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BACKGROUND

- Voluntary medical male circumcision (VMMC) lowers the risk of heterosexually acquired HIV infection in men by approximately 60%.
- In the Kingdom of Eswatini (formerly Swaziland), self-reported VMMC prevalence among adult males (18+years) was low:
 - 8% in the 2007 Demographic and Health Survey
 - 17% in the first Swaziland HIV Incidence Measurement Survey (SHIMS1), conducted in 2011.
- The global target for VMMC coverage is 80% in high HIV prevalence countries, and the Swazi national target was 70% by 2018.
- We assessed self-reported VMMC prevalence in the second Swaziland HIV Incidence Measurement Survey (SHIMS2), conducted in 2016/7.

METHODS

Survey Methods

- SHIMS2 was a cross-sectional household-based survey, part of the Population-based HIV Impact Assessment Survey (PHIA) Project implemented in 14 countries.
- SHIMS2, like other PHIA surveys assessed the HIV disease burden and impact of the health sector response on national HIV epidemics through the national population-based survey.
- SHIMS2 data collection was conducted between August 2016 and March 2017 in a nationally representative sample of 287 enumeration areas and 5,185 households.
- Adults 15 years and older who consented to survey participation completed a structured questionnaire covering demographic, social and behavioural characteristics.
- HIV status was determined through household testing with the national HIV testing algorithm using three rapid HIV tests. All adults testing HIV positive in the survey received confirmatory testing in satellite laboratory using the BioRad Geenius™ HIV 1/2 Supplemental Assay.

VMMC Data collection

- VMMC status was evaluated through two questions to all male adults in the survey: male adults were asked to report if they were circumcised, and if so if the circumcision was conducted by a doctor, clinical officer, or nurse midwife (VMMC). Circumcisions done traditionally or out of health care settings were not classified as VMMC.
- Among men with self-reported VMMC: we asked age at circumcision and reason for getting circumcised
- Among men who did not report VMMC: we asked reasons for not being circumcised, and plans to get circumcised.

