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## CHAPTER 7

# HIV/AIDS Services Delivery, Overall Quality of Care, and Satisfaction in Burkina Faso: Are Some Patients Privileged?

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### **Introduction**

The human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS) remains a major public health problem in Sub-Saharan Africa. The latest estimates of the United Nations HIV/AIDS Program

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(UNAIDS) reported that 35 million people worldwide were living with HIV by the end of 2010 (UNAIDS 2013a). More than two-thirds (71 percent) of them were living in Sub-Saharan Africa (WHO 2015). Initially, antiretroviral treatment (ART) was only available for a small number of patients in a few health facilities located mainly in urban areas. With the support of governments, associations of persons living with HIV/AIDS (PLWHA), and multilateral, bilateral, and private donors, the number of PLWHA who have access to ART has increased dramatically since 2003 (UNAIDS 2013b). As of June 2014, an estimated 13.6 million people worldwide were receiving antiretroviral drugs (UNAIDS 2014), representing 38 percent of those needing them. In 2003 the estimated coverage in the region was only 2 percent (UNAIDS 2008, 2014). In Burkina Faso, the number of PLWHA was 110,000 persons (99,000–130,000) at the end of 2012 (UNAIDS 2013b), 54,000 of whom were estimated to need antiretroviral treatment. The number of PLWHA under treatment increased from 3,000 in 2004 to 39,047 (72 percent) in 2012, concomitant with a rise in the number of facilities delivering ART, from 44 in 2005 to 76 at the end of 2007 (UNAIDS 2013b).

In Africa HIV infection occurs in a general context of health system crisis and underuse of health services. Health services were not prepared to confront the HIV/AIDS epidemic. The 1987 Bamako Initiative for primary health care aimed to strengthen the geographic, financial, and cultural accessibility of care for the population. However, most of the studies conducted in the continent show that access to care and the performance of health facilities remain low (Baltussen and Ye 2006; Das, Hammer, and Leonard 2008; Fowler, Adhikari, and Bhagwanjee 2008; Mapunjo and Urassa 2007; O'Donnell 2007; Zere et al. 2007).

There are many challenges in successfully scaling up ART, ensuring access to care, and reorienting the delivery of health care services for people with chronic diseases. In many studies, insufficient human resources in health care are often cited as the most important obstacle to providing adequate access to care and successfully scaling up treatment (Chen and Hanvoravongchai 2005; Das and Hammer 2007; Das and Sohnesen 2007; Marchal, De Brouwere, and Kegels 2005; Schneider et al. 2006; Wouters et al. 2008). Weak and overloaded health systems threaten the quality of care and patient satisfaction, which can, in turn, seriously lessen the chances of successfully confronting AIDS (Wouters et al. 2008).

Quality of care and patient satisfaction influence care-seeking behavior and determine the demand for health services. If patients are dissatisfied with the quality of care they receive, they may not adhere to a treatment regimen or they may fail to attend follow-up visits (Mesfin et al. 2009; Wouters et al. 2008). For patients suffering from HIV/AIDS, in particular, adherence

to a regimen and strict follow-up schedules play a central role in treatment success. Therefore, the quality of care and patient satisfaction underpin the success of public health policies in enhancing access to care, especially for policies that aim to increase access and improve adherence to ART.

In this chapter, we assess the quality of care received in a sample of health facilities delivering ART in Burkina Faso. Our analysis focuses on the quality of care based on structured interviews with outpatients.<sup>1</sup> We use multivariate regressions to explore the determinants of the quality of care, focusing on patients' wealth and the purpose of the visit—specifically, whether the visit was related to HIV.

## **Methods: Sampling and Survey**

The sample was drawn to be representative of health facilities offering ART in Burkina Faso as of July 2006.<sup>2</sup> All health facilities with at least 100 registered HIV/AIDS patients were included in the sampling process. In total, the study comprises 43 health facilities, including 32 public health facilities, 10 run by associations of PLWHA or nongovernmental organizations (including 3 faith-based organizations), and 1 private clinic. In the analysis, we group health facilities into four categories: (1) public reference hospitals, including the Centres Hospitaliers Universitaires and the Centres Hospitaliers Régionaux; (2) public local health facilities, including the Centres Médicaux avec Antenne Chirurgicale and the Centres Médicaux; (3) associations and nongovernmental organizations, including facilities run by associations of PLWHA and faith-based organizations; and (4) private for-profit clinics. In each health facility, the manager and health providers were surveyed, with at least one health provider selected from the HIV/AIDS department.

