

# Factors influencing HIV testing among young women aged 15-24 according to the 2015-2016 Malawi Demographic and Health Survey

Mark Momoh Koroma<sup>1</sup>, Kuleza Chigoneka<sup>1</sup>, John Alimamy Kabba<sup>2</sup>, Jing-Rong Yu<sup>1</sup>, Pauline Kerapetse Senabye<sup>3</sup>, Lu Wang<sup>1</sup>, Dong-Jie Xie<sup>4</sup>, Meng-Si Qiu<sup>4</sup>, Wen-Tao Duan<sup>4</sup>, Jessicah Wanda<sup>5</sup>, Ying-Chun Dai<sup>1</sup>

<sup>1</sup>Department of Epidemiology, School of Public Health, Southern Medical University (Guangdong Provincial Key Laboratory of Tropical Disease Research), Guangzhou, China

<sup>2</sup>Department of Pharmacy Administration and Clinical Pharmacy, School of Pharmacy, Xi'an Jiaotong University, Xi'an, China

<sup>3</sup>Department of Psychology, School Public Health, Southern Medical University, Guangzhou, China

<sup>4</sup>School of Traditional Chinese Medicine, Southern Medical University, Guangzhou 510515, Guangdong, China

<sup>5</sup>Department of Nursing, Southern Medical University, Guangzhou 510515, Guangdong, China

## Abstract

**Introduction:** Adolescent girls and young women develop two of three global new human immunodeficiency virus (HIV) infections daily, yet they perceive little risk of acquiring it, thus neglecting their status. HIV testing is fundamental for its prevention and achieving the UNAIDS 90-90-90 targets.

**Material and methods:** Data from the 2015-2016 Malawi demographic and health survey on women to establish the HIV testing factors were obtained. SPSS bivariate and multivariate logistic regressions were employed to determine HIV testing factors among young women aged 15-24.

**Results:** Of all 10,422 young women 69.5% had done HIV testing, most of whom were rural dwellers. Women between 20 and 24 years old were 2.6 (AOR: 2.69; 95% CI: 2.11-3.43%) times more likely to carry out HIV testing than those aged 15-19. Reading newspapers or magazines less than once a week and listening to a radio at least once a week increased HIV testing by 1.9 and 1.5 times, respectively. A visit to a health facility in the past 12 months influenced HIV testing by 3 (AOR: 3.06; 95% CI: 2.41-3.89%) times. Contraceptives and condoms used influenced HIV testing 4.4 (AOR: 4.40; 95% CI: 3.24-5.96%) and 2.1 (AOR: 2.17; 95% CI: 1.09-4.30%) times. Employed and wealthy young women were 1.6 times more likely to be tested. Husbands' education positively influenced HIV testing, while living in rural areas had a negative influence.

**Conclusion:** Our findings emphasize potential factors in improving HIV testing and indicate that robust strategies are needed to increase HIV testing among young women in Malawi. Future research should focus on motivating factors that enhance HIV testing uptake in young Malawi women.

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**Address for correspondence:** Ying-Chun Dai,  
Department of Epidemiology, School of Public Health,  
Southern Medical University (Guangdong Provincial Key  
Laboratory of Tropical Disease Research), Guangzhou, China,  
e-mail: [yingchun78@hotmail.com](mailto:yingchun78@hotmail.com)

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## Introduction

Human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) remain a significant public health burden in sub-Saharan Africa (SSA). The prevalence of HIV in Malawi, an SSA country, is among the highest globally, accounting for 9.2% of the adult (aged 15-49) population [1]. HIV disproportionately affects women in Malawi, with a prevalence of 10.8% in women and 7.0% in men living with HIV between the ages of 15-49 years in 2018 [1]. This disparity in HIV prevalence significantly affects young women aged 15-25 years, with 9,900 cases of 38,000 new infections in 2018 compared to 4,200 young men in the same age group [1, 2]. Despite declining HIV prevalence from 11.5% in 1996 to 4.2% in 2019 among young women in Malawi [3], 70% of new infections among youth occurred in females [4]. Furthermore, reports showed a considerable reduction in HIV/AIDS-related deaths, yet young women continue to bear the highest burden of HIV/AIDS epidemic [5]. While they contribute to a third of new HIV infections, half of young people living with HIV appear to neglect their HIV status [6].

