

## Factors Associated with Delay in Seeking Basic Health Care, in Patients Suspected of Tuberculosis: Systematic Review of Literature

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### Abstract

**Background:** Tuberculosis is a contagious disease, constituting a public health problem especially in developing countries.

The effective control of the disease depends on the elimination of several reasons that have substantially contributed in the delay of demand for basic health care by patients, such as some beliefs, stigma, lack of knowledge of the early signs and symptoms, relationship between health professional-patient, while system variables such as the poor response for the rapid diagnosis, coupled with the lack of technical resources continue to influence the late diagnosis of the disease.

**Methods:** A literature review was made from: SciELO, Lilacs, Medline, Scopus, ScienceDirect and HINARI. A systematic review of scientific literature was done in studies who reported the late diagnosis of tuberculosis and associated factors among symptomatics. During the review, studies published from 2008 to 2018 that were related to the issue under analysis were initially included. Two authors participated in analysis and evaluation of the eligibility of the publications found in an independent way, arriving at the consensus for the discordant cases.

**Results:** In the literature review, they were recovered 419 publications. After an analysis of the titles, summaries and full text reading, were included in the review 14 references. Analysis made by articles included in this review, found that variables such as unemployment, old age, illiteracy, distance to the sanitary unit, women especially vulnerable, have greater weight in the various associations made in many studies, as factors that influence the delay in seeking health care basic, in patients suspected of tuberculosis and consequent late diagnosis.

**Conclusion:** The late demand for basic health care in patients with suspected tuberculosis, is still a problem for public health, not only in rural areas where access to basic health care is often deficient but also in urban areas. Community awareness-raising, disseminating messages on the need for basic health care, must be accompanied by people who are especially influential in their respective communities.

**Keywords:** Tuberculosis; Basic Health Care; Delay in Seeking; Associated Factors

### Introduction

Tuberculosis (TB) is a contagious disease and is a public health problem, especially in developing countries, and it is estimated that one-third of the world's population is infected with *Mycobacterium tuberculosis*, bacterium that causes TB [1]. It is considered to be one of the oldest infectious diseases in mankind, although it is now possible to treat and cure it. It remains a major public health problem in the world due to the wide geographic dispersion, emergence of multiresistant cases and co-infection with human immunodeficiency virus (HIV) [2].

Although the overall goal related to the Millennium Development Goals of starting to reverse the epidemic may already have been achieved in 2004, the most important long-term goal of elimination, set for 2050, will not be reached with the current strategies and instruments available, since several and major challenges persist.

Many vulnerable people do not have access to quality health services, and some of these are late diagnosed [3].

The World Health Organization (WHO) estimates that almost 10 million new cases of tuberculosis are registered each year, of which 4 million are infectious (bacilliferous). In many countries, TB cases have quadrupled despite the implementation of effective anti-disease strategies, mainly because of co-infection with HIV [1].

The identification of the patient’s delay time for the diagnosis of TB (time between the perception of the signs and symptoms of the person, feeling sick and feel the need to seek health care), leaving aside social, religious obstacles, personal and even physical, is one of the tools that can help in the development of strategies that can help in the timely localization of the sources of infection, perhaps the reasons for the delay in the diagnosis of the disease [4,5].

The effective control of the disease depends on the demand for the first care by the patient, in the period of two to three weeks of the early diagnosis of primary care, as a gateway to health services [6]. However, some studies point to several reasons that have contributed substantially to the late diagnosis of tuberculosis by patients, such as some beliefs, stigma, lack of knowledge of the first signs and symptoms, relationship between patient and health professional, among others, besides the system variables such as poor response to rapid diagnosis combined with insufficient technical resources [4,7].

Identifying the factors associated with late demand for basic health care in the suspected TB patients, can help tuberculosis control programs and health care providers to improve diagnosis and treatment of TB, especially in many developing countries [8].

This paper seeks to summarize, through a systematic review of the scientific literature, studies that report factors associated with delay in the search for basic health care (consequent late diagnosis) in patients with suspected TB. The results of this research may contribute to the elaboration of strategies of more effective approaches, aiming at the improvement of the actions of control of the disease.

**Methods**

During the review, studies published from 2008 to 2018 that were related to the issue under analysis were initially included. During the research, were excluded: systematic review article, opinion articles, case reports, qualitative studies, editorials, event summaries as well as book chapters and quantitative studies that presented only descriptive statistics in the results. The inclusion criteria were: original articles, theses and dissertations as well as brief communications that presented abstracts in Portuguese, English or Spanish, with the quantitative approach and with emphasis on statistical association analysis, between the delay seeking for basic health care in patients with suspected TB and possible associated factors.