We interviewed 10 randomly selected outpatients (5 from HIV/AIDS services and 5 from other services) present on the day of the survey in each health facility selected. Informed consent was obtained from every respondent prior to the interview. The survey covered basic sociodemographic and socioeconomic data, service used during the visit, direct and indirect costs associated with the visit, and satisfaction level with the service used. Respondents were asked 17 questions about the medical procedures performed during their visit. Table 7.1 includes the list of questions.

The score obtained for each question—that is, 1 if the procedure was performed or 0 if it was not—was assigned the same weight of 1/17 to normalize the quality index between 0 and 1, with 0 indicating the poorest quality of care and 1 indicating the highest.<sup>3</sup> We classify a patient as visiting for HIV-related services if he or she declared that the purpose of the visit was for a

**Table 7.1 Frequency of Patients' Positive Answers on Whether Questions on Their Medical History Were Asked during the Visit to a Health Facility in Burkina Faso**  
Percentages

Quality index component: Patients asked about		Total	Male	Female	P-value	HIV	Non-HIV	P-value
1	Beginning of current pain	80.9	83.6	79.2	(0.317)	73.0	89.3	(0.000)
2	Beginning of sickness	81.2	84.3	79.2	(0.238)	73.6	89.3	(0.000)
3	Presence of blood in sputum	32.7	32.1	33.0	(0.857)	38.2	26.8	(0.024)
4	Episode of breathing difficulties	29.5	32.8	27.4	(0.276)	29.2	29.8	(0.911)
5	Stitch	23.1	23.1	23.1	(0.996)	25.8	20.2	(0.217)
6	Night perspiration	31.2	27.6	33.5	(0.250)	41.0	20.8	(0.000)
7	Contact with coughing individuals	32.4	31.3	33.0	(0.746)	45.5	18.5	(0.000)
8	Weight loss	47.7	45.5	49.1	(0.521)	60.7	33.9	(0.000)
9	Prior pathologies, including HIV and tuberculosis	44.2	39.6	47.2	(0.165)	60.1	27.4	(0.000)
10	Asthma history	18.2	20.9	16.5	(0.303)	23.0	13.1	(0.017)
11	Is the patient currently under treatment?	59.0	61.2	57.5	(0.502)	57.9	60.1	(0.670)
12	Smoking history	17.3	33.6	7.1	(0.000)	20.8	13.7	(0.081)
13	Medicinal allergy	45.1	45.5	44.8	(0.897)	53.4	36.3	(0.001)
14	Other medical history	41.3	43.3	40.1	(0.557)	48.3	33.9	(0.007)
15	Patient's employment	53.8	56.0	52.4	(0.512)	59.6	47.6	(0.026)
16	Alcohol consumption history	30.3	36.6	26.4	(0.045)	33.7	26.8	(0.162)
17	Other question	7.8	11.2	5.7	(0.062)	5.6	10.1	(0.119)
	N	346	134	212		178	168	

Note: P-values of Pearson's Chi-2 test are in parentheses. HIV and non-HIV indicate whether or not the consultation was related to HIV.

follow-up on the evolution of HIV/AIDS or adherence to ART or if it was for HIV/AIDS counseling or voluntary testing. Therefore, our analysis concerns the impact of HIV-related services delivery. We do not focus on HIV-positive patients, since not all the patients visiting for these services were HIV-positive. Instead, our focus is on the type of service delivered.

We define up-front fees as any fees (legal or not) that the patient paid at the health facility before seeing a health professional. Thus our definition excludes the costs of both prescriptions and exams. Other external costs borne by the patient, such as transportation costs, are also excluded.

The analysis also controls for patients' wealth level. We measure wealth as a weighted index calculated from 14 variables. We use principal component analysis to choose weights for the wealth index because it has been shown to outperform alternative methods. The variables used include housing quality, access to water and electricity, and ownership of assets such as livestock, agricultural tools, household appliances, communication devices, and vehicles. For ease of interpretation, we normalize the wealth index between 0, representing the lowest level of wealth, and 1, indicating the highest level.

## **Data Analysis**

We use the answers to 17 questions to construct a health care quality index from the patient's perspective. By asking more detailed questions, this approach offers more variations in their perceived quality of health care received than single questions on their satisfaction.<sup>4</sup> Indeed, exit interviews of patients have been widely used in both developed and developing countries to measure the quality of health care.

