

Inadequate Adherence to Antiretroviral Treatment and Prevention in Hospital and Community Sites in Burkina Faso and Mali

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BACKGROUND

Rapid expansion of antiretroviral treatment (ART) programs currently underway in sub-Saharan Africa underlines the relevance of adherence for ensuring optimal treatment outcomes, reducing the risk of drug resistance, and boosting prevention efforts with sero-status specific interventions. Pilot studies have shown high levels of adherence: however these do not necessarily reflect "real world" adherence levels. Here, we hypothesized that adherence might be lower than rates reported in pilot studies.

CONTEXT

Burkina Faso

Burkina Faso has an estimated **300,000 people living with HIV**. There, the response to the epidemic has been spearheaded by a robust community-based sector with most patients receiving ART through non-governmental mechanisms. The vibrancy of this response has been internationally recognized, most notably by the World Bank which chose Burkina to pilot the community-based strategy of its Treatment Acceleration Program (TAP). Currently six community-based organizations (CBOs) are providing ART to an estimated 2000 patients at varying cost.

Mali

At the end of 2003, Mali was estimated to have a total **140 000 people living with HIV**. The degree of political engagement in the fight against AIDS is visible in its well developed public sector ART program, the Initiative malienne d'accès aux antirétroviraux, IMAARV, which started in 2001 in three sites in Bamako. ART is subsidized by the government and has been free since August 2004.

- Neighbouring countries in West Africa
- Strong cultural, economic and religious similarities
- Similar epidemiological and virological profiles.

But...

- Low seroprevalence in Mali (second lowest in West Africa 2%).
- High seroprevalence in Burkina Faso 4-10% (second-highest in West Africa)
- Mali: strong governmental response
- Burkina Faso: robust and spontaneous community-based response.

OBJECTIVES

For patients having received >6 months ART in hospitals and community based organizations in Bamako, Mali and Ouagadougou, Burkina Faso, we describe:

- Socio-demographic, clinical, and immunologic status
- Adherence to treatment and partner notification

METHODS

Design: A cross-sectional study of adherence was conducted using a questionnaire. Patient interviews and chart review were used by health care providers.

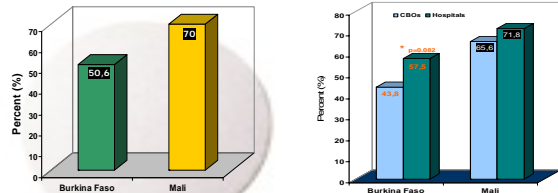
Sample: n=270 (94 men; 176 women)

Patients recruited in **six participating sites** in Bamako and Ouagadougou. Sites were a representative mix of public, non-governmental, community and hospital-based ART delivery mechanisms.

Analysis: Logistic regressions were performed separately by country to isolate risk and protective factors for adherence behaviour.

NUMBERS AND PERCENTAGES OF PATIENTS WITH COMPLETE ADHERENCE

Only **58.5% (158/270)** of patients had complete adherence.
 Proportion of adherent patients: Bamako (**70.0%**) > Ouagadougou (**50.6%**) p<0.001
 Hospitals (**64.6%**) > CBOs (**50.0%**) p<0.017

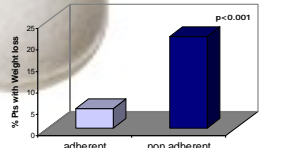


	N(%)	p
Individual Characteristics		
Sex		
Female	103/176 (58.5)	998
Male	55/94 (58.5)	
Age		
≤30	35/62 (56.3)	484
31-35	26/52 (50.0)	
36-40	34/63 (54.0)	
41-49	39/65 (60.0)	
≥50	14/18 (77.8)	
Religion		
Christian	48/98 (49.0)	024
Muslim	110/171 (64.3)	
Education		
Not educated	38/61 (62.3)	560
Elementary	43/70 (61.4)	
Secondary or more	77/139 (55.4)	
Occupation		
With salary	32/65 (49.2)	231
Commission (service)	63/104 (60.6)	
Housewife	49/73 (66.8)	
Unemployed	14/26 (53.8)	
Marital status		
Married monogamous	69/109 (63.3)	133
Married polygamous	16/23 (69.6)	
Single	26/58 (44.8)	
Divorced/separated	10/19 (52.6)	
Widowed	32/61 (52.5)	
Relational Characteristics		
Number of children		
0	31/66 (47.0)	099
1	44/73 (60.3)	
2-3	50/74 (67.6)	
≥4	32/55 (58.2)	
Number of people you provide for		
0	38/64 (59.4)	750
1-2	27/52 (51.9)	
3-4	30/47 (63.8)	
5-6	27/44 (61.4)	
≥7	33/60 (55.0)	
Having a regular partner		
No	27/58 (46.6)	037
Yes	131/212 (61.8)	