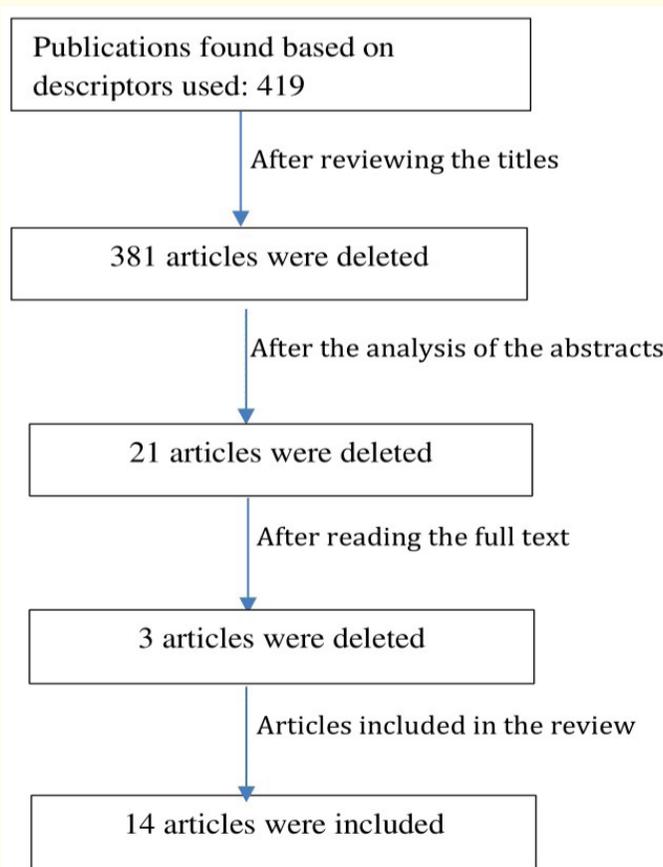
The articles were searched in three languages namely: english; portuguese and spanish. The databases used for the research were: SciELO (www.scielo.org), Lilacs (bases.bireme.br), Medline (www.ncbi.nlm.nih.gov/pubmed), Scopus (www.scopus.org.com), ScienceDirect (http://www.sciencedirect.com/science?) and HINARI Research in Health (http://www.who.int/hinari/en/).

The search terms used in this systematic review were obtained through consultation with descriptors in Health Sciences (decs.bvs.br). In the bibliographic research, the combination of the descriptors were used: “*diagnóstico tardio da tuberculose*” and “*causas*” in portuguese, “*delayed diagnosis of tuberculosis*” and “*causes*” in english and “*diagnóstico de la tuberculosis finales*” y “*causas*” in spanish.

For the analysis and evaluation of the eligibility of the publications found, two authors participated, all of them in an independent way, arriving at the consensus for the discordant cases. At the writing and final review stage, four authors participated. After the selection of the articles for the complete reading, a specific questionnaire was elaborated for the extraction of the following information: author, title, year, type of study, objective, language of publication, data collection instruments, country of origin, variables associated with the late seeking for basic health care and main conclusions of the authors.

**Results**

The literature review, recovered 419 publications. After an analysis of the titles, 381 were excluded. Subsequently, summaries evaluation was done and 21 publications were excluded because they did not present an outcome of the study object. After reading the full text, 3 articles were excluded, having been included 14 references in the review, according to the flowchart shown in figure 1.



**Figure 1:** Reference selection flowchart, on the late demand for basic health care for patients with suspected TB and possible associated factors.

Table 1 shows the general characteristics extracted in the various studies. In all of the studies analyzed, all of them used a questionnaire as a data collection instrument. One study was done in Argentina, six in Brazil, one in Nepal, three in Ethiopia, one in Colombia, one in Uganda and one in Tanzania. From the multivariate analysis done in each study, only one showed no association between the variables under analysis (time to TB diagnosis or time to start treatment) with the variables gender, schooling, previous use of antibiotics, HIV status and radiology extension of the disease, being the main reason for the delay of the patients in seeking the health service, difficulties in recognizing their symptoms as indicative of disease [9]. The remaining studies showed some association between the variables under analysis.

