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Utilization of HIV-Related Services from the Private Health Sector:

A Multi-Country Analysis

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ABSTRACT

Increasing the participation of private health providers in the AIDS response will help to achieve the global goal of "universal access to comprehensive HIV prevention, treatment, care and support". Yet little is known about the extent to which the private health sector is delivering HIV-related services. This study uses data from the Demographic and Health Surveys (DHS) and AIDS Indicators Surveys (AIS) from 12 countries in Africa, Asia, and Latin America and the Caribbean to explore use of HIV testing and STI care from the private for-profit sector, and its association with household wealth status.

The analysis indicates that the private for-profit health sector is active in HIV-related service delivery, although the level of participation varies by region and country. From 3 to 45 percent of women and 6 to 42 percent of men reported the private for-profit sector as their source of the most recent HIV testing. While in some countries use of the private for-profit health sector for HIV testing and STI care increases with wealth, in others the relationship is not clear, as there are no significant differences in using private for-profit HIV-related services between the rich and the poor. As the global AIDS response evolves from emergency relief to sustained country programs, broader consideration of the role of the private health sector may be warranted.

Key words: *HIV/AIDS, Services utilization, Private health sector, Household wealth*

INTRODUCTION

The number of people infected by the human immunodeficiency virus (HIV) has grown significantly over the past two decades. By the end of 2008, an estimated 33.4 million people worldwide were living with HIV, while in 2008 alone 2.7 million people were newly infected with HIV and 2.0 million died from acquired immune deficiency syndrome (AIDS) (UNAIDS, 2009). The HIV/AIDS epidemic has generated tremendous demand for health services, and the burden on health care systems will grow as more HIV-positive individuals gain access to antiretroviral therapy (ART) and require regular health care to monitor progression of the disease.

In recent years the global AIDS response has expanded in both commitment to addressing the epidemic and level of funding. Globally, funding to HIV/AIDS has dramatically scaled up the AIDS response, saving an estimated 2.9 million lives through the provision of ART (UNAIDS, 2009). Major programmatic initiatives have included the President's Emergency Program for AIDS Relief (PEPFAR), the Global Fund to Fight AIDS, TB, and Malaria (GFATM), and the World Bank Multi-country AIDS Program (MAP).

The most significant share of resources for HIV in developing countries has gone to governments and non-governmental organizations (NGO). Most investments have focused on building the public sector's capacity to provide HIV-related services. While these efforts have greatly increased access to and the quality of essential health services, they have largely overlooked the private health sector. A 2004 study of Malawi, Mozambique, South Africa, and Swaziland found that a lack of human resources for health, rather than a lack of financial resources, was the main bottleneck to expanding access to ART (Kober & Van Damme, 2005). In light of public sector capacity constraints and the global goal of "universal access to

comprehensive HIV prevention, treatment, care and support" (United Nations General Assembly, 2006), increasing participation of private health providers may help address the current bottlenecks and expand access to HIV- related services.

The private sector provides a significant portion of health care (Berman & Laura, 1996; Hanson & Berman, 1998; Waters, Hatt & Peters, 2003). A study using DHS data from 19 sub–Saharan African countries found that an average of 32 percent of family planning users across the countries, and up to 51 percent in Gabon, reported a private sector source (Private Sector Partnerships-*One*, 2005). Private practitioners are also important health care providers in Asia. As of 2004, for example, the private sector accounted for 80 percent of all outpatient care and 60 percent of inpatient care in India (Over, 2009). In an urban squatter settlement in Karachi, Pakistan, the proportion of women visiting private facilities for antenatal care was much higher than the proportion visiting public facilities (Nisar & White, 2003).

There are various determinants of choosing services from the private health sector versus the public sector. Because monetary costs are comparatively higher in the private sector, socioeconomic status is usually believed to be associated with using private services, and a common concern is that the involvement of the private sector would cause inequity in service access. Some studies have found that seeking health care in the private sector is positively associated with household wealth status (Chakrabarti, 2007; Obermeyer & Potter, 1991). For example, a study in Afghanistan found that, after controlling for other factors, people in the richest quintile were 1.6 times more likely to utilize private providers for illness than those in the poorest quintile (Steinhardt 2008). Other studies have not found a clear pattern (Bhatia & Cleland, 2001; Makinen, Water & Rauch, 2000). Using DHS data, one analysis showed that in many African countries the poor also heavily relied on the private sector for curative child care

(Private Sector Partnerships –*One*, 2005). Despite the private sector's expanding role in the provision of other health services, there is limited knowledge on the extent to which it delivers HIV-related services (Arur, 2009; Ramchandani, 2007).

Understanding the private sector's role in serving different wealth segments of the population is important to assessing its potential in providing HIV-related services on a broad scale. The private sector offers several advantages over other types of facilities. Private health facilities not only are largely independent of government and donor financial support but also often offer more flexible hours of operation, making them more accessible. Private sector clients often perceive service quality and confidentiality to be superior to that of the public sector (Ron, Wang & Magvanjav, 2009; Sulzbach, Wang & O' Hanlon, 2009).

To further understand the role of the private sector in providing HIV/AIDS services and to help inform policy decisions, this study used data from nationally representative surveys to document the role of the private health sector in delivering HIV-related services and to assess the relationship between wealth status and preference for private providers.

METHODS

Data

The private health sector comprises both private for-profit and private not-for-profit entities. Earlier studies exploring the utilization of the private health sector largely combined both types of facilities (Brugha 2003). This study, however, focuses on the private for-profit subsector because there is very limited information about the extent to which it contributes to the AIDS response. Thus, references to the private sector below should be interpreted as the private for-profit sector.

Our analysis began with an extensive scan of publicly available and internationally comparable data with information on utilization of private sector HIV-related services. The scan revealed a scarcity of data on private provision of HIV services. Eventually, we identified two sources of data on utilization of private HIV and related services: the Demographic and Health Surveys (DHS) and AIDS Indicator Surveys (AIS). Other data sources do not capture the source of HIV services or do not distinguish between private for-profit and private not-for-profit facilities. Even the DHS and AIS contain only a limited number of variables related to HIV services. Given sensitivities about HIV status, neither DHS nor AIS ask respondents about HIV treatment. Two indicators of HIV-related services—HIV testing and STI care—contain detailed information on sources of care. Both surveys only recently began asking source of care; for example, DHS and AIS began asking source of HIV testing in 2004 and 2005, respectively.

We examined recent DHS and AIS data from all countries for which data are available to identify relevant variables that permit analysis of the utilization of HIV-related services provided by the private for-profit sector. Some recent DHS and AIS asked about source of HIV testing and STI care but did not distinguish between private for-profit and not-for-profit providers.

