

# Multiple healthcare Seeking behaviors of new Smear positive pulmonary tuberculosis patients attending a diagnosis and treatment center of Bafoussam- Cameroon

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## Introduction

The global fight against tuberculosis (TB) has made tremendous progress since the recognition of TB as a global public health emergency by World Health Organization (WHO) in 1993 [1]. For example, it is estimated that 37 million lives were saved between 2000 and 2013 through effective diagnosis and treatment [2]. Despite these good results, TB remains one of the world's deadliest communicable diseases and worse, TB now ranks alongside HIV as a leading cause of death worldwide with 1.5 million deaths (1.1 million HIV-negative and 0.4 million HIV-positive) [3,4]. Given that most deaths from TB are preventable, the mortality rate from the disease are still unacceptably high. Moreover, about 3 million TB cases are either not diagnosed, or are diagnosed but remain unreported to National Tuberculosis Programs (NTPs) [2]. The aforementioned statistics justifies why the World Health Assembly, passed a resolution in May 2014 approving the new post-2015 Global TB Strategy (the End TB Strategy) which aims to end the global TB epidemic, with targets to reduce TB deaths by 95% and to cut new cases by 90% between 2015 and 2035, and to ensure that no family is burdened with catastrophic expenses due to TB [5,6].

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## ABSTRACT

**Objective:** To identify the healthcare seeking behaviours of smear positive pulmonary TB patients before attending the Diagnosis and Treatment Centre (DTC) of Baleng and to assess the influence of patients, patients' relatives and healthcare workers on these behaviours.

**Methods:** We conducted a descriptive study on new smear positive pulmonary TB patients consulting at the tuberculosis DTC of Baleng from February 2<sup>nd</sup> to December 21<sup>st</sup>, 2013. Data on socio-demographic characteristics and health-seeking behaviours were collected by direct interviews, using a structured questionnaire. Data on clinical characteristics were extracted from patients' registers.

**Results:** Of the 147 patients (mean age 36.93 years) enrolled, most were males (65.99%), and 53.74% of participants had at least attained secondary school education. The mean duration of patients' delay to visit the DTC was 5.15 month (Std Dev: 4.92). About 53.6% of patients had sought care in at least three different places before being diagnosed for TB. Diagnosis was initiated by the patients themselves (14.97%), by a relative (64.63%) or by a health worker (20.41%). About 80% of patients with TB-related symptoms were not referred to TB DTC when attending ordinary health care facilities. However, this non reference rate was not statistically different when patients consulted in public or private health care facilities ( $p=0.11$ ).

**Conclusion:** TB patients have several health seeking behaviours before attending the DTC. TB therapeutic options are greatly influenced by patients themselves and their relatives. Most patients with TB related symptoms who visit ordinary health facilities are not referred to DTC. There is therefore a necessity to improve community sensitization, Public-Public and Public-Private Mix (PPM) in tuberculosis control in Cameroon.

**KEY WORDS:** Healthcare seeking behaviours  
Tuberculosis  
Cameroun

To have a world free from TB according to the WHO's End TB Strategy vision, early diagnosis of TB and the engagement of communities, civil society organizations, and public and private care providers have been identified as the pillars of this ambitious strategy [4]. That is why,

on World TB Day 2015, WHO calls on affected communities, civil society organizations, and healthcare providers, to ‘‘join the drive to roll out this strategy and to reach, treat and cure all those who are ill today’’ [3]. Studies done elsewhere have shown that many TB patients adopt multiple care seeking pathways before attending a Diagnostic and Treatment Centre (DTC) [7-9]. Although it has been reported that first line care seeking is strongly influenced by patients and their relatives, second line care seeking options are however influenced by health personnel receiving TB patients. The objective of this study is to identify the healthcare seeking behaviours of smears positive pulmonary TB patients and to assess the influence of patients, patients’ relatives and healthcare provider on the therapeutic pathways of patients before attending a DTC.

## Materials and methods

### Study Design

It was a descriptive study, during which newly diagnosed smear positive pulmonary TB patients consulting at the DTC of Baleng were enrolled, from February 2nd, to December 21st, 2013. Before their enrolment, patients who gave their informed consent to participate in the study were interviewed with a structured questionnaire.

### Study setting

The Diagnostic and Treatment Centre of Baleng is the largest TB treatment centre in the West Region of Cameroon. The DTC of Baleng is located in a semi urban area of Bafoussam town. It is a specialized unit of the Divisional Medical Centre of Baleng that covers a population of about 20,000 people. With a capacity of 20 beds dedicated to TB patients during their intensive phase of treatment. Baleng DTC receives patients from many parts of the country, especially those from the West, the Littoral and Center Regions [10]. TB case management is done according to national guidelines by well trained nurses under the supervision of a medical doctor [11].