Author	Title	Year	Type of study	Objective
Zerbini, <i>et al.</i> [24]	Delay in tuberculosis diagnosis and treatment in four provinces of Argentina	2008	Cross-sectional	To evaluate delays in tuberculosis (TB) diagnosis and treatment and associated risk factors in departments and administrative areas of four Argentine provinces
de María, <i>et al.</i> [11]	[Delay in the Diagnosis of Tuberculosis Pulmonary in a region of Colombia]	2008	Cross-sectional	To determine the delay in the diagnosis of tuberculosis and associated factors
Mfinanga, <i>et al.</i> [12]	The magnitude and factors associated with delays in management of smear positive tuberculosis in Dar es Salaam, Tanzania	2008	Cross-sectional	To assess the magnitude and factors responsible for delay in TB management
Mesfin, <i>et al.</i> [13]	Delayed consultation among pulmonary tuberculosis patients: a cross sectional study of 10 DOTS district of Etiopia	2009	Cross-sectional	To investigate patterns of health seeking behavior and determine the risk factors for late consultation of tuberculosis patients in 10 public health units in Ethiopia
Basnet, <i>et al.</i> [10]	Delay in the diagnosis of tuberculosis in Nepal	2009	Cross-sectional	To evaluate the duration of the delay in the diagnosis of tuberculosis and to investigate its determinants
Sendagire, <i>et al.</i> [16]	Long Delays and Missed Opportunities in Diagnosing Smear-Positive Pulmonary Tuberculosis in Kampala, Uganda: A Cross-Sectional Study	2010	Cross-sectional	To quantify the late diagnosis among patients with tuberculosis by analyzing the associated factors and to describe the trajectory of the patients in relation to the health care sought
Machado, <i>et al.</i> [20]	[Factors associated with delayed diagnosis of pulmonary tuberculosis in the state of Rio de Janeiro]	2011	Cross-sectional	Estimate the time elapsed between the onset of symptoms and the diagnosis of pulmonary tuberculosis (patient time, from the onset of symptoms to the first medical visit, and time of the health system from the first visit to the diagnosis) and to analyze the factors associated with the delay in the diagnosis of pulmonary tuberculosis in the state of Rio de Janeiro
Beraldo, <i>et al.</i> [4]	[Delay in seeking for health services for the diagnosis of Tuberculosis in Ribeirão Preto (SP)]	2012	Cross-sectional	To analyze the delay in seeking for health services for the diagnosis of Tuberculosis in Ribeirão Preto, 2009
de Loureiro, <i>et al.</i> [9]	[Time between onset of symptoms and treatment of pulmonary tuberculosis in a municipality with a high incidence of the disease]	2012	Cross-sectional	To estimate the time between the beginning of the symptoms and the beginning of the treatment of patients with treatment-naïve pulmonary tuberculosis and with a positive result in sputum smear microscopy, as well as to evaluate the variables associated with the delay in diagnosis and the beginning of treatment
Maciel, <i>et al.</i> [8]	Delay in diagnosis of pulmonary tuberculosis at a primary health clinic in Vitoria, Brazil	2013	Prospective cohort	To identify risk factors associated with patient and health care delays among patients seeking care at primary health clinics
Sasaki, <i>et al.</i> [6]	[Delays in suspected and diagnosed tuberculosis and related factors]	2015	Cross-sectional	Measure delays in suspecting and diagnosing tuberculosis and identifying related factors
Almeida, <i>et al.</i> [15]	Health care seeking behavior and patient delay in tuberculosis diagnosis	2015	Cross-sectional	To describe the health care seeking behavior of TB patients, assessing patient delay and the number of health care facilities visited before the start of TB treatment
Yirgu, <i>et al.</i> [41]	Determinants of delayed care seeking for TB suggestive symptoms in Seru district, Oromiya region, Ethiopia: a community based unmatched case-control study	2017	Control case	To provide insights into the magnitude and determinants of patient delay
Fuge, <i>et al.</i> [17]	Patient delay in seeking tuberculosis diagnosis and associated factors in Hadiya Zone, Southern Ethiopia	2018	Cross-sectional	To assess patient delay in seeking tuberculosis diagnosis and associated factors in Hadiya Zone, Southern Ethiopia.
Language of publication	Data collection instruments	Country of origin	Associated variables	Key findings
