Socio-economic and health characteristics of HIV-infected patients seeking care in relation to access to the Drug Access Initiative and to antiretroviral treatment in Côte d’Ivoire

Philippe Msellati, Anne Juillet-Amari, Joanne Prudhomme, Hortense Aka-Dago Akribi, Djenéba Coulibaly-Traore, Marc Souville and Jean-Paul Moatti for the Côte d’Ivoire HIV Drug Access Initiative Socio-Behavioural Evaluation Group

Objective: To compare socio-economic and health characteristics of HIV-infected patients in Côte d’Ivoire whether or not they had access to the Drug Access Initiative (DAI) and to antiretroviral drug (ARV) treatment.

Design and methods: Cross-sectional survey using medical files, blood sampling for CD4 cell counts and face-to-face interviews among all patients, informed of their HIV status, who attended during a 6-week period in the five DAI referral centres and three additional centres in charge of HIV care in Abidjan and Bouaké (participation rate = 65.4%). Multiple logistic regression using generalized estimating equations (GEE) to identify factors related to non-access to DAI and to ARV treatment.

Results: Among the 711 respondents, 23.0% were ARV-treated, 14.2% had been included in the DAI but were still waiting for initiation of ARV, and 62.7% were neither part of the DAI nor ARV-treated. In this latter group, less than one-third (29.6%) declared that they knew about the existence of the DAI. Among the 164 ARV-treated patients, 59.1% had benefited from DAI public subsidies partially covering the costs of drugs. In the non-DAI—non-ARV-treated group, 86% could have qualified for ARV treatment according to the DAI medical criteria (CD4 cell counts < 500 x 10^6 cells/l), and only 32.9% of those medically eligible were prescribed cotrimoxazole prophylaxis. In multivariate analysis, not being in the DAI and not being ARV-treated was related to: being a male, not having health care insurance, having a low level of education, living in poor housing conditions (absence of refrigerator in the household, absence of ventilation in patient’s bedroom), and not being under cotrimoxazole prophylaxis.

Conclusion: The Ivoirian DAI has facilitated access to ARV treatment for a significant number of patients with limited ability to pay. The majority of HIV-infected patients seeking care however face persisting socio-economic and informational barriers to access to these treatments.

Keywords: Access to antiretroviral treatment, Africa, gender, HIV infection, socio-economic status

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From the Institute for Research & Development (LPE/IRD), University of Provence, Marseille, France, the University of Abidjan, Côte d’Ivoire, the Regional Center for Disease Control (ORS PACA), Marseille, France, the Department of Psychology, University of Abidjan, the Institute of Sociology & Ethnology University of Abidjan, Côte d’Ivoire, and INSERM U 379 & University of the Mediterranean, Marseille, France. *See Appendix.

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Correspondence and requests for reprints to Jean-Paul Moatti, INSERM U379 ‘Epidémiologie & Sciences Sociales Appliquées à l’Innovation Médicale’, 23, rue Stanislas Torrents, F-13006 Marseille, France.
Tel: +33 (0)4 91 59 89 00; fax: +33 (0)4 91 59 8927; e-mail: moatti@marseille.inserm.fr

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Introduction

The pilot phase of the UNAIDS HIV Drug Access Initiative (DAI), aimed at providing wider access to HIV-related drugs in developing countries, was launched in November 1997. Four countries, Chile, Côte d'Ivoire, Uganda and Vietnam, participated and the Ministry of Health established its own national schedule in close collaboration with UNAIDS [1].

Côte d'Ivoire had the highest HIV prevalence in West Africa, with an estimated one million individuals already HIV infected in 1998, namely approximately 6% of the general population [2]. In addition, the national Ivorian programme against AIDS had been integrated with the pre-existing national programme against tuberculosis which had already excellent expertise for delivery of care [3]. Finally, the Ivorian authorities expressed strong commitments for facilitating access to antiretroviral drugs (ARVs) in the HIV-infected population of their country.

