

## ORIGINAL RESEARCH ARTICLE

# Factors associated with access to condoms and HIV services among women in high migration communities in six Southern African countries

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## Abstract

Despite the documented importance of sexual and reproductive health in women's life, access to sexual and reproductive health (SRH) services by migrant women remains low leading to negative sexual and reproductive health outcomes. This study investigated the factors associated with access to condoms and Human immunodeficiency virus (HIV) testing services among 2070 women aged 15-49 years residing in high migration communities. Logistic regression models were fitted and migration status was found to be an important factor in women's access to HIV testing services. In addition to migration status, age, educational level, marital status, religion, comprehensive knowledge about SRH, comprehensive knowledge about HIV, partner's age, and partner's educational level were significantly associated with access to condoms and HIV testing services. Programmes aimed at increasing access to condoms and HIV services should collaborate with adult basic education programmes in order to increase women's education and involve all women regardless of migration status, age and marital status. In addition, the involvement of male partners and religious leaders in disseminating and imparting accurate information and knowledge regarding SRH and HIV services to ensure women's access to both condoms and HIV testing services is required. (*Afr J Reprod Health* 2023; 27 [1]: 41-53).

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**Keywords:** Sexual and reproductive health, migration status, modern contraceptive methods, HIV testing services, condoms

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## Résumé

Malgré l'importance documentée de la santé sexuelle et reproductive dans la vie des femmes, l'accès aux services de santé sexuelle et reproductive (SSR) par les femmes migrantes reste faible, ce qui entraîne des résultats négatifs en matière de santé sexuelle et reproductive. Cette étude a examiné les facteurs associés à l'accès aux préservatifs et aux services de dépistage du virus de l'immunodéficience humaine (VIH) chez 2070 femmes âgées de 15 à 49 ans résidant dans des communautés à forte migration. Des modèles de régression logistique ont été ajustés et le statut migratoire s'est avéré être un facteur important dans l'accès des femmes aux services de dépistage du VIH. Outre le statut migratoire, l'âge, le niveau d'éducation, l'état matrimonial, la religion, les connaissances approfondies sur la SSR, les connaissances approfondies sur le VIH, l'âge et le niveau d'éducation du partenaire étaient significativement associés à l'accès aux préservatifs et aux services de dépistage du VIH. Les programmes visant à accroître l'accès aux préservatifs et aux services liés au VIH devraient collaborer avec les programmes d'éducation de base des adultes afin d'accroître l'éducation des femmes et d'impliquer toutes les femmes, quel que soit leur statut migratoire, leur âge et leur statut matrimonial. En outre, l'implication des partenaires masculins et des chefs religieux dans la diffusion et la transmission d'informations et de connaissances précises sur les services de SSR et de VIH afin de garantir l'accès des femmes aux préservatifs et aux services de dépistage du VIH est nécessaire. (*Afr J Reprod Health* 2023; 27 [1]: 41-53).

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**Mots-clés:** Santé sexuelle et reproductive, statut migratoire, méthodes contraceptives modernes, services de dépistage du VIH, préservatifs

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## Introduction

The need to address the sexual and reproductive health (SRH) of migrant women was first acknowledged at the United Nations International Conference on Population and Development (ICPD) in 1994 due to increased reported negative SRH

outcomes among migrant women<sup>1,2</sup>. Since then, various international organisations including the International Organization for Migration (IOM) and World Health Organization (WHO) have held regular meetings where all member states of World Health Assembly (WHA) promote equitable access to health and disease prevention to all regardless of

their migration status<sup>3,4</sup>. In 2009, the Migration Dialogue for Southern Africa (MIDSA) was held to continue discussions on the implementation of the WHA resolutions to ensure equitable access and service provision to both migrants and non-migrants<sup>4</sup>. The resolutions of the MIDSA dialogue included: (1) SADC Member States should explicitly guarantee migrants' access to health in national health policies and implementation plans; (2) Ministries responsible for immigration should undertake a policy review to ensure that immigration policies explicitly reflect the rights of migrants to access health care and services; (3) SADC Member States should promote the inclusion of migrant health into primary health care reform principles and ongoing health systems strengthening efforts; (4) SADC Member States should implement existing SADC policies and protocols as well as bilateral agreements that facilitate migrants' access to health<sup>5</sup>. Despite these resolutions, the SADC countries are yet to mainstream migration into health systems to make it migrant sensitive, which is one of the key components of the WHA resolution<sup>6</sup>. Thus, access to health care including SRH services by migrants remains a challenge in the region.

Globally, several studies have shown that migrant women face barriers in accessing contraceptive methods compared to non-migrant women<sup>7-17</sup>. Similarly, migrants face difficulties and unequal treatment in accessing HIV services compared to non-migrants<sup>18-27</sup>. Similar findings were documented in Southern Africa, for example, health services including SRH services were provided to citizens for free in Botswana and South Africa, whereas a fee was charged for migrants to utilise these services<sup>23</sup>. Migrants in Botswana were not provided with referrals to clinics and hospitals to utilise the required health services including SRH services and they were not entitled to the provision of free HIV services which are viral load testing, Antiretroviral (ARV) treatment and prevention of HIV transmission from the mother to the child (PMTCT) services<sup>23</sup>. In addition, the Gauteng Department of Health circulated 'Non-South African citizens' guidelines' in 2013 which encouraged health practitioners to report irregular migrants and those whose citizenship could not be ascertained to the Department of Home Affairs<sup>28</sup>. Similarly, in Lesotho, lack of transfer letters for

migrants hindered them from utilising SRH services including HIV services<sup>25</sup>.