English [24]	Questionnaire	Argentina	Age over 50 years for more than 30 days of delay (OR, 2.08, 1.16-3.76), and (OR, 2.51; 1.38-4.56) for more than 60 days of delay	There was an association between the delay of the patient in seeking of basic health care in relation to being over 50 years old
Spanish [11]	Questionnaire	Colombia	Unemployment (OR, 2.58, 1.28-4.78), not having social security (OR, 2.32, 1.20-4.50)	There was an association between the delay of over 30 days with unemployment and lack of social security
English [12]	Questionnaire	Tanzania	Chest pain (OR, 1.62, 1.11-2.37), night sweats (OR, 1.92, 1.20-3.05), weight loss (OR, 1.55, 1.03-2.32), and cough with blood (OR, 1.47, 1.01-2.16)	The various risk factors such as chest pain, night sweats, weight loss and cough with blood were associated with delayed patients seeking basic health care, especially in female than male patients
English [13]	Questionnaire	Ethiopia	Illiteracy (OR, 1.7, 1.2-2.4), rural poverty (OR, 1.43, 1.1-1.9), poor perception of TB (OR, 2; 1.2-3.8) and the use of alternative treatment: holy water (OR, 3.5, 2.4-5)	Illiteracy, rural poverty, poor perception of TB and the use of alternative treatment: holy water, were the key factors that contributed for delays in the seeking for conventional medical care.
English [10]	Questionnaire	Nepal	Smoking more than 5 cigarettes per day (OR, 2.7, 1.39-5.38)	Smokers who used more than 5 cigarettes per day had significantly an increased risk of delay in the diagnosis of tuberculosis
English [16]	Questionnaire	Uganda	Knowledge about tuberculosis cure (OR, 0.36; 0.13-0.97)	Knowledge about the cure of tuberculosis by patients was a protective factor in the late diagnosis of tuberculosis
Portuguese [20]	Questionnaire	Brazil	Female gender (OR, 2.7, 1.3-5.6), cough (OR, 11.6, 2.3-58.8) and unemployment (OR, 2.0, 1.0-3.8)	The female sex, cough and unemployment, were independently associated in the patient's delay in the diagnosis of tuberculosis
Language of publication	Data collection instruments	Country of origin	Associated variables	Key findings
Portuguese [4]	Questionnaire	Brazil	Satisfactory knowledge before the diagnosis of tuberculosis (PR *, 0.6, 0.38-0.93)	Satisfactory knowledge before the diagnosis of tuberculosis was significantly associated with late diagnosis.
Portuguese [9]	Questionnaire	Brazil	Gender (p = 0.06), previous use of antibiotics (p = 0.52), HIV status (p = 0.08) and radiological extension of the disease (p = 0.38)	The variables gender, schooling, prior antibiotic use, HIV status, and radiological extent of the disease were not associated with time to diagnosis or time to treatment. The main reason for patients' delay in seeking health care was their difficulty in recognizing their symptoms as indicative of disease.
English [8]	Questionnaire	Brazil	Cough (OR, 6.67, 2.65-16.79), initial weight <60 kg (OR, 3.45, 1.40-8.48), any cough (OR, 2.58, 1.20-5.57) chest pain (OR, 2.69, 1.55-4.66)	Cough and initial weight <60 kg were associated with a delay of ≥30 days in patients seeking HU ** and any type of cough and chest pain was an increased risk of delay of ≥90 days of delay.
Portuguese [6]	Questionnaire	Brazil	Having sought the health care system more than once (p <0.001) and having extrapulmonary tuberculosis (p = 0.0078)	Having seeking the health system more than once and had extrapulmonary tuberculosis, were associated in the late diagnosis of tuberculosis.
English [15]	Questionnaire	Brazil	Weight loss (OR, 0.314; 0.109-0.900), having sought treatment for the first symptom (OR, 0.203; 0.062-0.666)	Weight loss and having sought treatment because of the first symptom were protective factors in the patient's delay in seeking basic health care
English [41]	Questionnaire	Ethiopia	First episode of tuberculosis treatment (AOR16.2, 95% CI 9.94-26.26) and limited access to traditional or modern modes of transport (AOR 2.62, 95% CI 1.25-5.49)	Having the first episode of tuberculosis treatment and having limited access to modern or traditional modes of transportation, were independently associated with the delay in the seeking for basic health care.
English [17]	Questionnaire	Ethiopia	Socioeconomic factors such as urban residence (OR 2.36, CI 1.64-3.40), religious views (OR 1.24, CI 1.73-7.0), low monthly income (OR 3.38, CI 2.01-5.66).	Having a residence in the urban area, religious views and low monthly income were statistically associated with delay in the late diagnosis of tuberculosis by the patient.

