FSWs
106 in SSA, data on utilization of these services remain suboptimal (21). Understanding factors
107 that influence health service utilization will help to address the current lack of available,
108 accessible, and acceptable health services for FSWs.

109

110 **Methods**

111 **Aim, design and setting**

112 From October 2017 to January 2018, we conducted a cross-sectional study to estimate the
113 prevalence and factors associated with the utilization of HIV prevention, care and treatment
114 services among FSW accessing a dedicated clinic. The study was part of the evaluation of the
115 five- year (2011 -2016) HIV Enhanced Prevention Program (EPP) at the Good Health for
116 Women Project (GHWP) clinic. The GHWP clinic was established in 2008 as the first cohort of
117 FSWs in Kampala to study the epidemiology of HIV and sexually transmitted infections (STIs)
118 and to implement HIV/STI prevention among FSWs. The clinic, a stand-alone clinic located in
119 a peri-urban suburb in Southern Kampala, the capital city of Uganda reported a high HIV/STI
120 prevalence combined with high-risk behaviour in 2011 (5). Hence, the EPP intervention was
121 initiated to build on the experience of the existing GHWP HIV prevention services.

122

123 **Participants**

124 The participants were FSWs receiving a targeted comprehensive EPP intervention at a
125 dedicated GHWP clinic for at least ≥ 12 months. FSWs were defined as women having sex with
126 men in exchange for money, favours or other goods either regularly or casually at least once
127 in the past 12 months.

128

129 **Eligibility criteria**

130 The eligibility criteria for participation in the study included: 1) being a FSW aged ≥ 14 years
131 old; 2) having documented evidence of having received the HIV EPP services for at least a year
132 or more at the GHWP clinic; 3) living within the catchment area; 4) willing to participate during

133 the study period; 5) ability to provide informed consent. We excluded participants who were
134 enrolled before 2011, and those who were ill requiring emergency medical care.

135

136 **The GHWP-HIV EPP intervention and procedures**

137 The five-year (2011/16) GHWP-HIV EPP intervention, aimed at improving the effectiveness of
138 HIV prevention, care, and treatment services among FSWs, their male partners, and their
139 children below five years. The free HIV EPP intervention integrated behavioural, biomedical,
140 and structural components which were implemented at the GHWP clinic, bars, and lodges in
141 the community. During the formative phase (2011/12), FSW workplaces (bars, lodges,
142 brothels etc.) were mapped out using a geographic information system. FSWs were then
143 mobilized from these locations by community mobilizers, a network of trained peer
144 educators, and influential persons like bar attendants, lodge managers, or influential FSWs
145 ['aunts']. At enrolment and subsequent visits every three months, the women received
146 targeted HIV services including: the provision of free condoms and contraception, syndromic
147 management of STIs, free HIV counselling and testing following the national guidelines. On-
148 site initiation of ART for HIV positive women was rolled out in January 2013, according to the
149 Ministry of Health (MoH) guidelines (15). In between the scheduled visits, all participating
150 women and their children under five had free access to daily general primary health care
151 services. Health education was given on an individual basis during the 3-monthly visits and
152 regular group sessions. The existing pool of peer-educators was trained through face-to-face
153 and group sessions. This continuum of care was strengthened by using innovative approaches
154 including targeted community outreaches, a peer-led model, active tracking by the field team,
155 and linkage facilitators across different service points to increase demand for and utilization
156 of the services. The EPP intervention was aligned with the National HIV/AIDS Strategic Plan

157 (14) to support and strengthen the national HIV/AIDS frameworks. The program was
158 implemented in collaboration with MoH, the community advisory board (CAB), and other
159 existing community initiatives targeting FSWs such as bar owners and lodges.

160

161 **Data collection and study measures**

162 Following informed consent, FSWs completed a face-to-face interview in a private setting.
163 The interview was administered by trained research staff who collected data on socio-
164 demographic characteristics, knowledge of HIV status, HIV sero-status, use of family planning,
165 being screened or treated for STIs, alcohol use, accessibility to the clinic, utilization of and
166 satisfaction with the clinic services. The primary outcome of this study was the utilization of
167 the clinic services which was defined as the use of the HIV EPP intervention services by FWS
168 at least once within the last six months. Utilization of clinic services in the last six months was
169 categorised as yes or no. Socio-demographic measures included age, marital status, education
170 level, partner violence, source of income, and alcohol use. Alcohol use was assessed by using
171 a standardized WHO Alcohol Use Disorders Identification Test (AUDIT) (22). Alcohol use was
172 classified into three categories i.e. harmless or low-risk drinkers: score 1-7, harmful or high-
173 risk drinkers: score 8-19 and alcohol-dependent: score 20+. The main source of income was
174 categorised as sex work alone or sex work and other sources of income (working in the bar,
175 salon, or nightclub). The clinical characteristics included knowledge of HIV status, self-
176 reported HIV status, ART initiation, being screened or treated for STIs within the last 3
177 months, receiving any family planning method in the last 12 months. Accessibility to the clinic
178 was categorized as easy or not easy.