The difficulties in accessing contraceptive methods and HIV services by migrant women is attributed to lack of knowledge of available family planning services, lack of trust regarding the confidentiality of the results, financial instability, language and discrimination, lack of knowledge regarding places to obtain contraceptive methods and HIV services<sup>7-12,17-24,26,27,29</sup>. Unmet access to SRH services contributes to the decline of the "healthy migrant effect"<sup>30,31</sup>. The health of migrants deteriorates overtime after they enter a host country due to unfavourable conditions they encounter resulting in loss of the health status that allowed them to migrate in the first instance<sup>30</sup>.

Internationally, efforts have been made to improve the SRH of women through the implementation of ICDP Programme of Action, WHA resolutions and the sustainable development goals (SDGs)<sup>4,32-35</sup>. However, access to SRH services by migrant women remains a challenge. Regional efforts to ensure equitable access to healthcare services including SRH services for both migrants and non-migrants through MIDSA failed to yield positive results owing to the absence of country-level migrant sensitive health systems<sup>4,6,36</sup>. Without migrant-sensitive health systems, inequalities will persist in accessing SRH services between migrants and non-migrants. As a result, countries may find it difficult to achieve the SDG targets of ensuring universal access to SRH care services. Thus, investigating factors that are associated with access to SRH services including HIV/AIDS services by women in high migrant communities is crucial in policy formulation, devising strategies required to achieve migrant-sensitive health systems and ultimately, positive SRH outcomes among migrant women in Southern Africa, South Africa included. Against this backdrop, the study aims to investigate the factors associated with access to condoms and HIV services among women residing in high migrant communities of six Southern African countries.

## Methods

The data used for this study was from a baseline survey conducted as part of the Sexual and Reproductive Health and Rights-HIV (SRHR-HIV)

Knows no Borders Project - a collaboration of the International Organization for Migration (IOM), Save the Children Netherlands (SCN), and University of the Witwatersrand's School of Public Health (WSPH) (consortium partners). The survey was conducted between May to December 2018 in 10 high migrant communities in six Southern African countries namely; Hhohho (The Kingdom of Eswatini), Maputsoe (Lesotho), Mwanza and Mchinji (Malawi), Chifunde and Ressano Garcia (Mozambique), Ekurhuleni and Nkomazi (South Africa), and Chipata and Katete (Zambia). The rationale for selecting these communities was that they are labour and transport corridors for migrants and have major inflows of migrants both from within the countries and from other African countries.

The target population included adolescent and young people (AYPs), sex workers (SWs), migrants, truck drivers and the settled population. Eligible participants for the baseline survey included women of reproductive age (15-49 years) and men aged 15-59 years who were either regular household members or migrants, visitors were excluded from the study. To facilitate access to the SWs and the mobile populations, a rapid mapping exercise was carried out at each site to identify hotspots for SWs, truck stops, and sleeping places of mobile populations.

### ***Sampling technique***

Random selection was done within each selected project site, clusters (villages/wards) and listing of buildings and households were performed in each cluster using a household schedule form. To avoid errors in uniquely numbering each building/household, listing of the buildings and households was done sequentially. In a household with more than 3 eligible participants, a maximum of three respondents were randomly selected. A fixed sample of 300 males and females per study site was used, yielding a pooled sample size of 2070 female participants for the 10 sites. A total sample size of 2070 would be sufficient to detect an absolute difference of 12% in the rate of access to a given SRHR service (e.g. access to condoms) between two groups e.g. international migrants and non-migrants as being statistically significant at the 5% level with 80% power, based on the following assumptions a) roughly equal numbers of women are in each of the three migration status categories

and b) the effect of the clustering of women within sites results in a moderate Design Effect (DEFF) of 1.5. In this study, data for 2070 women aged 15-49 years that participated in the SRHR-HIV project baseline survey was used. The data from eligible women were collected using the individual women questionnaire which collected demographic information, marital status, sexual activity, family planning/contraception, pregnancy and reproduction, fertility preferences, HIV/AIDS and STIs, IPV, gender roles and other health related issues including referrals.

### ***Variables and measurement***

#### ***Outcome variables***

There are only two access related outcome variables in the questionnaire, namely access to condoms and access to HIV testing services. Access to condoms measures a woman's ability to obtain either female or male condoms as a modern contraceptive method and to protect her against HIV and other STIs. It is derived from questions which asked respondents' "if you wanted to, could you get a male condom yourself?" And "if you wanted to, could you get a female condom yourself?" A "yes" on either male or female condom was regarded as a yes and a "no" on both male and female condom was regarded as a no.

Access to HIV testing services was derived from asking respondents if they know of a place where people can get tested for HIV and identifying the place. If the respondents reported knowing and identify the facility or other places where they could get tested for HIV, they were considered to have access to HIV testing services and if they could not they were regarded as not having access to HIV testing services.

