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Antiretroviral treatments abandon determinants in HIV positive patients, Chiúre, Mozambique, 2015.

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Abstract

Background and objective: *Mozambique ranks fifth in the world in terms of human immunodeficiency virus incidence rate. In June 2014, 19,256 people were diagnosed with the virus in Chiúre district, Cabo Delgado province and antiretroviral therapy abandon was high. Health education activities were implemented by the District Health, Women and Social Welfare Services and non-governmental organizations such as the Wiwanana Foundation that has been active in the district for two years in the community health program. This study evaluates social, demographic and health determinants associated with antiretroviral therapy abandons proposing solutions to improve adherence.*

Methods: *multicentre cross-sectional, mixed descriptive study. Patients with HIV who abandoned antiretroviral therapy, technicians involved in consultation and psychological counselling and traditional health practitioners, were interviewed in three health units (Chiúre, Old Chiúre, Ocua) and clinical files were reviewed. The research protocol was approved by Lúrio University Institutional Committee of Health Bioethics and authorized by Cabo Delgado Provincial Health Directorate.*

Results: *a total of 149 clinical files were analyzed, 51% female. Mean age was 35 years and 56 % of patients had the primary level of schooling; half of this population is engaged in subsistence agriculture; informal union is the family model for 46% of subjects and non-governmental organizations were more efficient in guiding patients for diagnosis (64%). Disease conditions leading to abandon were the low number of CD4 T lymphocytes and the advanced stage of the disease. The lack of a confidant occurred in 100 % of Chiúre patients, 80 % in Ocua and 50 % in Old Chiúre.*

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Discussion: *ART abandon determinants referred in the literature are confirmed in our research (illiteracy, poor social network, HIV stigma, scarce economic resources, alcohol consumption, difficult access to health services, low quality of clinical management). ART protocol recommends starting treatment when patients present a confidant and the lack of confidant in our study group seems to be a major determinant to ART abandon.*

Conclusion: *health service deficiencies, the precariousness of the social network and low economic status lead to antiretroviral therapy abandon. The former impair clinical factors: body mass index, CD4 T lymphocyte level, disease stage and occurrence of opportunistic infections; health professionals' poor collaboration in consultation affected the diagnostic and therapeutic orientation, with a long time between diagnosis and therapy initiation. Lack of family support results in loss of trust among patients and cohabitants, self-exclusion and absence of confidant. Scarce economic resources limit food, education, information and travel, important elements for good adherence to antiretroviral therapy.*

Key-words: abandon, therapeutic adherence, antiretroviral, Mozambique, HIV / AIDS.

1. Introduction

Acquired human immunodeficiency syndrome (AIDS) is the most advanced stage of human immunodeficiency virus (HIV) infection. Infection severity results from dysfunction and destruction of the immune system, as viral load levels rise and T - CD4 (CD4) lymphocytes, the virus major target cells and immunodeficiency marker, are destroyed. AIDS is determined by a CD4 count below 350 cells per mm^3 or the diagnosis of a disease indicative of immunodeficiency (opportunistic infections - OI and cancer). [1]

The United Nations Organization for AIDS estimates that in 30 years more than 34 million people were infected with HIV worldwide. Most cases are in Africa (about 23.5 million). [2]

In 2011 around the world, 14.8 million infected individuals were eligible for antiretroviral therapy (ART) and 8 million (54 %) were on treatment, a 20-fold increase in global antiretroviral coverage since 2000, contributing to increase patients' life expectancy.

Poverty, poor eating habits, obscurantism and popular beliefs are considered to aggravate the pandemic, predominating in developing countries.

According to the World Health Organization (WHO), Mozambique ranks fifth in the world in HIV infection, but recent data

indicate that the incidence rate has stabilized in recent years. From the 15,900 patients on ART in 2003 we attained 218,991 in 2011. In 2005, only 21 % of ART services were provided in primary health care centres, while today the weight of ART services at this level is about 78 %.

Research about health care abandon' associated factors is based on the fact that individuals who do not return to the service may have abandoned ART, increasing the risk of disease progression, viral resistance, infection and death.

