

J. T. Price ¹, N. E. Rosenberg ^{1,2}, B. Maseko ², S. Brar ², T. Phanga ², A. Pettifor ¹, L-G. Bekker ³

¹ University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; ² UNC Project – Malawi, Lilongwe, Malawi; ³University of Cape Town, Cape Town, South Africa

Background

- There is high HIV incidence among adolescent girls and young women (AGYW) in sub-Saharan Africa.
- The disproportionate burden of HIV among AGYW is attributed to a range of social, structural, behavioral, and biomedical risk factors.
- Prevention strategies rely on accurate individual risk perception that can affect testing, care-seeking, risk stratification, intervention uptake and adherence, individual effectiveness and population impact.

Objectives

- To identify the socioeconomic, behavioral, partnership, and biomedical factors associated with self-reported HIV infection among AGYW in Malawi
- To determine which of these factors predict HIV risk perception and HIV acquisition worry among those who report being uninfected

Methods

- The Girl Power study in Lilongwe, Malawi is assessing four combinations of service delivery for AGYW
- Inclusion criteria: AGYW aged 15–24 years old; sexually-active participants in high-risk areas were purposively recruited
- Baseline surveys administered to 250 AGYW enrolled from each public sector health clinic site

Four domains of exposure variables:

- Socioeconomic factors
- Individual biomedical factors
- Individual behavioral factors
- Partnership factors

Outcome variables:

- Self-reported HIV status (Known positive vs Not known positive)
- Lifetime HIV risk perception (High vs Low / None / Don't know)
- Worry about HIV infection (Worry vs No worry / Neutral / Don't know)

Results

N = 1000; median age 19 years [IQR 17–21]

- 33 (3.3%) reported HIV infection
- 66% reported negative HIV test within last 6 months
- 13% had never tested

15 characteristics were associated with HIV prevalence (p ≤ 0.15)

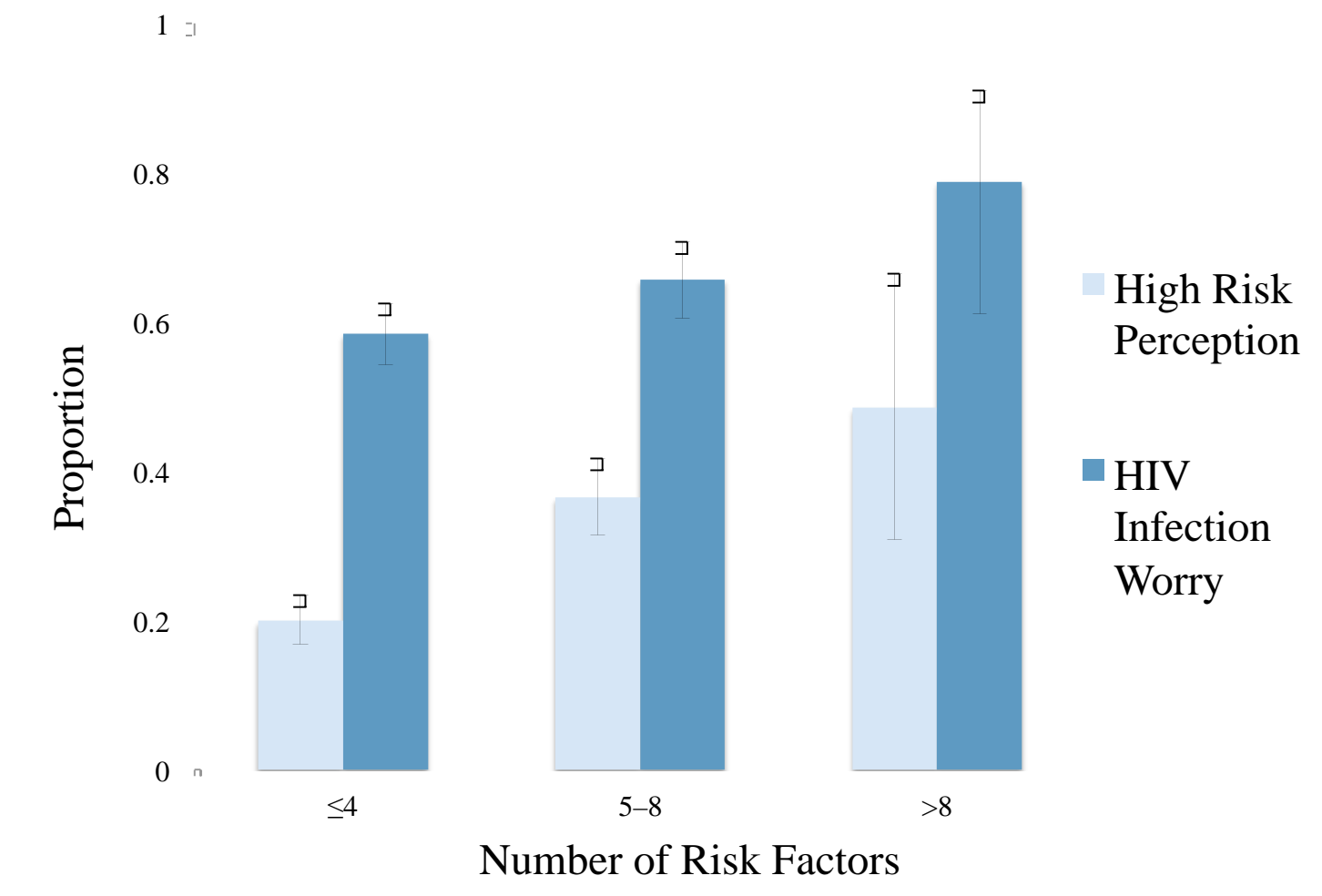
- 40% of HIV-uninfected respondents had 5+ risk factors
- 65% of those ≥20 years old were in this high-risk group