The stated objectives, jointly adopted by UNAIDS and the Ministry of Health of Côte d'Ivoire, for the DAI were to improve HIV-infected persons’ access to essential drugs in remote primary-care centers, to drugs for the treatment of opportunistic infections (related to HIV/AIDS) in follow-up centers, and to antiretroviral therapies in referral centers. Specific goals of the DAI included the promotion of rational selection of drugs by health care providers and their clients and the availability of affordable HIV care [1].

In Côte d'Ivoire, the health authorities opted for a public mechanism to subsidize the costs of ARVs: patients who were identified as 'low income' could receive a 50 to 75% subsidy. In addition, patients identified as active members of people living with HIV/AIDS (PLWAs) non-governmental organizations (NGOs), as well as women who had participated in clinical trials for prevention of mother-to-child transmission of HIV, could receive the maximum subsidy, namely 95%. Patients' out-of-pocket monthly costs of drugs for highly active antiretroviral therapies (HAART) was about US$15 in 2000. Public subsidies of ARVs were partly supported by financial donations from the International Therapeutic Solidarity Fund (ISTF) sponsored by the French government.

In Côte d'Ivoire, the DAI effectively started in August 1998. Selected patients for the DAI accessed ARVs at six 'referral centers' in Abidjan, the economic capital of the country. These referral centers were the hospital departments or medical centers with the greatest experience in clinical care for HIV-infected patients. The procedure for accessing ARV treatment through the DAI started with a face-to-face interview with either a physician or a social worker. This first interview included a rapid assessment of patient's socio-economic status and ability to pay for the drugs. Following this first interview a CD4 cell count, viral load and other tests were performed. One month later, physicians could prescribe ARV treatment for patients who met the DAI medical eligibility criteria (CD4 cell count < 500 x 10^6 cells/l and/or viral load > 10,000 copies/ml, absence of contraindications for ARVs) and who had the ability to pay. For those who required a public subsidy to pay for the costs of ARVs, an authorization had to be obtained from the public committee in charge ('Comité de Gestion de l'Initiative') [4].

The evaluation of the socio-economic and behavioural impacts of the DAI, carried out by ANRS (the French Agency for AIDS Research) in close collaboration with social science researchers from Côte d'Ivoire [4], included a cross-sectional survey among HIV-infected patients, aware of their serostatus and seeking HIV care, in order to describe the socio-economic and behavioural characteristics of those who did, or did not get access to ARV treatment.

Material and methods

Data collection

A cross-sectional survey was carried out from December 1999 to February 2000 in the five referral centers of the initiative dealing with adult patients as well as three additional health structures in charge of HIV care in Abidjan and Bouaké, the second most populated town in the country (Infectious Diseases Department in Treichville University Hospital, USAC, Abidjan Military Hospital, Antituberculous Center in Adjamé, Abidjan, CIRBA, Hôpital de jour de Bouaké, CAT de Bouaké, CAT de Treichville). In each of these eight centers, during a period of a month and a half, a face-to-face questionnaire was proposed by physicians to all HIV-infected patients who had been informed of her/his HIV status. Once the patient's consent to participate in the study had been obtained, the survey questionnaire was administered face-to-face by specially trained interviewers.

The questionnaire included 11 questions dealing with patients’ socio-economic status including variables about the patient's practical conditions of living (such as living in collective housing, an indicator of poverty). Fifty-one additional questions dealt with the following items: knowledge of HIV status, circumstances of HIV testing and date of HIV diagnosis, sexual behaviours, psychological and health status, quality of life, health care-seeking behaviour and history of access to HIV care, impact of disease on resources of the household, family and social support, disclosure of HIV serostatus to others, knowledge and beliefs about HIV treatments and awareness of the DAI.

Medical data at time of the interview were obtained from consulting physicians and medical files. For the sub-sample of patients who were already in the DAI at
time of the study, we obtained from the files of the Rétro-CI project, in charge of the epidemiological and biological evaluation of the DAI, the CD4 lymphocyte counts at time of inclusion in the DAI before initiation of ARV treatment. In parallel, all other patients who agreed to answer the questionnaire were offered a CD4 lymphocyte count.