#### ***Explanatory variables***

The main explanatory variable in this study is migration status, a three-level categorical variable with levels non-migrant, internal migrant, and international migrant. Other variables that apply to both access to condoms and access to HIV testing services are country, age, marital status, educational level, employment status, duration of stay in community, religion, partner's age, partner's educational level, partner's employment status,

SRH decision making power, comprehensive knowledge about HIV, and comprehensive knowledge about SRH. An additional explanatory variable for access to condoms is experience of IPV.

Comprehensive knowledge about SRH is a discrete quantitative variable taking integer values between 0 and 2 inclusive, and is derived from questions about effective ways of preventing pregnancy, rejecting two or more misconceptions about pregnancy and knowing the fertile days. A correct answer on each question is scored 1 and incorrect answer/don't know is scored 0.

Comprehensive knowledge about HIV is a discrete quantitative variable taking integer values between 0 and 3 inclusive, which is defined as respondents having knowledge about HIV transmission, rejecting two or more HIV myths and knowing that a healthy looking person can be HIV positive. It is derived from a set of questions and a correct answer on each question is scored 1 and incorrect answer/don't know is scored 0.

SRH decision making power is a discrete quantitative variable which takes integer values between 0 and 5 and is derived from the responses to five questions which measures women's ability to decide about timing of sexual intercourse, ability to refuse sex when not in the mood, timing of pregnancy and mode of child delivery. Women who responded that they have the power to decide for all five questions were given a score of five while those who reported that they did not have the power to decide for all five questions were given a score of zero.

Experience of IPV refers to encountering physical or sexual violence from an intimate partner in the past 12 months. It is derived from the following questions: did your (last) intimate partner ever do any of the following things to you in the last 12 months: for physical violence- Push you, shake you or throw something at you? Slap you?, Twist your arm or pull your hair?, Punch you with his fist or something that could hurt you?, Kick, drag you or beat you up?, Try to choke you or burn you on purpose?, Threaten or attack you with a knife? For sexual violence, physically force you to have sexual intercourse with him when you did not want to? And physically force you to perform any other sexual acts you did not want to? Answering "yes" to any of the questions on physical or sexual violence was regarded as experiencing IPV while answering "no"

to all of the questions on physical and sexual violence was regarded as not experiencing IPV.

### **Statistical analysis**

For descriptive purposes, the distribution of the explanatory variables was broken down by i) whether or not they had access to contraceptive services and ii) whether or not they had access to HIV services. Univariable and multivariable logistic regression models were used to investigate the factors associated with access to modern contraceptive methods and HIV services among women in high migrant communities of six Southern African countries. A sub-analysis which investigated the effects of partner's characteristic variables and comprehensive knowledge about SRH and HIV and SRH decision making power was also conducted for partnered women. In addition to the variables that were found to be significant in the univariable model at  $P=0.20$ , all the variables that were found to be relevant in literature were used in the multivariable model and all analyses were carried out using Stata release 15.

### **Results**

Table 1 shows the prevalence of access to condoms among women in high migration communities of six Southern African countries. Of the 2070 women, 68% had access to condoms while 32% did not have access to condoms. The prevalence of non-access to condoms was highest among international migrants (38.3%), followed by non-migrant women (31.3%) and lowest among internal migrants (30.3%). Similarly, the prevalence of not having access to condoms was higher (45.3%) for women in Zambia and lower (15.5%) for women in South Africa. As expected, the prevalence of not having access to condoms was high (38.7%) among women with primary/lower education and low (27.6%) among women with secondary/higher education. Regarding marital status, the prevalence of not accessing condoms was highest (37.0%) among never married women and lowest (25.3%) among formerly married women. The prevalence of non-access to condoms was also high (35.5%) among unemployed women and low (27.9%) among employed women. In terms of religion, the prevalence of non-access to condoms was highest (33.8%) among Catholics, followed by other Christians (32.7%) and lowest

**Table 1:** The prevalence of access to condoms among women in high migration communities of six Southern African countries N=2070

Variable	Level	Total	Have access to condoms	No access to condoms
			1407(68.0)	663(32.0)
<b>Migration status</b>	Non-migrant	1411(100.0)	969(68.7)	442(31.3)
	Internal Migrant	390(100.0)	272(69.7)	118(30.3)
	International migrant	269(100.0)	166(61.7)	103(38.3)
<b>Country</b>	Lesotho	226(100.0)	160(70.8)	66(29.2)
	Malawi	480(100.0)	345(71.9)	135(28.1)
	Mozambique	381(100.0)	222(58.3)	159(41.7)
	South Africa	387(100.0)	327(84.5)	60(15.5)
	Swaziland	185(100.0)	128(69.2)	57(30.8)
	Zambia	411(100.0)	225(54.7)	186(45.3)
<b>Educational level</b>	Primary/lower	810(100.0)	498(61.5)	312(38.5)
	Secondary/higher	1246(100.0)	902(72.4)	344(27.6)
<b>Marital status</b>	Never married	1108(100.0)	698(63.0)	410(37.0)
	Married	666(100.0)	489(73.0)	177(26.6)
	Formerly married	292(100.0)	218(74.7)	74(25.3)
<b>Religion</b>	Catholic	689(100.0)	456(66.2)	233(33.8)
	Other Christians	1174(100.0)	790(67.3)	384(32.7)
	Other religion	207(100.0)	161(77.8)	46(22.2)
<b>Employment status</b>	Employed	953(100.0)	687(72.1)	266(27.9)
	Unemployed	1115(100.0)	719(64.5)	396(35.5)
<b>Partner's age</b>	<=24	412(100.0)	288(69.9)	124(30.1)
	25-34	491(100.0)	375(76.4)	116(23.6)
	>=35	341(100.0)	283(83.0)	58(17.0)
	Don't know	353(100.0)	225(63.7)	128(36.3)
<b>Partner's education</b>	Primary/lower	868(100.0)	486(56.0)	382(44.0)
	Secondary/higher	994(100.0)	786(79.1)	208(20.9)
<b>Partner's occupation</b>	No occupation	125(100)	94(75.2)	31(24.8)
	Agriculture	188(100.0)	125(66.5)	63(33.5)
	Technical/managerial	269(100.0)	222(82.5)	47(17.5)
	Skilled manual	362(100.0)	279(77.1)	83(22.9)
	Unskilled manual	595(100.0)	425(71.4)	170(28.6)
<b>Experience of IPV</b>	Yes	503(100.0)	360(71.6)	143(28.4)
	No	1130(100.0)	823(72.8)	307(27.2)