Characteristics not associated with self-reported HIV: (p > 0.15)

- Flooring type in home
- Electricity in home
- Marital status
- Participant travel
- Age at first sex <15
- Forced first sexual encounter
- Partner violence

Characteristic	Reported HIV- or Unknown (N=967) N, %	Reported HIV+ (N=33) N, %	Characteristic	Reported HIV- or Unknown (N=967) N, %	Reported HIV+ (N=33) N, %
Socio-economic factors			Partnership factors		
Age, years			Partner slept away from home		
15–19	566 58%	11 37%	<3 times in past year	129 65%	2 22%
20–24	404 42%	19 63%	≥3 times in past year	70 35%	7 78%
Completed primary school			Any partner uncircumcised		
No	273 29%	14 42%	No	417 43%	5 15%
Yes	684 71%	19 58%	Yes	475 49%	23 70%
Running water in house			Don't know	68 7%	5 15%
No	542 56%	27 82%	Any partner known HIV-infected		
Yes	425 44%	6 18%	No	960 >99%	28 85%
Number of household assets			Yes	3 <1%	5 15%
≤2	376 39%	19 58%	Believes partner ≥1 other partner		
>2	591 61%	14 42%	No	358 37%	2 6%
Orphan status			Yes	468 49%	30 91%
Not double orphan	888 92%	26 79%	Don't know	134 14%	1 3%
Double orphan	76 8%	7 21%	Any partner ≥10 years older		
Individual biomedical factors			No	906 94%	27 82%
STI symptoms in past 6 months			Yes	58 6%	6 18%
No	725 75%	21 64%	Any transactional sex		
Yes	240 25%	12 36%	No	763 79%	20 61%
Ever pregnant			Yes	201 21%	13 39%
No	563 58%	7 22%	Individual behavioral factors, continued		
Yes	401 42%	25 78%	Alcohol use		
Individual behavioral factors			None / Some		
Number of partners in last year			Heavy		
<3	915 95%	27 82%	925 96%	25 76%	
≥3	52 5%	6 18%	42 4%	8 24%	

Figure 1. Reporting more risk factors is associated with high HIV risk perception and HIV infection worry



Low perceived risk even among high-risk groups

- 63% with 5+ risk factors did not perceive high risk
- 33% with 5+ risk factors did not report worry