### Tuberculosis Control in Cameroon

The fight against TB in Cameroon use a network of DTC disseminated though out the territory. DTCs are specialized care units hosted in some health facilities particularly in public and non-profit health facilities. By 2013, there

were 238 DTCs for 20,916,854 habitants (1 DTC for every 88,000 inhabitants) in Cameroon with the West Region having 20 DTCs for 1,882,517 habitants (1 DTC for every 94,126). In Cameroon, TB diagnosis is firstly based on clinical examination to identify suspected cases. Depending on the symptoms and the result of sputum smear examination, the suspected cases are referred to a DTC. In the TB DTCs, confirmation is done through deep examination. Patients are first of all classified according to the anatomical site of TB. In this way, pulmonary and extra-pulmonary TBs are distinguished. Pulmonary TB cases are subsequently classified according to bacteriological smear results. Bacteriology refers to the smear status of cases. Smear examination is done through microscopic observation of *M. tuberculosis* after smear staining using the Ziehl Neelsen’s technique. After smear staining examination, pulmonary TB cases are classified into smear-negative pulmonary TB (smear contains no AFB in 100 High Power fields) and smear-positive pulmonary TB groups. Grading of smear-positive pulmonary TB cases was done is as follows: 1+ (10–99 acid-fast bacilli in 100 High Power fields), 2+ (1-9 acid-fast bacilli by field in at least 50 HPF), and 3+ (>10 acid-fast bacilli by field in at least 20 HPF). New cases of smear-positive pulmonary TB are smear-positive pulmonary TB patients with no previous history of anti-tuberculosis treatment. Whatever the clinical form of TB, all patients should undergo two phases of treatment: intensive/initiation phase and continuation phase.

### Data management

Data were collected in two main phases. Initially, a structured questionnaire was administered to participants who consented to participate in the study. This questionnaire was administered by nurses involved with TB case management. Patients’ interview permitted the collection of information on socio-demographic characteristics of participants, TB-related symptoms and healthcare seeking behaviours. The second phase of data collection used the patients’ registers. In fact, information concerning clinical characteristics of previously interviewed patients were collected at the end of diagnosis.

Statistics were done with Epi info software version 3.5.4 from the (Center for Disease Control and Prevention).

Common descriptive statistics (means, standard deviation, proportions) were used to summarize the results. Group comparisons were made using the Student's t-test for means and  $\chi^2$  test for proportions. Significance of tests were set at P-values <0.05.

### Definition of certain variable

**Modern self-medication:** this expression concerned patients who took drugs at home without consultation in a formal health facility. **Traditional self-medication:** this expression concerned patients who took herbal treatments without consulting a traditional healer. **Missed opportunity to be referred by health personnel:** it concerned patients who consulted a formal health facility (public or private) and who was not referred by the health worker of this facility.

### Ethical considerations

Before their enrolment in the study, all participants gave their informed consent. The study was approved by the administrative authorities of the Diagnostic and Treatment Centre of Baleng and the Mifi Health Committee.

## Results

### Characteristics of participants

During the enrolment period, 226 patients were received at the Baleng DTC for TB. Among them, 192 (85.0%) were smear positive pulmonary TB, 18 (8.4%) were smear negative pulmonary TB and 15 (6.6%) were extra pulmonary TB. Of the 192 smear positive pulmonary TB cases, 147 (76.56%) were classified as new cases of smear positive pulmonary TB and were thus included in the study.

Ninety seven (65.99%) patients included in the study were male and the mean age of participants was 36.93 years (Std Dev: 12.84). Twenty seven (18.37%) participants were tested positive for HIV. The socio-demographic and clinical characteristics of participants are shown in table 1 and 2.

### First resort of care seeking and patients' delay

At the first care resort, 57 (38.78%) patients made use of modern self-medication, 19 (12.93%) made use of tradi-

tional self-medication, 35 (23.81%) consulted in public health facilities, 27 (18.37%) consulted in private health facilities, 2 (1.36%) went to traditional healers and 7 (4.75%) directly went to the DTC for consultation.

The main symptoms presented by 141 participants before their first healthcare seeking were coughing (95.92%) and 60 with fever (40.82%). The diseases suspected by patients after the first TB-related symptoms were uncomplicated (simple) cough 116 (78.91%), malaria 30 (20.41%), typhoid fever 5 (3.40%), AIDS 4 (2.72%) and tuberculosis 3 (2.04%).

