



RESEARCH ARTICLE

ADHERENCE TO ANTIRETROVIRAL TREATMENT AT THE MOTHER-CHILD HOSPITAL LUXEMBOURG IN BAMAKO, MALI

Brahima CISSE¹, Saoudatou TALL², Mamadou KEITA³, Alassane Oumar⁴, Mahamadou TRAORE⁵, Boubacar DIARRA⁶, RenéMarie DAKUO⁶ and Dramane SAMAKE⁷

¹National Centre for University Works (CENOU), BP : 208, Tél : (+223) 20 71 96 32, Bamako, Mali; ²Reference Health Center of Commune V of Bamako, Mali; ³Reference Health Center of Commune VI of Bamako, Mali; ⁴Faculty of Medicine and Odonto-Stomatology of the University of Science, Technology and Technology of Bamako, Mali; ⁵National Institute of Public Health (INSP), BP: 1771, Tel: (+223) 20 21 42 31, Bamako, Mali; ⁶Centre Hospitalo-Universitaire Gabriel TOURE, BP: 267, Tel: (+223) 20 22 27 12, Bamako, Mali

ARTICLE INFO

Article History:

Received 14th August, 2024

Received in revised form

27th September, 2024

Accepted 20th October, 2024

Published online 30th November, 2024

Key Words:

Observance TARV, CHME, Bamako, Mali.

*Corresponding author:

Brahima CISSE

ABSTRACT

Objectives: Adherence to antiretroviral therapy (ART) is a prerequisite for successful management of patients living with HIV. The multiple factors associated with poor adherence are still poorly understood. This is why a study on compliance with ART was conducted at the mother-child hospital in Luxembourg. The objective was to assess adherence to ART in patients followed at the hospital HIV management unit. **Method and materials:** The survey was cross-sectional, descriptive, retrospective and comprehensive. The study population consists of all patients living with HIV, followed at the mother-child hospital in Luxembourg, during the period from 01 January to 31 March 2010. **Results:** This study involved 130 patients on ARVs with durations ranging from 2 weeks to 12 months. The average age was 36 years (+or-10) with a female predominance (67.7%). 78.5% of patients were classified as CDC Stage C. The majority of patients (64.6%) were at month 6 of ART. 13% of patients used traditional treatment. 74.6% of patients did not inform a third party of their HIV status. 20.8% of patients feel they are victims of stigma and/or discrimination. The combination regimen 2INRT+1INNRT was the most prescribed (94.6%). Adherence to treatment was good in 88.5%. The causes of non-compliance were: stock-out: 33.3%; rejection: 26.7%; travel: 20%; side effects: 13.3%; Oblivion: 6.7%. **Conclusion:** The study showed a statistically significant relationship between adherence and psychosocial factors: stigma, information about the patient's HIV status, use of traditional treatment ($p<0.05$) and between adherence and the presence of side effects following ART ($p<0.05$).

Copyright©2024, Brahima CISSE et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Brahima CISSE, Saoudatou TALL, Mamadou KEITA, Alassane Oumar, Mahamadou TRAORE, Boubacar DIARRA, RenéMarie DAKUO et Dramane SAMAKE. 2024. "Adherence to antiretroviral treatment at the Mother-Child Hospital Luxembourg in Bamako, Mali". *International Journal of Current Research*, 16, (11), 30627-30630.

INTRODUCTION

HIV infection is now a major global public health problem. In its latest report published in December 2009, UNAIDS estimated that 33.2 million people are living with HIV worldwide (1). In 2008, 2.7 million people were infected (1, 2). In Mali, after the detection of the first case and the first seroprevalence survey in Bamako in 1987, the state resolutely committed itself to dealing with the pandemic. It is in this respect that significant efforts have been made by the highest authorities in terms of political commitment and support for activities to combat the pandemic (3). Thus, the initiatives and actions initiated by the government and its partners have led to encouraging results in the fight against the pandemic (3). The establishment of the Malian initiative for access to antiretrovirals (IMAARV) in 2001 with a view to improving the quality of care for people living with HIV has made it

possible to provide free care for people infected with HIV and AIDS since July 2004 (4). In addition, the number of ARV treatment sites has increased from 3 in 2001 to 75 as of 31 October 2009 throughout the country (5). These efforts have led to a positive evolution in the fight against the pandemic, which has been marked by a drop in seroprevalence from 1.7 in 2001 to 1.3 in 2006, according to Mali's fourth demographic and health survey (DHS-IV) carried out in 2006 (3). However, difficulties persist, particularly with regard to the stigmatization and discrimination of people living with HIV, but also the success of patient care, the essential condition of which is good adherence to treatment. According to several authors, the effectiveness of antiretroviral treatment depends on an adherence rate greater than or equal to 95% (6, 7, 8). However, the means of measuring and the determinants of compliance as well as the means of reducing the number of non-compliant people are not well known.

