



HPV GENOTYPE PREVALENCE IN RURAL VERSUS URBAN ACCORDING TO HIV STATUS, BURUNDI

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4th SYMPOSIUM
WAKA HPV AFRICA





BACKGROUND

- HPV is a very common STI worldwide.
- Evidence of association between HPV and cervical lesions
- Cervical Cancer (CC) first female cancer in Burundi, accounting for approximately 39% of all female cancers.



BACKGROUND (2)

- Since 2015, Burundi
 - Eligible to apply for GAVI new vaccine support
 - Preparing to introduce HPV vaccination programme as strategy to control CC.
- HPV vaccination
 - Young girls aged 9-13 years old
 - School based scheme.

BACKGROUND (3)

- Evidence on differences in distribution of oncogenic HPV strains in different geographic areas
- No data available distribution of HPV genotypes in the general population and in women with cervical lesions in Burundi.
- Baseline assessment of circulating HPV strains needed before vaccine implementation for future evaluation of the effectiveness of the programme.



BACKGROUND (4)

Objective:

- To determine the HPV genotype-specific prevalence in Burundi
 - according to HIV status
 - in rural and urban areas



- Two cross sectional surveys:
 - 2013 in a rural : 150 HIV+ 150 HIV-
 - 2016 in urban: 151 HIV+ 149 HIV-
- Liquid based cytology
- HPV testing.



RESULTS

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Baseline characteristics

Variable	Urban		p	Rural		p
	HIV-positive (N=151)	HIV-negative (N=149)		HIV-positive (N=150)	HIV-negative (N=150)	
Age group (years)						
17-25	8(5.3%)	8(5.4%)	0.21	6(4%)	10(6.7%)	0.0017
26-35	44(29.1%)	39(26.2%)		42(28%)	63(42%)	
36-45	48(31.8%)	64(43%)		61(40.7%)	60(40%)	
≥46	51(33.8%)	38(25.5%)		41(17%)	17(11.3%)	
Mean age(years)+SD	41.1(9.7)	39.7(8.7)	0.19	39.9(8.3)	36.4(7.9)	0.0002
Profession						
Shopkeeper	37(24.5%)	11(7.4%)	<0.0001	19(12.7%)	18(12%)	<0.0001
Farmer	31(20.5%)	12(8.1%)		107(71.3%)	75(50%)	
housewife	27(17.9%)	9(6%)		1(0.7%)	0(0%)	
Non-working	27(17.9%)	6(4%)		6(4%)	3(2%)	
Civil servant	19(12.6%)	104(69.8%)		15(10%)	53(35.3%)	
Student	1(0.7%)	2(1.3%)		2(1.3%)	1(0.7%)	
Other	9(6%)	5(3.3%)		0(0%)	0(0%)	

Variable	Urban		p	Rural		p
	HIV-positive (N=151)	HIV-negative (N=149)		HIV-positive (N=150)	HIV-negative (N=150)	
Marital status						
Married	78(51.7%)	132(88.6%)	<0.0001	78(52%)	131(87.3%)	<0.0001
Widowed	39(25.8%)	5(3.4%)		51(34%)	9(6%)	
Divorced	16(10.6%)	1(0.7%)		6(4%)	6(4%)	
Free union	11(7.3%)	9(6%)		0(0)	0(0)	
Single	7(4.6%)	2(1.3%)		15(10%)	4(2.7%)	
Mean age of menarche (SD)	14.5(1.7)	14.5(1.8)	0.71	14.6(1.7)	14.7(1.7)	0.71
Median age at sexual intercourse debut(IQR)	18(16-19)	22(18-26)	<0.001	18(16-20)	19(17-23)	<0.001
Median age of marriage(IQR)	20(17-25)	26(23-29)	<0.001*	19(17-22)	22(18-26)	<0.001ⁱ
Median age at 1st pregnancy(IQR)	20(17-23)	26(21-29)	<0.001**	19(17-21)	22(19-26)	<0.001ⁱⁱ
Median gestity(IQR)	4(2-6)	4(3-5)	0.99	4(3-6)	4(3-6)	0.72
Median parity(IQR)	3(2-5)	3(2-5)	0.65	4(2-6)	4(2-5)	0.31
Number of sex partners	N=150	N=147		N=136	N=147	
1	34(22.7%)	72(49%)	Ref	24(17.6%)	83(56.5%)	
≥2	116(77.3%)	75(51%)	<0.0001	112(82.4%)	64(43.5%)	<0.0001
Median (IQR)	3(2-5)	2(1-3)	<0.0001	3(2-4)	1(1-2)	<0.0001
Smoking						
Yes	4(2.6%)	2(1.3%)	0.34	23(15.3%)	14(9.3%)	0.11
alcohol consumption						
Yes	48(31.8%)	71(47.7%)	0.005	70(46.7%)	79(52.7%)	0.29