Results

Risk Factor	Reported HIV Infection		HIV Risk Perception [†]		HIV Infection Worry [‡]	
	Unadjusted PR (95% CI)	APR [§] (95% CI)	Unadjusted PR (95% CI)	APR [§] (95% CI)	Unadjusted PR (95% CI)	APR [§] (95% CI)
Age 15–19	1.00	1.00	1.00	1.00	1.00	1.00
Age 20–24	2.73 (1.34,5.56)	--	1.35 (1.09,1.65)	--	1.19 (1.07,1.31)	--
Completed primary school	1.00	1.00	1.00	1.00	1.00	1.00
Did not complete primary	1.80 (0.92,3.55)	--	1.40 (1.13,1.73)	--	1.00 (0.90,1.12)	--
Running water	1.00	1.00	1.00	1.00	1.00	1.00
No water	3.41 (1.42,8.18)	3.02 (1.17,7.82)	1.58 (1.26,1.98)	1.74 (1.26,2.41)	1.02 (0.92,1.12)	--
>2 assets	1.00	1.00	1.00	1.00	1.00	1.00
≤2 assets	2.08 (1.05,4.10)	--	1.41 (1.15,1.73)	--	1.01 (0.91,1.12)	--
Not double orphan	1.00	1.00	1.00	1.00	1.00	1.00
Double orphan	2.96 (1.32,6.62)	--	1.03 (0.71,1.51)	--	0.79 (0.62,1.00)	0.49 (0.29,0.81)
Partner slept <3 nights away	1.00	1.00	1.00	1.00	1.00	1.00
≥3 nights away [¶]	5.95 (1.27,27.9)	--	2.01 (1.55,2.61)	2.11 (1.13,3.93)	1.30 (1.13,1.49)	2.24 (1.11,4.53)
<3 sexual partners	1.00	1.00	1.00	1.00	1.00	1.00
≥3 sexual partners	3.61 (1.55,8.39)	--	1.38 (0.95,2.01)	--	1.24 (1.05,1.46)	--
Not heavy alcohol	1.00	1.00	1.00	1.00	1.00	1.00
Heavy alcohol use	6.08 (2.89,12.8)	5.54 (2.13,14.4)	1.06 (0.65,1.74)	--	1.23 (1.02,1.48)	--
No STI symptoms	1.00	1.00	1.00	1.00	1.00	1.00
STI symptoms	1.69 (0.84,3.39)	--	0.96 (0.76,1.23)	--	1.12 (1.00,1.24)	--
Never pregnant	1.00	1.00	1.00	1.00	1.00	1.00
Ever pregnant	4.78 (2.09,10.9)	--	1.61 (1.31,1.99)	--	1.16 (1.05,1.28)	--
Partner circumcised	1.00	1.00	1.00	1.00	1.00	1.00
Uncircumcised	2.29 (1.10,4.75)	--	1.18(0.96,1.45)	--	1.08 (0.97,1.19)	--
No known HIV+ Partner	1.00	1.00	1.00	1.00	1.00	1.00
Partner HIV+	22.05 (11.52,42.21)	42.61 (7.65,237.31)	-- ^{††}	--	1.08 (0.49,2.41)	--
Partner has no other partners	1.00	1.00	1.00	1.00	1.00	1.00
Partner has ≥1 other partners	9.94 (3.05,32.36)	7.78 (2.23,27.16)	1.94 (1.55,2.42)	2.13 (1.56,2.92)	1.33 (1.20,1.47)	1.83 (1.38,2.42)
Partner <10y older	1.00	1.00	1.00	1.00	1.00	1.00
Partner ≥10y older	3.24 (1.39,7.56)	--	1.73 (1.28,2.35)	--	1.39 (1.22,1.58)	2.59 (1.22,5.50)
No transactional sex	1.00	1.00	1.00	1.00	1.00	1.00
Transactional sex	2.38 (1.20,4.70)	--	1.58 (1.27,1.97)	1.60 (1.13,2.25)	1.12 (1.00,1.26)	--

[†] All multivariable models adjusted for age.
[‡] Analyses only completed among the 967 respondents who did not report known HIV infection. Missing HIV risk perception responses N=1; missing HIV worry responses N=23.
[§] N=221, reflecting only cohabiting participants who responded to this question.
[¶] PR not calculated given zero observations in one category (zero responses of "high risk perception" among 3 women who reported an HIV-positive partner).

Conclusions

- Our results suggest that many adolescent girls and young women in Malawi have multiple socioeconomic, individual behavioral, biomedical, and partnership factors associated with HIV.
- Although presence of more risk factors is statistically associated with higher prevalence of HIV risk perception and HIV infection worry, many still do not perceive themselves to be at high risk of HIV infection.
- While heavy alcohol use is associated with HIV infection, it is NOT associated with high HIV risk perception or HIV worry.
- Aligning HIV risk and risk perception will be critical to encourage uptake, adherence and population effectiveness of behavioral and biomedical prevention strategies.