This is why we believe it is relevant to study adherence to antiretroviral treatment. The establishment of IMAARV has made it possible to open a unit for the care of people living with HIV at the mother-child hospital center. Since its opening in 2003, 458 patients living with the virus have been put on ARVs. However, no aspect of this care has been studied at the centre level to date.

METHOD AND MATERIALS

The study took place from 1 January to 31 March 2010 at the Luxembourg Mother and Child Hospital, located in the heart of Hamdallaye in the far west of commune IV of the district of Bamako. It includes: the medical departments (internal medicine, cardiology, pediatrics), the surgical departments (gynaecology and obstetrics, general surgery, pediatric surgery), the medical imaging department, the medical laboratory, the hospital pharmacy, the maintenance department, the social service and the general management. This is a descriptive and retrospective cross-sectional survey whose study population consists of all patients living with HIV, followed at the Mother and Child Hospital in Luxembourg during the above-mentioned period. The exhaustive method was used. It consisted of taking into account all the patient files listed. However, only properly completed and usable records were included in the study. Two male investigators were selected from among the hospital staff based on their experience in epidemiological investigations and follow-up of patients living with HIV. The training of the investigators was done from 15 to 16 April 2010. The collection instrument is a data collection sheet for each patient record. We conducted a literature review of individual patient follow-up records and ARV treatment follow-up registries. Data entry was done with a computer using Epi info Version 3.3.2 software. The analysis of the data provided by the Epi Info software allowed us to develop the tables and to proceed with the calculation of the frequencies and confidence intervals, the means and the standard deviations. Univariate analyses were performed for the calculation of frequencies and confidence intervals for qualitative variables and the calculation of means and standard deviations for quantitative variables. Bivariate analyses were performed for comparison of proportions and means. Chi² tests, Yates tests and Fischer's exact test are used according to their application conditions to compare proportions. For the comparison of the averages, the student's test or the Anova will be used. The results are expressed with a 5% risk of error.

RESULTS

Descriptive study: The study involved 130 patients listed during the period from January 1st to March 30th, 2010. The average age is 36 years (+or- 10) with a minimum of 18 years and a maximum of 66 years. The majority of our patients (90), or 70%, are between 26 and 45 years old. The majority of patients, 67.7%, are female. The sex ratio is 0.47 in favour of the female sex. Eighteen patients, or 13.8%, lost their spouses. The majority of patients have Malian nationality, i.e. 88.5%. Patients residing in Bamako accounted for 58.5% of cases. Sixteen patients, or 12.3%, reside outside the country, including fourteen (14) in Guinea and two (2) in Cameroon. Housewives were the most represented (29.2%). Fifty-nine patients, or 45.5%, are uneducated. Ninety-seven patients, or 74.6%, did not inform of their status.

Seventeen patients, or 13%, used traditional therapists. Patients who are in their sixth month of follow-up accounted for 64.6% of cases. One hundred and two patients, or 78.5%, were classified as stage C of the CDC classification. Two patients were classified as stage A, i.e. 1.5%. The viral load was not achieved in three patients. One hundred and two patients or 78.5% had a viral load at baseline > one hundred thousand copies/ml. The combination of 2INRT+1INNRT was prescribed in 94.6% of cases. Compliance with treatment was good in one hundred and fifteen patients, i.e. a percentage of 88.5%. Stock-outs were the main cause of non-compliance with treatment (33.3%). Twenty-seven patients, or 20.8%, were victims of stigmatization and/or discrimination.

Analytical study: There is no statistical relationship between patients' sociodemographic characteristics, baseline treatment regimen and treatment adherence. Statistically significant associations were found between ART adherence to ART and the absence of side effects at day 14; the existence of the notion of stigmatization and/or discrimination; taking traditional treatment and informing one or more people of their HIV status.

DISCUSSION

The study assessed compliance in 130 patients. An 88.5% rate of good compliance was observed. Stock-outs were the main cause of non-adherence to antiretroviral therapy (33.3%).