**Table 1.** Socio-demographic characteristics of the study patients (N = 147).

Variables	Total n (%)
<b>Gender</b>	
Male	97 (65.99)
Female	50 (34.01)
<b>Age (years)</b>	
≤40	93 (63.27)
>40	54 (36.73)
<b>Smoking</b>	
Yes	59 (40.14)
No	88 (59.86)
<b>Number of Sticks smoked by day*</b>	
0-5	23 (38.98)
6-10 Sticks	18 (30.51)
11-20 Sticks	5 (8.47)
More than 20 Sticks	13 (22.03)
<b>Residence</b>	
Mifi Health District	56 (38.10)
West Region (Mifi Health District excluded)	40 (27.21)
Centre Region	12 (8.16)
Littoral Region	31 (21.09)
Other Region	8 (5.44)
<b>Education</b>	
No formal education	15 (10.20)
Primary education	53 (36.05)
secondary education	70 (47.62)
High level education	9 (6.12)

\*The total number is 59, representing smoker's patients

The mean delay (the duration between onset of TB related symptoms and consultation in DTC) was 5.15 months (Std Dev: 4.92) and this delay was not statistical different according to gender (p = 0.16), age (p = 0.83), residence (p = 0.27) and education level (p = 0.45).

### Care seeking pathways

The mean number of care seeking options used by participants was 2.67 (Std Dev: 0.85). This mean was not significantly different according to gender ( $p = 0.49$ ), age ( $p = 0.46$ ), HIV status ( $p = 0.42$ ), place of residence ( $p = 0.10$ ) and educational level ( $p = 0.68$ ). Participants' care seeking pathways are presented in (figure 1). About 53.6% of patients had at least three different care seeking options before reaching the DTC. A total of forty two different pathways (figure 1) were undertaken by smear positive pulmonary TB patients before getting the final diagnosis for the disease.

**Table 2.** Clinical characteristics of the study patients (N = 147).

Pre-treatment smear load	
1+	14 (9.52)
2+	40 (27.21)
3+	93 (63.27)
HIV Status	
Positive	27 (18.37)
Negative	117 (79.59)
Unknown	3 (2.04)
Symptoms*	
Cough	141(95.92)
Fever	60 (40.82)
Weight loss	39 (26.53)
Body weakness	24 (16.33)
Anorexia	9 (6.12)
Patients' delay	
≤ 1Month	25 (17.01)
1-2 Months	26 (17.69)
2- 3 Months	23 (15.65)
More than 3 Months	73 (49.66)

\*The total number exceeds 100% because one patient could have more than one symptom.

Visits to the DTC that resulted in a diagnosis of TB were initiated by the patients themselves for 22 (14.97%) of them, by a parent or friend for 95 (64.63%) and by a health worker for 30 (20.41%) patients.

### Missed occasions to be referred to the DTC by the medical personnel

Before attending the DTC, participants had in all 132 pre-

vious contacts with health personnel (both in public and in private health facilities), representing the total number of times they could to be referred to a DTC by a medical personnel (see table 3).

**Table 3.** Reference of participants to Diagnostic and Treatment Centre by a Health Personnel during a contact with a Health Facility.

	Contact with Private Health Facility N=60 n (%)	Contact with Public Health Facility N=72 n (%)	Contact with a Health Facility (Public and Private) N=132n (%)
Refer to DTC	15 (25.00)	11 (15.28)	26 (19.70)
Not refer to DTC	45 (75.00)	61 (84.72)	106 (80.30)