among Other religion (22.2%). Regarding partner's age, the prevalence of non-access to condoms was highest (36.3%) among women who did not know their partner's age followed by women who had partners aged 24 years or below (30.1%) and lowest among women who had partners aged 35 years and above (17.0%). Non-access to condoms was high (44.0%) among women with partners who had primary/lower education and low (20.9%) among women with partners who had secondary/higher education. Regarding partner's occupation, non-access to condoms was higher among women with partners in Agriculture (33.5%) and lower (17.5%) among women with partners in technical/managerial.

Table 2 shows the prevalence of access to HIV testing services among women in high migration communities of the six Southern African countries. Of the 2070 women, 90.2% had access to HIV testing services while 9.8% did not have access to HIV testing services. The prevalence of non-access to HIV testing services was highest (16.7%) among international migrants, followed by non-migrants (9.6%) and lowest (5.4%) among internal migrants. In the six countries, the prevalence of not being able to access HIV testing services was higher (28.4%) among women in Mozambique and lower (1.1%) among women in Malawi. Regarding marital status, the prevalence of non-access to HIV testing services was highest (11.6%) among never married women

**Table 2:** Prevalence of access to HIV testing services among women in high migration communities of six Southern African countries N=2070

Variable	Level	Total 2070(100.0)	Access to HIV testing 1868(90.2)	No access to HIV testing 202(9.8)
<b>Migration status</b>	Non-migrants	1411(100.0)	1275(90.4)	136(9.6)
	Internal migrants	390(100.0)	369(94.6)	21(5.4)
	International migrants	269(100.0)	224(83.3)	45(16.7)
<b>Country</b>	Lesotho	226(100.0)	214(94.7)	12(5.3)
	Malawi	480(100.0)	475(99.0)	5(1.0)
	Mozambique	381(100.0)	273(71.7)	108(28.4)
	South Africa	387(100.0)	349(90.2)	38(9.8)
	Swaziland	185(100.0)	182(98.4)	3(1.6)
	Zambia	411(100.0)	375(91.2)	36(8.8)
	Primary/lower	810(100.0)	680(84.0)	130(16.0)
<b>Educational level</b>	Secondary/higher	1246(100.0)	1178(94.5)	68(5.5)
	Never married	1108(100.0)	979(88.4)	129(11.6)
<b>Marital status</b>	Married	666(100.0)	619(92.9)	47(7.1)
	Formerly married	292(100.0)	268(91.8)	24(8.2)
	Employed	953(100.0)	868(91.1)	85(8.9)
<b>Employment status</b>	Unemployed	1115(100.0)	998(89.5)	117(10.5)
	<b>Religion</b>	Catholic	689(100.0)	622(90.3)
Other Christians		1174(100.0)	1068(91.0)	106(9.0)
Other religion		207(100.0)	178(86.0)	29(14.0)
<b>Partner's age</b>	<=24	412(100.0)	390(94.7)	22(5.3)
	25-34	491(100.0)	470(95.7)	21(4.3)
	>=35	341(100.0)	318(93.3)	23(6.7)
	Don't know	353(100.0)	304(86.1)	49(13.9)
<b>Partner's educational level</b>	Primary/lower	868(100.0)	724(83.4)	144(16.6)
	Secondary/higher	994(100.0)	956(96.2)	38(3.8)
<b>Partner's occupation</b>	No occupation	125(100.0)	120(96.0)	5(4.0)
	Agriculture	188(100.0)	176(93.6)	12(4.5)
	Technical/managerial	269(100.0)	257(95.5)	12(4.5)
	Skilled manual	362(100.0)	342(94.5)	20(5.5)
	Unskilled manual	595(100.0)	559(94.0)	36(6.0)

and lowest (7.1%) among married women. As expected, the prevalence of non-access to HIV testing services was high (16.1%) among women with primary/lower education and low (5.5%) among women with secondary/higher education. It was also high among unemployed women (10.5%) and low among employed women (8.9%). Regarding religion, the prevalence of non-access to HIV testing services was highest (14.0%) among Other religion and lowest (9.0%) among Other Christians.