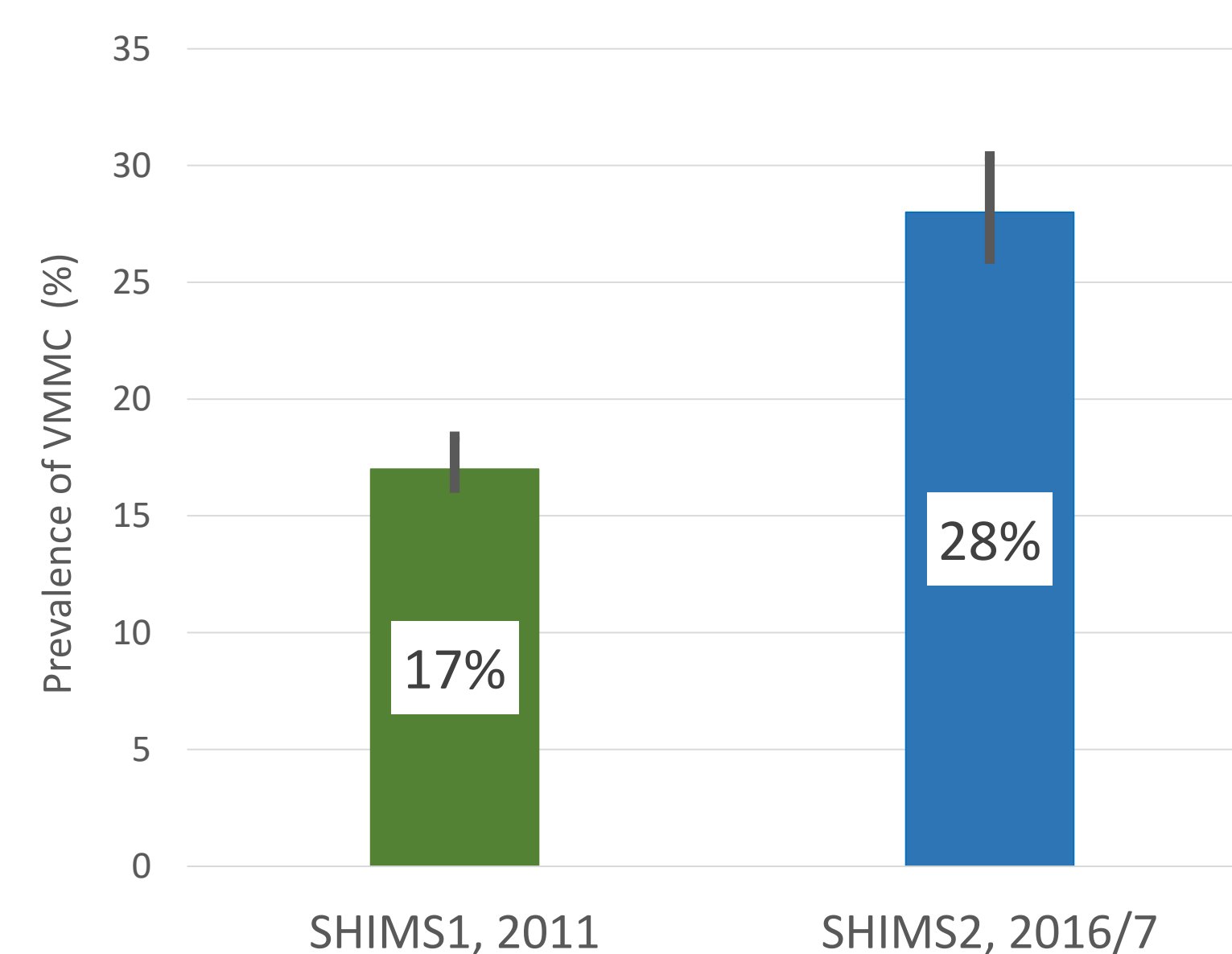
Data analysis

- For all adults 15 year and older, we calculated the VMMC prevalence by sociodemographic characteristics and ran descriptive statistics.
- We used multivariable logistic regression to evaluate the associations between VMMC status and sociodemographic characteristics: age, education, wealth quintile, location, marital and HIV status on the day of the survey. Odds Ratios were calculated to estimate the associations.
- Among adults 18-49 years, we compared prevalence of VMMC between SHIMS1 and SHIMS2.
- Data were weighted to adjust for survey design, non-coverage, and non-response using Jackknife variance estimation.

RESULTS

- A total of 4,815 adult men (15+ years) responded to the MC related questions in the survey. The median age was 29.2 years (Interquartile range [IQR]: 19.9, 42.8). HIV prevalence was 20.4% (95% Confidence Interval [95%CI]: 18.9-21.9).
- Overall VMMC prevalence was 27.1% (95% CI: 25.3-29.0). The median age of circumcision 17.0 years (IQR: 13.5, 23.1).
 - VMMC prevalence peaked in the age group 15-19 years 38.7% (95% CI: 35.1-42.3)
 - VMMC prevalence was lowest in the age group 65+ years 7.9% (95% CI: 4.8-11.1).
 - VMMC prevalence varied by marital status, education, and wealth quintile (Table 1)
 - VMMC prevalence among HIV negative males was twice that among HIV positive males: 30.1% (95%CI: 28.0-32.2) vs 15.5% (95%CI: 12.6-18.3).
- Among males 18-49 years, VMMC prevalence increased from 17% (95%CI: 16.2-18.4) in SHIMS1 to 28% (95%CI: 26.0-30.4) in SHIMS2, Figure 1.
- In the multivariable analysis, the odds of self-reporting VMMC were significantly lower among younger males, those married, those with no formal education, and those who tested HIV positive in the survey, Table 1.
- Higher odds of self-reported VMMC were observed among those in the higher wealth quintile.
- Among circumcised men, HIV prevention was the most frequent reason for being circumcised (63.6%) , followed by hygiene (56.8%), Table 2.
- About one quarter (24.0%) of uncircumcised men stated they planned to be circumcised.
- Fear of side effects (25.2%) and religious prohibition (11.8%) were the most commonly reported reasons for males being uncircumcised, Figure 2.