Malawi has implemented several interventions to combat the HIV/AIDS pandemic, including the United Nations Program on HIV/AIDS (UNAIDS) 90-90-90 treatment targets by 2020. The UNAIDS 90-90-90 targets focus on eradicating HIV by the year 2030 by ensuring 90% of all people living with HIV know their status, 90% of all those diagnosed with HIV commence and sustain antiretroviral therapy (ART), and 90% of people on highly active antiretroviral therapy (HAART) have suppressed viral load [7]. Additionally, Malawi has also implemented test-and-treat management of HIV, irrespective of the World Health Organization's (WHO) HIV staging of viral load and CD4+ count [8]. Since early 2000, rapid HIV testing services have been provided free of charge at all public health facilities and some private facilities [9].

HIV testing is a significant gateway to achieving the UNAIDS targets of 90-90-90 by 2020. While the current adult population is on track to meeting HIV testing targets, young people still lag, with only half of young women knowing their HIV status [4]. In Malawi, HIV testing made notable progress among the adults, with 90% of them knowing their HIV status, whereas the young, aged 15 to 24, were estimated at 53% HIV testing [4, 10]. Despite HIV testing rates being higher for females of this age group than males [10], it remains paramount for young women aged 15-24 to know their HIV status before conception since most young women experience their sexual debut within this age bracket. Young women aware of their HIV status may prevent risky sexual behaviors for fear of acquiring the virus or adopt better behaviors to prevent secondary HIV infection and transmission of the virus to others or their unborn child. The acute phase of HIV is the most infectious without ARVs since it can rapidly replicate in the earliest stage when the body is naïve [11]. However, HIV testing can enhance the timely commencement of ARVs to reduce this rapid replication [7, 12]. Moreover, HIV testing has been shown to significantly reduce HIV-related morbidity and mortality and improve patient outcomes [13].

Despite the free HIV testing and treatment in Malawi and its numerous advantages, young women aged 15-24 failed to meet the UNAIDS HIV testing targets in 2020. Here, we aimed to explore the factors influencing HIV testing among young women aged 15-24 using data from the Malawi Demographic and Health Survey (MDHS) for better intervention.

## Material and methods

### Data source

This study analyzed secondary data from 2015-16 MDHS. MDHS is a nationally representative cross-sectional survey conducted every five years to provide current estimates of essential demographic and health indicators. The survey uses four questionnaires (household, women's, men's, and biomarker questionnaires) to collect data from women and men aged 15-49 and 15-54 years old, respectively. Women's questionnaire data were analyzed to determine the factors of HIV testing among young women in Malawi. MDHS is an implemented program by the National Statistical Office (NSO) in collaboration with the Malawi Ministry of Health, the International Classification of Functioning, Disability and Health (ICF), the United States Agency for International Development (USAID), the United Nations Children's Fund (UNICEF), and other financing organizations. DHS conducts cross-sectional, nationally representative surveys in over 90 countries.

### Study setting, sampling, and study design

The current study was conducted in Malawi in three regions and 28 districts. MDHS used a two-stage probability sampling method to produce a nationally representative sample. Firstly, 28 districts were stratified into urban and rural settings, resulting in 56 sampling strata. The strata were further segmented into 850 enumeration areas (EAs) or clusters using proportional probability. The 850 EAs had 173 urban and 677 rural clusters derived from the latest Malawi population and sampling housing census frame. Secondly, systematic random sampling of 30 households per urban cluster and 33 per rural cluster was performed. All women within the selected households were eligible to participate. A total of 26,564 occupied households were enumerated at the time of data collection, but 26,361 households were interviewed, accounting for 99% coverage. Of the 24,562 women interviewed (98% response rate), we extracted 10,422 young women aged 15-24 years for our analysis. Detailed methodology and standard MDHS interview questionnaires have been described elsewhere [14].