**Statistical analysis**

Four groups of respondents were compared: those included in the DAI and already ARV-treated at time of the survey (DAI-ARV group); those included in the DAI but still waiting for ARV treatment at time of the survey (DAI-non-ARV group); those having access to ARV treatment through other channels (non-DAI-ARV group), and those who did not access either ARV treatment or the DAI (non-DAI-non-ARV group). At first, univariate comparisons were made using 4 x 2 chi-square test for qualitative variables and Kruskall-Wallis test for quantitative variables. When the comparison between these four groups was significant, multiple comparisons were calculated using a 2 x 2 chi-square or a Mann-Whitney test.

In order to identify factors associated with failure to access ARV treatment we focused on the comparison between the non-DAI-non-ARV group and the rest of the sample and performed a multiple logistic regression using the generalized estimating equation method (GEE) [5,6].

**Results**

During the period of data collection, a total of 1087 HIV-infected adult patients, informed of their HIV status, consulted, at least once, at one of the participating health centers. Among these patients, 342 (31.5%) were not offered the questionnaire by their consulting physician. Among the 745 patients who were offered participation in the study, 95.4% (n = 711) gave consent and CD4 cell counts were obtained for 650 (91.4%).

When comparing the basic socio-demographic characteristics (sex, age, occupational status) and access to ARV treatment of the 342 patients who were not included with the 745 who were, the former were significantly older (36.6 versus 35.1 years of age, P = 0.02), less likely to be ARV-treated (12.6 versus 23.5%, P < 0.001), and more likely to have a high occupational status (middle and top management, civil servants) (30.6 versus 17.8%, P < 0.001). No significant differences were found between the 711 respondents and the 34 patients who refused to participate.

Of 711 respondents, about one-third (n = 242, 34.0%) were included in the DAI. At time of the interview, 141 of the DAI patients were ARV-treated (19.8% of total sample) (DAI-ARV group) whereas 101 patients (14.2% of total sample) were awaiting ARV treatment (DAI-non-ARV group). Twenty-three non-DAI patients (3.2%) had access to ARVs (non-DAI-ARV group). The majority of respondents (n = 446, 62.7%) were neither part of the DAI nor ARV-treated (non-DAI-non-ARV group). Of these, less than one-third (29.6%) knew about the existence of an initiative offering access to ARVs. Although women accounted for 48.9% of the total sample, this proportion was significantly higher among those included in the DAI than in the rest of the sample (55.0 versus 45.8%, P = 0.026).

Table 1 shows that patients in the non-ARV-non-DAI group significantly differed from the rest of the sample for most socio-economic characteristics. They were also more likely to have been more recently informed of their HIV diagnosis (in the 9 months period prior to the survey). However, even after adjustment for this factor in multivariate analysis, not being ARV treated and not having access to the DAI was significantly related to being a male, not having health care insurance, having a low level of education and living in poor housing conditions (absence of refrigerator in the household, absence of ventilation in patient's bedroom) (Table 1).

Among the 164 ARV-treated patients, no significant differences in socio-economic conditions were found when comparing those who had access to ARVs through the DAI to the minority of those who used other channels for drug procurement.

As also shown in Table 1, patients in the non-ARV-non-DAI group tended to declare a poorer subjective self-estimation of their own health status. This fact has to be related to the significantly higher proportion of patients in this group with symptomatic HIV infection (CDC AIDS stage > A).

Among the 650 patients with available CD4 cell counts at time of the interview, 566 (87.1%) had a CD4 cell count less than 500 x 10^6 cells/l and 324 (49.8%) were under 200 x 10^6 cells/l, but only 29.0% of those with less than 500 x 10^6 cells/l and 24.4% of those with less than 200 x 10^6 cells/l were ARV treated. The majority (67.9%; n = 57) of the 84 patients with CD4 cell counts ≥ 500 x 10^6 cells/l belonged to the non-ARV-non-DAI group. When excluding these 84 patients from analysis, no difference was found in levels of immunodepression between groups (mean CD4 cell count 193 ± 131 x 10^6 cells/l in the non-ARV-non-DAI group versus 175.3 ± 127.5 x 10^6 cells/l in the rest of the sample, P = 0.11). Moreover, the proportion of patients with CD4 cell count ≤ 200 x 10^6 cells/l was similar in the non-ARV-non-DAI group (48.6%) to the rest of the sample (51.4%, P = 0.54).