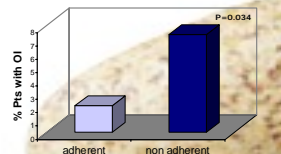
	N(%)	p
Material and financial condition		
Financial autonomy		
Yes	42/139 (30.2)	197
No	16/23 (69.6)	
Revenue (\$US)		
No revenue	43/76 (56.3)	188
1-4\$	33/50 (66.0)	
5-8\$	37/39 (94.9)	
9-16\$	26/31 (83.9)	
17-24\$	11/26 (42.3)	
Material situation		
Yes	39/52 (75.0)	109
No	64/143 (45.0)	
Temp.	49/71 (69.0)	

	N(%)	p
Therapeutic history		
Type of treatment		
1N, 1N, 1N	133/195 (68.2)	345
1N, 1N, 1P	33/53 (62.3)	
1N, 1N, 1I	2/8 (25.0)	
Length of treatment (months)		
1-6	26/24 (108.0)	188
7-12	87/95 (91.6)	
13-18	29/31 (93.5)	
19-24	20/31 (64.5)	
> 25	21/25 (84.0)	
Knowledge		
Knowledge of treatments		
Low	14/23 (60.9)	360
Medium	37/53 (69.8)	
High	29/33 (87.9)	
Preventive Behavior		
Condom use with regular partner		
Yes	63/89 (70.8)	778
No	77/122 (62.9)	
Status disclosure to partner		
No	59/72 (80.6)	783
Yes	73/120 (60.9)	

ASSOCIATION B/W ADHERENCE AND WEIGHT LOSS



ASSOCIATION B/W ADHERENCE AND OCCURRENCE OF OPPORTUNISTIC INFECTIONS



MAIN FINDINGS FROM BIVARIATE ANALYSIS

- Individual characteristics were **NOT** associated with ADHERENCE (except for religion)
- Relational characteristics:** "having children" and "having a regular partner" were associated with ADHERENCE
- Length of ART was **negatively** associated with ADHERENCE
- ADHERENCE was **NOT** associated with knowledge, nor preventive behaviours such as condom use and partner notification
- Adherence was related to **better clinical outcomes**
 - 4.6% adherent vs. 21.4% non-adherent lost weight p<0.0001
 - 2% of adherent vs. 7.3% non-adherent had had an OI (p=0.034)

RESULTS: REGRESSION MODELS PER COUNTRY

Mali

	Intercept	B.S.	Wald	df	Signif.	Exp(B) Odds Ratio
Age	0.173	0.23	1.975	1	1.677	1.014
Having a regular sex partner	0.559	0.16	2.633	1	1.05	1.839
0-6 months ART						
1-2 months ART	1.205	0.19	3.988	1	0.047	2.988
3-12 months ART	1.205	0.19	3.988	1	0.047	2.988
13-18 months ART	1.495	0.48	4.315	1	0.035	4.691
≥ 19 months ART	1.375	0.19	3.988	1	0.047	2.988
Constant	4.80	1.09	38.4	1	0.000	122.0

Burkina Faso

	Intercept	B.S.	Wald	df	Signif.	Exp(B) Odds Ratio
Age	0.001	0.00	0.000	1	0.999	1.000
Unstable work	0.001	0.00	0.000	1	0.999	1.000
Being a housewife	1.897	0.73	4.492	1	0.032	6.496
Unemployed	1.013	0.61	1.692	1	0.196	2.714
Number of children	0.01	0.01	0.000	1	0.999	0.999
Number of people you provide for	0.03	0.01	0.000	1	0.999	1.034
0-12 months ART						
13-18 months ART	0.01	0.01	0.000	1	0.999	0.999
≥ 19 months ART	-0.042	0.01	0.745	1	0.387	0.958
Constant	4.65	0.71	68.83	1	0.000	103.876

CONCLUSIONS

- Adherence is incomplete and varies considerably between countries.
- Initial high adherence rates reported from some pilot programs in Senegal and South Africa may not be representative of real world adherence rates in Africa.
- Lack of robust association between individual variables and adherence suggest that relational characteristics, local and site-specific factors may play an important role in determining adherence and may explain why adherence is so high in high-profile "boutique" ARV pilot programs; further study is required to elucidate this.
- Inadequate adherence levels reflect experience in other countries and suggests that ARV drug resistance may become a significant public health problem unless significant efforts are deployed to support adherence. Significant efforts must be urgently undertaken to improve adherence to treatment and prevention in this group especially after the first year of ART.