We first provide descriptive statistics of the characteristics of the health services received and the patients interviewed, distinguishing between patients coming for HIV/AIDS services and those coming for other services. Next, we use multivariate regression analysis to explore the quality of care as measured by the quality index, the determinants of up-front costs paid by patients, and the time spent at the health facility.

Our primary explanatory variables of interest are patient wealth and whether the consultation is related to HIV/AIDS. Nevertheless, we control for patients' sociodemographic variables, including education level, gender, and age. We use health facility fixed effects to control for the characteristics of health facilities. This allows us to remove effects idiosyncratic to each facility. Our focus is, therefore, on how resources are allocated within the same health facility between HIV/AIDS services and other services.<sup>5</sup>

## **Results**

We examine how responses to each element of the exit interview (used to determine the quality index) vary by gender of the patient and by whether the patient visited the facility for HIV/AIDS services (table 7.2). Based on bivariate analysis, patients visiting for HIV-related services were more likely to have been questioned about their medical condition or history. However, most of the other types of visits were classified as "adult care"

**Table 7.2 Summary Statistics for Patients Visiting Health Facilities in Burkina Faso**  
*a. Means for continuous variables*

Variable	Total (gender)			Total			Males			Females		
	Total	Males	Females	Total	HIV	Non-HIV	Total	HIV	Non-HIV	Total	HIV	Non-HIV
Age (years)	35.369 [0.663]	39.107 [1.207]	33.014 [0.723]	34.632 [0.702]	36.145 [1.142]	37.620 [1.609]	40.025 [1.680]	33.427 [0.719]	32.405 [1.446]	0.461 (0.334)	0.461 (0.334)	0.461 (0.460)
Education (years)	4.295 [0.270]	4.252 [0.470]	4.322 [0.328]	4.126 [0.340]	4.473 [0.425]	3.020 [0.517]	5.012 [0.678]	4.573 [0.423]	3.952 [0.518]	0.026 (0.677)	0.026 (0.677)	0.298 (0.531)
Wealth index	0.370 [0.015]	0.314 [0.024]	0.405 [0.018]	0.363 [0.019]	0.378 [0.023]	0.287 [0.030]	0.331 [0.034]	0.393 [0.023]	0.423 [0.030]	0.378 (0.030)	0.378 (0.030)	0.531 (0.030)
N	346	134	212	178	168	52	82	126	86			

Note: Standard deviations are in brackets. *P*-values of means test are in parentheses. HIV and non-HIV represent whether or not the consultation was related to HIV.

*b. Frequencies for categorical variables*

Variable	Total	Total (gender)			Total (HIV-related visit)			Males			Females		
		Males	Females	P-value	HIV	Non-HIV	P-value	HIV	Non-HIV	P-value	HIV	Non-HIV	P-value
Share (%)	100	38.7	61.3		51.5	48.6		38.8	61.2		59.4	40.6	
N	346												
<i>Marital status</i>				(0.000)			(0.000)			(0.026)			(0.000)
Single	19.9	23.8	17.4		16.2	23.8		22.4	24.7		13.7	22.9	
Married or a couple	53.7	70.8	43.0		42.2	65.9		65.3	74.1		33.1	57.8	
Divorced or widowed	26.4	5.4	39.6		41.6	10.4		12.2	1.2		53.2	19.3	
N	337	130	207		173	164		49	81		124	83	
<i>Occupation</i>				(0.000)			(0.257)			(0.919)			(0.317)
Salaried employee	12.8	21.1	7.4		11.0	14.8		19.1	22.4		7.7	6.8	
Farmer, housewife, breeder	54.3	46.3	59.5		55.5	53.0		44.7	47.4		59.8	58.9	
Shopkeeper	22.0	17.1	25.3		25.0	18.8		19.1	15.8		27.4	21.9	
Other	10.9	15.4	7.9		8.5	13.4		17.0	14.5		5.1	12.3	
N	313	123	190		164	149		47	76		117	73	

Note: P-values of Pearson's Chi-2 test, which are in parentheses, apply to the overall distribution of each variable with regard to sex or the purpose of the visit. HIV and non-HIV represent whether or not the consultation was related to HIV. The difference in frequencies between HIV-related and non-HIV-related visits with regard to sex is significant (P-value = 0.000; not presented).