Overall, only 24.9% of patients in the non-ARV-non-DAI group had, however, been prescribed cotrimoxazole
Table 1. Access to the Drug Access Initiative and to antiretroviral treatment (ARV) and socio-economic and health characteristics of HIV-infected patients consulting for HIV care in Côte d'Ivoire (December 1999-February 2000, n = 711).

<table>
<thead>
<tr>
<th>Patients' characteristics</th>
<th>In DAI</th>
<th>Out of DAI</th>
<th>Adjusted sample</th>
<th>Total sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARV-treated</td>
<td>Non-ARV-treated</td>
<td>ARV-treated</td>
<td>Non-ARV-treated</td>
<td>Level of sign</td>
</tr>
<tr>
<td>Male gender</td>
<td>73 (52%)</td>
<td>36 (36%)</td>
<td>15 (65%)</td>
<td>239 (64%)</td>
</tr>
<tr>
<td>Age &lt; 35 years</td>
<td>63 (44%)</td>
<td>64 (63%)</td>
<td>8 (35%)</td>
<td>248 (56%)</td>
</tr>
<tr>
<td>Education level ≤ primary school</td>
<td>38 (27%)</td>
<td>49 (49%)</td>
<td>7 (30%)</td>
<td>287 (64%)</td>
</tr>
<tr>
<td>Head of household (or spouse of)</td>
<td>101 (72%)</td>
<td>60 (59%)</td>
<td>20 (87%)</td>
<td>275 (62%)</td>
</tr>
<tr>
<td>Education level</td>
<td>39 (27%)</td>
<td>44 (44%)</td>
<td>12 (52%)</td>
<td>101 (23%)</td>
</tr>
<tr>
<td>Access to tap water in household</td>
<td>130 (8%)</td>
<td>88 (87%)</td>
<td>22 (96%)</td>
<td>274 (62%)</td>
</tr>
<tr>
<td>No refrigerator in household</td>
<td>39 (27%)</td>
<td>41 (31%)</td>
<td>9 (39%)</td>
<td>316 (71%)</td>
</tr>
<tr>
<td>Absence of ventilation in bedroom</td>
<td>20 (14%)</td>
<td>29 (22%)</td>
<td>5 (22%)</td>
<td>207 (46%)</td>
</tr>
<tr>
<td>No health insurance</td>
<td>90 (64%)</td>
<td>71 (70%)</td>
<td>18 (78%)</td>
<td>399 (89%)</td>
</tr>
<tr>
<td>Has lost job since HIV diagnosis</td>
<td>25 (18%)</td>
<td>27 (27%)</td>
<td>6 (26%)</td>
<td>156 (35%)</td>
</tr>
<tr>
<td>Has disclosed HIV+ status to others</td>
<td>134 (95%)</td>
<td>86 (85%)</td>
<td>22 (96%)</td>
<td>246 (55%)</td>
</tr>
<tr>
<td>Knows HIV status for less than 9 months</td>
<td>39 (28%)</td>
<td>47 (47%)</td>
<td>4 (17%)</td>
<td>337 (56%)</td>
</tr>
<tr>
<td>Personally feels in bad health</td>
<td>56 (40%)</td>
<td>60 (59%)</td>
<td>8 (35%)</td>
<td>284 (65%)</td>
</tr>
<tr>
<td>Declares declining health when compared with previous year</td>
<td>25 (18%)</td>
<td>40 (40%)</td>
<td>6 (26%)</td>
<td>165 (37%)</td>
</tr>
<tr>
<td>Not under cotrimoxazole prophylaxis</td>
<td>69 (49%)</td>
<td>45 (45%)</td>
<td>14 (61%)</td>
<td>335 (75%)</td>
</tr>
<tr>
<td>CDC AIDS Stage &gt; A</td>
<td>56 (40%)</td>
<td>46 (46%)</td>
<td>11 (52%)</td>
<td>250 (58%)</td>
</tr>
</tbody>
</table>