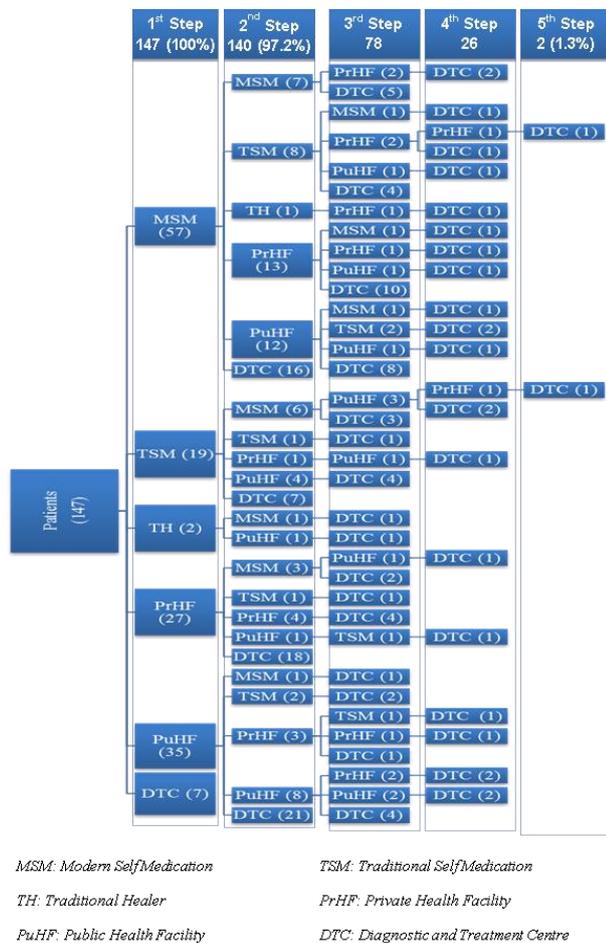
DTC: Diagnostic and Treatment Centre

From these 132 occasions, 26 (19.70%) ended in a reference to the DTC while 106 (80.30%) were missed occasions that could have been referred to a DTC. This reference rate was 25.00 % after a contact with a private health facility and 15.28% after a contact with a public health facility. The difference between these two reference rates was not statistically significant ( $p= 0.11$ ).

### Discussion

The results of this study (which aimed to assess the health seeking behaviours of new smear positive TB patients) indicated that 51.70% of patients at the first instant seek treatment by themselves (38.78% and 12.93% through modern and traditional medications respectively) and the initiation to seek care at DTC is done by patients themselves in 14.97% of cases, and by a patient's relative in 64.63% of cases. The present study has also shown that, patients with TB-related symptoms who had a contacts with a health facility are most often not referred to the DTC as recommended by NTP. In fact, only 19.70% of patients' contacts with a health facility end with reference to a DTC. These majors finding have direct implications on TB control in Cameroon.

**Figure 1.** Pathways undertaken by the patients to reach the Baleng Diagnostic and Treatment Centre.



First of all, it highlights the role of patients and that of their relatives in the TB diagnosis process. Those roles have been well documented [12-14]. For example, a study done in Burkina Faso by Ouédraogo showed that 59% of visits to DTC were initiated by the patients and their relatives [15]. This further ascertain that patients' relatives have some degree of impact on patients' care seeking attitudes. A strong coalition with communities (the second principle of The End TB Strategy 2016–2035) is thus necessary to have a world free from TB. That is why, on World TB Day 2015, WHO calls on affected communities to join the drive to roll out End TB Strategy to reach, treat and cure all those who are ill [3]. The engagement of affected communities in TB control required awareness of these latter on TB-related symptoms and on the necessity to reach directly to a DTC for TB diagnosis and rapid treatment initiation in case of TB suspicion [16]. The communities' sensitization on TB will contribute to re-

duce problems of TB management, by avoiding multiple care seeking attitudes, diagnostic delays, aggravation of the disease leading to the death of the patient, spread of the diseases in the families and workplaces [17-18]. It is thus necessary and urgent to improved communities' sensitization. The new effective and efficient sensitization strategies should thus be identify, tested and implemented by NTP in collaboration with all stakeholders involved in TB control.

On the other hand, this study highlights the weakness of collaboration between non-NTP health facilities and DTC in TB control. In Cameroon where TB diagnosis and treatment are delivered by a few number of health facilities (238 disseminated in the entire national territory), all suspected cases, reaching in non-NTP facilities should be transferred to a DTC. The success of this transfer mechanism requires a strong collaboration between non-NTP facilities (both public and private) and DTC. In this study, only 15.28% and 25.00% of patient-contact with public and private health facilities respectively ended with reference to the DTC. A study done in Delhi, India indicated that about 33.33% of the patients who sought medical care from qualified health care providers went to DOTS directly after the 1st consultation, but others had visited qualified providers few more times (up to 6 times) before reaching a DTC [19].

In settings where patients with symptoms suggestive of TB seek care from a wide array of health-care providers [20] (as in the present study), the engagement of all care providers in TB care and control proves to be necessary [9, 16]. Evidence suggests that failure to involve all care providers in TB control hampers case detection, delays diagnosis, causes improper diagnosis as well as inappropriate and incomplete treatment, increases drug resistance and places a large and unnecessary financial burden on patients [9, 21]. To engage all care providers (one of the component of the second pillars of The End TB Strategy), WHO has defined an approach known as Public–Public and Public–Private mix (PPM). Several countries have already implemented this approach [22], but Cameroon is yet to implement it. The Cameroonian NTP should thus initiate pilot projects, develop PPM guidelines and implement PPM mix activities.

## Conflict of Interest

We declare that we have no conflict of interest.

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