Eventually, we included in the analysis 12 countries: 9 from sub–Saharan Africa, 2 from Latin America and the Caribbean, and 1 from Asia. All countries selected for the study provided detailed data on sources of HIV testing for men and women. Four countries—Chad, Ethiopia, Guinea, and Rwanda—did not include sufficient information on source of STI care and thus were excluded from the relevant analysis.

Table 1 lists the DHS and AIS in the 12 countries studied. All surveys were conducted in 2004 or later. Eight countries had data from DHS and four countries had data from AIS.

Table 1. Summary of DHSs and AISs Included in the Analysis

Country	Year	Survey	Respondents
Africa Region			
Benin	2006	DHS	All women, age 15–49; all men, age 15–64
Chad	2004	DHS	All women, age 15–59; all men, age 15–59
Cote d'Ivoire	2005	AIS	All women, age 15–49; all men, age 15–49
Ethiopia	2005	DHS	All women, age 15–49; all men, age 15–59
Guinea	2005	DHS	All women, age 15–49; all men, age 15–59
Rwanda	2005	DHS	All women, age 15–49; all men, age 15–59
Tanzania	2007	AIS	All women, age 15–49; all men, age 15–49
Uganda	2006	DHS	All women, age 15–49; all men, age 15–54
Zimbabwe	2005	DHS	All women, age 15–49; all men, age 15–54
LAC Region			
Guyana	2005	AIS	All women, age 15–49; all men, age 15–49
Haiti	2005	DHS	All women, age 15–49; all men, age 15–59
Asian Region			
Vietnam	2005	AIS	All women, age 15–49; all men, age 15–59

Table 2 presents country-specific demographic data relevant to the analysis, providing a picture of the broader context for the 12 countries. All countries except Guyana are classified as low-income countries by the World Bank and have low levels of health expenditures. With the exception of Vietnam, all others are experiencing a generalized HIV epidemic.

Table 2. Selected Health and Demographic Data by Country

Country	Population (thousands)[1]	GDP per Capita (constant 2000 US$)[1]	HIV Prevalence Rate (percent)[2]	Physicians per 10,000 Population[1]	Private Expenditure as Percentage of Total Health Expenditure[3]
Africa Region					
Benin	9,025	328	1.2	0.4	46.7
Chad	10,764	260	3.5	0.4	64.4
Cote d'Ivoire	19,268	554	3.9	--	77.0
Ethiopia	79,087	174	2.1	0.3	39.6
Guinea	9,380	404	1.6	1.1	87.7
Rwanda	9,736	271	2.8	0.5	36.3
Tanzania	40,432	354	6.2	0.2	40.8
Uganda	30,916	324	5.4	0.8	73.1
Zimbabwe	13,403	428	15.3	1.6	47.4
LAC Region					
Guyana	739	1,062	2.5	4.8	15.5
Haiti	9,612	411	2.2	2.5	32.4
Asian Region					
Vietnam	85,155	617	0.5	5.6	67.6

[1] World Development Indicators, 2009.
[2] UNAIDS, 2008.
[3] World Health Organization, Statistical Information System, 2008.

Analysis

For HIV testing, the analysis centered on women and men who reported ever having an HIV test. The survey provided a list of options from which respondents selected the source of their most recent HIV test. According to the country context, we categorized the sources as public, private for-profit, NGO, and "other". In general, public providers included government hospitals, government health centers, public voluntary counseling and testing (VCT) centers, health posts, family planning clinics, and other government providers; private for-profit providers included private hospitals, private clinics, private health centers, and private stand-alone VCT centers; and

the NGO category included NGO health centers, clinics, and stand-alone VCT centers. When necessary, we consulted experts familiar with specific country health systems to ensure accurate classification.

The sample for the analysis of STI care included respondents seeking STI care among those reporting an STI or STI symptoms in the last 12 months. In DHS and AIS, respondents who had ever had sex were asked whether they had an STI in the past 12 months or whether they experienced STI symptoms, such as a genital sore or ulcer or genital discharges. Women and men who answered in the affirmative were asked if they sought advice and/or treatment. Care seekers were then asked the source of care, with reporting multiple sources allowed. The classification criteria for the four categories of sources aligned with those for source of HIV testing within the same country.

Typically, respondents reported a greater variety of sources for STI care than for HIV testing. For example, respondents commonly pointed to private pharmacies as a source for STI care but not for HIV testing. Respondents also reported traditional healers, relatives, and friends as sources of STI care. For consistency, we classified traditional healers as “private” and families, friends, and relatives as "other".

We conducted descriptive analysis to show the overall coverage of HIV testing and STI care, as well as the extent to which people utilized HIV testing services and STI care from the private sector. Then we used bivariate analysis to assess the unadjusted association, and multivariate logistic regression to assess the adjusted association, between household wealth status and use of the private sector for each service. In multivariate analysis, the dependent variable was using a private source for services; the primary independent variable of interest was

household wealth status. Other background variables such as age, educational attainment, marital status, urban/rural residence and religion were controlled in the analysis.

DHS and AIS collect data on a range of household assets and utility services and then develop a wealth index based on these variables by using principal components analysis (Filmer & Pritchett, 2001; Rustein & Johnson, 2004). The wealth index has been shown to be a more reliable socioeconomic proxy than income variables and other quantitative socioeconomic measures in developing countries (Khan, Hutchinson & Hotchkiss, 2007). This wealth index variable was used in the current analysis on the association between household wealth and private sector use.

Due to a very limited sample, some countries were excluded from the bivariate and multivariate analysis. For HIV testing, 10 countries—Benin, Cote d'Ivoire, Ethiopia, Rwanda, Tanzania, Uganda, Zimbabwe, Guyana, Haiti, and Vietnam—were included in the analysis. For STI care, we performed analysis for women in seven countries—Benin, Cote d'Ivoire, Tanzania, Uganda, Zimbabwe, Haiti, and Vietnam—and for men in five countries—Cote d'Ivoire, Tanzania, Uganda, Zimbabwe, and Haiti—where survey samples on private service use for STI care were of sufficient size.

We analyzed the data using STATA 10.0 Statistical Software and performed separate analyses for women and men. We accounted for complex DHS survey design to estimate efficient regression coefficients and applied sampling weights in all the analyses to enable us to generalize the results to the population. The sample weight variable was the pre-existing individual sampling weight in the DHS or AIS datasets.

RESULTS

This section first summarizes women and men's overall HIV testing, STI care, and reliance on the private sector for each health service. Second, we present the results of bivariate and multivariate analysis on the relationship between household wealth status and private sector utilization for each service.