The chi-square test was calculated on the 4 x 2 table. Odds ratios (ORs) and their standard error estimates were calculated by logistic regression based on generalized estimating equations. ARV, antiretroviral treatment; CDC, centers for disease control; CI, confidence interval; DAI, Drug Access Initiative.

prophylaxis and this proportion remained significantly lower than in the rest of the sample, even after multivariate adjustment (Table 1). When restricting the analysis to patients with available data on CD4 cell counts and CD4 cell counts < 500 x 10^6 cells/l, coverage by cotrimoxazole prophylaxis was only 32.9% in the non-DAI-non-ARV group and 58.1% in the group of DAI patients still waiting for ARV treatment (DAI-non-ARV group).

Among the 242 patients who were included in the DAI, the proportion of those who were already ARV treated was significantly lower among the 133 female patients (51.1%) than among the 109 male patients (67.0%, P = 0.01). DAI ARV-treated patients had logically longer follow-up in the initiative (65.2% with 6 months follow-up or more) than those still waiting for initiation of ARV treatment at the time of this cross-sectional survey (33.7%, P < 0.001). Among the 141 DAI patients who were ARV treated, about one-third (31.2%) had to pay the full costs of ARV drugs out of their pocket; whereas another third (34.1%) did benefit from the maximum level of public subsidy (95%); 17.0 and 17.7%, respectively, had a 75 and 50% subsidy.

Discussion

To our knowledge, this study was the first to compare socio-economic characteristics and health status of HIV-infected patients consulting for HIV care in Côte d'Ivoire (December 1999-February 2000, n = 711).
infected patients consulting for HIV care in African medical centers, whether or not they had access to ARV treatment. Of course, this cross-sectional survey is not representative of the whole HIV-infected population in Côte d’Ivoire since only a minority of HIV-infected individuals in this country, as elsewhere in Africa, are aware of their HIV serostatus. In Abidjan, 20 to 26% of pregnant women who received adequate counselling refused to be tested for HIV and more than one-third (38.6%) did not return for notification [7]. Moreover, fewer than one out of ten adults seen in primary health-care centers in the most populated neighborhoods of Abidjan had been tested for HIV [4]. Among those who know they are infected, the proportion who effectively consult health structures for HIV counselling and care remains unknown. Our survey was focused on an HIV-infected population that should logically be the easiest to target for access to ARV treatment, namely HIV-infected patients aware of their serostatus and seeking health care in the main hospital departments and medical centers providing HIV care.

At the individual patient’s level, affordability of drugs remains a major barrier between HIV-infected individuals and access to ARV treatment in Africa. At the time of our survey, monthly costs of HAART were between 250 000 and 300 000 CFA Francs (~ US$450-540), when the legal minimum salary in Côte d’Ivoire was only 40 000 CFA Francs (US$75), annual health care expenditures per capita was only 6200 CFA Francs (US$12), and only 20% of the general population had some form of health insurance [8]. This cross-sectional survey shows that the introduction of the DAI in Côte d’Ivoire has allowed access to ARVs for groups of patients who would not have had ability to pay for ARVs in the absence of public subsidies. This is especially true for women who had previously participated in mother-to-child transmission prevention programmes and received the 95% maximum subsidy, and thus, whose proportion was higher among patients included in the DAI than in the rest of our sample.