179

180 **Statistical analyses**

181 Data were double entered in Microsoft Access, cleaned, and exported to STATA 14.0
182 (StataCorp, College Station, TX, USA) for analysis. We resolved discrepancies by checking the
183 source documents for clarification. Categorical demographic and clinical characteristics were
184 summarized by counts and percentages. Continuous variables were summarized by means
185 and standard deviations or medians and interquartile ranges. The proportion of those who
186 utilized the services was analysed by the different demographic and clinical characteristics.
187 Only factors for which the associations attained statistical significance at the 15% level using
188 a likelihood ratio test (LRT) were considered for the multivariable model. Log binomial models
189 were fitted to identify factors associated with utilization at unadjusted analysis. We used a
190 log-binomial model to identify factors associated with the utilization of the clinic services. In
191 the multivariable model, factors were removed from the model if removing them did not
192 make the fit of the model significantly worse at the 5% level (on an LRT).

193

194 **Results**

195 **Participant characteristics**

196 Eight hundred and seventy-four women were included in the analysis. The mean age was 32.5
197 years (SD=±6.5). About half of the FSWs (52%) were aged 25-34 years, 35% were not married,
198 and more than half (55%) had attained at least primary education. Nearly a half (47%)
199 reported other work in addition to sex work as their main source of income. Only 14% of
200 FSWs were alcohol dependent and about a half (52%) had experienced partner violence in
201 the previous three months. All women (100%) knew their HIV status, of these 53% were HIV
202 positive, of whom (98%) were receiving ART. Nearly two thirds (58%) reported using family
203 planning services, while most (76%) had been screened or treated for STIs in the last three
204 months. Forty percent reported poor accessibility to the clinic, and of these, 69% reported

205 high transport-cost challenges. The overall prevalence of utilization of clinic services was 81%.

206 Table1.

207

208

209 **Table 1. Characteristics of FSWs accessing HIV prevention, care and treatment services at GHWP**
 210 **clinic in Kampala, Uganda**

Characteristic	Category	Frequency N=874	Percentage (col %)
Socio-demographic characteristics			
Age			
	≤24	105	12
	25-35	451	52
	35-56	318	36
Marital status			
	Single	310	35
	Married	269	31
	Separated	255	29
	Other	40	5
Religion			
	Christian	643	74
	Moslem	220	25
	Other	11	1
Level of education			
	No education	88	10
	Primary	481	55
	Secondary & above	305	35
Source of income			
	Other in addition to sex work	530	61
	Sex work only	344	39
Alcohol use			
	Low risk	385	44
	Harmful/high risk	262	30
	Alcohol dependent	227	26
Ever experienced partner violence			
	No	420	48
	Yes	454	52
Participants clinical characteristics			
Know their HIV status			
	No	0	0
	yes	874	100
Self-reported HIV status			
	Negative	411	47
	Positive	463	53
Receiving ART			
	No	8	2
	yes	455	98
Receiving family planning in the last 12 months			
	No	369	42
	Yes	505	58
Screened or treated for STI symptoms in the last three months			
	No	210	24
	Yes	664	76
Other participants characteristics			
Utilization of clinic services in the last six months			

	No	166	19
	Yes	708	81
Accessibility to the clinic			
	Not easy	331	38
	Easy	543	62
Reasons for no easy access (N=324)			
	Long distance	29	9.0
	High transport costs	222	69
	No time	25	7.7
	Partner influence	2	0.6
	Others	4	1.2
	Several of the above	42	13.0

211

212 Utilization of clinic services and associated factors

213 At unadjusted analysis, utilization of clinic services was more likely among HIV positive
 214 women (uRR=1.28; 95%CI: 1.19-1.37) compared to those who were HIV negative and those
 215 who had been treated for STIs in the last three months (uRR=1.41; 95%CI: 1.26-1.57)
 216 compared to those who had not been treated of STIs. (Table 2).

217

218 At adjusted analysis, utilization of clinic services was more likely among HIV positive women
 219 (aRR=1.19; 95%CI: 1.11-1.28) and those who had been treated for STIs in the last three
 220 months (aRR= 1.32; 95%CI: 1.18-1.48) (Table 2).