(164 consultations out of 346), which may or may not require as many investigations of the patient's condition and medical history. In addition to a difference in the health care quality index, patients visiting for HIV/AIDS services reported being more satisfied with the services received, except for waiting time (not shown).

In table 7.3, column 1, we regress the quality of health care on wealth and control variables using the quality index. Then in column 2, we include a

**Table 7.3 Estimated Fixed Effects of Quality of Care in Burkina Faso**

Variable	(1)	(2)	(3)	(4)
Up-front costs			-0.023 [0.014]	0.002 [0.014]
HIV-related services * Up-front costs				-0.169 [0.237]
Wealth index	-0.110 [0.065]*	-0.035 [0.075]		
HIV-related services		0.175 [0.045]***		0.169 [0.029]***
HIV-related services * Wealth index		-0.032 [0.094]		
Years of education	-0.001 [0.003]	-0.001 [0.003]	-0.003 [0.003]	-0.002 [0.002]
Female	0.007 [0.027]	-0.023 [0.026]	-0.003 [0.026]	-0.029 [0.026]
Age	0.015 [0.006]**	0.005 [0.006]	0.014 [0.006]**	0.004 [0.006]
Age squared	-0.015 [0.007]**	-0.002 [0.007]	-0.014 [0.007]**	-0.001 [0.007]
Constant	0.129 [0.120]	0.218 [0.115]*	0.121 [0.116]	0.227 [0.112]**
N	344	344	344	344
R-squared	0.51	0.56	0.51	0.56

Note: The dependent variable is the quality index. Robust standard errors are in brackets, clustered at the health facility level. Quality of care is the sum of 17 discrete variables (see table 7.1), normalized between 0 and 1. Wealth index is a 0 to 1 score. Regressions also include health facility fixed effects.

\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$



binary variable indicating whether the respondent visited the facility for HIV/AIDS services and the same variable interacted with wealth. We want to test if the quality of care varies between patients visiting for services related to HIV/AIDS and those visiting for other purposes and whether wealth plays a role in this relationship. In column 1, the estimated coefficient of the normalized wealth index is negative and statistically significant at the 10 percent level. In column 2, it is no longer significant. However, the coefficient on HIV/AIDS services is positive and significant at the 1 percent confidence level. To provide further evidence of the link between wealth and the quality of care, we look directly at the relation between up-front costs and health care quality in columns 3 and 4. The estimated coefficients are small and statistically insignificant at the 10 percent level.

In table 7.4, the dependent variable is up-front fees. In columns 1 and 2, we find a positive association between up-front fees and wealth. The estimated coefficient is statistically significant at the 1 percent level in each case. In column 2 we also include as independent variables HIV-related services and the same variables interacted with wealth. Both estimated coefficients are negative, but only the coefficient of the interaction term is significant at the 1 percent level. In column 3, we find a negative association between up-front fees and HIV-related services, and the estimated coefficient is significant at the 1 percent level.

In table 7.5, the dependent variable is waiting time. In column 1, we find a negative association between waiting time and wealth. The estimated coefficient is statistically significant at the 1 percent level. In column 2, we also include as independent variables HIV-related services and the same variables interacted with wealth. The estimated coefficient of wealth is still negative, but no longer significant at the 10 percent level. The coefficient of HIV-related services is positive and significant at the 5 percent level, while the coefficient of wealth interacted with HIV-related services is negative and significant at the 10 percent level.

## Discussion

The bivariate analysis indicates that patients visiting a facility for HIV-related services are more likely to be asked about important elements of their medical condition or history than others (table 7.1). However, most of the other types of visits are classified as “adult care” (164 consultations out of 346), which may or may not require as many questions about the patient’s condition and medical history. We do not have a sufficient level of detail about the consultation purposes to assess whether the difference between

**Table 7.4 Estimated Fixed Effects of Up-front Costs in Burkina Faso**  
*FCFA, thousands*

Variable	(1)	(2)	(3)
Wealth index	0.705 [0.271]***	0.980 [0.308]***	
HIV-related services		-0.165 [0.188]	-0.640 [0.114]***
HIV-related services * Wealth index		-1.175 [0.386]***	
Years of education	0.000 [0.013]	0.000 [0.012]	0.012 [0.010]
Female	-0.132 [0.113]	-0.001 [0.109]	0.022 [0.106]
Age	-0.022 [0.024]	0.011 [0.024]	0.017 [0.024]
Age squared	0.027 [0.029]	-0.012 [0.029]	-0.022 [0.028]
Constant	0.521 [0.497]	0.011 [0.476]	0.248 [0.469]
N	344	344	344
R-squared	0.24	0.33	0.30

Note: Robust standard errors are in brackets, clustered at the health facility level. Up-front costs include all fees (legal or not) paid by the patient at the health facility before being received by a health professional. The definition excludes both prescription and exam costs. Other external costs borne by the patient such as transportation costs are also excluded. Wealth index is a 0 to 1 score. Regressions also include health facility fixed effects. FCFA = West African CFA franc.