### Study variables and measurements

The outcome variable was "Ever been tested for HIV", with a binary response "Tested" and "Never tested."

The independent or predictor variables were age in 5 years, region, residence, frequency of reading newspapers or maga-

zines, frequency of listening to a radio, owning a mobile phone, visited a health facility in the last 12 months, employment, condom use during last sex with a most recent partner, currently pregnant, husband's /partner's education level, wealth index (poor, middle, or rich) [15], and account in a bank or financial institution.

### Ethical consideration

Data use permission was obtained from the MEASURE DHS, demographic health survey's global monitoring and evaluation body (DHS). The MDHS obtained ethical clearance from Malawi's National Health Sciences Research Committee (NHSRC), and all participants provided informed consent.

### Data analysis

IBM SPSS version 24 and selected variables based on previous literature were applied. Data were cleaned, re-coded, and weighed to account for the national representation of study subjects. Descriptive statistics described variable characteristics of young women aged 15-24, and  $\chi^2$  test was used to evaluate the association ( $p < 0.001$ ) between the dependent variable and independent variables. Predictor variables associated with HIV testing at  $p \leq 0.25$  on binary logistic regression were included in the final model at a 95% confidence interval (CI) to identify potential factors [16]. Crude (unadjusted) odds ratio and adjusted odds ratios and their 95% CI were estimated and reported.

## Results

### Characteristics of young women aged 15-24 years in Malawi with regards to ever tested for HIV

Table 1 shows the weighted socio-demographic characteristics of young women, who responded to questions relating to ever being tested for HIV in the 2015/2016 Malawi DHS. Of the 10,422 young women who responded, 69.5% had done HIV tests with a mean  $\pm$  SD of  $19.38 \pm 2.84$  years. The population of young women was almost equally distributed between the two age group categories. The central and Southern regions accounted for nearly 90% of the young women population, with more than 80% residing in rural areas. The majority of young women had low media exposure. Half of the young women (50.6%) were employed, but only 5.2% had an account in a bank or financial institution. The wealth index was almost equally distributed between the poor (40.3%) and the rich (41.3%). Almost 70% used contraceptives, but few (16.8%) used a condom during their last sex with their partners. About half of the young women had educated husbands with primary school level (53.4%) and secondary level 35.2%. Over half of young women have visited a health facility in the last 12 months, and 10.2% were pregnant.  $\chi^2$  test showed that socio-demographic charac-

teristics of young women were significantly associated with HIV testing, with  $p < 0.001$ .

### Determinants of HIV testing among young women aged 15-24 in Malawi

Table 2 shows the associates of HIV testing among young women in Malawi. The determinants are based on logistic regression's crude and adjusted odds ratio. In particular, young women aged 20-24 were 2.6 (AOR: 2.69; 95% CI: 2.11-3.43%) times more likely to do HIV tests than those aged between 15 and 19 years. The frequency of reading newspapers or magazines less than once a week influenced HIV testing by 1.9 (AOR: 1.94; 95% CI: 1.09-3.45%) times compared to those who did not. Similarly, listening to a radio at least once a week influenced HIV testing by 1.5 (AOR: 1.50; 95% CI: 1.09-2.06%) times more than those who did not. Young women who had visited a health facility for the past 12 months were 3 (AOR: 3.06; 95% CI: 2.41-3.89%) times more likely to do HIV tests than those who did not. Contraceptives and condom use influenced HIV testing by 4.4 (AOR: 4.40; 95% CI: 3.24-5.96%) and 2.1 (AOR: 2.17; 95% CI: 1.09-4.30%) times, respectively, compared to those who did not use it. Young women married to educated husbands/partners were 35.5 (AOR: 35.53; 95% CI: 2.76-457.67%), 5.1 (AOR: 5.11; 95% CI: 3.41-7.67%), and 3.2 (AOR: 3.24; 95% CI: 2.30-4.56%) times more likely to do HIV test having higher, secondary, and primary education levels, respectively, as compared to those not married/married to uneducated husbands. Employed (AOR: 1.60; 95% CI: 1.25-2.05%) and rich (AOR: 1.65; 95% CI: 1.13-2.41%) young women were 1.6 times more likely to do HIV tests than unemployed and poor, respectively. Conversely, young women in rural residences were 0.3 (AOR: 0.35; 95% CI: 0.17-0.71%) times less likely to do HIV testing than urban residents. Other variables, such as region, owning a mobile phone, current pregnancy, and bank/financial accounts, were only significant at the univariate, but not at the multivariate level.