221

222 **Table 2: Characteristics of FSWs and association with utilization of HIV EPP services in the**
 223 **last six months in Kampala, Uganda**

Characteristic	Utilization N=708, n(col%)	uRR 95%CI	LRT P-value	aRR 95%CI	P-value
Age			0.119		
≤24†	77(11)	Reference		Reference	
25-35	371(52)	1.12(0.99-1.27)		1.02(0.92-1.14)	0.687
35-56	260(37)	1.11(0.98-1.27)		1.00(0.89-1.15)	0.946
Marital status			0.365		
Single	252(36)	1.08(0.90-1.31)			
Married	212(30)	1.05(0.87-1.27)			
Separated	214(30)	1.12(0.93-1.35)			
Other†	30(4)	Reference			
Religion			0.745		
Christian	517(73)	0.98(0.74-1.30)			
Moslem	182(26)	1.01(0.76-1.34)			
Other †	9(1)	Reference			
Level of education			0.179		

No education †	77(11)	Reference		Reference	
Primary	390(55)	0.61(0.31-1.20)		0.93(0.87-1.00)	0.056
Secondary & above	241(34)	0.54(0.27-1.07)		0.96(0.88-1.04)	0.312
Source of income			0.519		
Other in addition to sex work †	433(61)	Reference			
Sex work only	275(39)	0.98(0.92-1.05)			
Accessibility to the clinic			0.207		
Easy †	447(63)	Reference			
Not easy	261(37)	0.96(0.89-1.03)			
HIV status			<0.001		
Negative	290(41)	Reference		Reference	
Positive	418(59)	1.28(1.19-1.37)		1.19(1.11-1.28)	<0.001
Receiving family planning			0.873		
No †	298(42)	Reference			
Yes	410(58)	1.01(0.94-1.07)			
Screened or treated for STI symptoms in the last three months			<0.001		
No †	130(18)	Reference		Reference	
Yes	578(82)	1.41(1.26-1.57)		1.32(1.18-1.48)	<0.001
Alcohol use			0.514		
Low risk †	316(45)	Reference			
Harmful/high risk	214(30)	1.10(0.92-1.07)			
Alcohol dependent	178(25)	0.96(0.88-1.04)			
Ever experienced partner violence					
No †	337(48)	Reference	0.578		
Yes	371(52)	1.02(0.95-1.09)			

224 † = Reference category; uRR=unadjusted relative risk; aRR=adjusted relative risk; CI= Confidence
225 interval; LRT=Likelihood ratio test

226
227

228 Discussion

229 Our results indicate a high utilization of health care services among Ugandan FSWs that had
230 received a free comprehensive HIV prevention, care and treatment intervention at a
231 dedicated clinic over 12months. This is comparable to prior studies conducted in SSA among
232 FSWs but slightly lower than results among Ugandan women within the general population
233 (23, 24). The discrepancy might be due to the differences in social and structural barriers such
234 as stigma and discrimination (16). Our model of intervention combined free comprehensive
235 HIV services within the same setting, community mobilization activities and peer-educator-
236 based support which could have created the demand for the FSWs to utilize the services

237 frequently, given the clinic was specifically for them. Interventions that target mechanisms
238 for building positive peer support and community participation among FSWs are critical for
239 improving HIV care for this vulnerable population (25). Our findings align with other research
240 which shows that, due to social stigma and marginalization, FSWs often choose to access
241 targeted, friendly and tailored services that meet their needs. (26).

242

243 Similar to other studies conducted in SSA (20), utilization of the services was more likely
244 among HIV positive FSWs and those that had been screened or treated for STIs. This is not
245 particularly surprising as health care access and utilization provide the avenue for the
246 acquisition of HIV/STI medications. In fact, evidence has shown that FSWs who have a history
247 of any STI are more likely to visit clinics for treatment possibly because they can recognise the
248 signs and symptoms at an early stage (20). Qualitative interviews in earlier studies in the same
249 population, indicate that participants were very aware of the need to prevent HIV/STI
250 symptoms and subsequent complications (17). It is possible that the perceived risk of HIV/STI
251 related symptoms could be linked to the higher rates of utilizing the services in this
252 population.

