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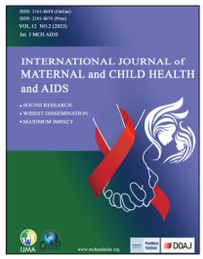

ORIGINAL ARTICLE *WOMEN'S HEALTH*

HIV Testing, Household and Reproductive Health Decision-Making: The Role of Women Autonomy in a Nationally Representative Study in Cambodia

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ABSTRACT

Background and Objective: Women's autonomy plays a critical role in decision-making of health service use. This study aims to evaluate the relationship between Human Immunodeficiency Virus (HIV) testing and decision-making autonomy among Cambodian women aged 15–49.

Methods: We used data from the 2021–2022 Cambodia Demographic and Health Survey (DHS) and our sample consisted of currently married/cohabiting women aged 15–49 (N = 13,755). The outcome variable was "ever been tested for HIV." Covariates were household decision-making and reproductive health decision-making scores, socio-demographic characteristics (age, place of residency, education, wealth quintiles, and employment status), and HIV knowledge (HIV self-test kits, drugs to prevent HIV in babies during pregnancy, antiretroviral [ARV] drugs, and pre-exposure prophylaxis).

Results: Sixty-one percent of studied women reported ever being tested for HIV. The logistic regression results revealed that women with a higher household decision-making score (aOR = 2.09, $p < 0.001$), reproductive health decision-making score (aOR = 1.72, $p < 0.001$), from 25 to 29 age groups (aOR = 2.21, $p < 0.001$), with a higher education (aOR = 1.96, $p = 0.001$), from the richest groups (aOR = 1.73, $p < 0.001$), had knowledge of HIV test kits but never get tested (aOR = 1.38, $p = 0.035$), heard of drugs to avoid HIV transmission to babies during pregnancy (aOR = 1.21, $p < 0.001$), and heard of ARV drugs (aOR = 1.28, $p < 0.001$) were more likely to get tested for HIV than their counterparts. Women living in rural areas (aOR = 0.56, $p < 0.001$) and those who had discriminatory attitudes (aOR = 0.76, $p = < 0.001$) were less likely to get HIV tests than those in urban areas and those without discrimination.

Conclusion and Global Health Implications: Findings revealed that greater autonomy is important for health care use, particularly HIV testing for women in Cambodia.

Keywords: Cambodia, Decision-Making, HIV Testing, Personal Autonomy, Women's Health

INTRODUCTION

Background of the Study

Human Immunodeficiency Virus (HIV)/Acquired Immuno-Deficiency Syndrome (AIDS) remains a global public health challenge. About 40 million people are living with HIV/AIDS (PLWHA) in 2023, of which 1.3 million are newly acquired cases.[1] Women and girls accounted

for 73% (29 million) of the PLHIV and 44% (572,000) of all new HIV infections. [1] In response to the alarmingly high rates of HIV infections worldwide, the Joint United Nations Programme on HIV/AIDS (UNAIDS) set three 95 targets to end the AIDS epidemic by 2030. The three 95 targets aim to diagnose 95% of all HIV-positive individuals, provide antiretroviral (ARV) therapy for 95% of those diagnosed, and achieve viral suppression for 95% of those treated by 2030.[2] Among the world regions, Southeast Asia (SEA) is home to the second largest burden of HIV, with 6.5 million PLWHA and 300,000 new cases in 2022. [1] Among SEA countries, Cambodia is one of the many countries that has a considerable HIV prevalence and has many challenges despite tremendous efforts to meet the three 95 targets.

In 2022, an estimated 74,000 adults aged 15 and older in Cambodia were PLHIV, of which about 50% (36,000) were women.[1] Almost 500 new cases were seen among Cambodian women.[1] Many of these women contracted HIV from their spouses, who enjoyed condomless extramarital sexual intercourse with their wives.[3] Given that the majority of these women are of reproductive age, they could be the main drivers of pediatric HIV.[3] Therefore, early HIV testing is urgently needed as it is the gateway to early diagnosis and treatment, which leads to achieving undetectable and un-transmittable (U=U) viral loads.[4,5] Currently, 86% of PLHIV in Cambodia are aware of their HIV status.[6] However, in 2022, Cambodia's National Demographic and Health Survey (DHS) reported that more than half (53%) of Cambodian women surveyed have never been tested for HIV.[7] It has been suggested that one of the reasons for not getting a test could be limited or lack of decision-making authority autonomy of the women.[8]