## Discussion

HIV testing is crucial in eradicating the AIDS epidemic by 2030 by identifying influential associated factors. These influencing factors vary in a population of different age groups and geographical regions. Here, we document the socio-demographic factors associated with HIV testing among young women aged 15-24 in Malawi using DHS data. Nearly seventy percent (69.5%) of young women know their status, similar to men [17]. However, almost three-quarters of people living with HIV in SSA are young women aged 15-24 years, who acquired the disease a decade ago [18]. Moreover, adolescents and young women perceived themselves at a lower risk of acquiring HIV, including those at the highest risk. Therefore, there is every significance in studying this age group, since their trend of HIV prevalence better reflects a country's overall HIV trend and risk

**Table 1.** Characteristics of young women aged 15-24 years in the 2015-2016 Malawi demographic and health survey

Characteristics	n	%	Never tested		Tested		p-value
			n	%	n	%	
Age in years							
15-19	5,263	50.5	2,690	84.8	2,572	35.5	< 0.001*
20-24	5,159	49.5	483	15.2	4,676	64.5	
Mean ± SD of age (years)	19.38 ± 2.842						
Region							
Northern	1,159	11.1	278	8.8	881	12.2	< 0.001*
Central	4,536	43.5	1,553	48.9	2,983	41.2	
Southern	4,727	45.4	1,342	42.3	3,384	46.7	
Residence							
Urban	1,892	18.2	492	15.5	1,400	19.3	
Rural	8,529	81.8	2,681		5,848		
Frequency of reading newspapers or magazines							
Not at all	8,085	77.6	2,516	79.3	5,569	76.8	0.017*
Less than once a week	1,364	13.1	375	27.5	989	72.5	
At least once a week	973	9.3	283	8.9	690	9.5	
Frequency of listening radio							
Not at all	5,551	53.3	1,820	57.3	3,731	51.5	< 0.001*
Less than once a week	1,873	18.0	569	17.9	1,304	18.0	
At least once a week	2,998	28.8	785	24.7	2,213	30.5	
Own mobile phone							
No	7,813	75.0	2,734	86.1	5,079	70.1	< 0.001*
Yes	2,609	25.0	440	13.9	2,169	29.9	
Visited health facility in the last 12 months							
No	4,772	45.8	2,249	70.9	2,523	34.8	< 0.001*
Yes	5,650	54.2	925	29.1	4,725	65.2	
Employment							
Not employed	5,277	50.6	1,974	62.2	3,302	45.6	< 0.001*
Employed	5,145	49.4	1,199	37.8	3,946	54.4	
Contraceptive use							
Not using	7,203	69.1	2,966	93.4	4,237	58.5	< 0.001*
Using	3,219	30.9	208	6.6	3,011	41.5	
Condom used during last sex							
No	5,428	83.2	621	67.9	4,807	85.7	< 0.001*
Yes	1,098	16.8	294	32.1	803	14.3	
Currently pregnant							
No or unsure	9,361	89.8	3,044	95.9	6,317	87.2	< 0.001*
Yes	1,061	10.2	130	4.1	931	12.8	
Husband's education							
No education	320	6.5	82	21.8	238	5.3	< 0.001*
Primary	2,608	53.4	207	55.1	2,401	53.2	
Secondary	1,722	35.2	79	21.0	1,644	36.4	
Higher	176	3.6	1	0.3	175	3.9	
Don't know	62	1.3	7	1.9	55	1.2	

Table 1. Cont.