Figure 1: VMMC Prevalence among males 18-49 years in SHIMS1 vs SHIMS2



CONCLUSIONS

Only a modest increase in VMMC prevalence has been observed since 2011, and the 2018 national and international targets were likely not met. Innovative VMMC approaches are needed to increase VMMC prevalence, particularly among uneducated, low wealth and older men. VMMC messaging should address fear of side effects and religious barriers to VMMC. Targeting men who reported planning to get circumcised could significantly increase VMMC prevalence in Eswatini.

Table 1: Prevalence and correlates of VMMC among males 15 years and older in SHIMS2

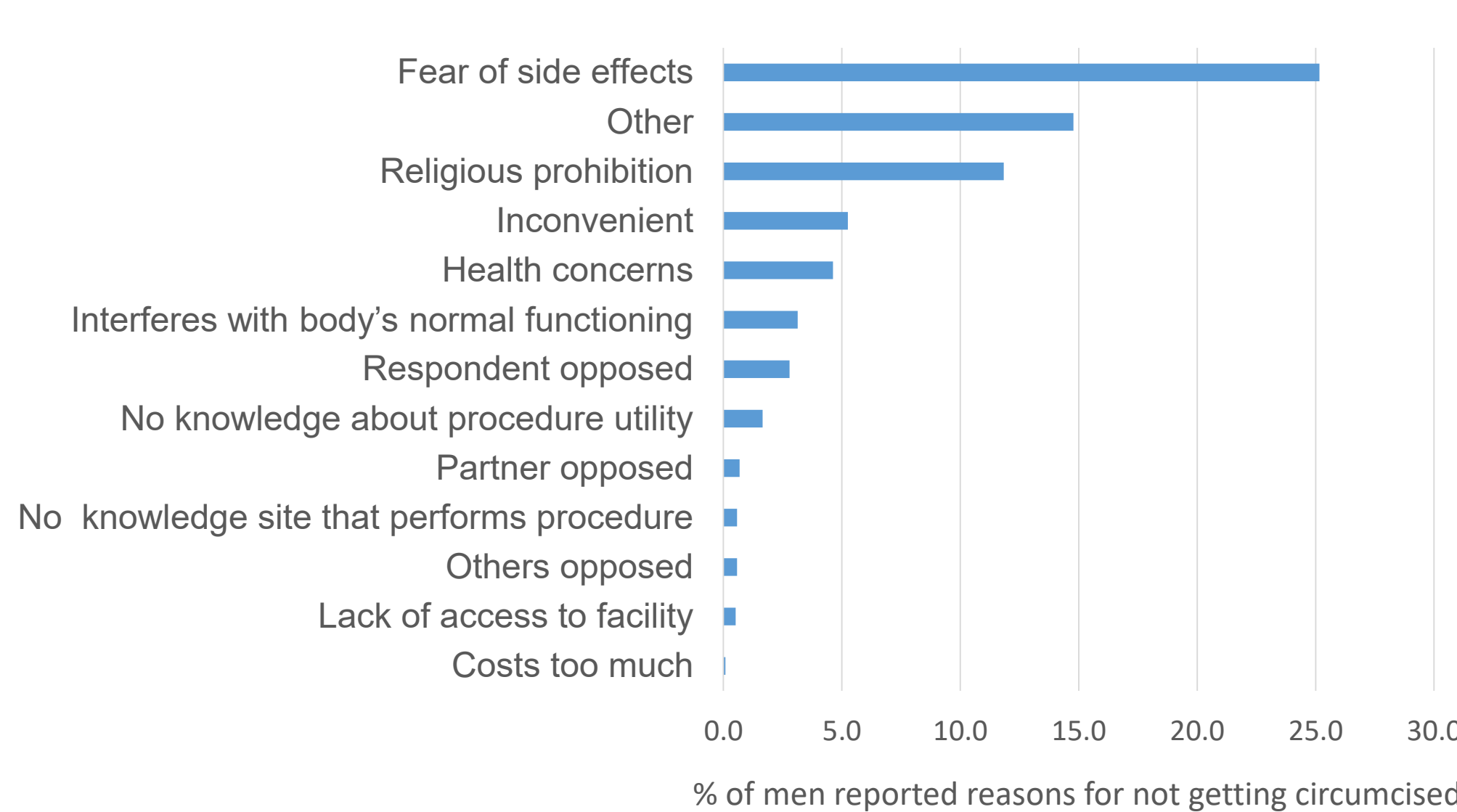
Variable*	VMMC%	(95% CI)	Unweighted number of circumcised men	Unweighted total number of men	Univariate model		Multivariate model	
					Crude Odds Ratio	(95% CI)	Adjusted Odds Ratio	(95% CI)
Age								
15-24	35.2	(31.9-38.6)	632	1764	1	reference	1	reference
25+	22.4	(20.6-24.1)	633	3051	0.5	(0.5-0.6)	0.7	(0.6-0.9)
Marital status								
Never married	32.2	(29.4-34.9)	882	2735	1	reference	1	reference
Married	20.0	(17.6-22.4)	284	1558	0.5	(0.4-0.6)	0.7	(0.6-0.9)
Living together	21.2	(15.2-27.1)	45	223	0.6	(0.4-0.9)	0.8	(0.5-1.3)
Divorced/separated	22.7	(16.3-29.1)	39	178	0.6	(0.4-0.9)	1.00	(0.7-1.5)
Widowed	8.5	(1.7-15.3)	7	94	0.2	(0.1-0.5)	0.3	(0.1-0.9)
Education								
No education	11.1	(6.8-15.3)	27	259	0.4	(0.3-0.6)	0.5	(0.3-0.8)
Primary	23.8	(21.5-26.1)	348	1466	1	reference	1	reference
Secondary	28.5	(25.4-31.6)	356	1279	1.3	(1.1-1.6)	1.1	(0.9-1.4)