Use of HIV testing and STI care from the private sector

Prevalence of prior HIV testing and private sector utilization

Knowledge of one's HIV status is critical to both prevention and treatment. Although global efforts have made HIV counseling and testing increasingly available, uptake of these services remains low.

Table 3 describes the overall utilization of HIV testing in the 12 study countries. Despite the higher prevalence of HIV in Africa compared with other regions, the rate of HIV testing in Africa is low to moderate. Ethiopia is noteworthy for having the lowest rate of HIV testing and relatively low HIV prevalence. Gender differences are evident but not consistent across the region. Compared with Africa, the two countries studied in Latin America and the Caribbean reported generally higher levels of HIV testing, despite relatively lower HIV prevalence, with levels of testing higher among women than men. Although Vietnam is the only country in the study classified as experiencing a concentrated epidemic (i.e., HIV prevalence is concentrated in high-risk populations), HIV infection appears to be expanding rapidly into the general population. Nevertheless, overall coverage of HIV testing remains low in Vietnam; only 5 percent of women and 6 percent of men reported ever receiving an HIV test.

Table 3. Percentage of Women and Men Who Ever Received an HIV Test

Country	Women (percent)	Men (percent)
Africa Region		
Benin	17.7	13.1
Chad	2.1	3.9
Cote D'Ivoire	12.6	9.6
Ethiopia	4.1	5.1
Guinea	2.5	6.6
Rwanda	24.0	20.9
Tanzania	40.9	29.2
Uganda	29.4	23.1
Zimbabwe	25.8	18.6
LAC Region		
Guyana	28.7	21.1
Haiti	18.3	10.5
Asia Region		
Vietnam	5.0	5.8

Table 4 presents the percentage of respondents, among those who have had HIV testing, receiving their most recent HIV test from a public, private, or NGO source. Table 4 omits the "other" category, which is applicable in only two countries in which more than 5 percent of people reported an HIV test provided by sources other than public, private, or NGO sources.

In all countries except Haiti, the majority of people received HIV testing at a public facility, while use of private services was generally low. In Africa the highest use of the private sector was among Ethiopian women and Chadian men, with 24 percent receiving an HIV test in a private facility, although overall utilization of HIV testing services was low in both countries.

In Haiti 45 percent of women and 42 percent of men turned to private providers for HIV testing, which was the highest level among all countries studied. Guyana also reported a high level of private sector use, at 18 percent of women and 30 percent of men, among those tested for

HIV. In Vietnam the public sector was the predominant source of HIV testing. Only 6 percent of women and 7 percent of men received HIV testing in the private sector.

Table 4. Percentage of Women and Men Undergoing Most Recent HIV Test, by Source

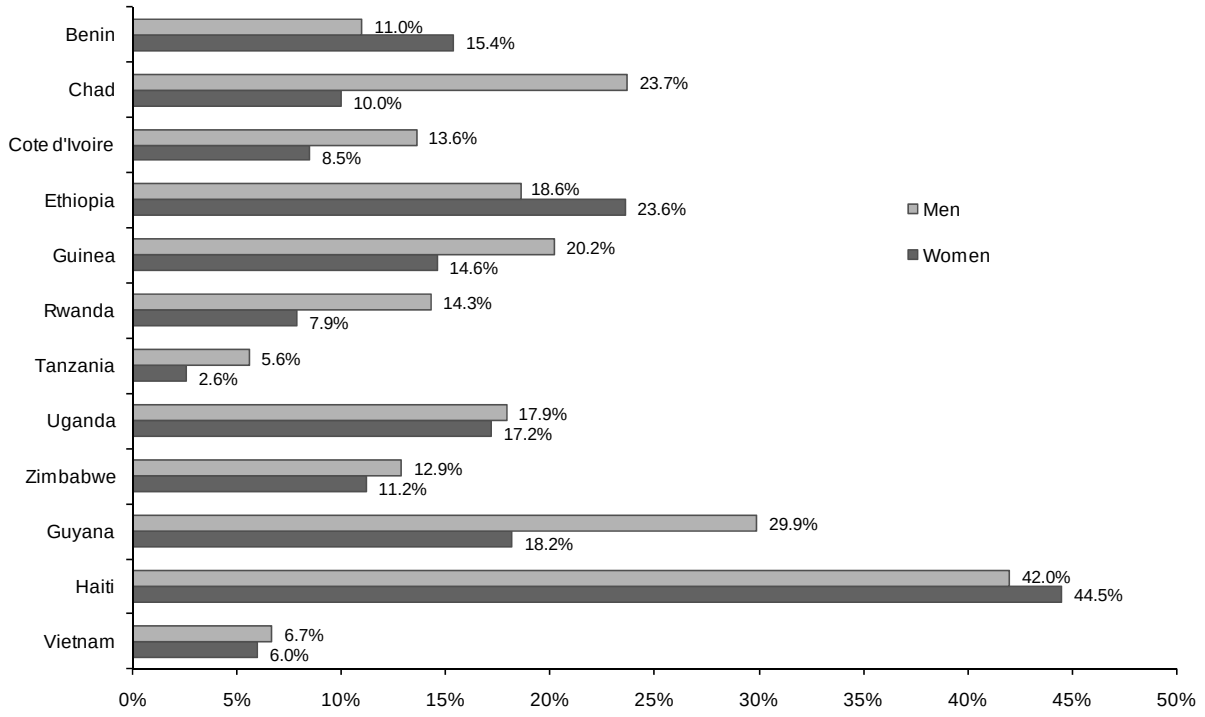
	Women				Men			
Country	Public Sector	Private Sector	NGO Sector	Total number of women ever received an HIV test	Public Sector	Private Sector	NGO Sector	Total number of men ever received an HIV test
Africa Region								
Benin	82.0	14.9	0.5	3,050	87.3	11.0	0.0	676
Chad[1]	44.7	10.0	0.0	200	64.2	23.7	0.0	127
Cote d'Ivoire	88.0	8.5	0.4	397	79.9	13.6	0.7	294
Ethiopia	67.8	23.6	5.1	469	71.8	18.6	6.0	435
Guinea[2]	53.0	14.6	0.0	152	71.1	20.2	0.0	186
Rwanda[3]	55.2	7.9	1.7	2,898	82.4	14.3	3.3	1,060
Tanzania[4]	34.3	2.6	20.0	3,443	54.1	5.6	40.0	1,960
Uganda	71.5	17.2	7.0	2,486	63.6	17.9	16.2	593
Zimbabwe	69.6	11.2	16.7	2,276	39.3	12.7	38.8	1,259
LAC Region								
Guyana[5]	39.4	18.2	12.2	774	50.8	29.9	13.7	441
Haiti	40.0	44.5	13.2	1,918	33.2	42.0	18.5	508
Asia Region								
Vietnam	94.0	6.0	0.0	585	92.9	6.7	0.0	603

[1] In Chad, 39 percent of women ever testing did not report the source of the last test.
[2] In Guinea, 27 percent of women ever testing did not report the source of the last test.
[3] In Rwanda, 35 percent of women ever testing did not report the source of the last test.
[4] In Tanzania, 42 percent of women ever testing did not report the source of the last test.
[5] In Guyana, 18 percent of women ever testing did not report the source of the last test.