Adherence to treatment: Our 88.5% compliance rate is almost close to the rates observed by other African authors, C. Maoula *et al* in Bangui (8) with a rate of 83%, Laurent C *et al* (17) in Senegal with a rate of 87.9% and A. Elira *et al* in Congo (19) with 84% in 2006. However, a lower rate of 41.5% was observed by Oumar. A *et al* in Mali (15) in 2007. This could be explained by the fact that in the latter study, compliance was assessed in patients on ARVs for a period of 12 to 40 months. Indeed, this observation confirms the observation made by some authors (12,18) who believe that patients on ART tend not to observe after a long period of drug use.

The determinants of compliance

Socio-demographic characteristics: The sociodemographic aspects found in the study have been mentioned by several authors (1, 15, 19,13), these are: the young age of HIV-infected patients; female predominance; minority marital status; the greater representativeness of the socio-professional categories considered as vulnerable patients (housewives, peasants, the unemployed, pupils and students). However, we did not find a significant association between treatment adherence and patient sociodemographic characteristics. This observation was made by A.A. Ahmed *et al* in Djibouti (13).

Psycho-social characteristics: A link was found between information on serological status and adherence to ARV treatment (OR=0.12 with CI=(0.03-0.45)). According to some authors (15, 20), the factor associated with good compliance was the assistance of the patient by a family member informed of his or her HIV status. Patients who have informed at least one person of their HIV status are in the minority in our series. The factor associated with good compliance was the lack of information on serological status.

Table 1. Assessment of adherence by patient sociodemographic characteristics, from treatment regimen to baseline

VARIABLE		OBSERVANCE		PROBABILITE
		Good	Bad	
Age	16-45ans	96(89,7%)	11(10,3%)	0,25
	46-66ans	19(82,6%)	4(17,4%)	
Sex	Male	37(88,09%)	5(11,91%)	0,56
	Feminine	78(88,6%)	10(11,4%)	
Residence	Bamako	68(89,4%)	8(10,6%)	0,88
	Other	47(87%)	7(13%)	
Profession	Housewife	33(86,8%)	5(13,2%)	0,45
	Other	82(89%)	10(11%)	
Level of education	Educated	63(88,7%)	8(11,3%)	0,56
	Uneducated	52(88%)	7(12%)	
Marital status	Married	50(89,2%)	6(10,8%)	0,98
	Other	65(88%)	9(12%)	
Weight	<=45kg	48(82,7%)	10(17,3%)	0,12
	>45kg	67(93%)	5(7%)	
Baseline treatmentregimen	2inrt+1innrt	109(88,6%)	14(11,4%)	0,58
	Other	6(85,7%)	1(14,3%)	

Table 2. Evaluation of Adherence according to side effects at day 14, the notion of stigma and/or discrimination, the notion of traditional treatment

VARIABLE		OBSERVANCE		Statistique
		Good	Bad	
EFFECTS	Presence	33(71,7%)	13(28,3%)	OR= 0,06, IC= (0,009-0,26), P= 0,00001
	Absence	82(97,6%)	2(2,4%)	
STIGMA/DISCRIMINATION	Yes	15(55,5%)	12(44,5%)	OR=0,04 IC= (0,001-0,17), P= 0,0000002
	No	100(97%)	3(3%)	
TRADITIONAL TREATMENT	Yes	6(35,3%)	11(64,7%)	OR=0,02 IC= (0,00-0,10), P= 0
	No	109(96,4%)	4(3,6%)	
informing a third party of their HIV status	Yes	23(69,7%)	10(30,3%)	OR=0,13 IC= (0,03-0,45), P= 0,0003

Knowledge of the patient's HIV status is very often a source of stigmatization and/or discrimination. Indeed, a significant relationship between compliance and stigmatization and/or discrimination within the professional or family environment has been noted by several authors (20, 13, 21, 14). In our study, eighty percent (80%) of patients with poor compliance also feel that they are victims of stigma and/or discrimination. Also, we found a statistically significant relationship between the notion of stigma and/or discrimination and treatment adherence (OR=0.003 with a CI= (0.008-0.14). The use of traditional medicine is, according to some authors (21,14), a characteristic of non-compliance with ARV treatment. In our series, 75.3% of the poor adherents used traditional therapists. We found that there is a statistically significant relationship between the use of traditional treatment and adherence to ARV treatment (OR= 0.002 with a CI= (0.004-0.008). Indeed, traditional therapists are key players in the use of care in Africa (4). There is one traditional healer for every five hundred (500) inhabitants compared to one (1) doctor for every four hundred thousand inhabitants (400,000 inhabitants) on the mainland (22).