Regarding partner's characteristics, the prevalence of non-access to HIV testing services was highest (13.9%) among women who did not know their partner's age and lowest (4.3%) among women who had partners aged 25-34 years. Non-access to HIV testing services was high (16.6%) among women with partners who had primary/lower education and low (3.8%) among women with partners who had secondary/higher

education. Regarding partner's occupation, non-access to HIV testing services was higher (6.0%) among women with partners in unskilled manual and lower (4.0%) among women with partners who had no occupation.

Table 3a shows the results of unadjusted and adjusted logistic regression models of factors associated with not being able to access condoms. Adjusting for other factors, there was no evidence of an association between migration status and not being able to access a condom ( $P=0.15$ ). Country was strongly associated with non-access to condoms ( $P<0.001$ ). After adjusting for other factors, women from Lesotho (aOR=3.24; 95% CI 2.06-5.11), Malawi (aOR=3.13; 95% CI 2.10-4.66), Mozambique (aOR=2.95; 95% CI 1.99-4.36), Swaziland (aOR=3.41; 95% CI 2.17-5.35) and Zambia (aOR=5.10; 95% CI 3.46-7.52) had higher odds of not being able to access condoms compared to women from South Africa. There was a strong

**Table 3a:** Factors associated with non-access to condoms among all women in high migrant communities of six Southern African countries

Variable	Level	Unadjusted OR(95% CI)	Adjusted OR(95% CI) N=2052	P-value
<b>Migration status</b>	Non-migrant	1.00	1.00	0.15
	Internal	0.95( 0.75-1.21)	1.10( 0.71-1.70)	
	International	1.36(1.04-1.78)	1.50(0.95-2.39)	
<b>Duration of stay in community Country</b>		1.00(1.00-1.00)	0.99(0.91-1.09)	0.93 P<0.001
	South Africa	1.00	1.00	
	Lesotho	2.25( 1.51-3.35)	3.24(2.06-5.11)	
	Malawi	2.13( 1.52-3.00)	3.13(2.10-4.66)	
	Mozambique	3.90( 2.77-5.50)	2.95(1.99-4.36)	
	Eswatini	2.43 ( 1.60-3.68)	3.41(2.17-5.35)	
	Zambia	4.51( 3.22-6.31)	5.10(3.46-7.52)	
<b>Age</b>		0.95(0.94-0.96)	0.81(0.73-0.90)	P<0.001
<b>Marital status</b>	Never married	1.00	1.00	0.09
	Married	0.62(0.50-0.76)	0.76(0.58-0.99)	
	Formerly married	0.58(0.43-0.77)	0.72(0.50-1.03)	
<b>Educational level</b>	Primary/lower	1.00	1.00	0.018
	Secondary/higher	0.60(0.50-0.734)	0.74(0.59-0.93)	
<b>Employment status</b>	Employed	1.00	1.00	0.067
	Unemployed	1.42(1.18-1.72)	1.21(0.97-1.50)	
<b>Religion</b>	Catholic	1.00	1.00	0.050
	Other Christians	0.95(0.78-1.16)	1.10(0.88-1.37)	
	Other religion	0.56(0.39-0.80)	0.68(0.45-1.04)	
<b>Comprehensive knowledge about SRH</b>		0.74(0.69-0.79)	0.81(0.75-0.88)	P<0.001
<b>Comprehensive knowledge about HIV</b>		0.77(0.72-0.81)	0.80(0.75-0.86)	P<0.001

**Table 3b:** Factors associated with not being able to access condoms among partnered women in high migration communities of six Southern African countries

Variable	Level	Unadjusted OR (95% CI)	Adjusted OR (95% CI) N= 987	P-value
Migration status	Non-migrant	1.00	1.00	0.55
	Internal	0.97(0.73-1.29)	0.90(0.43-1.87)	
	International	1.25(0.90-1.72)	1.26(0.57-2.80)	
Duration of stay in the community		0.94(0.90-0.98)	0.89(0.77-1.04)	0.111
Country	Mozambique	1.00	1.00	P<0.001
	Lesotho	0.72(0.49-1.06)	2.09(1.15-3.80)	
	Malawi	0.55(0.39-0.77)	1.46(0.86-2.49)	
	South Africa	0.18(0.11-0.30)	0.31(0.12-0.80)	
	Eswatini	0.75(0.50-1.12)	1.94(1.03-3.66)	
	Zambia	1.01(0.72-1.41)	1.43(0.81-2.55)	
Age		0.86(0.80-0.93)	0.95(0.81-1.13)	0.45
Marital status	Never married	1.00	1.00	0.39
	married	0.99(0.78-1.26)	1.32(0.87-1.99)	
	Formerly married	0.94(0.68-1.29)	1.10(0.63-1.92)	
Educational level	Primary/lower	1.00	1.00	0.39
	Secondary/higher	0.62 (0.49-0.77)	0.82(0.57-1.19)	
Employment status	Employed	1.00	1.00	0.74
	Unemployed	1.18(0.94-1.47)	1.08(0.77-1.51)	
Religion	Catholic	1.00	1.00	0.190
	Other Christians	1.08(0.67-1.76)	1.39(0.97-2.00)	
	Other religion	2.11(0.73-6.14)	0.98(0.48-2.01)	
Comprehensive knowledge about SRH		0.76(0.70-0.82)	0.74(0.65-0.85)	P<0.001
Comprehensive knowledge about HIV		0.75(0.70-0.81)	0.82(0.72-0.93)	0.003
SRH decision making power		0.83(0.81-1.05)	0.82(0.73-0.93)	0.001