Urban HPV & Cyto Results

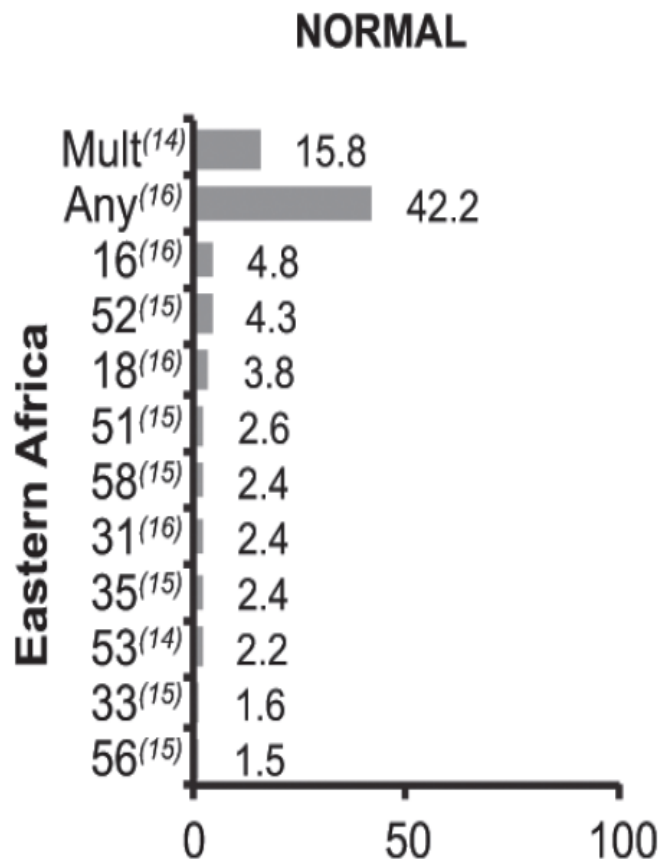
	HIV positive women				HIV negative women			
HPV type	Normal (N=115)	LSIL (N=16)	HSIL/ASCUS/ASC-H/ICC (N=19)	Total (N=151)*	Normal (N=142)	LSIL (N=3)	HSIL/ASCUS/ASC-H/ICC (N=4)	Total (N=149)
	n/N(%)	N/N (%)	n/N (%)	n/N (%)	n/N(%)	N/N (%)	n/N (%)	n/N (%)
Negative	82(71.3)	0(0)	0(0)	82(54.3)	129(86.6)	0(0)	0(0)	129(86.6)
Positive	33(28.7)	16(100)	19(100)	69(45.7)	13(13.4)	3(100)	4(100)	20(13.4)
Multiple	8(7)	7(43.8)	7(36.8)	23(15.2)	2(1.4)	2(66.7)	0(0)	4(2.7)
High-risk								
16	3(2.6)	1(6.3)	3(15.8)	8(5.3)	0(0)	0(0)	1(25)	1(0.7)
18	4(3.5)	2(12.5)	1(5.3)	7(4.6)	3(2.1)	1(33.3)	1(25)	5(3.4)
31	4(3.5)	0(0)	1(5.3)	6(4)	1(0.7)	0(0)	0(0)	1(0.7)
33	1(0.9)	0(0)	0(0)	1(0.7)	0(0)	0(0)	0(0)	0(0)
35	1(0.9)	1(6.3)	1(5.3)	3(2)	3(2.1)	0(0)	0(0)	3(2)
39	3(2.6)	0(0)	0(0)	3(2)	1(0.7)	0(0)	0(0)	1(0.7)
45	3(2.6)	1(6.3)	1(5.3)	6(4)	2(1.4)	0(0)	1(25)	3(2)
51	6(5.2)	2(12.5)	3(15.8)	11(7.3)	2(1.4)	0(0)	0(0)	2(1.3)
52	5(4.3)	4(25)	1(5.3)	10(6.6)	2(1.4)	1(33.3)	0(0)	3(2)
53	1(0.9)	2(12.5)	2(10.5)	5(3.3)	2(1.4)	0(0)	0(0)	2(1.3)
56	3(2.6)	2(12.5)	4(21.1)	9(6)	1(0.7)	0(0)	0(0)	1(0.7)
58	3(2.6)	0(0)	5(26)	8(5.3)	3(2.1)	0(0)	1(25)	4(2.7)
59	2(1.7)	0(0)	0(0)	2(1.3)	1(0.7)	0(0)	0(0)	1(0.7)
66	2(1.7)	1(6.3)	1(5.3)	5(3.3)	2(1.4)	2(66.7)	0(0)	4(2.7)
68	2(1.7)	2(12.5)	1(5.3)	6(4)	1(0.7)	0(0)	0(0)	1(0.7)
any	31(27)	15(93.8)	19(100)	66(43.7)	9(6.3)	3(100)	4(100)	16(10.7)