253

254 Furthermore, all the women recruited into this study were aware of their HIV status. This
255 meets the first 90 of the UNAIDS 90-90-90 targets (27). These findings are similar to previous
256 research among FSWs in Rwanda (28). Based on our results, we may argue that learning one's
257 HIV status is a prerequisite for entry into HIV care, but also possibly because of the fear of the
258 perceived negative consequences of HIV infection, this could have led to increased utilization
259 of the services. The proportion of all HIV-positive FSWs who initiated on ART in this study was
260 also high meeting the second 90 for the 90-90-90 targets. We did not measure viral

261 suppression, but another study (29) in the same population showed high viral suppression
262 among HIV-positive FSWs.

263

264 **Policy implications and practice**

265 This study highlights a number of issues useful for understanding factors influencing the
266 utilization of HIV services among FSWs. The results of this work imply that targeted,
267 dedicated, HIV prevention interventions for FSWs should be tailored to meet their sexual and
268 reproductive health needs and rights (SRHR) including comprehensive care for STIs, family
269 planning (FP) gender-based violence (GBV), stigma and discrimination to create demand for
270 health care service utilization (30). On the other hand, though faced with the high burden of
271 HIV, promotion of their human rights, access to health care without discrimination and
272 attention to social factors like violence from partners and authorities should be prioritized (2).
273 The currently existing comprehensive HIV prevention efforts of enhancing FSWs' HIV risk
274 reduction in the country should be strengthened. Importantly, this comprehensive HIV EPP
275 intervention has been able to reach a vulnerable population with increased access and
276 utilization of health services, these efforts should continue. The EPP model implemented at
277 the GHWP clinic used a community engagement and peer-to-peer support approach to
278 encourage utilization of the services by the FSWs, this should be strengthened.

279

280 **Limitations**

281 Our study had some limitations. First, because sex work remains illegal in Uganda, and yet we
282 dealt with socially stigmatizing and sensitive topics, FSWs may have provided some inaccurate
283 or incomplete information. However, we created a private space for face-to-face interviews
284 and these sensitive topics were handled by trained staff with high levels of confidentiality.

285 Second, this was a cross-sectional study conducted at a single site –a clinic with dedicated
286 services for FSWs. Hence associations should not be interpreted as causal, and data may not
287 be generalizable to places with limited access to HIV care services. Thus highlighting the need
288 for longitudinal studies to address this gap. Third, data were self-reported by participants,
289 hence these were subject to recall and social desirability biases. However, despite these
290 limitations, this study provides insight and lessons to inform future initiatives regarding
291 increasing utilization of HIV services among FSWs in SSA.

292

293 **Conclusions**

294 The prevalence of utilization of clinic services was high. There is a need to strengthen HIV/STIs
295 prevention services that effectively target FSWs. Given prevailing levels of stigma and
296 discrimination, our findings suggest that dedicated services for FSWs are required.

297

298 **List of abbreviations**

299	AIDS	Acquired Immunodeficiency Syndrome
300	ART	Anti-retroviral therapy
301	EPP	Enhanced Prevention Program
302	FSWs	Female sex workers
303	GBV	Gender-based violence
304	GHWP	Good Health for Women Project
305	HIV	Human Immunodeficiency Virus
306	LSHTM	London School of Hygiene and Tropical Medicine
307	MRC	Medical Research Council
308	RR	Relative risk
309	SD	Standard deviation
310	STIs	Sexually transmitted infections
311	SSA	Sub-Saharan Africa
312	UNCST	Uganda National Council of Science Technology
313	UVRI	Uganda Virus Research Institute
314	WHO	World Health Organisation

315

316

317

318 **Declarations**

319 **Ethics approval and consent to participate**

320 Ethical approval was obtained from the Uganda Virus Research Institute Research and Ethics
321 Committee (Reference: Gc/127/17/02/597) and the Uganda National Council for Science and
322 Technology (Reference: SS4337). Written informed consent was obtained from the
323 participants and assent for emancipated minors. Confidentiality and anonymity were
324 maintained throughout the study period.

325

326 **Consent to publish**

327 Not applicable

328

329 **Availability of data and materials**

330 The data used to support the findings of this study are available at MRC/UVRI and LSHTM
331 Uganda Research Unit, and are available from the corresponding author upon reasonable
332 request and with permission from MRC/UVRI and LSHTM Uganda Research Unit.

333

334 **Competing Interests**

335 The authors declare that they have no competing interests.

336

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343

344 **Authors' contributions**

345 GN conceived and designed the study, OK and GN performed the statistical analysis, GN wrote
346 the manuscript; AS, YM, OK, DB, and JS oversaw the overall execution of the manuscript
347 writing; JS oversaw the critical revisions of the manuscript. All authors read and approved the
348 final manuscript.

349

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