Women's autonomy includes access to and control over resources, participation in household-level economic decisions, mobility, freedom from domestic violence, and freedom to act independently.[9] Although some studies in Sub-Saharan African countries[10,11,12] and Nepal[13] have evaluated the relationship between HIV testing and women's autonomy, there is no literature on HIV testing and decision-making autonomy specific to Cambodia. Most of the available studies in SEA evaluated the influence of women's household decision-making autonomy over maternal health and other reproductive outcomes; for example, some studies explored the relationship between women's household decision-making autonomy and service utilization in Bangladesh,[14,15] Nepal,[16] Indonesia,[17] safer sex negotiation in Cambodia,[18] and use of contraception among Cambodian women.[19]

Objectives of the Study

This study aims to evaluate the relationship between HIV testing and Cambodian women's household decision-making autonomy and reproductive health decision-making autonomy. The specific aims are as follows:

Specific aims

1. To describe the socio-demographic characteristics of married/cohabiting women in Cambodia.
2. To evaluate the influence of household and reproductive health decision-making on HIV testing among married/cohabiting women in Cambodia.
3. To assess the relationship between HIV-related knowledge, including self-test kits and ARVs and HIV testing among married/cohabiting women in Cambodia.

METHODS

This study used the women's data (Total N = 19,496) of Cambodia's DHS (2021–2022). The main eligibility criteria were currently married/cohabiting, non-pregnant women. Of the total women survey, we excluded never married (N = 4,616) and formerly married (N = 1,125) women, leaving our final sample of currently married/cohabiting non-pregnant women to be 13,755 [Figure 1].[7] Cambodia's DHS used a two-stage stratified random sampling methodology: the first stage being at the cluster level and the second stage at the household level.[7] Cambodia's DHS received ethical approval from the Institutional Review Board (IRB) of Inner-City Fund (ICF) International.[20] This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STOBE) guidelines for observational cross-sectional studies.

Study Variables

Outcome variable

The outcome variable was if the respondent has "ever been tested for HIV." It is a dichotomous variable (No = 0, Yes = 1).

Covariates

Socio-demographic variables

The socio-demographic variables included age groups (15–18, 19–24, 25–29, 30–34, 35–39, 40–44, 45–49), place of residency (urban/rural), education level (no education, primary, secondary, and higher), wealth index (poorest, poorer, middle, richer, and richest), and employment status (no employment, worked in the last 12 months, currently working, have a job but on leave for the last 7 days). The

Table 1: Socio-demographic characteristics, HIV-related knowledge and discriminatory attitude, and decision-making autonomy of Cambodian women currently married/cohabiting with a partner.

Socio-demographic characteristics (N = 13,755)	*N*	%
Age groups		
15–19	409	2.48
20–24	1,563	10.26
25–29	2,499	17.53
30–34	2,814	21.05
35–39	2,843	21.51
40–44	2,243	16.76
45–49	1,384	10.41
Place of residency		
Urban	4,678	40.05
Rural	9,077	59.95
Education level		
No education	2,345	14.03
Primary	6,314	45.06
Secondary	4,529	35.73
Higher	567	5.18
Household wealth quintile		
Poorest	3,723	18.76
Poorer	2,459	18.09
Middle	2,636	19.67
Richer	2,750	21.65
Richest	2,187	21.82
Employment status		
No employment	2,996	21.34
In the past year	1,418	9.8
Currently working	9,082	67.02
Have a job but on leave last 7 days	259	1.83
Household decision-making score		
Score 0	659	4.51
Score 1	342	2
Score 2	901	5.74
Score 3	11,853	87.76
Decision-making score on reproductive health		
Score 0	979	6.37
Score 1	2,337	15.84
Score 2	10,439	77.79
Respondents had heard about HIV or AIDS		
No	533	2.95
Yes	13,222	97.05
Ever been tested for HIV if heard about HIV or AIDS		
No	5,386	37.03
Yes	7,836	62.97
HIV-related variables (N = 13,222)		
Knowledge and use of HIV self-test kits		
Never heard of HIV self-test kits	12,647	95.19
Have tested	56	0.5
Knows test kit but never get tested	519	4.31
Heard of drugs to avoid HIV transmission to babies during pregnancy		
No	5,070	34.39
Yes	8,152	65.61
Heard of antiretroviral (ARV) drugs to treat HIV		
No	4,613	29.75
Yes	8,609	70.25
Knowledge and attitude to pre-exposure prophylaxis (PrEP) to prevent getting HIV		
Haven't heard about PrEP	10,872	79.13
Heard and approved to take it every day	2,014	18.44
Heard but do not approve of taking it every day	257	1.85
Heard but not sure about approving it	79	0.59
Discriminatory attitude		
No discrimination	9,217	73.97
Discrimination exists	4,005	26.03

Note: HIV-related knowledge and discriminatory attitude questions are asked only if the respondents reported they heard about HIV or AIDS (*N* = 13,222).