\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$

patients visiting for HIV versus non-HIV services is still significant for the consultations needing such medical history. In addition to a difference in the health care quality index, patients visiting for HIV-related services also reported being more satisfied with the services received, with the exception of waiting time (not shown).

Within the same health facility, level of wealth correlates negatively with the quality of care (table 7.3, column 1).<sup>6</sup> There is some evidence suggesting that patients visiting for HIV-related services receive higher-quality care. Comparing the results in column 2 to those in column 1 suggests that clients of HIV/AIDS services are less wealthy,<sup>7</sup> but receive relatively higher-quality care. The higher quality of care received by HIV/AIDS patients is confirmed

**Table 7.5 Estimated Fixed Effects of Waiting Time in Burkina Faso**

Variable	(1)	(2)
Wealth index	-2.227 [0.735]***	-1.145 [0.878]
HIV-related services		1.379 [0.535]**
HIV-related services * Wealth index		-1.98 [1.101]*
Years of education	-0.065 [0.035]*	-0.068 [0.034]**
Female	0.455 [0.307]	0.369 [0.311]
Age	0.022 [0.065]	-0.024 [0.068]
Age squared	-0.015 [0.077]	0.048 [0.081]
Constant	2.28 [1.348]*	2.367 [1.358]*
N	339	339
R-squared	0.30	0.32

Note: Robust standard errors are in brackets, clustered at the health facility level. Wealth index is a 0 to 1 score. Regressions also include health facility fixed effects.

\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$

by the multivariate results in table 7.3: on average, visiting a facility for HIV-related services increases the health care quality score by about .17 units.

However, in a cross-sectional study like ours, the finding that patients visiting for HIV services receive, on average, better-quality care than others does not imply that HIV services have a negative impact on other health services. Our empirical results could be observed in a context where the quality of the other services is improving, deteriorating, or remaining the same. Addressing this question would require a panel of health facilities before and after the introduction of antiretroviral services.

A relevant question is whether patients seeking HIV-related services pay a premium for the additional quality of care they receive. If health facilities are charging these patients more in return for quality of care, the cost might exclude relatively poor patients desiring to receive HIV-related services.

We investigate this question formally by exploring the correlations between up-front costs, on the one hand, and wealth and visiting for HIV/AIDS services, on the other hand (table 7.4). We find a strong correlation between wealth and up-front fees, with wealthier individuals paying more, on average, except when they are visiting for HIV/AIDS-related services.

Our analysis suggests that higher wealth is positively associated with higher up-front costs but not significantly correlated with quality of care. We find, however, that wealth is negatively and significantly correlated with waiting time at the health care center, especially for HIV/AIDS services. It is plausible that health facilities engage in price discrimination based on wealth. If health professionals form a belief about the wealth level of a patient at the time of the service (and they guess correctly, on average), then they could effectively discriminate between rich and poor patients and charge rich patients more. This finding is consistent with the result from Banerjee (1997), who finds that hospitals use waiting times as a screening device. It is therefore consistent with some type of price discrimination with regard to the health sector in Uganda. He finds that wealthier patients are more likely to pay higher bribes and that this is consistent with price discrimination by health care providers.

## **Conclusions and Policy Recommendations**

Our results indicate that visiting for HIV-related services makes a difference in the overall quality of care, costs of care, and waiting time in health facilities in Burkina Faso. First, requiring HIV-related services guarantees a better quality of care, without having to pay more. However, requiring HIV-related services also means enduring a longer waiting time at the facility. That longer waiting time is shorter for wealthier individuals. These initial findings indicate that there is a difference in the treatment of patients depending on the purpose of their visit. Even if the better quality somehow compensates for the increase in waiting time, it is still concerning that a certain category of patients receives differential treatment.