Characteristics	n	%	Never tested		Tested		p-value
			n	%	n	%	
Wealth index combined							
Poor	4,201	40.3	1,169	36.8	3,032	41.8	< 0.001*
Middle	1,945	18.7	666	21.0	1,279	17.6	
Rich	4,276	41.0	1,338	42.2	2,938	40.5	
Account in a bank or financial institution							
No	9,882	94.8	3,117	98.2	6,765	93.3	< 0.001*
Yes	540	5.2	57	1.8	483	6.7	

\*Significant at  $p < 0.05$

behavior. In this study, we employed multivariate regression analysis to evaluate the influencing factors of HIV testing. Our study suggests that age influences HIV testing among young women in Malawi. Specifically, young women aged 20-24 were more likely to be tested for HIV than those aged 15-19 years. Several studies confirm this finding demonstrating that the young population (15-19 years) has lower odds of HIV testing irrespective of gender [17, 19, 20]. This discrepancy could be attributed to several barriers, including physical and legal limitations adolescents face in accessing HIV testing in most countries [21]. Furthermore, Malawi HIV testing guidelines limit young people below 18 years, requiring a guardian's permission or important reason or order to test people below 18 years [8]. Additionally, adolescents engaging in premarital sex may be shy to access HIV testing services. However, adolescents and young women must be significantly considered in HIV testing programs since a study showed age 15 years to be the defining threshold for early sexual debut [22]. In a recent study, this age was even lower, with first sexual activity for boys at age 11.5 years and girls at age 13 [23]. Adolescents are faced with a lot of peer pressure and are easily influenced by their opposite counterparts. Therefore, targeting the young aged and leveraging HIV testing guidelines in Malawi would significantly utilize UNAIDS 90-90-90 targets to end the AIDS pandemic by 2030.

In agreement with other studies, our findings exhibit rural-urban discrepancy in terms of HIV testing. The result indicates that young women in rural residents were less likely to do HIV testing than urban residents. Similar studies have also found lower odds of HIV testing among rural dwellers compared to urban residents, regardless of gender [17, 24, 25]. The lower odds of HIV testing among rural residents could be attributed to fewer and distant health facilities. Generally, there are fewer health facilities in rural areas than in urban areas, which can explain this finding. Additionally, stigmatization [26] might decrease HIV testing among rural residents since healthcare workers usually know community members or patients. Another reason could be the higher exposure of urban residents to various media [19], in which they are easily informed.

A visit to a health facility was a significant influencer of HIV testing in our study. Young women who had visited a health facility in the past 12 months had higher odds of HIV testing than those who did not. A similar study in Ethiopia also showed that young women who visited healthcare facilities had higher odds of being tested for HIV [24]. Furthermore, antenatal care services provided in health facilities, including free HIV testing, could account for a high proportion of HIV testing among young women visiting these health facilities. For example, a study in Mozambique revealed that 75.4% of pregnant women received HIV tests during ANC visits [27]. Therefore, young women should be encouraged to visit healthcare facilities to improve HIV testing service uptake.

Media exposure, such as frequency of reading newspapers or magazines and listening to the radio, significantly influenced HIV testing among young women. The frequency of reading a newspaper or magazine for at least less than a week was more likely to influence HIV testing. This conforms with other studies that reported an increased HIV test uptake with the frequency of reading newspapers or magazines [28] or being able to read compared to those who cannot [29]. The influence of reading on HIV testing can be explained in terms of educational attainment, as the educated can better comprehend health and other information with reasonable deduction. Our study also showed that the frequency of listening to a radio at least once a week was positively associated with increased HIV testing in concordance with other studies [28]. This positive association could be due to the dissemination of health knowledge through media, such as radio and television. A study in Uganda evidenced a significant association between mass media exposure with HIV-related knowledge [30]. Although there was a significant association between the frequency of listening to a radio and HIV testing, other media, such as owning a phone, was only marginally significant at the multivariable level.