wealth index is a composite measure that is calculated based on selected consumable households' assets (e.g., electricity, television, radio, bicycles, housing construction materials, including roofing and flooring, drinking water, and sanitation facilities).[21]

HIV-related knowledge variables

This study used the screening question, "Have you heard about HIV or AIDS (No = 0, Yes = 1)". If the respondents reported yes, then the following HIV-related knowledge questions were asked: (a) knowledge about drugs to avoid HIV transmission to babies during pregnancy (No = 0, Yes = 1), (b) knowledge of and attitude towards pre-exposure prophylaxis (PrEP) for HIV prevention (haven't heard, heard and approved to take it every day, heard but do not approve to take it every day, heard but not sure about approving it), (c) knowledge and use of HIV self-test kits (i.e., never heard, have tested, knows self-test kit but never

got tested), and (d) heard of ARV drugs to treat HIV (No = 0, Yes = 1). We also included the discriminatory attitude of the respondents, which was created from two scenarios: (a) would buy vegetables from a vendor with HIV and (b) children with HIV should be allowed to attend school with children without HIV. These two scenarios are in line with the UNAIDS Global AIDS Monitoring (GAM) indicator 6.1 on discriminatory attitudes.[22] If a respondent answered no/don't know/not sure/depends on either of the questions, it was recoded as zero. If the respondent answered yes to both questions, it was recoded as one.

Women's decision-making variables

The women's decision-making variables were (a) respondents' household decision-making authority and (b) respondents' reproductive health decision-making authorities.[23] The household decision-making authority was created based on three scenarios: decision-making on (a) own health care, (b) large household purchases, and (c) visits to family or relatives. The original responses were decision-making (a) alone, (b) joint (herself and her partner), (c) by partner only, and (d) by others. We assigned a score of one to those who responded that the decision was made (a) alone or (b) joint and assigned zero for other responses. Similarly, the women's reproductive health decision-making score was created based on two scenarios: whether the respondent has a say (a) to refuse sex and (b) to use a condom. We assigned one to those who reported yes to either one of these scenarios and zero to those who reported no to both scenarios.

Statistical Analysis

We performed descriptive statistics to describe the frequency and percentage included variables. We applied Pearson's Chi-squared (X^2) test of independence to observe the relationship between the outcome variable and covariates. We also assessed the correlation of two decision-making score variables to observe the strength and the direction between them by using Pearson's correlation test. To predict the relationship between HIV testing and women's autonomy, we conducted multivariable logistic regressions controlling other covariates that showed a significant relationship with the outcome variable (i.e., p-value < 0.05 in the bivariate analysis). We reported adjusted odds ratios (aOR) and 95% confidence intervals (CI) and applied a significant level of p-value < 0.05. Missing data were not included in the analyses. We also checked multicollinearity among independent variables using the "collin" command. All the analyses applied survey weights and used "svy" and "svyset" commands by using Stata 18.0.[24]

The ICF's IRB approved the original study.[25]

RESULTS

Prevalence of Included Variables

Table 1 presents the prevalence of included variables. A higher percentage of HIV testing was observed in the women aged 35–39 group (22%), rural residents (56%), with primary education (45%), from the richest wealth quintile groups (22%), and with current employment (67%) compared to those who were aged 18–24, urban residents, from the lowest wealth quintile groups, and those who were not currently employed. About 88% reported having household decision-making autonomy in all scenarios, and 78% reported having decision-making autonomy on reproductive health-related issues. More than half (63%) reported ever being tested for HIV. Almost all (97%) had heard about HIV or AIDS. Of them, almost all (95%) had never heard about HIV self-test kits, 66% had heard about drugs to avoid HIV transmission to babies during pregnancy, and 70% had heard about ARV drugs to treat HIV. However, about 79% have never heard about PrEP, and about 26% of the studied women had a discriminatory attitude towards PLHIV.

Results from Bivariate Analyses

The results from Pearson's X^2 bivariate analyses [Table 2] demonstrated a significant relationship between HIV testing and socio-demographic variables (age groups, place of residency, education level, household wealth quintile, and employment status) and decision-making scores (household decision-making score and reproductive health decision-making scores) (all $p < 0.001$). Moreover, the results revealed a significant relationship between HIV testing and HIV knowledge variables: knowledge and use of HIV self-test kits ($p = 0.001$), heard of drugs to prevent HIV transmission to babies during pregnancy ($p < 0.001$), and had heard about ARV ($p < 0.001$), knowledge and attitude towards PrEP to prevent HIV prevention ($p = 0.002$), and discriminatory attitude ($p < 0.001$). The results from Pearson's correlation test also revealed that the household decision-making score and the reproductive decision-making score are positively correlated (correlation coefficient [r] = 0.76, $p < 0.001$).