Respondent's choice of provider varied by gender. Figure 1 shows that, except in Benin, Ethiopia, and Haiti, a higher proportion of men than women patronized the private sector instead of the public sector for HIV testing. Men also were more likely than women to receive HIV testing from NGO providers—for example, in Zimbabwe at 39 percent of men compared with 17

percent of women. Across most countries however, use of NGO services was low compared with private and public services (Table 4),

Figure 1. Percentage of Men and Women Who Had the Most Recent HIV Test in the Private Sector



STI care-seeking and private-sector utilization

Among the very low proportion of all respondents, especially men, who reported an STI or STI symptoms in last 12 months (usually less than 10%), a significant percentage sought advice or treatment from a provider (Table 5). In African countries with the exception of Ethiopia, at least half of men sought STI care, and nearly as high a proportion of women. Generally, in all studied countries except Guyana and Vietnam, higher percentages of men than women reported seeking STI care.

Table 5. Percentage of Population Seeking Care for STIs in Last 12 Months

Country	Women	Men
Africa Region		
Benin	48.5	83.1
Chad	63.7	87.9
Cote D'Ivoire	48.9	69.3
Ethiopia	36.6	42.6
Guinea	69.2	81.0
Rwanda	49.1	52.2
Tanzania	68.3	77.2
Uganda	67.1	80.5
Zimbabwe	63.8	72.5
LAC Region		
Guyana	53.8	29.1
Haiti	49.0	54.3
Asia Region		
Vietnam*	82.7	21.1

*In Vietnam, only 35 men reported an STI or STI symptoms in the last 12 months, and 7 reported that they sought care.

Table 6 shows the percentage of respondents seeking STI care from each type of provider in 8 of the 12 countries in our study. In the other four, Chad, Ethiopia, Rwanda, and Guinea, there was insufficient data for disaggregating private sources. (Data for responses such as family, friends, or relatives, which were classified as "other", are not presented in Table 6). Because respondents were allowed to report more than one source, the sum of the percentages in each country may exceed 100 percent.

Compared with HIV testing, respondents evidenced greater reliance on the private sector for STI care in all countries analyzed. In some countries, including Tanzania, Zimbabwe, and Vietnam, the public sector provided the largest share of STI care. In Benin, Uganda, Haiti, and Guyana, however, private care utilization was high, from 41 percent in Benin to 53 percent in Haiti, among women seeking care.

In all countries except Haiti, more men than women reported seeking STI care from the private sector. For example, in Uganda, 58 percent of men reported reliance on the private sector compared with 49 percent of women.

Table 6. Percentage of Population Seeking Care for STIs, by Source

	Women				Men			
Country	Public Sector	Private Sector	NGO Sector	Total number of women seeking STI care	Public Sector	Private Sector	NGO Sector	Total number of men seeking STI care
Africa Region								
Benin	54.0	40.8	5.0	524	41.9	44.2	2.3	91
Cote D'Ivoire	54.9	15.8	5.2	451	51.0	19.1	6.1	236
Tanzania	60.0	19.7	13.7	257	51.2	30.9	12.6	211
Uganda	53.8	48.8	7.4	1,012	44.8	57.6	1.1	182
Zimbabwe	83.5	15.5	0.0	424	68.8	29.2	0.0	285
LAC Region								
Guyana	44.1	51.0	0.0	37	46.1	52.3	0.0	19
Haiti	33.3	52.6	2.7	866	27.1	29.6	17.2	150
Asia Region								
Vietnam	75.0	39.3	0.0	850	54.4	45.6	0.0	35

Given that STI symptoms can also indicate risk for HIV, in that both HIV and STIs can be transmitted through unprotected sex, use of STI care may be viewed as an entry point for HIV prevention, such as HIV testing and counseling on risk reduction. Thus examining the patterns for both types of HIV-related services within the same country can help to identify any consistent patterns of reliance on the private sector.

In the two countries studied in Latin America and the Caribbean, we found high utilization of the private sector for both HIV testing and STI care. In Africa we observed substantial variation. Uganda reported a high level of private sector STI care and also a

comparatively high level of private sector HIV testing. In Benin, however, the private sector provided a large percentage of STI care, but the public sector was the predominant provider of HIV testing.

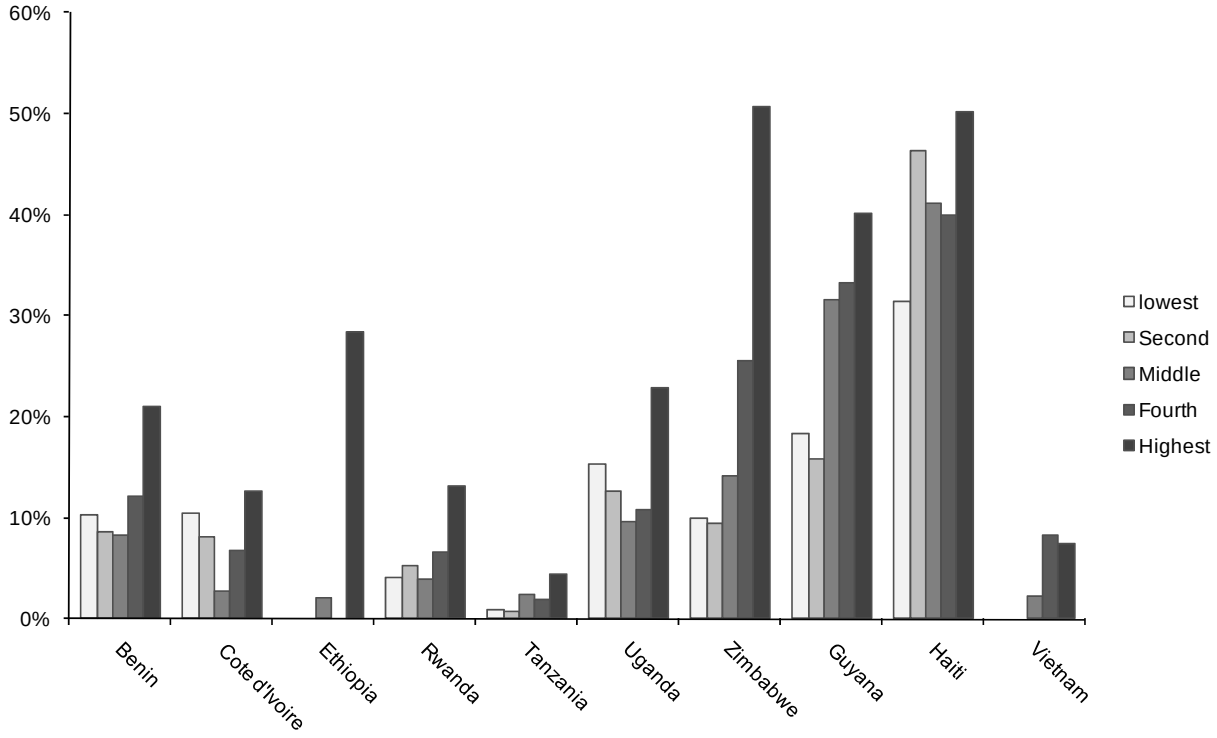
The role of household wealth in utilization of private sector services