Clinical characteristics: The most prescribed regimen in our study, combining 2INRT+1INNRT, has been used by other authors (15,23). Indeed, this treatment regimen is recommended as a first-line treatment by the WHO in countries with limited financial resources. According to several authors (24,23), triple therapy combining 2INNRT+1IP is the first-line regimen of choice for antiretroviral therapy. We did not find a statistical relationship between the prescribed treatment regimen and treatment adherence, Fischer's p is 0.58. A statistical relationship between the presence of side effects and non-adherence to treatment has been reported by authors (25,26). In our study, we also found that there is a statistically significant relationship between the presence of side effects following ARV treatment and adherence to treatment (OR=0.63 with CI= (0.009-0.26).

The absence of side effects is associated with better adherence to ART.

The causes of non-compliance: Stock-outs remain the main cause of non-adherence to ARV treatment in several African countries (23). In the series of Oumar. A *et al* in Mali (15) in 2007, stock-outs were the cause of treatment interruption in 74.3%. This relatively higher rate than ours (33.3%) could be explained by the size of their sample (n=458). In Senegal, Laurent C *et al* (17) found that the interruption of ARV treatment was due in 18.5% of cases to the patients' lack of financial means. In Mali in 2007, Oumar. A *et al* (15) found that lack of financial means was the cause of the interruption of ARV treatment in 8.5% of cases. However, this cause was not mentioned in our study. This could be explained by the fact that patients living with HIV receive free care, but also by the increase in the number of treatment sites, which have become closer and more accessible to patients. However, we found in our study that 26.7% of patients categorically refused to take the treatment and 20% stopped it for travel reasons. Thus, it is necessary to initiate health actions aimed at psycho-social support for the patient with a view to better adherence to antiretroviral treatment. Also, the implementation, at the sub-regional level, of mechanisms to facilitate access to and availability of ARVs for patients during travel, will certainly contribute to improving treatment compliance.

Biological criteria and treatment compliance: Several studies have shown a significant relationship between adherence and therapeutic efficacy (13, 14, 25, 27). We found that there is a link between adherence to ARV treatment and increased CD4 counts at M6 and decreased viral load at M6 (p is 0.01). Indeed, the increase in the CD4 count and the decrease in the viral load over time depend on good compliance with ARV treatment. But also the resulting improvement in general condition promotes better compliance.

CONCLUSION

Good adherence, a prerequisite for successful antiretroviral treatment, remains a major challenge for programs and initiatives to access ARVs for disadvantaged populations. This study conducted at the "Luxembourg" mother-child hospital in Bamako shows a significant relationship between psychosocial factors and adherence to ARV treatment. It also underlines the need for a strengthened organization of the dispensation services of the center's pharmacy and for therapeutic education essential to the patient's management of the side effects and schedules of taking ARV drugs. Particular emphasis is placed on the need for psycho-social support for the patient to improve adherence to ARV treatment. However, a study is needed to validate methods for measuring compliance in order to improve the quality of care for people living with HIV.

CONFLICTS OF INTEREST: The authors have no conflicts of interest to report.