Multivariable Logistic Regression Results

Socio-demographic characteristics

The results from the multivariable logistics regressions are presented in Table 3. The findings revealed that women

Table 2: Results of Pearson Chi² test of independents (outcome = ever been tested for HIV).

	No = 5,919	Yes = 7,836	*N* = 13,755		
	N (%)	*N* (%)	*N* (%)	X^2	p-value
Age groups					
15–19	213 (3.08)	196 (2.11)	409 (2.48)	1198.86	<0.001
20–24	562 (8.91)	1,001 (11.12)	1,563 (10.26)		
25–29	712 (11.21)	1,787 (21.55)	2,499 (17.53)		
30–34	887 (14.87)	1,927 (24.98)	2,814 (21.05)		
35–39	1,201 (20.11)	1,642 (22.4)	2,843 (21.51)		
40–44	1,306 (22.94)	937 (12.83)	2,243 (16.76)		
45–49	1,038 (18.89)	346 (5.01)	1,384 (10.41)		
Place of residency					
Urban	1,439 (27.53)	3,239 (48.02)	4,678 (40.05)	571.74	<0.001
Rural	4,480 (72.47)	4,597 (51.98)	9,077 (59.95)		
Education level					
No education	1,544 (21.31)	801 (9.4)	2,345 (14.03)	815.94	<0.001
Primary	2,921 (51.05)	3,393 (41.25)	6,314 (45.06)		
Secondary	1,360 (25.55)	3,169 (42.21)	4,529 (35.73)		
Higher	94 (2.09)	473 (7.14)	567 (5.18)		
Household wealth quintile					
Poorest	2,094 (25.08)	1,629 (14.74)	3,723 (18.76)	644.76	<0.001
Poorer	1,136 (21.42)	1,323 (15.97)	2,459 (18.09)		
Middle	1,148 (22.09)	1,488 (18.14)	2,636 (19.67)		
Richer	978 (18.89)	1,772 (23.4)	2,750 (21.65)		
Richest	563 (12.51)	1,624 (27.75)	2,187 (21.82)		
Employment status					
No employment	1,269 (22.67)	1,727 (20.5)	2,996 (21.34)	29.06	<0.001
In the past year	633 (10.26)	785 (9.51)	1418 (9.8)		
Currently working	3,942 (65.86)	5,140 (67.77)	9,082 (67.02)		
Have a job but on leave last 7 days	75 (1.21)	184 (2.22)	259 (1.83)		
Household decision-making score					
Score 0	335 (6.16)	324 (3.46)	659 (4.51)	66.34	<0.001
Score 1	148 (2.15)	194 (1.9)	342 (2)		
Score 2	413 (4.86)	488 (6.29)	901 (5.74)		
Score 3	5,023 (86.83)	6,830 (88.35)	11,853 (87.76)		
Decision-making score on reproductive health issues					
Score 0	643 (9.84)	336 (4.17)	979 (6.37)	214.93	<0.001
Score 1	1,124 (17.66)	1,213 (14.68)	2,337 (15.84)		
Score 2	4,152 (72.5)	6,287 (81.15)	10,439 (77.79)		
HIV related variables	*N* = 5,386	*N* = 7,836	*N* = 13,222		
Knowledge and use of HIV self-test kits					
Never heard of HIV self-test kits	5,229 (35.93)	7,418 (59.26)	12,647 (95.19)	57.89	<0.001
Have tested	14 (0.1)	42 (0.39)	56 (0.5)		
Knows test kit but never get tested	143 (1)	376 (3.32)	519 (4.31)		

(Continued)

	No = 5,919	Yes = 7,836	*N* = 13,755		
	N (%)	*N* (%)	*N* (%)	X^2	p-value
Heard of drugs to avoid HIV transmission to babies during pregnancy					
No	2499 (14.82)	2,571 (19.56)	5,070 (24.67)	109.86	<0.001
Yes	2,887 (22.21)	5,265 (43.41)	8,152 (65.61)		
Heard of antiretroviral(ARV) drugs to treat HIV					
No	2,249 (13.06)	2,364 (16.69)	4,613 (29.75)	112.82	<0.001
Yes	3,137 (23.97)	5,472 (46.28)	8,609 (70.25)		
Knowledge and attitude to pre-exposure prophylaxis (PrEP) to prevent getting HIV					
Haven't heard about PrEP	4,522 (29.94)	6,350 (49.19)	10,872 (79.13)	26.26	0.002
Heard and approved to take it every day	712 (6.06)	1,302 (12.38)	2,014 (18.44)		
Heard but do not approve of taking it every day	114 (0.76)	143 (1.09)	257 (1.85)		
Heard but not sure about approving it	38 (0.28)	41 (0.31)	79 (0.59)		
Discriminatory attitude					
No discrimination	3,275 (66.43)	5,942 (78.41)	9,217 (73.97)	229.67	<0.001
Discrimination exists	2,111 (33.57)	1,894 (21.59)	4,005 (26.03)		

Note: HIV-related knowledge and discriminatory attitude questions are asked only if the respondents reported they heard about HIV or AIDS (*N* = 13,222).