Partner's age	<=24	1.00	1.00	0.05
	25-34	0.72(0.53-0.97)	0.86(0.57-1.29)	
	>=35	0.48(0.33-0.68)	0.54(0.31-0.97)	
	Don't know	1.32(0.98-1.79)	1.16(0.68-1.96)	
Partner's educational level	Primary/lower	1.00	1.00	0.011
	Secondary/higher	0.46(0.37-0.582)	0.60(0.41-0.89)	
Partner's occupation	No occupation	1.00	1.00	0.41
	Agriculture	1.40(0.84-2.34)	1.39(0.70-2.77)	
	Technical/managerial	0.58(0.34-0.98)	1.34(0.66-2.73)	
	Skilled manual	0.83(0.51-1.34)	1.29(0.67-2.46)	
Experience of IPV	Unskilled manual	1.10(0.70-1.73)	0.92(0.51-1.69)	0.063
	Yes	1.00	1.00	
	No	0.97(0.75-1.25)	1.44(0.98-2.11)	

**Table 4a:** Factors associated with non-access to HIV testing services among all women in high migrant communities of six Southern African countries

Variable	Level	Unadjusted OR (95% CI)	Adjusted OR (95% CI) N=2052	P-value
<b>Migration status</b>	Non-migrant	1.00	1.00	0.046
	Internal	0.53(0.33-0.86)	0.97(0.39-2.33)	
	International	1.88(1.31-2.72)	2.31(1.10-5.43)	
<b>Duration of stay in days</b>		0.96(0.90-1.02)	1.13(0.94-1.35)	0.19
<b>Country</b>	South Africa	1.00	1.00	P<0.001
	Lesotho	0.53(0.27-1.04)	0.88(0.37-2.09)	
	Malawi	0.10(0.04-0.26)	0.24(0.08-0.73)	
	Mozambique	3.73(2.49-5.60)	1.60(0.84-306)	
	Eswatini	0.16(0.05-0.51)	0.19(0.05-0.74)	
	Zambia	0.91(0.56-1.47)	0.89(0.44-1.79)	
<b>Age</b>		0.88(0.80-0.97)	0.91(0.75-1.11)	0.34
<b>Marital status</b>	Never married	1.00	1.00	0.05
	Married	0.58(0.41-0.82)	0.55(0.31-0.97)	
	Formerly married	0.68(0.43-1.07)	0.46(0.22-0.97)	
<b>Educational level</b>	Primary/lower	1.00	1.00	0.004
	Secondary/higher	0.09(0.06-0.14)	0.49(0.30-0.79)	
<b>Employment status</b>	Employed	1.00	1.00	0.61
	Unemployed	1.20(0.89-1.61)	1.11(0.72-1.73)	
<b>Religion</b>	Catholic	1.00	1.00	0.93
	Other Christians	0.91(0.66-1.26)	1.07(0.68-1.70)	
	Other religion	1.51(0.95-2.40)	0.99(0.49-2.00)	
<b>Comprehensive knowledge about SRH</b>		0.52(0.46-0.58)	0.85(0.73-0.99)	0.040
<b>Comprehensive knowledge about HIV</b>		0.37(0.33-0.41)	0.43(0.38-0.47)	P<0.001

association between age and non-access to condoms ( $P<0.001$ ). The odds of not being able to access condoms decreased by 19 % with a five year increase in age (aOR=0.81; 95% CI 0.73-0.90).

Educational level was significantly associated with non-access to condoms ( $P=0.018$ ). In the adjusted model, compared to women with primary/lower education, the odds of not accessing condoms were 26% lower among women with secondary/higher education (aOR=0.74; 95% CI 0.59-0.93). There was a very strong significant

association between comprehensive knowledge about SRH and non-access to condoms ( $P<0.001$ ). The odds of not being able to access condoms decreased by 19 % with a unit increase in comprehensive knowledge about SRH (aOR=0.81; 95% CI 0.75-0.88). Similarly, comprehensive knowledge about HIV was strongly associated with non-access to condoms ( $P<0.001$ ). The odds of not accessing condoms decreased by 20 % with a unit increase in comprehensive knowledge about HIV (aOR=0.80; 95% CI 0.75-0.86). Factors that were



**Table 4b:** Factors associated with not having access to HIV testing services among partnered women in high migration communities of six Southern African countries