A meta-analysis of studies tracking patients who had abandoned ART estimated a mortality rate of 40 %, varying from 12 to 87 % in different African countries. Another African cohort estimated that 48 % of the patients in supposed abandonment had died and 10 % were hospitalised.[3]

The *Qualiaids* Guide recommends that periods between outpatient visits do not exceed six months, 60 and 30 days for ART patients and AIDS patients, respectively, while adjuvant diagnostic tests (CD4 count and viral load) should be performed three times per year.[4]

Regarding ART adherence, studies point to demographic and social variables (gender, age, ethnicity, schooling, income), as determinant factors, with emphasis on schooling (there is a significant association of adherence in people with higher levels of education).[5]

Adherence behaviour is multi-factorial, dynamic, time-varying and depends on therapy and disease characteristics, psychosocial factors, therapeutic relationship and quality of care.[6]

There are several factors associated with the difficulty to adhere to health services, being related to the virus, antiretroviral drugs (ARV) and relationship with health professionals (HP), the health system organization or to psycho-social difficulties of people living with HIV. [7-12] In addition to these factors, the fact that the therapy has an indefinite term, probably for life, also contributes to abandon.

There are more vulnerable periods for abandon (initial phase) and associated factors: lack of a social support network, social and economic difficulties and those related to the use of ARVs. Some characteristics in patients' life habits are more related to the risk of abandon: drug use, psychiatric history. Individuals who abandoned treatment had showed signs of poor adherence during the previous period.[13]

In Chiúre district, June 2014, 19,256 people were diagnosed with HIV, 68 % female (a

significant increase compared to 9,910 in June 2013), with 887 patients being discharged from ART (less than the actual number), of which 545 (67 %) were estimated dead. [14]

Monthly ART service statistics of Chiúre district three health units (HU) (Chiúre Hospital, Health Centres - HC of Old Chiúre and Ocua), comparing indicators for January and June 2015, show that about 10,000 patients are HIV + and 40 % are in ART. Registered dropouts (4 %) show a marked deficiency in the program information system (see Table I).

Economic fragility has been recognised to interfere with therapeutic adherence: those with a lower economic condition are more likely to have poor adherence. [15]

Viral load and CD4 count are important parameters for treatment' immunological evaluation: their inverse relationship occurs through adequate adhesion, decreasing circulating viral load in the blood and increasing the number of CD4 and decreasing clinical signs of infection. [16]

Screening patients that abandoned is a method to evaluate patients on ART life expectancy. A study in Africa showed a decrease in 91 % and 84 % to 85 % and 77 % of men and women, respectively, after confirmed death of patients who were considered abandoned. [17]

ART abandon can be due to several factors acting together: [18]

1. Lack of medication in the HU or lack of conditions for its acquisition; high number of tablets per day.
2. Disease type: stigmatized; lack of psychological support; use of psychoactive substances; mental disorder or disability.
3. Intervention with an exclusive focus on the consultation or its opposite, the depreciation of counselling and little importance given to the consultation.
4. Less than four years of school: difficulty to understand dosages, both in AIDS and associated co-morbidities treatment; absence of personal income or employment loss; lack of significant family and social ties and lack of occupation, aggravating depression.
5. Distance between residence and HU: difficulty in getting around and travelling; lack of clarity regarding care routine in the HU: unawareness of care flow, inflexibility in schedules for consultations and diagnostic auxiliary exams (DAE) agenda.
6. Treatment initiation poorly conducted by HP: patient or illness disqualification, inappropriate family information,

immediate withdrawal requirement for drug addicts.

This research general goal was to evaluate the demographic, social and economic and care conditions in the HU associated to ART abandon and to seek solutions to improve therapeutic adherence in Chiúre district. We had five specific objectives:

1. Characterize patients who have abandoned ART.
2. Describe disease process, treatment, access and care conditions in the HU associated with ART abandon.
3. Evaluate patients' knowledge about ART abandon and its risks.
4. Identify ART abandon causes.
5. Collect respondent's suggestions to improve ART adherence.

2. Methods

Descriptive cross-sectional multicenter study with mixed methods: patients who abandoned ART clinical files review in HU and conducting semi – structured interviews with those patients, HP, activists involved in HIV infection prevention and traditional health practitioners (THP).

The research took place in Cabo Delgado Province in the North of Mozambique, Chiúre district' administrative divisions of Chiúre, Old Chiúre and Ocua, between March 2015 and March 2016.