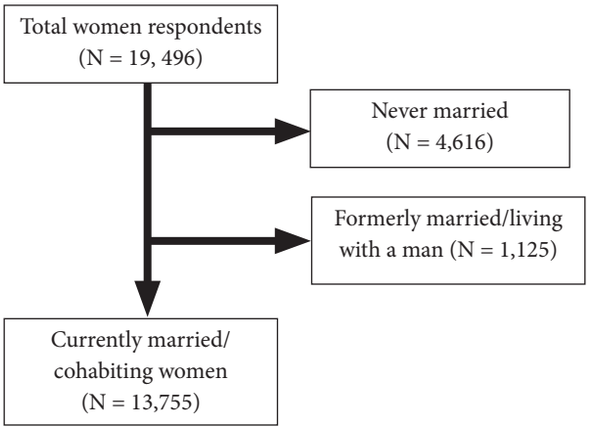

Figure 1: Sample size flow diagram.

aged 25–29 were more than twice as likely to get an HIV test (aOR = 2.21, 95% CI = 1.59, 3.07) than those who were aged 15–18. Additionally, women in rural Cambodia were less likely to get tested for HIV than those in urban areas (aOR = 0.59, 95% CI = 0.48–0.64).

Some of the education and wealth quintiles also illustrated a significant relationship. The results revealed that the women with higher education were more likely to get HIV tests (aOR = 1.96, 95% CI = 1.35, 2.69) compared to those without formal education. Similarly, significant positive relationships between HIV test and the women from the two wealth quintile groups were observed: women from the richer (aOR = 1.42, 95% CI = 1.08, 1.86) and the richest groups (aOR = 2.24, 95% CI = 1.54, 3.26). Interestingly, the women in current employment were less likely to get tested for HIV (aOR = 0.86, 95% CI = 0.76, 0.98) than those who were unemployed.

Main variable (dependent or outcome) results

Women's decision-making score ranges from zero to three. Women who reported at least one household decision-making score (aOR = 1.88, 95% CI = 1.371, 2.59) and reproductive health decision-making score (aOR = 1.76, 95% CI = 1.36, 2.18) were more likely to get tested for HIV compared to those without.

HIV-related variable(s) (covariates) results

Women having knowledge of HIV self-test kits but never being tested for HIV (aOR = 1.38, 95% CI = 1.02, 1.85), those who heard about the drugs to avoid HIV transmission to babies during pregnancy (aOR = 1.21, 95% CI = 1.08, 1.37), and those who heard about ARVs (aOR = 1.28, 95% CI = 1.14, 1.44) were more likely to get tested for HIV than those who did not have such knowledge. Conversely, women who had a discriminatory attitude towards people with HIV/AIDS were less likely to get tested for HIV than those who did not (aOR = 0.76, 95% CI = 0.67, 0.85).

Multicollinearity Results

The results from multicollinearity analysis among covariates showed that the multicollinearity in this model may not be an issue (conditional number without intercept = 3.245).

Table 3: Results of multivariable logistic regression.