Variable	Level	Unadjusted (95% CI)	OR	Adjusted OR (95% CI) N=987	P-value
Migration status	Non-migrants	1.00		1.00	0.17
	Non-migrant	0.47(0.25-0.90)		1.44(0.28-7.38)	
	Internal	2.29(1.47-3.59)		4.58(0.83-25.1)	
Duration of stay in community	International migrants	1.00(0.93-1.08)		1.32(0.97-1.80)	0.097
	Country				
Country	Mozambique	1.00		1.00	P<0.001
	Lesotho	0.18(0.10-0.36)		0.34(0.09-1.25)	
	Malawi	0.02(0.00-0.07)		0.05(0.01-0.43)	
	South Africa	0.29(0.17-0.50)		1.10(0.31-3.91)	
	Eswatini	0.06(0.02-0.19)		0.29(0.05-1.63)	
	Zambia	0.16(0.09-0.30)		0.09(0.02-0.50)	
Age		1.02(0.92-1.14)		0.77(0.53-1.12)	0.17
Marital status	Never married	1.00		1.00	0.27
	Married	1.01(0.66-1.54)		1.92(0.70-5.29)	
	Formerly married	1.12(0.66-1.90)		0.91(0.22-3.74)	
Educational level	Primary/lower	1.00		1.00	0.32
	Secondary/higher	0.32(0.21-0.47)		0.61(0.23-1.61)	
Employment status	Employed	1.00		1.00	0.84
	Unemployed	0.94(0.64-1.37)		0.92(0.41-2.08)	
Religion	Catholic	1.00		1.00	0.45
	Other Christians	0.60(0.25-1.46)		0.61(0.25-1.53)	
	Other religion	0.81(0.10-6.59)		0.45(0.10-1.92)	
Comprehensive knowledge about SRH		0.50(0.43-0.58)		0.80(0.59-1.08)	0.13
Comprehensive knowledge about HIV		0.36(0.31-0.41)		0.51(0.41-0.64)	P<0.001
SRH decision making power		1.19(0.99-1.43)		1.16(0.82-1.64)	0.41
Partner's age	<=24	1.00		1.00	0.61
	25-34	0.79(0.43-1.46)		1.24(0.39-3.96)	
	>=35	1.28(0.70-2.34)		0.93(0.25-3.42)	
	Don't know	2.86(1.69-4.83)		2.05(0.60-6.10)	
Partner's educational level	Primary/lower	1.00		1.00	0.12
	Secondary/higher	0.28(0.18-0.41)		0.45(0.16-1.27)	
Partner's occupation	No occupation	1.00		1.00	0.36
	Agriculture	1.74(0.53-5.67)		0.99(0.13-7.49)	
	Technical/managerial	1.46(0.46-4.63)		4.92(0.66-36.76)	
	Skilled manual	1.70(0.56-5.09)		2.93(0.43-20.04)	
	Unskilled manual	1.74(0.60-5.01)		1.85(0.31-11.06)	
Experience of IPV	Yes	1.00		1.00	0.14
	No	1.31(0.81-2.11)		0.51(0.21-1.26)	

found to be marginally associated with non-access to condoms are marital status, employment status and religion.

Table 3b shows the factors associated with non-access to condoms in a sub-analysis restricted to women who were partnered. The results show that partner's age was significantly associated with non-access to condoms (P=0.05). Compared to women whose partners were aged 24 years and below, women with partners aged 25-34 years and 35 years and above had 14% and 46% lower odds of non-access to condoms (aOR=0.86; 95% CI 0.57-

1.29) and (aOR=0.54; 95% CI 0.31-0.97) respectively. While women who did not know the age of their partners had 16% higher odds of non-access condoms compared to women whose partners were aged 24 years and below (aOR=1.16; 95% CI 0.68-1.96). In addition, partner's education level was significantly associated with non-access to condoms (P=0.011). Compared to women whose partners had primary or lower education, women whose partners had secondary/higher education had 40% lower odds of non-access to condoms (aOR=0.60; 95% CI 0.41-0.89). Experience of IPV

in the last 12 months was marginally associated with non-access to condoms ( $P=0.063$ ).

Table 4a shows the factors associated with not having access to HIV testing services among all women. After adjusting for other factors, migration status was significantly associated with non-access to HIV testing services ( $P=0.046$ ). Compared to non-migrant women, internal migrant women had lower odds of non-access to HIV testing services (aOR=0.97; 95% CI 0.39-2.33) while international migrant women had higher odds of non-access to HIV testing services (aOR=2.31; 95% CI 1.10-5.43). Country was significantly associated with non-access to HIV testing services ( $P<0.001$ ). After controlling for other factors, women from Malawi (aOR=0.24; 95% CI 0.08-0.73) and Eswatini (aOR=0.19; 95% CI 0.05-0.74) had lower odds of not having access to HIV testing services compared to women from South Africa. In addition, there was a significant association between marital status and non-access to HIV testing services in the adjusted model ( $P=0.05$ ). Compared to never-married women, the odds of non-access to HIV testing services were 45% lower for married women (aOR=0.55; 95% CI 0.31-0.97) and 54 % lower for formerly married women (aOR=0.46; 95% CI 0.22-0.97).

There was a significant association between educational level and non-access to HIV testing services ( $P=0.004$ ). Adjusting for other factors, women with secondary/higher education had 51% lower odds of non-access to HIV testing services (aOR=0.49; 95% CI 0.30-0.79) compared to women with primary/lower education. Comprehensive knowledge about SRH was significantly associated with non-access to HIV testing services ( $P=0.040$ ). Controlling for other factors, a unit increase in comprehensive knowledge about SRH, decreased the odds of non-access to HIV testing services by 15% (aOR=0.85; 95% CI 0.73-0.99). Similarly, there was a strong significant association between comprehensive knowledge about HIV and non-access to HIV testing services ( $P<0.001$ ). The odds of non-access to HIV testing services decreased by 57% with a unit increase in comprehensive knowledge about HIV (aOR=0.43; 95% CI 0.38-0.47).