As mentioned, because the cost of services is generally higher in the private sector than the public and NGO sectors, it is believed that reliance on private sector providers for health care increases with income. Our study examined the relationship between household wealth status and use of the private sector for HIV-related services.

Unadjusted relationship between the wealth status and use of the private sector for HIV testing and STI care

Figure 2 shows the percentage of women in studied countries who received their most recent HIV test in the private sector, by household wealth status. In all countries except Vietnam, use of the private sector for HIV testing is highest among individuals in the richest households.

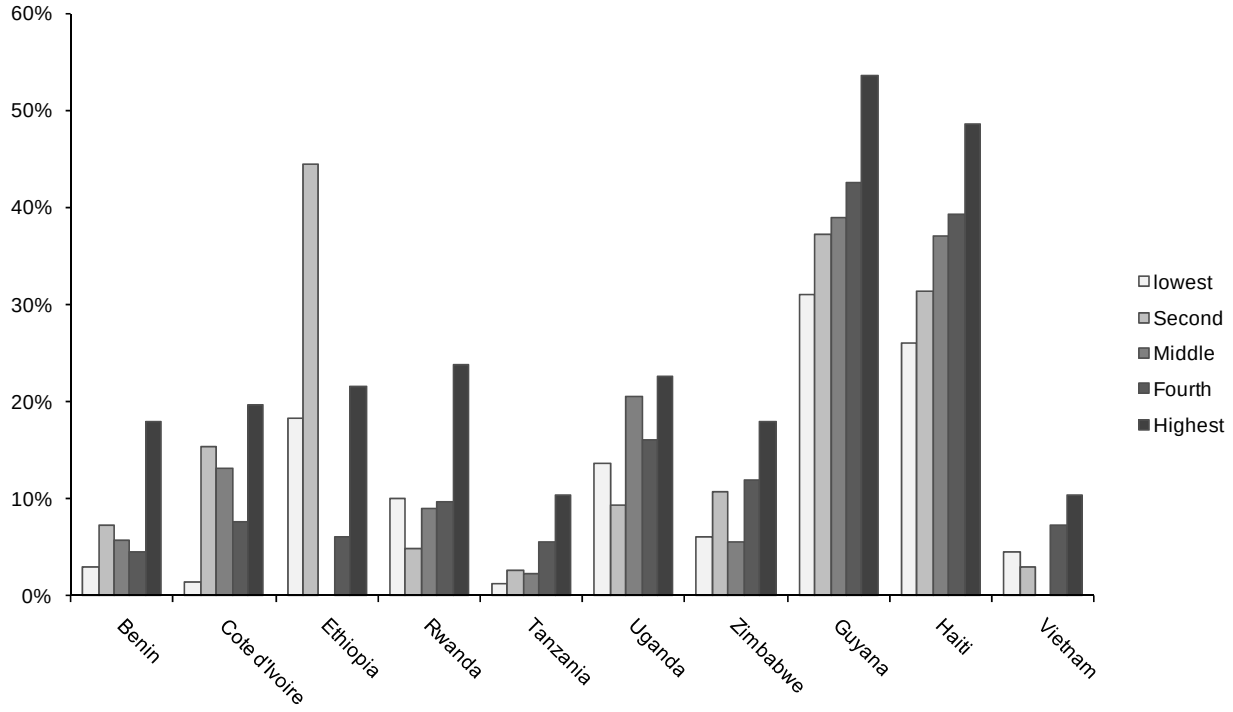
Figure 2. Utilization of Private Sector HIV Testing, by Household Wealth Status (Women)



In Africa, however, a substantial proportion of the poorest women in some countries turned to the private sector for HIV testing. In Cote d'Ivoire and Uganda women in the poorest households reported the second-highest use of the private sector for HIV testing. In Uganda, where use of the private health sector is generally high, about 15 percent of women from the poorest households received their most recent HIV test in a private hospital or clinic. In the two Latin America and the Caribbean countries studied, while use of the private sector for HIV testing increased with household wealth, use of the private sector was high among women across wealth groups.

Similarly, in the majority of countries men from the richest households reported the highest use of the private sector for HIV testing (Figure 3). Ethiopia was an exception, probably because the sample size was so small—fewer than 10 men in these household wealth groups received an HIV test.

Figure 3. Utilization of Private Sector HIV Testing by Household Wealth Status (Men)



Figures 4 and 5 show private health sector utilization of STI care among women and men by household wealth status. Due to small sample sizes resulting from disaggregating by wealth status, only a few countries (seven for women and five for men) were included in the analysis. In all countries with data for women (Figure 4), women in the top wealth quintile reported the highest use of private services. In most of these countries, utilization of the private sector increased with wealth, although a substantial proportion of women from the poorest households sought STI care from the private sector. In the countries with data for men (Figure 5), we did not find a consistent association between wealth status and men seeking care for STIs in the private sector, probably due to the small sample sizes.