Outcome: Ever been tested for HIV (*N* = 13,222)	**aOR (95% CI)**
Household decision-making (self or joint with the respondent partner)	
Score 0 = No decision-making at all	Ref
Score 1	1.88 (1.37, 2.59)***
Score 2	2.09 (1.51, 2.92)***
Score 3	1.74 (1.37, 2.21)***
Reproductive health decision-making	
Score 0 = No decision-making at all	Ref
Score 1	1.72 (1.36, 2.18)***
Score 2	1.72 (1.39, 2.13)***
Age groups	
15–19	Ref
20–24	1.76 (1.27, 2.46)***
25–29	2.21 (1.59, 3.07)***
30–34	1.91 (1.38, 2.64)***
35–39	1.34 (0.98, 1.85)
40–44	0.69 (0.49, 0.95)*
45–49	0.32 (0.22, 0.45)***
Place of residency	
Urban	Ref
Rural	0.56 (0.48, 0.64)***
Education level	
No education	Ref
Primary	1.31 (1.14, 1.53)***
Secondary	1.74 (1.49, 2.05)***
Higher	1.96 (1.35, 2.69)***
Household wealth quintiles	
Poorest	Ref
Poorer	1.07 (0.92, 1.25)
Middle	1.05 (0.89, 1.25)
Richer	1.23 (1.03, 1.47)*
Richest	1.73 (1.37, 2.19)***
Employment status	
No	Ref
Yes, in the past year	1.02 (0.86, 1.22)
Currently working	0.86 (0.76, 0.98)*
Have a job, but on leave last 7 days	1.63 (1.103, 2.41)*
Knowledge and use of HIV self-test kits	
Never heard of HIV test kits	Ref
Has tested with HIV test kits	1.48 (0.56, 3.87)
Knows test kits but never tested with them	1.38 (1.02, 1.85)*
Heard of drugs to avoid HIV transmission to babies during pregnancy	
No	Ref
Yes	1.21 (1.08, 1.37)***
Heard of ARVs to treat HIV	
No	Ref
Yes	1.28 (1.14, 1.44)***
Knowledge and attitude to pre-exposure prophylaxis (PrEP) to prevent HIV	
Haven't heard about it	Ref
Heard and approved to take it every day	1.03 (0.86, 1.23)
Heard, but don't approve of taking it every day	1.03 (0.76, 1.403)
Heard, but not sure about approving its use	0.87 (0.55, 1.36)
Discriminatory attitude	
No discrimination	Ref
Discriminatory attitude exists	0.76 (0.67, 0.85)***
_cons	0.358 (0.22, 0.58)***

Note: *denotes *p*-value < 0.05; ***denotes *p*-value < 0.001. CI: Confidence interval, aOR: Adjusted odds ratio.

DISCUSSION

The present study aimed to evaluate the relationship between HIV testing and decision-making autonomy among married/cohabiting Cambodian women. As consistent with the findings from a previous study, this study found that Cambodian women with any household decision-making autonomy were more likely to get tested for HIV than their counterparts, highlighting that women's decision-making plays an important role in health service utilization.[10]

Our findings on the significant relationship between HIV testing and those who had reproductive health decision-making is a novel finding. Although a study in Cambodia by Ung et al. (2014) reported that refusal of sexual activity and autonomy have a positive relationship, their study did not research HIV testing.[18] Another prior qualitative study conducted by Webber and colleagues in Cambodia reported that using condoms in the marital relationship could raise distrust issues from their husbands, and thus the women did not ask for it, jeopardizing women's health as they can contract sexually transmitted diseases.[26] Moreover, our findings on the positive correlation between household decision-making and reproductive health decision-making suggested that one decision-making autonomy could influence the other; this is consistent with the finding from another study in Cambodia that revealed that the women

who had full decision-making power were more likely to refuse sex.[18] Similarly, Seidu and colleagues found that women with medium and high levels of household decision-making authority were more likely to have safer sex practices than those who did not, which supported the present study's findings.[10]

Our finding that, when compared to women aged from 15-19 women aged 25–34 were more likely to get HIV tests and those aged 45–49 were less likely to get tested for HIV may need to explore cultural-specific reasons in the Cambodian context. However, our findings were inconsistent with the findings from a study in Kenya in which the women aged 20–29 were more likely to get HIV tests and those from age groups 30–49 were less likely to get HIV tests.[5] Both studies suggest that older age groups were less likely to get an HIV test; perhaps the women in the 45–49 age group may have considered no or low HIV risk, which requires further studies. In view of this finding, it might be beneficial to evaluate a trend of HIV testing prevalence among women aged 45–49 or research the potential reasons. Also, the finding that rural women residents were less likely to get tested for HIV when compared to their urban counterparts is consistent with the findings from a previous multicounty study,[27] and highlights the need for urgent research specifically on the awareness, availability, and accessibility of HIV testing services in rural areas.

Our findings regarding women with some education levels and women in the wealthier groups were consistent with previous findings.[27,28] The current study's finding that women with some education levels were more likely to get tested for HIV than those who had no formal education also highlighted a need to review the current HIV testing strategies to reach women with no formal education. Also, the findings that women from wealthier groups were more likely to get tested for HIV are interesting, especially if the HIV testing services were free then there should not be a problem for women in the poorest group to access them. However, further studies are required to understand this discrepancy. Future research could explore obstacles for women in the poorest and less educated groups to address ending HIV/AIDS and health inequity gaps. Furthermore, women who had current employment were less likely to get HIV testing, demonstrating that the women in employment may have obstacles finding time to go for an HIV test or may even be avoiding regular/routine HIV testing centers. This finding requires future studies.