2.1. Patients

Inclusion criteria: missing HIV + on ART patients (did not seek medication or consultation, from 2 days to 2 months after the scheduled date), patients who abandoned ART (did not come for medication or consultation, more than 2 months after scheduled date), with residence address in clinical file, with updated home visits address card or accidentally found in the community.

Exclusion criteria: patients who do not sign the Informed Consent Term (ICT), who give up during the interview or with a clinical file with incomplete information.

2.2. Sample

A 150 clinical files sample was calculated using *Epiinfo program 7.1.2. StatCal - Sample Size and Power*, with a 95 % confidence interval with statistically significant association when $p < 0.05$.

Active search (AS) in the communities was carried out by five pre-qualified inquirers who signed an ethical commitment agreement, for a sample of 131 patients

who had abandoned ART, according to the residence address.

We found 102 patients and interviewed 95 volunteers that signed the ICT.

The qualitative study interviewed 15 HP, 12 activists and 10 THP all volunteers, after explaining and signing an ICT.

2.3. Authorizations

The research protocol was approved by Lúrio University Institutional Committee for Health Bioethics and authorized by Cabo Delgado Provincial Health Directorate and followed all Helsinki Declaration (2013) recommendations. All patients that had abandoned ART and were interviewed were referred to HC ART service consultation.

3. Results

3.1. Clinical files

We analysed 147 patients' clinical files who had abandoned ART with up-dated domiciliary visit card. Table II details sample characteristics.

Both genders are equally represented mainly in the age groups 25-29 and 35-39 years of age.

Mostly the group has a primary level of education, a marital status of informal union and an occupation in subsistence agriculture. There are an average number of five people per family.

Patients reference for HIV diagnosis and ART by NGOs has a statistically significant predominance (64 %, p = 0.001), followed by Volunteer Counselling and Testing Counters (27 %), in patient yards and consultation (2 %).

Clinical indicators of HIV infection (Body Mass Index (BMI), CD4 count, WHO staging, occurrence of OI at the time of ART withdrawal) show that extreme thinness (BMI <16) occupies a prominent position in Chiúre (19 %) and Ocua (10 %); a CD4 count below 350 concerns 58 % of the sample; assessing WHO disease classification, almost half of this population are in stage III (42 %), followed by 27 % in stage I, 23 % in stage II and 7 % in stage IV; 47 % of patients who abandoned had an OI. The most frequent OI were chronic diarrhoea, pulmonary tuberculosis and severe anaemia.

Before leaving ART patients had an average of nine clinical observations in the range of 1 to 56 visits with a single observation highly frequent; time from diagnosis to treatment onset was 0 to 556 days, with an average of 22 months. Most patients who discontinued ART had a CD4 value of 64 cells / mm^3 and a mean of 363 cells / mm^3 in a range of 8 to 1,111 cells / mm^3.

In these 149 files 71 (100 % in Chiúre) had no confidant; 50 % of Old Chiúre indicated a confidant as well as 20 % of Ocua patients. Table III details confidant availability.

Marriage is referred by 46 %, of whom 12 % had confidant; in informal unions (28 %), 34 % had a confidant. The youngest group (18 to 24 years old) has the lowest % of confidant.

3.2. Interviews

3.2.1. Patients

We interviewed 95 people living with HIV who had abandoned ART. Most participants (65 %) were female, between the ages of 18 and 49 years. The predominant age group was between 18 and 24 years old (30 %).

Most participants are illiterate (56 %), 39 % have primary education and 5 % higher.

Agricultural activity is the occupation of 79 % of respondents.

The most frequent types of families were informal union (40 %) and single (44 %).

With regard to toxic habits, 24 % consume tobacco and 42 % alcohol (see Table IV).

Families with less than three members predominate (47 %), followed by three to six members (44 %).

These patients' economic resources source is mainly (80 %) self-support and a minority (20 %) is supported by the family.

Lack of food is reported by the majority (76 %), resulting in two or less meals per day for 93 %; this situation is confirmed by food sources, where self-sustenance predominates (83 % with subsistence agriculture and 10 % with informal small business) on employment (6 %) or subsidies (1 %).

Regarding disease characteristics, 47 % had an HIV diagnosis for 48 months, 38 % 24 months and 16% less than 6 months. Most frequent HIV diagnosis was made in consultation (39 %). Concerning ART period, the largest group reported less than six months (40 %), followed by the group between 7 and 12 months (30 %); a smaller group achieved 48 months of therapy before abandon; 94 % took medication personally in the pharmacy.