Figure 4. Utilization of Private Sector STI Care by Household Wealth Status (Women)

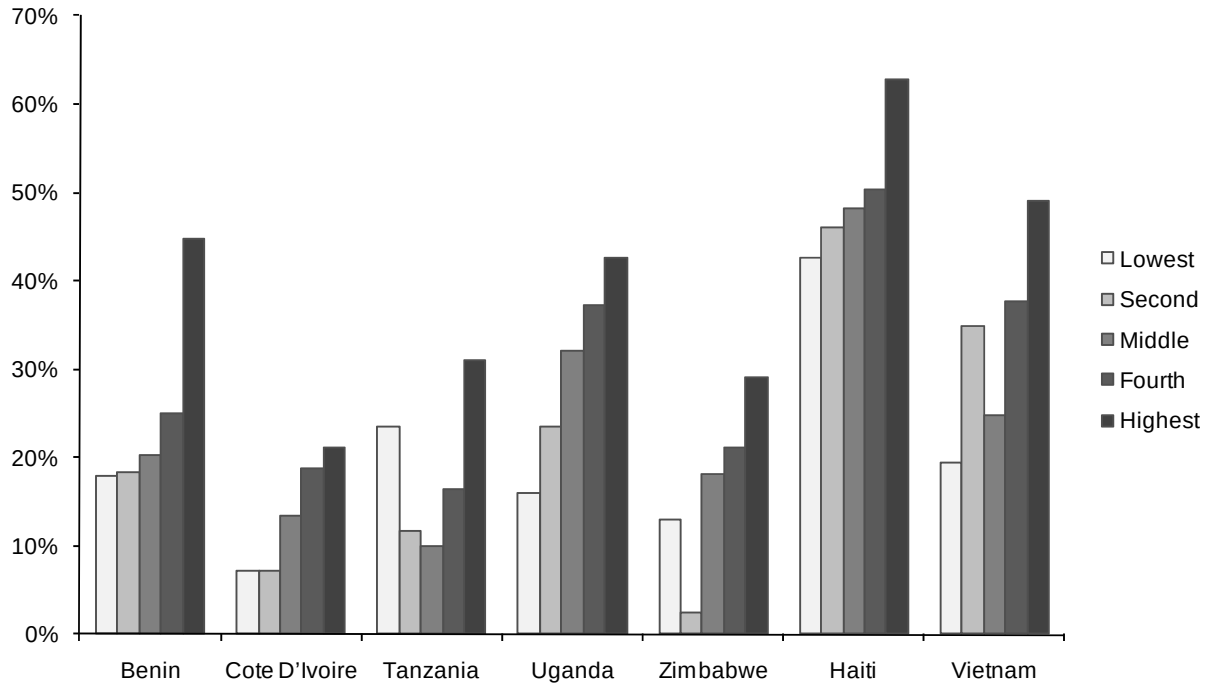
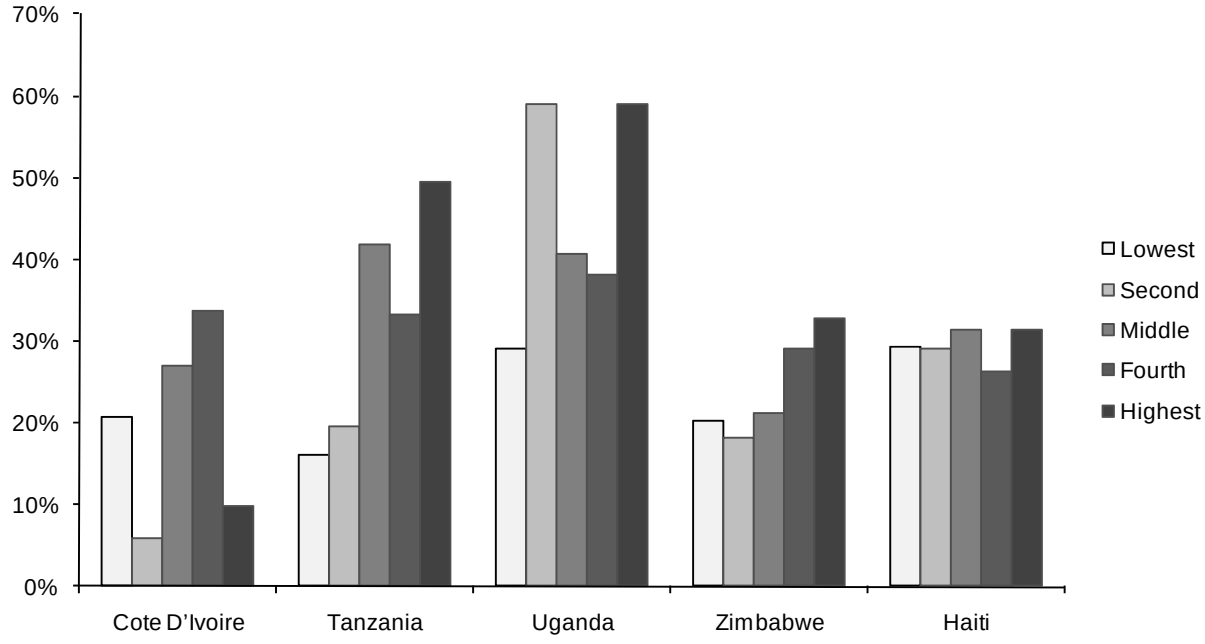


Figure 5. Utilization of Private Sector STI Care by Household Wealth Status (Men)



Adjusted relationship between wealth status and use of the private sector for HIV testing and STI care

Table 7 presents the results of multivariate analysis on the effect of household wealth on the likelihood of using a private sector source for HIV testing, among women and men. We dropped Ethiopia from the multivariate analysis, since the bivariate analysis showed that 99% of Ethiopian women and 93% of Ethiopian men using the private sectors were from the richest group. In four of the eight countries with complete data—Benin, Tanzania, Zimbabwe, and Guyana—women in richer households were significantly more likely to use the private sector for HIV testing, after controlling for other background characteristics. In contrast, in Cote d'Ivoire, Rwanda, Uganda, and Haiti, the multivariate analysis did not detect significantly higher private sector use among the wealthy compared with other groups, although bivariate analysis showed highest use of the private sector for HIV testing among the richest group.

Among men, in three countries—Benin, Tanzania, and Zimbabwe—higher wealth status was shown to be significantly associated with more use of the private sector. In Haiti and Guyana, however, the strong positive unadjusted association between wealth and use of private sector disappeared after controlling for other variables.