Our findings on the significant relationship between HIV testing and HIV-related knowledge such as knowledge and use of HIV self-test kits, hearing of drugs to avoid HIV transmission to babies during pregnancy, and hearing of ARVs to treat HIV were novel findings. Although Cambodia's Ministry of Health's National Center for HIV/AIDS implemented HIV self-testing among high-risk populations such as transgender women, people who inject drugs, and people involved in prostitution, it would be beneficial if it were expanded to the general women population.[6] Moreover, the finding that those who had discriminatory attitudes were less likely to get tested for HIV than those who did not also suggest that activities that aim at reducing discrimination could improve the HIV testing situation. Although it is not exactly the same, this finding aligns with a previous study in which the women who never got tested for HIV exhibited a more discriminatory attitude towards people with HIV.[29]

Data Availability

The data for this study was publicly available at https://dhsprogram.com/data/ upon free registration.

Strengths and Limitations of the Study

The strength of this study was the use of the most recent and nationally representative dataset of Cambodia, the inclusion of the important decision-making variables, and HIV-related knowledge such as HIV self-test kits and ARVs. However, this study has some limitations. First, there could be a socially desirable bias as we used the self-reported data. Second, caution must be taken when interpreting the causal relationship as we used cross-sectional data. Third, the HIV-related knowledge questions such as HIV transmission and misconceptions were not included in our study as it only asked for women aged 24 and above, which is not the focus of this study.

CONCLUSION AND GLOBAL HEALTH IMPLICATIONS

To end the HIV epidemic, it is critical that everyone must have access to information and services related to HIV knowledge, testing, and anti-retroviral drugs. The country's current strategies and programs should be reviewed to ensure that women, especially those who are poorer and less educated, have access to HIV-related information and services and be able to make decisions about their own health. The findings from this study clearly demonstrated that women still need to have control over the important decisions that impact them such as the use of available HIV preventive services.

Key Messages

1. In Cambodia, women with decision-making autonomy have more likelihood of getting a human immunodeficiency virus test than those who do not have one. 2. Cambodian women

who had awareness of human immunodeficiency virus self-test kits, although they had never been tested before, were more likely to get tested than those who were not. 3. Women with knowledge related to antiretroviral drugs or drugs to prevent human immunodeficiency virus transmission to babies during pregnancy were more likely to get tested for human immunodeficiency virus than those who did not have such knowledge.

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COMPLIANCE WITH ETHICAL STANDARDS

Conflicts of Interest: The authors declare no competing interests. **Financial Disclosure:** Nothing to declare. **Funding/Support:** There was no funding for this study. **Ethics Approval:** For this study, we used de-identified secondary data, which are available in the public domain, and therefore the ethical review was not required. **Declaration of Patient Consent:** Patient's consent not required as there are no patients in this study. **Use of Artificial Intelligence (AI)-Assisted Technology for Manuscript Preparation:** The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI. **Disclaimer:** None.