These findings have two plausible explanations. First, HIV-related services might be different in nature from other health services. HIV/AIDS is a serious chronic disease that might require more attention from the health care provider than other medical conditions. The lack of detailed information on non-HIV/AIDS patients does not allow further exploration of this potential explanation. The government of Burkina Faso subsidizes antiretroviral treatment, which explains why out-of-pocket expenses are not higher for this upgraded service.

Second, HIV/AIDS services have benefited in recent years from more generous funding, provided to a large extent by external donors, than other health services. This could explain why the quality of care is higher (better equipment and supplies, more motivated health practitioners) and why up-front costs for patients are lower (if both the supply of drugs and the chain of service delivery are funded externally, it is easier for government to subsidize treatment). This could also explain the longer waiting time, as relatively better quality of care and low cost can lead to more crowded waiting rooms.

Whether these changes in HIV services have had an overall positive or negative impact on the delivery of other health services is still debated. On the one hand, the improvement of equipment and supply chains and the fact that many AIDS patients have turned from being terminally ill patients crowding inpatient services into chronic patients easier to manage as outpatients might have, as a positive spillover, benefited other health services. On the other hand, the influx of resources and money into HIV/AIDS services might have distorted incentives at both the facility and the provider levels and encouraged a neglect of other services. Our cross-sectional study does not allow for a clear-cut answer to this debate. Further investigation could address this type of question. However, we can conclude that it would be desirable for the quality of care in other services to reach at least the level attained in HIV/AIDS services and for the up-front costs to be reduced.

Our finding that wealth does not affect quality of care is reassuring with regard to equity. But we find that wealth is associated with lower waiting time for HIV-related services, even though wealthier patients do not pay more for those services (and for those services only). This suggests more subtle ways in which wealthier individuals enjoy a more comfortable experience while visiting health facilities. Although this type of preferred access is difficult to detect and correct, it goes against the principle of equity.

## **Annex 7A Robustness of Multivariate Analysis to an Alternative Definition of Health Care Quality Index**

A potential concern is that the quality index may not be directly comparable across HIV and non-HIV patients. Presumably, a doctor who is interacting with a patient who has already been diagnosed with HIV should (and will) ask a different set of questions than one interacting with a patient with an unknown illness.<sup>8</sup> As a robustness check, we separate the questions that should be asked regardless of the condition of the patient from the questions that are more specific to HIV/AIDS. Based on the national health protocol in

Burkina Faso, questions 1 (beginning of current pain), 2 (beginning of sickness), 10 (asthma history), 11 (is patient currently under any treatment?), 12 (smoking history), 13 (is patient allergic to any medication?), 14 (other medical history), 15 (patient's employment), and 16 (history of alcohol consumption) in table 7.1 should be asked of any patient, regardless of his or her condition. Questions 8 and 9 (weight loss and prior pathologies, including HIV and tuberculosis, respectively) are systematically asked of patients coming to the health facility for HIV/AIDS-related reasons. We calculate two different health care quality indexes based on these sets of questions.<sup>9</sup>

The regression results using these different indexes are reported in table 7A.1 for the HIV/AIDS-specific questions—that is, questions 8 and 9—and table 7A.2 for the standard questions. The estimated coefficients in both tables support qualitatively the findings reported in table 7.3 that the health care quality index is higher for HIV/AIDS patients. It is apparent that HIV/AIDS patients have, on average, a higher health care quality index, whether the quality index uses only the questions that are asked of each patient, regardless of his or her condition (table 7A.2) or the questions that are asked specifically of HIV/AIDS patients (table 7A.1). While the results in table 7A.1 are to be expected, the results in table 7A.2 confirm the results in table 7.3 and indicate that they are robust since they persist when we focus on the questions that should be asked of all patients.