Table 7. Results of Multivariate Analysis on the Association between Household Wealth Status and Use of the Private Sector for the Most Recent HIV Testing among Women and Men

	Women	Men
	HIV testing	HIV testing
Country and wealth status	OR (95% CI, p-value)	OR (95% CI, p-value)
African Region		
Benin		
Lowest	1.00	1.00
Second	0.83(0.45, 1.54; 0.555)	2.48(0.29, 21.03; 0.403)
Middle	0.78(0.45, 1.35; 0.373)	2.40(0.31, 18.54; 0.403)
Fourth	1.12(0.66, 1.89; 0.670)	1.85(0.23, 14.61; 0.560)
Highest	***2.09(1.25, 3.48; 0.005)***	***8.85(1.17, 66.79; 0.034)***
Cote d'Ivoire		
Lowest	1.00	1.00
Second	0.44(0.04, 4.48; 0.484)	7.83(0.66, 93.29; 0.101)
Middle	0.17(0.03, 1.07; 0.059)	4.55(0.34, 61.79; 0.248)
Fourth	0.33(0.03, 3.21; 0.332)	2.89(0.19, 43.40; 0.435)
Highest	0.67(0.07, 6.50; 0.727)	8.57(0.58, 127.06; 0.116)
Rwanda		
Lowest	1.00	1.00
Second	1.28(0.66, 2.50; 0.466)	0.45(0.15, 1.38; 0.161)
Middle	0.81(0.40, 1.67; 0.574)	0.80(0.36, 1.79; 0.587)
Fourth	1.51(0.80, 2.85; 0.204)	0.81(0.34, 1.93; 0.635)
Highest	1.57(0.85, 2.89; 0.146)	1.30(0.63, 2.70; 0.481)
Tanzania		
Lowest	1.00	1.00
Second	0.80(0.21, 3.01; 0.743)	2.00(0.44, 8.96; 0.369)
Middle	3.11(0.87, 11.11; 0.080)	1.66(0.35, 7.85; 0.523)
Fourth	2.29(0.63, 8.29; 0.206)	***4.32(1.02, 18.25; 0.046)***
Highest	***5.08(1.48, 17.42; 0.010)***	***8.78(2.02, 38.27; 0.004)***
Uganda		
Lowest	1.00	1.00
Second	***0.51(0.34, 0.77; 0.002)***	0.76(0.29, 1.98; 0.571)
Middle	***0.37(0.23, 0.61; 0.000)***	1.85(0.75, 4.56; 0.179)
Fourth	***0.41(0.25, 0.67; 0.000)***	1.68(0.73, 3.86; 0.218)
Highest	0.78(0.50, 1.24; 0.298)	1.87(0.79, 4.42; 0.150)
Zimbabwe		
Lowest	1.00	1.00
Second	3.05(0.79, 11.77; 0.106)	1.69(0.66, 4.31; 0.269)
Middle	**2.90(1.05, 7.96; 0.039)**	0.88(0.29, 2.65; 0.821)
Fourth	***4.57(1.41, 14.80; 0.012)***	2.50(0.88, 7.13; 0.086)
Highest	***8.18(2.38, 28.11; 0.001)***	***4.39(1.34, 14.40; 0.015)***

(cont'd)

Table 7 – cont'd

Country and wealth status	Women HIV testing OR (95% CI, p-value)	Men HIV testing OR (95% CI, p-value)
LAC Region		
Guyana		
Lowest	1.00	1.00
Second	0.77(0.42, 1.45; 0.415)	1.44(0.53, 3.89; 0.467)
Middle	2.04(1.08, 3.83; 0.028)	1.36(0.52, 3.59; 0.524)
Fourth	***2.14(1.10, 4.16; 0.026)***	1.51(0.68, 3.37; 0.307)
Highest	***2.76(1.47, 5.16; 0.002)***	2.05(0.83, 5.05; 0.116)
Haiti		
Lowest	1.00	1.00
Second	1.11(0.68, 1.84; 0.669)	1.21(0.40, 3.69; 0.733)
Middle	0.85(0.48, 1.53; 0.586)	1.74(0.64, 4.72; 0.270)
Fourth	0.82(0.43, 1.54; 0.534)	2.08(0.63, 6.89; 0.229)
Highest	1.22(0.65, 2.31; 0.537)	2.89(0.84, 9.91; 0.090)
Asian Region		
Vietnam*		
Lowest	--	1.00
Second	--	0.48(0.03, 8.14; 0.605)
Middle	1.00	--
Fourth	5.77(0.43, 78.31; 0.184)	1.48(0.11, 19.98; 0.765)
Highest	4.60(0.36, 58.75; 0.236)	1.74(0.16, 19.02; 0.646)

*As no Vietnamese women in two lowest quintile wealth groups had HIV testing in the private sector; the middle wealth group was treated at the reference group. Among men, the middle wealth group was dropped due to nobody in this group used the private sector for HIV testing.

In analyzing the effect of wealth on use of the private sector for STI care, most countries analyzed did not show a significant association (Table 8). In Uganda, however, women from richer households were more likely than poorer women to use private sector services. In Haiti, women in the highest household wealth quintile were over three times more likely than those in the lowest quintile to use the private sector for STI care. Among five countries included for men's analysis, only Tanzania showed a positive effect of household wealth status on the likelihood of using the private sector for STI care, after controlling for other factors.

Table 8. Results of Multivariate Analysis on the Association between Household Wealth Status and Use of the Private Sector for STI Care among Women and Men

	Women	Men
	STI care	STI care
Country and wealth status	OR (95% CI, p-value)	OR (95% CI, p-value)
African Region		
Benin		
Lowest	1.00	--
Second	1.14(0.54, 2.42; 0.725)	--
Middle	1.03(0.51, 2.10; 0.925)	--
Fourth	0.89(0.45, 1.75; 0.730)	--
Highest	1.60(0.79, 3.25; 0.189)	--
Cote d'Ivoire		
Lowest	1.00	1.00
Second	0.98(0.18, 5.23; 0.979)	0.29(0.07, 1.25; 0.095)
Middle	1.88(0.41, 8.66; 0.409)	1.03(0.27, 3.86; 0.967)
Fourth	3.36(0.74, 15.26; 0.114)	0.97(0.30, 3.16; 0.956)
Highest	3.88(0.93, 16.25; 0.063)	0.17(0.03, 0.88; 0.056)
Tanzania		
Lowest	1.00	1.00
Second	0.40(0.11, 1.50; 0.171)	1.20(0.38, 3.81; 0.752)
Middle	0.32(0.09, 1.16; 0.082)	***3.94(1.28, 12.16; 0.019)***
Fourth	0.73(0.24, 2.26; 0.577)	***2.69(0.94, 7.72; 0.064)***
Highest	1.53(0.43, 5.45; 0.501)	***6.68(1.42, 31.43; 0.019)***
Uganda		
Lowest	1.00	1.00
Second	***1.71(1.03, 2.85; 0.038)***	4.99(1.22, 20.38; 0.026)
Middle	***2.19(1.30, 3.68; 0.003)***	1.09(0.27, 4.31; 0.903)
Fourth	***2.47(1.50, 4.04; 0.000)***	1.10(0.26, 4.75; 0.891)
Highest	***2.41(1.37, 4.21; 0.002)***	3.05(0.60, 15.61; 0.174)
Zimbabwe		
Lowest	1.00	1.00
Second	0.20(0.03, 1.11; 0.064)	0.84(0.32, 2.19; 0.712)
Middle	0.88(0.29, 2.64; 0.811)	0.91(0.35, 2.35; 0.836)
Fourth	0.81(0.22, 2.93; 0.735)	0.55(0.17, 1.81; 0.319)
Highest	1.61(0.37, 6.97; 0.521)	0.52(0.10, 2.63; 0.418)