Young women in the rich wealth index were more likely to do HIV tests, agreeing with earlier studies [25, 31]. Several studies have also confirmed that rich people [32] are more likely to accept HIV-VCT than the poor. These differences could be explained in terms of the greater exposure

**Table 2.** Univariate and multivariate logistic regression analyses of independent factors associated with HIV testing among young women aged 15-24 years in Malawi

Characteristics	COR	95% CI	p-value	AOR	95% CI	p-value
<b>Age in 5 years</b>						
15-19	Ref.			Ref.		
20-24	10.13	9.09-11.282	< 0.001*	2.69	2.11-3.43	< 0.001*
<b>Region</b>						
Northern	Ref.			Ref.		
Central	0.61	0.52-0.70	< 0.001*	0.82	0.55-1.23	0.330**
Southern	0.795	0.69-0.92	0.003*	1.04	0.70-1.55	0.839**
<b>Residence</b>						
Urban	Ref.			Ref.		
Rural	0.77	0.69-0.86	< 0.001*	0.35	0.17-0.71	0.004*
<b>Frequency of reading newspaper or magazine</b>						
Not at all	Ref.			Ref.		
Less than once a week	1.19	1.05-1.35	0.007*	1.94	1.09-3.45	0.024*
At least once a week	1.10	0.95-1.28	0.189**	1.43	0.77-2.64	0.258**
<b>Frequency of listening to radio</b>						
Not at all	Ref.			Ref.		
Less than once a week	1.12	1.00-1.25	0.054**	1.36	0.95-1.95	0.091**
At least once a week	1.375	1.25-1.52	< 0.001*	1.50	1.09-2.06	0.013*
<b>Own mobile phone</b>						
No	Ref.			Ref.		
Yes	2.66	2.37-2.97	< 0.001*	0.73	0.52-1.01	0.056**
<b>Visited health facility in the last 12 months</b>						
No	Ref.			Ref.		
Yes	4.56	4.16-4.99	< 0.001*	3.06	2.41-3.89	< 0.001*
<b>Employment</b>						
Not employed	Ref.			Ref.		
Employed	1.97	1.81-2.14	< 0.001*	1.60	1.25-2.05	< 0.001*
<b>Contraceptive use</b>						
Not using	Ref.			Ref.		
Using	10.15	8.75-11.77	< 0.001*	4.40	3.24-5.96	< 0.001*
<b>Condom use during last sex with most recent partner</b>						
No	Ref.			Ref.		
Yes	0.35	0.30-0.41	< 0.001*	2.17	1.09-4.30	0.027*
<b>Currently pregnant</b>						
No or unsure	Ref.			Ref.		
Yes	3.45	2.86-4.17	< 0.001*	1.30	0.98-1.73	0.071**
<b>Husband's/partner's education level</b>						
No education	Ref.			Ref.		
Primary	4.00	3.00-5.34	< 0.001*	3.24	2.30-4.56	< 0.001*
Secondary	7.19	5.13-10.08	< 0.001*	5.11	3.41-7.67	< 0.001*
Higher	97.42	7.94-1195.72	< 0.001*	35.53	2.76-457.67	0.006*
Don't know	2.64	1.17-5.99	0.020*	2.21	0.85-5.77	0.104**

Table 2. Cont.