Regarding time elapsed between ART abandon and the moment of the interview, 57 % had abandoned more than 12 months, 20 % had abandoned more than six months and 19 % more than 24 months.

Evaluating information sources about ART, HP occupy first position (65 %), followed by community radio (45 %), activists (33 %), family members (26 %), and partners (17%).

To access the HU, 50 % travel more than 5 km.

A small majority (58 %) claim to be satisfied with consultation referring to spend a minimum of two to four hours; to get ARV in the pharmacy, 54 % of participants reported waiting two to four hours.

In order to evaluate HP consultation quality, we inquired about patients' perception of the information provided by the provider: most patients (97 %) were informed about next visit date and about the possibility of medication side effects (MSE) (82 %); the majority (60 %) do not know major OI, a group is unaware of ART abandon risks (32 %), about the importance of adherence (31 %) or the value of the medication (27 %).

We analyzed pharmacy quality of care, asking about the information provided in that service: most patients (80 %) were informed about the possible MSE and half (51 %) were reminded of the next date to get the ARV. A group is unaware of ART abandon risks (33 %), the importance of adherence or the value of medication (32 %). The dosing regimen was evaluated, showing that more than half of these patients (53 %) took three tablets a day and 26 % took two tablets, not following the ART protocol (one tablet per day). Asked about the definition of ART abandon, 43 % gave the right answer (lack of ARV for two months) but most (57 %) refer to it as "not getting ARV for a three months period".

Asked about ART abandon motives, patients presented in first position difficulty to access HU (46 %), followed by a poor consultation (26 %) and pharmacy (25 %) services, social discrimination (17 %) and MSE (15 %). Only 2% (in Ocua) reported having abandoned by decision of their THP but a group of 36 % abandoned by decision of another person (see Table V). Other ART abandon determinant is these patients stigmatization, revealed by 17 %.

Consulted on proposals to facilitate treatment and improve ART adherence (see Table VI), patients presented in first place an improvement in ARV acquisition facilities and better quality of care.

3.2.2. Health professionals

The answers provided by 15 HP and 12 health activists interviewed confirm data obtained from patients:

1) "ART initiation takes a long time after HIV diagnosis and the clinical file is opened with a lack of patient identification data".

2) "Delay in consultation and in pharmacy is due to the high number of patients that daily use the HC, with a shortage of HP enabled for ART service, limiting the

quantity and quality of information given to patients."

3) "Community leaders should be informed about ART patients in order to be able to follow them and avoid abandon."

4) "Health promotion activists should be informed about ART patients to support ARV acquisition in the HC, deliver them to these patients and avoid abandon."

3.2.3. Traditional Health Practitioners

A strong cultural reality in this population is the use of "traditional healers" (40 % of the group). Of 10 THP interviewed, we highlight the most pertinent answers:

1) "THP have been trained in HIV prevention, transmission, testing, counselling, ART and adherence and are responsible for transmitting these messages to communities; they know that patients should not do traditional treatments simultaneously with taking ARV."

2) "I found a patient who abandoned ART and after counselling him he got back to the HC and re initiated ART".

3) "Family members should support ART patients".

4) "Use the media to improve ART adherence".

5) "ARVs should be available in the activists' drug kits to facilitate ART acquisition by patients."

6) "Sometimes patients abandon ART because they feel they are already cured."

4. Discussion

Patients who abandoned ART' clinical files and interviews showed with statistical significance than the majority was illiterate, making it difficult to understand educational messages about pathologies, disease and OI treatments regimens, as stated by WHO in 2001, where schooling less than four years was associated with ART abandon.

One ART goals is to restore CD4 immunity to gain physical capacity and prevent disease progression. Patients who abandoned ART' clinical indicators were not satisfactory: at the time patients decided to quit, 32 % were in a weak state, 58 % had low immunity (CD4 <350 cl / mm^3) and almost half were in a disease critical phase (stage III and IV). These clinical factors were highlighted in a study on individual vulnerability in adolescents with HIV in Brazil in 2011.

The most frequent OI were chronic diarrhoea (leading to physical incapacity), pulmonary tuberculosis (a discriminatory disease complicating patients' social and

family life) and severe anaemia (weakening the patient).