Table 4b under additional information shows the factors associated with non-access to HIV testing services in a sub-analysis restricted to women who were partnered. The results show that

partner's age, partner's educational level, partner's occupation and experience of IPV in the last 12 months were not significantly associated with non-access to HIV testing services.

## Discussion

This study investigated factors associated with access to condoms and access to HIV testing services among women in high migration communities. The findings suggest that being an international migrant is associated with limited access to HIV testing services. Similar results have been documented globally and in specific Southern African countries namely, Lesotho, South Africa, and Botswana<sup>8,11,18,21,23-27,37</sup>. The results were attributed to language barriers, discrimination based on migration status, lack of trust regarding the confidentiality of the HIV results, financial instability, negative healthcare worker attitude, and lack of knowledge of places where SRH services are accessed<sup>8,11,18,21,23-27,37</sup>.

Access to both condoms and HIV testing services differed significantly between countries for all women and partnered women with South African women having better access to condoms than women in other countries. Literature has shown that South Africa has the highest number of unwanted pregnancies among AYPs and people living with HIV, as a result, the demand for condoms and HIV testing is attributed to the desire to prevent unwanted pregnancy and HIV infection<sup>38</sup>. In addition, differences in accessing condoms and HIV testing services could be attributed to the differentials in cultural practices, acceptance levels, developmental level and country policies which differ in the manner they emphasise dissemination of HIV information and promotion of condom use and HIV testing. This calls for country-specific strategies that focus on increasing knowledge and access to condoms and HIV testing services information. Age was found to be an inhibitor of access to SRH services in Ghana for adolescent women owing to health worker attitude and shared norms whereby accessing contraception by younger women was regarded as a taboo<sup>39</sup>. Our findings corroborate previous findings of lower odds of accessing condoms among younger women compared to older women.

Education has been documented as one of the crucial factors that empowers and provides

women with the autonomy to make informed decisions concerning their sexual and reproductive health as it improves women's knowledge and attitude towards the use of condoms and HIV testing<sup>40,41</sup>. Previous studies have shown that women with higher education are more likely to access SRH services than women with no education<sup>9,40-45</sup>. In line with previous findings, this study identified a significant association between educational level and not having access to both condoms and HIV testing services, women with secondary/higher education had lower odds of non-access to both condoms and HIV testing services. Similarly, comprehensive knowledge about SRH and comprehensive knowledge about HIV was found to be a significant factor for not having access to condoms and HIV testing services for both all women and partnered women. This could be attributed to the fact that women who possess accurate knowledge about HIV can dismiss misconceptions and inaccurate information about HIV which normally hinder women from accessing SRH services<sup>7,45</sup>. This emphasizes the importance of imparting correct information and knowledge about SRH and HIV to women regardless of their migration status, age, educational level and marital status.

Religion was found to be a significant factor associated with access to condoms. Similar to previous findings of studies conducted in Norway and Tanzania, Catholic women were found to have lower odds of accessing condoms compared to non-religious women and this may be due to religious teachings which prohibit the use of contraceptive methods<sup>46,47</sup>. Partner's age and educational level were associated with not having access to condoms. This could be linked to the understanding of the importance of contraception and HIV testing services by older and educated partners who share SRH information and encourage their partners to access condoms<sup>7,45</sup>.

### **Limitations**

Limitations of this study include the cross-sectional design, which makes it difficult to conclude that there was a causal relationship between some of the explanatory variables and access. The data collected was self-reported hence it can be subject to recall bias, social desirability bias, and under-reporting.

Similarly, the baseline survey was conducted primarily in selected migration and transport corridors which may not be representative of all the migration/transport corridors in the countries and as such, the results may not be generalized to the countries. Regarding the measurement of access outcome variables, we were unable to measure access to other modern contraceptive methods as the questions on access were limited to condoms. Similarly, we could not measure access to other HIV services (especially access to PMTCT services).

### **Ethical considerations**

Formal approval to conduct this study was obtained from the Human Research Ethics Committee-Medical of the University of Witwatersrand (Clearance Certificate Number M190601) while permission to use the data was obtained from the SRHR-HIV Knows no Borders Project consortium. The data used in this study did not contain any personal identifier information, as such, privacy and confidentiality of respondents was guaranteed.

### **Conclusion and recommendations**

Migration status remains an important factor in determining women's access to HIV testing services. Country specific strategies should ensure equitable access of SRH services regardless of migration status as this is also an essential requirement for compliance with the Sustainable Development Goals, recognized by major international organizations. To increase access to condoms and HIV testing services, strategies and programmes should focus on providing basic education as well as dissemination of accurate SRH information including HIV information to ensure that women are fully empowered in making decisions. This can be partly achieved by disseminating SRH information including HIV through various media channels to ensure wider coverage. In addition, to ensure access to SRH services and commodities among different religious affiliations, programmes should involve religious leaders as change agents. There is a need to promote partner programmes and awareness campaigns that are targeted at involving male partners in issues related to women's SRH services.

## Competing interests

The authors declare that they have no competing interest.

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