Rural HPV & Cyto Results

	HIV positive			HIV negative	
HPV type	Normal (N=149)	ASCUS (N=1)	Total (N=150)	Normal (N=150)	Total (N=150)
	n/N(%)	n/N (%)	n/N (%)	n/N(%)	n/N (%)
Negative	105(70.5)	1(100)	106(70.7)	101(67.3)	101(67.3)
Positive	44(29.5)	0(0)	44(29.3)	49(32.7)	49(32.7)
Multiple	17(11.4)	0(0)	17(11.3)	20(13.3)	20(13.3)
High-risk					
16	6(4)	0(0)	6(4)	7(4.7)	7(4.7)
18	6(4)	0(0)	6(4)	3(2)	3(2)
31	2(1.3)	0(0)	2(1.3)	1(0.7)	1(0.7)
33	5(3.4)	0(0)	5(3.3)	1(0.7)	1(0.7)
35	0(0)	0(0)	0(0)	2(1.3)	2(1.3)
39	0(0)	0(0)	0(0)	0(0)	0(0)
45	0(0)	0(0)	0(0)	2(1.3)	2(1.3)
51	1(0.7)	0(0)	1(0.7)	0(0)	0(0)
52	0(0)	0(0)	0(0)	2(1.3)	2(1.3)
53	0(0)	0(0)	0(0)	1(0.7)	1(0.7)
56	1(0.7)	0(0)	1(0.7)	0(0)	0(0)
58	3(2)	0(0)	3(2)	2(1.3)	0(0)
59	0(0)	0(0)	0(0)	0(0)	0(0)
66	7(4.7)	0(0)	7(4.7)	6(4)	6(4)
68	0(0)	0(0)	0(0)	0(0)	0(0)
any	26(17.4)	0(0)	26(17.3)	23(15.3)	23(15.3)

	All women (N=600)			
Cytology		# HPV-positive (%)	RR (95%CI)	p
Normal	556	139(25)	Ref	Ref
LSIL	19	19(100)	4 (3.46-4.62)	<0.0001
HSIL	5	5(100)	4 (3.46-4.62)	0.001*
ASCUS	16	15(93.8)	3.75(3.09-4.54)	<0.0001
ASC-H	2	2(100)	4 (3.46-4.62)	0.06*
ICC	1	1(100)	4 (3.46-4.62)	0.25*
Not determined	1	1(100)	4 (3.46-4.62)	0.25*
P for trend :<0.001				

Burundi vs East Africa (normal cytology)



HPV type	Normal (N=556)	
	N	%
Negative	417	75.0
Positive	139	25.0
Multiple	47	8.5
High-risk		
16	16	2.9
18	16	2.9
31	8	1.4
33	7	1.3
35	6	1.1
39	4	0.7
45	7	1.3
51	9	1.6
52	9	1.6
53	4	0.7
56	5	0.9
58	11	2.0
59	3	0.5
66	17	3.1
68	3	0.5
any	89	16.0

**Low
prevalence**

- Rural and Urban
 - Different proportion HPV
 - Different HPV types
- HIV+ *vs* HIV-
 - Different proportion HPV
 - Different HPV types
- Limitations:
 - Few number of **LSIL, HSIL and ICC**.
- In all areas (HIV positive and negative), Gardasil 9 would prevent high proportion of HPV infections if given appropriately.