The lack of social, psychological, nutritional and economic support, makes patients lose confidence, resulting in self-exclusion, evidenced by the absence of confidant. The mean time between diagnosis and ART was too long, revealing patients' lack of orientation in consultation.

Patient home visits as a social integration determinant was identified as key to establish trust between patients and their families, HP and local authority, in a study in Brazil in 2012.

The 95 respondents who abandoned ART were mostly female (65 %), confirming the higher prevalence of HIV infection in this group and their greater availability to access health care. The predominant age group between 18 and 24 years old (30 %) corresponds to normal population distribution (50 % under 25 years) and also to legal age (> 18) target group choose limitation.

The predominant subsistence farming activity (79 %) explains economic income low level.

The most prevalent type of family relationship (single) shows social support network weakness and informal unions reveal fluid and insecure family structures.

Lifestyle directly affects ART in this group where toxic habits (alcohol drinking) impair adherence.

Patients' families have less than the average number of members in Mozambique, explaining why most of these patients (80 %) are individually responsible for their self-sufficiency with statistical significance.

They express a general feeling of lack of food (76 %), a situation confirmed in another study in the adjacent Nampula Province, [19] resulting in a large majority with two or fewer meals a day. This is supported by food sources identification (predominance of self-sustenance, mainly subsistence agriculture and informal small business).

HIV diagnosis was mostly made more than 2 years ago (85 %) at the consultation (39 %). Activists or NGOs role in diagnosis is very low (2 %). Most patients who abandoned ART were under treatment for less than 12 months (70 %) and 94 % got the medication personally at the pharmacy; 77% had dropped out less than 2 years before the time of the interview.

The evaluation of patients' information sources on ART value and availability shows that HP (65 %), community radio (42 %), activists (33 %), relatives (26 %) and

partners (17 %) are the main contributors; television and written sources are insignificant.

Access to HU needs a one-hour walking distance for half of this group. A little more than half of these patients (58 %) claim satisfaction in the consultation but refers to spend eight hours in an HU attendance.

Consultation quality measured by patients' retained information shows that one-third are unaware of ART abandon risks, the importance of adherence or the value of the medication; this is confirmed evaluating retained information in pharmacy when collecting ARV. Ministry of Health (MISAU)' ART protocol compliance was verified in 33 % of the group.

Regarding patients' knowledge about abandon, the majority wrongly defined it as "not raising ARV during a period of three months" and were unaware of consequences.

ART abandon motives indicate the difficulty to access HU in first place (46 %), but poor care in consultation (26 %) and pharmacy (25 %) are also significant. Social stigma (17 %) causes more abandon than MSE (15 %), confirmed by 36 % who said to have abandoned by decision of another person, as identified in another study in Mozambique. [20]

The use of THP is common in this population and can negatively interfere in diagnosis delay and ART through drug interactions through the use of medicinal plants. THP have some knowledge about the infection and treatment but this needs to be disseminated and deepened.

Patients suggested bettering ART adherence with an easy ARV acquisition, improved care quality (increase HP number and training), food support and fight against stigma and social discrimination.

5. Conclusion

ART abandon in Chiúre is a serious problem caused mainly by difficult access and poor quality health services, social network precariousness and economic need.

Age, marital status and educational level interfere with health promotion and education in ART adherence.

Patients' clinical state influenced poor ART adherence: decreased BMI, decreased immunity and disease progression.

A social condition such as the non-availability of confidant seems to be a determining factor in the vicious cycle of abandon, predominant in the district headquarters where people live in marked individualism.

Proposals to address these difficulties include facilitating patients' ARV

acquisitions (through Community Adherence Support Groups and Non Governmental Organisations' activists), improving quality of care in HU, and developing a public information campaign to reduce stigma linked to HIV infection.

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Table I: Chiúre district HIV / AIDS program indicators.