High school	29.8	(26.4-33.3)	388	1356	1.4	(1.1-1.7)	1.1	(0.9-1.3)
Tertiary	32.2	(27.4-37.1)	146	449	1.5	(1.2-1.9)	1.2	(1.0-1.6)
Wealth quintile								
Lowest	24.3	(21.3-27.4)	248	1060	1.0	(0.8-1.2)	1.0	(0.8-1.3)
Second	25.8	(22.6-28.9)	258	1025	1.1	(0.8-1.3)	1.0	(0.8-1.3)
Middle	24.9	(22.1-27.7)	276	1137	1	reference	1	reference
Fourth	27.2	(23.4-30.9)	215	786	1.1	(0.9-1.4)	1.2	(0.9-1.5)
Highest	34.4	(29.2-39.6)	268	806	1.6	(1.2-2.1)	1.5	(1.1-2.0)
HIV status								
HIV positive	15.5	(12.6-18.3)	137	955	0.4	(0.3-0.5)	0.6	(0.4-0.7)
HIV negative	30.1	(28.0-32.2)	1025	3475	1	reference	1	reference

* All variables presented had p-value<0.05 for the group differences in VMMC rate.

Table 2: Reasons for being circumcised among males 15 years and older in SHIMS2

	Among all circumcised men (N=1332)		Among medical circumcised men (N=1265)	
	N	%	N	%
Prevent HIV	822	61.7	805	63.6
Hygiene	738	55.4	718	56.8
Other	82	6.2	70	5.5
Religion	88	6.6	60	4.7
My partner asked me to	24	1.8	23	1.8
Don't have to use a condom	16	1.2	16	1.3

Figure 2: Reasons for not getting circumcised among males 15 years and older in SHIMS2 (N=3506)



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This poster has been supported by the President's Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention under the terms of Cooperative Agreements #U2GGH001271 and #U2GGH001226. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the funding agencies.

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