REFERENCES

1. ONUSIDA/OMS. AIDS epidemic update 2009. Genève: ONUSIDA, 2009, 100 p.
2. OMS. Les Femmes et la santé : la réalité d'aujourd'hui, le programme de demain. Genève : OMS, 2009, 87p.
3. Samake S, Traoré SM, Ba S, *et al.* Enquête démographique de santé Mali (EDS- IV 2006) Bamako, Mali, juin 2006. 405p.
4. Eholié SP, N'Dour CT, Cissé M, *et al.* L'observance aux traitements antirétroviraux : particularités africaines ; Méd. Mal Infect, 2006, 36 : 443-448.
5. Ministère de la santé du Mali, CSLS. : Répertoire national des sites de prise en charge adulte du VIH. Octobre 2009; 5 :56-58.
6. Dalgallarondo S. Une recherche négociée. La thérapeutique VIH en France. Social Travail 2000; 42 :160-83
7. De Jong MD, R J. Boer, F. De Wolf, *et al.* Overshoot of HIV-1-viraemia after early discontinuation of antiretroviral treatment. AIDS 1997, (11): F79-F84.
8. Mouala C, Roux P, Okome M, *et al.* Assessment of compliance with ARV treatment in Africa. Med Trop 2006; 66(6) :610-4.
9. Carreri P, Marcellin F, Spire B. Méthodes pour apprécier l'observance du traitement antirétroviral. Développement et santé, 2007 (187).
10. OMS, Améliorer l'accès aux traitements dans les pays à ressources limitées. Recommandation de santé publique. Avril 2002 1^{er} Edition Genève ,1-37.
11. Benoist J., 1999, « A propos du rapport entre dimension technique et médiation symbolique dans la médication » : 383-394, in O. Faure (dir.), les thérapeutiques : savoirs et usages. Lyon, Fondation Marcel Mérieux.
12. Desclaux A., 2001, « L'observance en Afrique : Question de culture ou " Vieux problème de santé publique" ? » : 57-66, in Y. Souteyran et M. Morin (dir.), L'observance aux traitements du VIH/Sida : mesure, déterminants, évolution. Paris, ANRS, Collection Sciences Sociales et Sida.
13. Ahmed, A. A. C. Katlama, J. Ghosn. Evaluation de l'observance au traitement antirétroviral au sein d'une cohorte de 200 patients à Djibouti (2005). Health journal; volume13 No.6, November-December, 2007.
14. Tourette-Turgis C, Rebillion M. Accompagnement des personnes sous traitement antirétroviral. Paris, Comment dire, 2001: 138.
15. Oumar. AA, Dao S, Diamoutene. A, Coulibaly. S, *et al.* Les facteurs associés à l'observance du traitement antirétroviral à l'hôpital du PG. Mali Med 2007, (1): 18-21.
16. SNV -Bamako. : Etude Monographique de la commune IV du district de Bamako ; Avril 2006.
17. Laurent C, Diakhate N, Gueye FNN, *et al.*: The Senegalese government's highly active antiretroviral therapy initiative: an 18-month follow-up study. AIDS. 2002; 16(10): 1363-1370.
18. Laurent C, Gueye FNN, Ndour CT *et al.*: Long-Term benefits of highly active antiretroviral therapy in Senegalese HIV-1-infected Adults. AIDS. 2005; **38 (1)**:14-17.
19. Elira Dokekias, A. F. O. AtipoGaliba, A. DziaLepfoundzouBokilo*et al.* Evaluation of antiretroviral therapy in HIV infected adults in the department of haematology, University hospital of Brazzaville. Bull Soc PatholExot, 2008, 101, 2, 109-112.
20. Andreo, C. A.D. Bouhnik, J. Soletti, *et al.* La non observance des patients infectés par le VIH, soutenus par une association communautaire. Santé publique 2001 ; 13 (3) :249-62
21. Garcia R, Schooley RT, Badaro R. An adherence trilogy is essential for long-term Haart success. Brazilian journal of infectious diseases, 2003, 7(5):307-14.
22. Hosseinipour MC, Kazembe PN, Sanne IM, Van der Horst CM. Challenges in delivering antiretroviral treatment in resource poor countries. AIDS 2002; 16:177-87.
23. Katlama C, *et al.* : Les traitements antirétroviraux : bilan des stratégies et indications thérapeutiques. Annales de l'institut Pasteur. Actualités. Le SIDA à l'ère des multithérapies. 2000; 11: 23-37.
24. Furlan V, Taburet AM. : Interactions médicamenteuses avec les antirétroviraux. Thérapie GBR. 2001 ; 56 : 267-271.
25. Bentz L *et al.* Description et évaluation d'un programme d'intervention sur l'observance thérapeutique (Counseling) dans un Centre Hospitalo-universitaire. In : L'observance aux traitements contre le VIH/sida - Mesure, déterminants, évolution. Paris, Agence nationale de recherches sur le sida, Collection Sciences sociales et SIDA. 2001 :99-112.
26. Tugenburg T, Wyatt MA, Ware NC. Paradoxical effects of provider emphasis on adherence Haart. Paper presented at the XV International Conference on AIDS, Bangkok, 11-16 July, 2004
27. Msellati P et coll. L'accès aux traitements du VIH/sida en Côte d'Ivoire. Evaluation de l'initiative Onu sida/Ministère de la santé publique. Paris, Agence nationale de recherches sur le sida, 2001:327.