**Table 7A.1 Estimated Fixed Effects of Health Care Quality Index Based on HIV/AIDS-Specific Questions in Burkina Faso**

Variable	(1)	(2)	(3)	(4)
Up-front costs			-0.086 [0.031]***	-0.03 [0.021]
HIV-related services * Up-front costs				-0.021 [0.463]
Wealth index	-0.282 [0.134]**	-0.219 [0.155]		
HIV-related services		0.312 [0.103]***		0.375 [0.076]***
HIV-related services * Wealth index		0.186 [0.204]		
Female	-0.001 [0.006]	-0.002 [0.005]	-0.007 [0.005]	-0.005 [0.004]

*(continued next page)*

**Table 7A.1 (continued)**

Variable	(1)	(2)	(3)	(4)
Years of education	0.112 [0.061]*	0.039 [0.049]	0.085 [0.060]	0.032 [0.049]
Age	0.043 [0.012]***	0.02 [0.010]*	0.044 [0.012]***	0.021 [0.010]**
Age squared	-0.05 [0.014]***	-0.022 [0.012]*	-0.051 [0.015]***	-0.022 [0.012]*
Constant	-0.324 [0.244]	-0.079 [0.212]	-0.37 [0.253]	-0.143 [0.214]
N	339	339	344	344
R-squared	0.42	0.54	0.44	0.54

Note: Robust standard errors are in brackets. Quality of care is based on questions 8 and 9 in table 7.1, normalized between 0 and 1. Wealth index is a 0 to 1 score. Regressions also include health facility fixed effects.

\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$

**Table 7A.2 Estimated Fixed Effects of Health Care Quality Index Based on Non-HIV/AIDS-Specific Questions in Burkina Faso**

Variable	(1)	(2)	(3)	(4)
Up-front costs			0.001 [0.008]	0.021 [0.013]
HIV-related services * Up-front costs				-0.263 [0.206]
Wealth index	-0.109 [0.061]*	-0.016 [0.074]		
HIV-related services		0.156 [0.067]**		0.130 [0.056]**
HIV-related services * Wealth index		-0.123 [0.098]		
Female	-0.031 [0.032]	-0.050 [0.032]	-0.039 [0.032]	-0.060 [0.032]*
Years of education	0.002 [0.003]	0.002 [0.003]	-0.001 [0.003]	0.000 [0.003]
Age	0.007 [0.006]	-0.001 [0.007]	0.007 [0.006]	-0.001 [0.007]

(continued next page)

**Table 7A.2 (continued)**

Variable	(1)	(2)	(3)	(4)
Age squared	-0.005 [0.007]	0.004 [0.008]	-0.006 [0.007]	0.004 [0.008]
Constant	0.373 [0.136]***	0.419 [0.133]***	0.341 [0.133]**	0.426 [0.132]***
N	339	339	344	344
R-squared	0.54	0.56	0.54	0.57

Note: Robust standard errors are in brackets. Quality of care is an average of nine discrete variables on questions 1, 2, 10, 11, 12, 13, 14, 15, and 16 in table 7.1, normalized between 0 and 1. Wealth index is a 0 to 1 score. Regressions also include health facility fixed effects.

\* $p < .10$  \*\* $p < .05$  \*\*\* $p < .01$

## Notes

1. Simple correlations indicate that self-reported satisfaction levels are highly correlated with the quality index. These simple correlations are available from the authors upon request.
2. The universe from which the sample is drawn includes all health facilities that offered ART and had at least 100 patients on their waiting list. The sample is representative of these health facilities.
3. We use equal weights in order to avoid assigning arbitrary weights to some questions. The normalization between 0 is for convenience only; it does not influence our findings. The quality index is ordinal in nature, not cardinal.
4. The quality index is different from the vignette score since the former focuses on exit patients and the latter asks questions directly of health care providers (for example, Baltussen and Ye 2006; Das, Hammer, and Leonard 2008; Wouters et al. 2008).
5. A related question that we do not address is whether health facilities that offer HIV/AIDS treatment offer better treatment to HIV/AIDS patients. To the extent that HIV/AIDS treatment is associated with the facility's equipment level, this question would address the allocation of resources at the health sector level, which is beyond the scope of this chapter.
6. In annex 7A, we provide some evidence that these findings are robust to alternative measures of the quality index.
7. The results in table 7.2 show that patients visiting for HIV services are slightly less wealthy, but the difference in wealth is not significant.
8. For instance, it makes sense to ask an HIV patient about "blood in the sputum" to check for opportunistic tuberculosis infection, but it makes no sense to ask this to a patient who has come in with, say, a headache. Therefore, it is not at all surprising that this question is asked more often of HIV patients than non-HIV patients.



9. One potential limitation of this approach is the extent to which patients are able to recall accurately the questions that doctors ask. For our purpose, this may not be a problem if the recall bias is the same for HIV and non-HIV patients, but there might be reason to believe that the measurement error in this case is correlated with the sickness—HIV patients, for instance, may be more distressed and therefore less likely to remember questions accurately.

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