REFERENCES

1. Joint United Nations Programme on HIV/AIDS. World AIDS day 2023: Fact sheet; 2023 [cited 2024 May 23]. Available from: https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf.
2. Joint United Nations Programme on HIV/AIDS. 2025 AIDS targets: UNAIDS; 2015 [cited 2024 May 23]. Available from: https://www.unaids.org/sites/default/files/2025-AIDS-Targets_en.pdf.
3. Yang Y, Thai S. Sociocultural influences on the transmission of HIV from husbands to wives in Cambodia: The male point of view. Am J Mens Health. 2017 Jul;11(4):845–54.
4. National Institute of Allergy and Infectious Diseases. HIV undetectable=untransmittable (U=U), or treatment as prevention; 2019 [cited 2024 May 23]. Available from: https://www.niaid.nih.gov/diseases-conditions/treatment-prevention.
5. Achia TNO, Obayo E. Trends and correlates of HIV testing amongst women: Lessons learnt from Kenya. Afr J Prim Health Care Fam Med. 2013 Sep 27;5(1):547.
6. Joint United Nations Programme on HIV/AIDS. Cambodia: Report prepared by the joint UN team on AIDS. Progress towards the fast-track targets Online: UNAIDS Aisa and Pacific; 2020 [cited 2024 May 23]. Available from: https://open.unaids.org/sites/default/files/documents/Cambodia_Country%20Report_2020_formatted_EN_1.pdf.
7. National Institute of Statistics (NIS) Cambodia, Ministry of Health (MoH) Cambodia, ICF. Cambodia demographic and health survey 2021–22 final report. Phnom Penh, Cambodia, and Rockville, Maryland, USA: NIS, MoH, and ICF; 2023.
8. Zegeye B, Idriss-Wheeler D, Ahinkorah BO, Ameyaw EK, Seidu AA, Adjei NK, et al. Association between women's household decision-making autonomy and health insurance enrollment in sub-saharan Africa. BMC Public Health. 2023 Mar 30;23(1):610.
9. Bloom SS, Wypij D, Das Gupta M. Dimensions of women's autonomy and the influence on maternal health care utilization in a north Indian city. Demography. 2001 Feb;38:67–78.
10. Seidu AA, Oduro JK, Ahinkorah BO, Budu E, Appiah F, Baatiema L, et al. Women's healthcare decision-making capacity and HIV testing in sub-Saharan Africa: A multi-country analysis of demographic and health surveys. BMC Public Health. 2020 Oct 22;20(1):1592.
11. Yaya S, Shibre G, Idriss-Wheeler D, Uthman OA. Women's empowerment and HIV testing uptake: A meta-analysis of demographic and health surveys from 33 sub-Saharan African countries. Int J MCH AIDS. 2020;9(3):274-286.
12. Kabir R, Alradie-Mohamed A, Ferdous N, Vinnakota D, Arafat SY, Mahmud I. Exploring women's decision-making power and HIV/AIDS prevention practices in South Africa. Int J Environ Res Public Health. 2022 Dec 10;19(24):16626.
13. Thapa R, Yang Y, Kang JH, Nho JH. Empowerment as a predictor of HIV testing among married women in Nepal. J Assoc Nurses AIDS Care. 2019 Sep-Oct;30(5):563–74.
14. Haider MR, Qureshi ZP, Khan MM. Effects of women's autonomy on maternal healthcare utilization in Bangladesh: Evidence from a national survey. Sex Reprod Healthc. 2017 Dec;14:40–7.
15. Ghose B, Feng D, Tang S, Yaya S, He Z, Udenigwe, et al. Women's decision-making autonomy and utilisation of maternal healthcare services: Results from the Bangladesh demographic and health survey. BMJ Open. 2017 Sep 7;7(9):e017142.
16. Adhikari R. Effect of women's autonomy on maternal health service utilization in Nepal: A cross sectional study. BMC Women's Health. 2016 May 13;16:1–7.
17. Rizkianti A, Afifah T, Saptarini I, Rakhmadi MF. Women's decision-making autonomy in the household and the use of maternal health services: An Indonesian case study. Midwifery. 2020 Nov;90:102816.
18. Ung M, Boateng GO, Armah FA, Amoyaw JA, Luginaah I, Kuuire V. Negotiation for safer sex among married women in Cambodia: The role of women's autonomy. J Biosoc Sci. 2014 Jan;46(1):90–106.
19. Rizvi F, Williams J, Hoban E. Factors influencing unintended pregnancies amongst adolescent girls and young women in Cambodia. Int J Environ Res Public Health. 2019 Oct 19;16(20):4006.
20. The Demographic Health Survey (DHS) Program. DHS methodology; n.d.[cited 2024 May 23]. Available from: https://dhsprogram.com/Methodology/Survey-Types/DHS-Methodology.cfm.
21. Rutstein SO, Johnson K. The DHS wealth index. Report; 2004.

22. Joint United Nations Programme on HIV/AIDS. Global AIDS monitoring 2018: Indicators for monitoring the 2016 United Nations Political Declaration on Ending AIDS; 2017.
23. Kishor S, Subaiya L. Understanding women's empowerment: A comparative analysis of demographic and health surveys (DHS) data. DHS Comparative Reports No. 20. Calverton, Maryland, USA: Macro International Inc.; 2008.
24. StataCorp. 2023. Stata statistical software: Release 18. College Station, TX: StataCorp LLC.
25. Demographic and Health Survey (DHS). Protecting the privacy of DHS survey respondents; n.d.[cited 2024 May 23]. Available from: https://dhsprogram.com/Methodology/Protecting-the-Privacy-of-DHS-Survey-Respondents.cfm.
26. Webber G, Edwards N, Amaratunga C, Graham ID, Keane V, Ros S. Knowledge and views regarding condom use among female garment factory workers in Cambodia. Southeast Asian J Trop Med Public Health. 2010 May;41:685–95.
27. Myint WW, Washburn DJ, Colwell B, Maddock JE. Determinants of HIV testing uptake among women (aged 15–49 years) in the Philippines, Myanmar, and Cambodia. Int J MCH AIDS. 2021;10(2):221–30.
28. Salazar-Austin N, Kulich M, Chingono A, Chariyalertsak S, Srithanaviboonchai K, Gray G, et al. Age-related differences in socio-demographic and behavioral determinants of HIV testing and counseling in HPTN 043/NIMH project. AIDS Behav. 2018 Feb;22(2):569–79.
29. Diress GA, Ahmed M, Linger M. Factors associated with discriminatory attitudes towards people living with HIV among adult population in Ethiopia: Analysis on Ethiopian demographic and health survey. SAHARA-J. 2020 Dec;17(1):38–44.

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