ART Services Chiúre

	Year	2015	
	Months	January	June
HC	Indicator		
Chiúre	Total HIV+ in follow up	6,888	7,838
	Total on ART	3,174	3,574
	% HIV+ on ART	46.1	45.6
	Total abandons	175	139
	% Abandons	5.5	3.9
Old Chiúre	Total HIV+ in follow up	520	643
	Total on ART	195	260
	% HIV+ on ART	37.5	40.4
	Total abandons	25	24
	% Abandons	12.8	9.2
Ocua	Total HIV+ in follow up	2,324	2,199
	Total on ART	1,034	760
	% HIV+ on ART	44.5	34.6
	Total abandons	0	0
	% Abandons	0.0	0.0
TOTAL	Total HIV+ in follow up	9,732	10,680
	Total on ART	4,403	4,594
	% HIV+ on ART	45.2	43.0
	Total abandons	200	163
	% Abandons	4.5	3.5

Table II: ART abandon patients clinical files sample' demographic and social characteristics.

Demographic and social characteristics	TOTAL		Chiúre		Old Chiúre		Ocua		*P*
	n	%	N	%	n	%	n	%	
Gender									
Female	71	51.1	31	49.2	23	62.2	17	43.6	*0.2*
Male	68	48.9	32	50.8	14	37.8	22	56.4	
TOTAL	139	100	63	100	37	100	39	100	
School level									
Primary	78	56.1	29	44.6	24	70.6	25	62.5	*0.08*
Secondary or more	23	16.5	15	23.1	2	5.9	6	15.0	
Illiterate	38	27.3	21	32.3	8	23.5	9	22.5	
TOTAL	139	100	65	100	34	100	40	100	
Marital status									
Informal union	58	45.7	32	61.5	2	5.6	24	61.5	*0.0001*
Married	35	27.6	7	13.5	23	63.9	5	12.8	
Single	30	23.6	12	23.1	9	25.0	9	23.1	
Widow	3	2.4	0	0.0	2	5.6	1	2.6	
Separated	1	0.8	1	1.9	0	0.0	0	0.0	
TOTAL	127	100	52	100	36	100	39	100	
Occupation									
Peasant	79	53.7	43	62.3	24	63.2	12	30.0	*0.0001*
Domestic	40	27.2	14	20.3	13	34.2	13	32.5	
Student	2	1.4	2	2.9	0	0.0	0	0.0	
Teacher	6	4.1	5	7.2	0	0.0	1	2.5	
Other	16	10.9	2	2.9	0	0.0	14	35.0	
No occupation	4	2.7	3	4.3	1	2.6	0	0.0	
TOTAL	147	100	69	100	38	100	40	100	

Table III: ART abandon patients with confidant' demographic and social characteristics.

Sample characteristics	TOTAL		Confidant				
			No		Yes		
	N	%	n	%	n	%	*p*
HU							
Chiúre	**71**	**47.7**	71	58.2	0	0.0	*0.001*
Old Chiúre	**38**	**25.5**	19	15.6	19	70.4	
Ocua	**40**	**26.8**	32	26.2	8	29.6	
TOTAL	**149**	**100**	**122**	100	**27**	100	
Gender							
Female	71	51.1	57	50.4	14	53.8	*0.9*
Male	68	48.9	56	49.6	12	46.2	
TOTAL	139	100	113	100	26	100	
School level							
Primary	**78**	56.1	62	53.4	16	69.5	*0.18*
Secondary or more	**23**	16.5	22	19.0	1	4.5	
Illiterate	**38**	27.3	32	27.6	6	26.0	
TOTAL	**139**	100	**116**	100	**23**	100	
Marital status							
Informal union	**35**	27.6	23	22.8	12	46.2	*0.12*
Married	**58**	45.7	51	50.5	7	26.9	
Single	**30**	23.6	24	23.8	6	23.1	
Widow	**3**	2.4	2	2.0	1	3.8	
Separated	**1**	0.8	1	1.0	0	0.0	
TOTAL	**127**	100	**101**	100	**26**	100	

Table IV: interviewed patients' demographic and social characteristics.