Table 1: General characteristics of the studies.

PR\*: Prevalence Ratio; HU\*\*: Health Unit

## **Discussion**

The late seeking for basic health care for patients with suspected TB remains a problem in many low income countries, despite the fact that the factors related to this delay are partly under the patient's responsibility, also the health system, has not been able to respond to the needs in the desired time [4,10,11]. Although the technical manuals have not described an ideal time for the diagnosis of tuberculosis, the studies analyzed shows a minimum time of three to four weeks as a cutoff point or ideal time.

The signs and symptoms of tuberculosis need to be well known by the community and it needs to be instructed, so that as soon as it has such signs, go to a nearest health unit immediately. Most of the time, in addition to the lack of transportation and physical difficulty to move to a nearby health unit, some patients ignore the signs and symptoms, which was verified in a study that analyzed the time between onset of symptoms and treatment of the tuberculosis, in which the main reasons described by the patients for the delay in seeking medical attention were in part their negligence [9,12]. Similar results were also found by other authors [6,8,13-15].

Although the availability of the health system is a socially negative factor for the timely diagnosis of tuberculosis, this factor tends to influence more the disadvantaged [6,16]. Some studies presented in this analysis have demonstrated the influence of cultural and anthropological aspects, as a factor dictating this delay [13,17]. Similar findings were also found by other authors [18,19]. A study on factors associated with the delay in the diagnosis of tuberculosis, showed that women socioeconomically disadvantaged, were more vulnerable [20], although other authors have found the opposite [21].

Although some studies have shown underestimation of TB signs and symptoms as a factor influencing the delay in the demand for basic health care [4,16], a study done in Uganda, which quantified whether the late diagnosis among tuberculosis patients, analyzing the associated factors, found different results, in which knowledge about the cure of tuberculosis by patients was a protective factor in the late search for basic health care [16]. This result should mirror many of the patients with minimal information about the disease, but paradoxically the opposite has occurred, probably due to the lack of massification of outreach campaigns on chronic curable diseases, such as TB, since community habits and customs prevail more in communities [23]. Another study, which analyzed the delay in directly observed treatment of tuberculosis, in new patients with pulmonary tuberculosis in a rural area of a district in India, showed that many patients spent a great deal of time and money to find alternative solutions to minimize the signs and symptoms of the disease long before they started treatment [23].

Old age is also a factor presented in the studies analyzed as one of the variables influencing the delay in the demand for basic health care [24]. This factor is even more aggravated when the individual is unemployed and deprived of any kind of social security [11,25-27], fact demonstrated by other authors in a review study [2], that the socioeconomic indicators referring to low levels of income and schooling, can increase vulnerability to tuberculosis by reflecting individual and unequal access to information, benefits from knowledge, consumer goods and health care. In addition to advanced age and illiteracy found in most of the studies analyzed, the distance that the patient walks from his home to find the first health center, is also a determining factor in the delay in the search for basic health care [28-30]. Although this is most noticeable in rural areas where access to health systems in many developing countries is still a major challenge [31,32], a study done in Ethiopia that drew attention to this analysis, which evaluated the patient's delay in the search for diagnosis of tuberculosis and associated factors, found that residing in the urban area was a factor that was associated with delay in the late diagnosis of tuberculosis by the patient [17].

In some areas, language may also be a preponderant factor in the late search for basic health care, since in many communities, local language is more common than official. A study conducted in the U.S. that determined the factors associated with the late diagnosis of tuberculosis and initiation of treatment, found that not speaking English as the first language was a factor that greatly influenced the delay in the search for basic health care in patients with tuberculosis [19].

## Conclusion

From the review, it was possible to verify that almost all studies used mainly primary data using a questionnaire done directly to the patients and, few used secondary data from the medical records. All studies analyzed were cross-sectional studies with the exception of two, one cohort and other case-control.

From the analysis found in the studies, it was concluded that the late demand for basic health care in patients with suspected tuberculosis, is still a problem for public health, not only in rural areas where access to basic health care is often deficient but also in urban areas. Variables such as unemployment, old age, illiteracy and distance to the health unit were more important in the various associations made in many studies, as factors that influence the late demand for basic health care, however, gender, especially female gender, remains a variable to be considered, since it continues to be a more deprived class in many societies especially in developing countries [21,33-40].

Community awareness-raising, disseminating messages on the need for basic health care, must be accompanied by people who are especially influential in their respective communities, with influence of the local language or most commonly spoken, because this component may be a barrier that negatively influences the demand for basic health care.

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