(cont'd)

Table 8 – cont'd

	Women	Men
	STI care	STI care
Country and wealth status	OR (95% CI, p-value)	OR (95% CI, p-value)
LAC Region		
Haiti		
Lowest	1.00	1.00
Second	1.63(0.75, 3.53; 0.214)	0.90(0.17, 4.73; 0.897)
Middle	1.49(0.70, 3.17; 0.303)	1.36(0.29, 6.32; 0.684)
Fourth	1.99(0.82, 4.86; 0.130)	0.91(0.15, 5.33; 0.913)
Highest	***3.24(1.19, 8.78; 0.021)***	1.26(0.18, 8.99; 0.810)
Asian Region		
Vietnam*		
Lowest	1.00	--
Second	1.75(0.93, 3.13; 0.061)	--
Middle	1.05(0.52, 2.14; 0.887)	--
Fourth	1.89(1.01, 3.52; 0.046)	--
Highest	3.38(1.59, 7.17; 0.002)	--

*Only 7 Vietnamese men reported seeking STI care, so men were dropped from this multivariate analysis.

DISCUSSION

Using DHS and AIS data from 12 developing countries, we examined the use of the private for-profit health sector for HIV testing and STI care and explored its association with household wealth status. Both services are considered critical for preventing HIV transmission and ensuring the availability of care and support. In light of growing demand for HIV/AIDS services, further exploration of the private health sector's current and potential contributions to HIV/AIDS prevention and treatment is warranted. This analysis is a first step in examining the extent to which private providers deliver HIV-related services in multiple countries, based on data from representative national surveys.

Review of available data and literature reveals that the private health sector has not generated sufficient attention to its role in the overall global response to AIDS. Most national, population-based surveys do not ask about sources of HIV-related services, nor do they distinguish between private for-profit and private not-for-profit sources of care. Given the differences between these two components of the private health sector, particularly their objectives (social mission versus profitability) and revenue goals (donor-supported versus self-sustaining), the inability to distinguish types of private sector providers limits measurement of the unique contributions of each. Moreover, in light of the shift toward sustainable country programs in the AIDS response, there is considerable interest in the role of the private for-profit sector. Although recent DHS and AIS in some countries have included detailed source options for questions on health care–seeking behavior, it is not yet possible to examine changes in utilization patterns over time. Advocacy efforts should encourage continued inclusion of such questions in population-based surveys.

The analysis is subject to the limited data availability. Due to small sample sizes and insufficient data in some countries, the multivariate analysis was limited to a small number of countries, especially for men. The small sample sizes also influence the power of the study, reflected by the wide 95% confidence intervals in some countries. In addition, relatively small samples may limit the ability to detect the significance in the regression analysis. The study did not account for some potentially important variables, such as perceptions of quality and availability of private sector services. While DHS and AIS provide relatively high-quality and comparable information, the data are self-reported, thereby introducing potential bias. Moreover, the scarcity of available data restricts the ability to generalize the results. In particular, the availability of data from only one Asian country makes it impossible to generalize the results of the analysis to the entire region, while data from only two countries of Latin America and the Caribbean cannot permit generalization to the region as a whole.

Despite the limited availability of data, the results of this analysis add to the small but growing body of evidence on the role of the private sector in health service delivery. Several studies have suggested that the private sector plays a very active role in some Asian countries (Alkunid, 1995; Berman, 1998; Jilani, Azhar, Jilani, & Siddiqui, 2009). Our analysis indicates that the private health sector is active in HIV service delivery, although the level of participation varies by country.

Our study found large variations in private utilization of HIV-related services in Africa, which may be linked to country-specific socioeconomic conditions, different levels of private-sector development, and levels of external funding for HIV and AIDS. Donor funding directed to NGOs or government facilities may discourage seeking care from private for-profit providers. For example, Tanzania demonstrated relatively low utilization of private providers for HIV

testing but high reliance on NGO services. This pattern is supported by Tanzania's 10-fold increase in donor funding—largely directed to NGOs—for HIV services between 2002 and 2005 (Sulzbach, Wang & De, 2009).

The study generally found larger use of private sector services for STI care than HIV testing. The explanation may lie in the curative nature of STI care, for which the private sector typically plays a greater role. In addition, fewer regulatory restrictions govern the provision of STI services compared with HIV services.

A variety of factors can affect health care–seeking behaviors, including types of illness, availability of health services, demographic characteristics, attitudes, beliefs, and proximity to providers (Anderson, 1995; Nuwaha, 2006). Poor populations also face financial obstacles to accessing health services. Previous studies have shown that socioeconomic status is one of the most important predictors of whether and where people seek care for illness (Ahmed, 2005; Larson, 2006). Our study found use of the private health sector for HIV testing and STI care increases with wealth in some countries, a finding that is consistent with some previous studies (Ramchandani, Mehta & Saple, et al. 2007). In other countries we did not find significant differences by wealth level among respondents in use of the private sector.

Notably, our results revealed that the poor are using private sector HIV-related services. Some previous studies also have demonstrated that the private sector serves both low-income and high-income groups (Nguyen, Berman & Larsen, 2002; Sohail & Do, 2008). National and international HIV stakeholders may be wise to reassess the role of the private sector in expanding access to critical health services, and to reexamine the notion that the private health sector primarily serves the wealthy. Further analysis of the association between wealth and the

demand for private sector HIV services is needed and will be possible as future DHS and AIS data become available.

This analysis provides a basis for assessing the utilization of private sector–provided HIV-related services. As the global approach to the AIDS epidemic continues to evolve from an emergency response to a sustained effort, and as levels of donor funding become less certain due to the current global economic crisis, it is critical to explore options for efficiently engaging all sectors of the health system to maximize the AIDS response. The private health sector is a relatively untapped resource that should not go overlooked. Private providers may play a role in increasing access to essential HIV prevention, care, and treatment services through partnerships with governments and donors. Such partnerships may relieve current bottlenecks resulting from infrastructure and human resource constraints in the public sector and may help countries reach the ambitious goal of universal access to HIV services.

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