HU / Demographic and social characteristics	TOTAL		Chiúre		Old Chiúre		Ocua		p
	N	%	N	%	N	%	N	%	
Gender									
Female	**62**	65.3	21	33.9	30	48.4	11	17.7	*0,05*
Male	**33**	34.7	5	15.2	16	48.5	12	36.4	
School level									
Illiterate	**53**	55.8	13	24.5	27	50.9	13	24.5	*0.0006*
Primary	**37**	38.9	2	5.4	5	13.5	9	24.3	
Secondary	**5**	5.3	3	60.0	1	20.0	1	20.0	
Occupation									
Peasant	**75**	78.9	17	22.7	39	52.0	19	25.3	*0.10*
Merchant	**1**	1.1	1	100.0	0	0.0	0	0.0	
Domestic	**3**	3.2	2	66.7	0	0.0	1	33.3	
Student	**2**	2.1	1	50.0	0	0.0	1	50.0	
Employee	**3**	3.2	1	33.3	2	66.7	0	0.0	
Other	**2**	2.1	2	100.0	0	0.0	0	0.0	
No occupation	**9**	9.5	2	22.2	5	55.6	2	22.2	
Civil status (n = 94)									
Informal union	**38**	40.4	11	28.9	19	50.0	8	21.1	*0.3*
Single	**41**	43.6	14	34.1	17	41.5	10	24.4	
Separated	**7**	7.4	1	14.3	3	42.9	3	42.9	
Married	**5**	5.3	0	0.0	4	80.0	1	20.0	
Widow	**3**	3.2	0	0.0	3	100.0	0	0.0	
Toxic habits									
Tobacco									
Yes	**23**	24.2	6	26.1	8	34.8	9	39.1	
No	**72**	75.8	20	27.8	38	52.8	14	19.4	
Traditional alcoholic beverages									
Yes	**31**	32.6	6	19.4	17	54.8	8	25.8	
No	**64**	67.4	20	31.3	29	45.3	15	23.4	
Beer									
Yes	**9**	9.5	3	33.3	3	33.3	3	33.3	
No	**86**	90.5	23	26.7	43	50.0	20	23.3	
Total	**95**	100	**26**	27.4	**46**	48.4	**23**	24.2	

Table V: ART abandon determinants.

Abandon determinants	TOTAL		Chiúre		Old Chiúre		Ocua		*P*
	n	%	n	%	n	%	N	%	
Difficulty of access to ART									
Yes	**43**	46.2	10	23.3	23	53.5	10	23.3	*0.5*
No	**50**	53.8	16	32.0	21	42.0	13	26.0	
MSE									
Yes	**14**	15.1	2	14.3	7	50.0	5	35.7	*0.3*
No	**79**	84.9	24	30.4	37	46.8	18	22.8	
Poor consultation service									
Yes	**24**	25.8	8	33.3	10	41.7	6	25.0	*0.7*
No	**69**	74.2	18	26.1	34	49.3	17	24.6	
Poor pharmacy service									
Yes	**23**	24.7	8	34.8	9	39.1	6	26.1	
No	**70**	75.3	18	25.7	35	50.0	17	24.3	*0.6*
Travel									
Yes	**9**	9.7	2	22.2	3	33.3	4	44.4	*0.3*
No	**84**	90.3	24	28.6	41	48.8	19	22.6	
Partner interdiction									
Ye	**6**	6.5	1	16.7	3	50.0	2	33.3	
No	**87**	93.5	25	28.7	41	47.1	21	24.1	*0.7*
Social critic									
Yes	**16**	17.2	5	31.3	6	37.5	5	31.3	*0.6*
No	**77**	82.8	21	27.3	38	49.4	18	23.4	
Does not believe in ART									
Yes	**11**	11.8	2	18.2	7	63.6	2	18.2	*0.5*
No	**82**	88.2	24	29.3	37	45.1	21	25.6	
THP decision									
Yes	**2**	2.2	0	0.0	0	0.0	2	100	
No	**91**	97.8	26	28.6	44	48.4	21	23.1	*0.04*
Own decision									
Yes	**60**	64.5	19	31.7	25	41.7	16	26.7	*0.3*
No	**33**	35.5	7	21.2	19	57.6	7	21.2	
Total	**93**	100	**26**	28.0	**44**	47.3	**23**	24.7	

Table VI: patients' proposals to reduce ART abandon.

Patients proposals to reduce ART abandon (n=93)	Frequency
Facilitate ARV acquisition	87%
Improve attendance at the consultation	85%
Improve pharmacy care	84%
Take HU near patients	80%
Explain better ARV MSE	80%
Inform patients about abandon risks	76%
Inform partners about abandon risks	72%
Patients food support	69%
Review ARV regimen	68%
Fight discrimination and stigma	67%
Fight social exclusion	65%
Support Community Adherence Support Groups	63%
Involve THP in ART adherence	62%
Intensify domiciliary visits	53%
Involve religious leaders	40%
TOTAL	**93 (100%)**