This survey however shows that the DAI had not yet been able to reach the majority of HIV-infected patients medically eligible for ARV treatments, aware of their serostatus and in regular contact with the health care system. Indeed, 86% of non-DAI—non-ARV—treated patients in our sample could have qualified for ARV treatment according to the medical criteria of the DAI (CD4 cell counts < 500 x 10^6 cells/l), and nearly half of them were already under 200 x 10^6 cells/l which means that initiation of ARV treatment should have been considered a medical priority [9]. In spite of public subsidies for ARVs, patients from the poorest social and economic background did not achieve access to ARVs.

A first explanation for limited access to DAI among HIV-infected patients consulting for care is that information on the existence of this initiative has not been widespread. Even in the population attending the referral or peripheral centers of the DAI: more than 60% of patients out of the DAI in our sample had never heard about it. This illustrates how difficult it is to provide accurate information in limited-resource settings on the benefits and costs of ARVs. Barriers to appropriate dissemination of information on ARVs could not be fully overcome. There are various explanations which may have contributed to this limitation. A recent knowledge of HIV status (less than 9 months) was associated with non-access to DAI, reflecting the complexity of the process of access to HIV care in general. Qualitative research suggested that some of the HIV-infected patients who were aware of the availability of ARVs self-excluded because they expected insuperable financial, practical and social difficulties [4]. In addition, in order to access ARV treatment, HIV-infected patients may need to disclose their serostatus to family members, including their main partner, and this requirement may have presented a barrier. Here, ARV-treated and DAI patients were far more likely to have disclosed their serostatus to significant other people (Table 1). Finally, health care professionals in referral and peripheral centers of the DAI may not have provided information about the initiative to HIV-infected patients whose living conditions appeared inappropriate for ARVs. Although, in developed countries, it has been shown that non-adherence to HAART cannot be reliably predicted by easily identified patient characteristics [10], in the Ivorian context, DAI physicians and social workers may have anticipated non-adherence to occur more often among their patients with the lowest socio-economic status.

Comparison between HIV-infected patients attending medical centers in and out of the DAI also highlights another major limitation of the initiative. Two clinical trials have shown the positive impact of cotrimoxazole prophylaxis on the survival of non-ARV-treated, HIV-infected patients [11,12]. Such low-cost prophylaxis (< US$ 2 per month) is now recommended for all HIV-infected adults with symptomatic HIV infection and/or with CD4 cell counts ≤ 500 x 10^6 cells/l [13]. However, of those medically eligible in our sample, only one-third in the non-DAI—non-ARV group and less than 60% in the group waiting for ARV treatment in the DAI had received prophylaxis. Training for health professionals is therefore vital to scaling up access to HIV care in African countries [14].

Wider dissemination of information about the availability of effective treatments, including ARVs, among patients and the general population may also be a prerequisite for scaling up access to HIV/AIDS care. The current reluctance of public health authorities to disseminate information about ARVs to the population at large in countries like Côte d’Ivoire is certainly related
to fears that excessive demand for expensive drugs may create unmanageable economic demands. Therefore, promoting further decreases in prices of ARVs and evaluation of cheaper laboratory methods for monitoring HIV infection and ARV treatment [15–17], and ‘adapt­ ing’ clinical guidelines to limited resource settings [9], are key for access to HIV care and treatment. Lack of information about treatment currently remains a major cause of inequity in access to health care among the HIV-infected populations.

There are legitimate concerns that the use of public funds to subsidize antiretroviral treatment in developing countries may be inequitable, and will shift health resources from the poor to those who are less poor [18]. In terms of equity, the picture that emerges from the experience of the Ivorian DAI is quite mixed. A national consensus defining the priority population groups had been reached and the provision of ARVs at a 50 to 95% subsidized price has allowed access to ARV treatment for a number of patients with limited ability to pay. Gender differences in access to ARVs have consequently been reduced. However, constraints on government expenditures have prevented the Ivorian DAI from establishing consistent access to ARVs, even in the limited subgroup of HIV-infected individuals aware of their serostatus and in contact with health care providers. Complementary funding mechanisms, including insurance funds in the public and private sectors, should be developed [19]. Indeed, significant progress has recently been made in Côte d’Ivoire with involvement of the private business sector in funding ARV treatment.

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References


Appendix