Characteristics	COR	95% CI	p-value	AOR	95% CI	p-value
Wealth index						
Poor	Ref.			Ref.		
Middle	0.74	0.66-0.83	< 0.001*	0.97	0.71-1.33	0.852**
Rich	0.85	0.77-0.93	< 0.001*	1.65	1.13-2.41	0.009*
Account in a bank or financial institution						
No	Ref.			Ref.		
Yes	3.93	2.97-5.19	< 0.001*	0.63	0.30-1.34	0.228**

AOR – adjusted odds ratio, COR – crude odds ratio, Ref. – reference

\*Significant:  $p < 0.05$ . \*\*Non-significant:  $p > 0.05$

of the rich to social amenities, including diverse media and better health facilities.

Husband's educational level was significantly associated with HIV testing among young women. Husband's educational level influenced young women's HIV testing from the primary, secondary, and higher academic levels. Many studies have found educational status to influence HIV testing [33]; however, we found an indirect association through husbands/partners. Studies have reported that men were more knowledgeable in HIV and influenced HIV testing decisions. Data showed that husbands are the primary confidants for HIV testing among married women [34, 35]. Our study did not directly associate HIV testing and educational level among young women, which might be due to fear of stigma or other unknown factors.

This current study demonstrated that preventive pregnancy measures significantly influenced HIV testing among young women. Sexually active young women using contraceptives and condoms were more likely to do HIV tests than women not using these preventive methods. Our finding was consistent with other studies that associated condom usage with increased HIV testing in partners [36]. In another study investigating the relationship between contraceptives and HIV uptake in four SSA countries among women, Mozambique women using modern forms of contraceptives were more likely to do HIV tests, while Congo, Nigeria, and Uganda women did not demonstrate such positive association [37]. Another study suggested that consistent condom use reduces the likelihood of getting an HIV test [20]. However, that study did not provide much information to the existing literature.

Our study showed that young women's employment was positively associated with HIV testing. This is consistent with a review that showed employment to be positively associated with HIV testing, management, and medication adherence in Western Europe, the United States, and Canada [38]. Similar studies conducted in Africa also showed that employment positively contributes to HIV testing. However, various studies conducted in Africa and Asia showed that employed women had a lower chance of being tested for HIV/AIDS than those unemployed [39]. Differences in results may be due to the type of occupation.

## Strengths and limitations

Like all other survey data, it is imperative to acknowledge a set of study limitations. Firstly, our study variables were limited to those collected by MDHS. Therefore, cultural and traditional beliefs that would better explain the differences in HIV testing and other social factors were not described. However, the variables collected by MDHS are very significant in determining HIV testing factors. Secondly, since data was obtained from the participants by self-reporting, it is substantive to be report bias. However, our results tallied with several cross-sectional data of such nature, making our estimates unlikely to be subjected to bias error. Thirdly, the factors influencing HIV testing cannot draw a causal inference since MDHS data are cross-sectional. Finally, not all households and young women were interviewed, despite the MDHS sample design being representative of the national Malawi population.

Additionally, there was a more than 90% response rate of women, including young women. Further studies are needed to establish cultural and traditional beliefs, and other associated factors. Despite the limitations, our findings of HIV testing among young women aged 15-24 years can be generalized to the entire country.

## Conclusion

Available evidence showed that adolescent girls and women exhibit a disproportionate HIV burden, representing two of three new infections occurring every day globally [40]. There is a substantial need to strengthen HIV testing uptake among this population to achieve the 90-90-90 UNAIDS targets in irradiating the AIDS epidemic by 2030. Our findings highlight possible targets for Malawi policy-makers. Adolescents (aged 15-19) living in rural areas, husbands' educational level, and media exposure are fundamental in HIV testing uptake among Malawi's young women. Therefore, targeting young women (aged 15-19) living in rural areas and increasing access to media would promote HIV uptake among young women and other groups. Our study indicates that additional robust strategies need to be implemented to increase HIV testing among young women in Malawi. Future

studies should focus on specific reasons for low HIV testing uptake among young women in rural Malawi and motivating factors for HIV testing.

## Conflict of interest

The authors declare no conflict of interest.

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