

## Using the notion of vulnerability in the production of knowledge about tuberculosis: integrative review



*A utilização da noção de vulnerabilidade na produção de conhecimento sobre tuberculose: revisão integrativa*  
*La utilización de la noción de vulnerabilidad en la producción de conocimiento sobre tuberculosis: revisión integrativa*

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### ABSTRACT

**Objective:** to identify how the notion of vulnerability is used in national and international scientific publications that address the problem of tuberculosis.

**Method:** an integrative review of literature published in the databases of the *Biblioteca Virtual em Saúde*, the United States National Library of Medicine and the *Biblioteca Digital Brasileira de Teses e Dissertações*, considering the descriptors Tuberculosis and Vulnerability in Portuguese and English.

**Results:** we selected fifty-eight studies published between 1992 and February 2014, which resulted in three categories of analysis.

**Conclusion:** the link between tuberculosis and the notion of vulnerability has not been sufficiently consolidated in national and international literature. This creates an obstacle for the achievement of the epistemological transformations and pragmatic measures that are required to obtain better results from interventions in the field.

**Keywords:** Tuberculosis. Health vulnerability. Review. Millennium Development Goals.

### RESUMO

**Objetivo:** Identificar como a noção de vulnerabilidade é tratada nas publicações científicas nacionais e internacionais que abordam a problemática da tuberculose.

**Método:** Trata-se de uma revisão integrativa realizada na base de dados Biblioteca Virtual em Saúde, *United States National Library of Medicine* e Biblioteca Digital Brasileira de Teses e Dissertações mediante uso dos descritores Tuberculose and Vulnerabilidade; *Tuberculosis and Vulnerability*.

**Resultados:** Cinquenta e oito estudos, publicados entre 1992 e fevereiro de 2014, foram selecionados, dando origem a três categorias de análise.

**Conclusões:** A articulação entre tuberculose e a noção de vulnerabilidade ainda não está suficientemente consolidada na literatura nacional e internacional. Isto se constitui em entrave para o alcance das transformações epistemológicas e pragmáticas necessárias para que as intervenções neste campo obtenham melhores resultados.

**Palavras-chave:** Tuberculose. Vulnerabilidade em saúde. Revisão. Objetivos de Desenvolvimento do Milênio.

### RESUMEN

**Objetivo:** Identificar cómo se utiliza la noción de vulnerabilidad en las publicaciones científicas nacionales e internacionales que abordan el tema de la tuberculosis.

**Método:** se trata de una revisión integrativa realizada en las bases de datos de la Biblioteca Virtual en Salud, *United States National Library of Medicine* y en la Biblioteca Digital Brasileña de Tesis y Disertaciones mediante el uso de los descriptores Tuberculosis y Vulnerabilidad; *Tuberculosis and Vulnerability*.

**Resultados:** la selección eligió cincuenta y ocho estudios, publicados entre 1992 y febrero de 2014, dando origen a tres categorías de análisis.

**Conclusión:** la articulación entre tuberculosis y la noción de vulnerabilidad todavía no está consolidada, configurándose como un obstáculo para alcanzarse las transformaciones epistemológicas y pragmáticas necesarias para asegurar mejores resultados en las intervenciones en este campo.

**Palabras clave:** Tuberculosis. Vulnerabilidad en salud. Revisión. Objetivos de Desarrollo del Milenio.

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## ■ INTRODUCTION

Of all the infectious and contagious diseases, tuberculosis (TB) is still one of the leading causes of death worldwide. In 2013, there were an estimated nine million new cases of the disease and 1.5 million deaths caused by TB, of which 300 thousand occurred in people infected by the human immunodeficiency virus (HIV)<sup>(1)</sup>. This scenario indicates that the development of therapeutics and epidemiological knowledge, which are traditionally used to control TB, have been insufficient.

The epidemiological focus of public health analyses has been the target of criticism, especially in relation to the notion of epidemiological risk as a core analysis category and the consequent devaluation of the psycho-social elements of the illness process<sup>(2)</sup>. Publications that address issues considered threats to public health include field work on transmissible diseases, especially TB, that focuses on the risk factors associated to morbidity and mortality. The pursuit of other approaches in a language that considers the social production of conditions associated to TB led to bibliographical research on the subject of vulnerability. The guiding question was: how is the notion of vulnerability addressed in national and international scientific literature that analyzes the problem of TB?

The understanding of vulnerability used in this study offers unique possibilities of analysis and considers the chances that a set of social and collective factors, as opposed to individual factors, such as risk, influence the sickness process of people according to a given health problem<sup>(3)</sup>. This notion considers the premises of collective health, which stress the multiple and dynamic influence of individual, social and programmatic dimensions in the process of health, sickness and care<sup>(3-4)</sup>.

The individual dimension refers to the biological, behavioral and affective aspects that can contribute to the exposure of health hazards; the social dimension includes the cultural, social and economic aspects that can influence the opportunities of access to goods and services; and the programmatic dimension examines how policies, programmes, services and actions influence situations of vulnerability<sup>(5)</sup>.

TB was officially recognized as a persistent and important worldwide public health problem in the sixth Millennium Development Goal (MDG). This goal establishes the fight against diseases including acquired immunodeficiency syndrome (AIDS), malaria and TB. Acknowledging the conceptual references that are used to discuss TB can be a relevant contribution as we reach the deadline of the millennium development goals. Consequently, the aim of this

integrative review was to identify how the notion of vulnerability has been addressed in national and international scientific publications that address issues related to TB.

## ■ METHOD

This is an integrative review divided into the following stages: preparation of the guiding question; establishment of the literature search strategy; selection of studies according to the criteria for inclusion; critical reading, evaluation and categorization of content; analysis and interpretation of results<sup>(6)</sup>. The publications were searched in the databases United States National Library of Medicine (PubMed), the *Biblioteca Virtual em Saúde* (BVS), and the *Biblioteca Digital Brasileira de Teses e Dissertações* (BDBTD). The latter was included because we believe theses and dissertations provide the production of knowledge that is both important and current on the subject of this review.

The descriptors were *Tuberculose and Vulnerabilidade*; *Tuberculosis and Vulnerability*, as specified in *Descritores em Ciências da Saúde* (DeCS). In 2013, the descriptor *Vulnerabilidade/Vulnerability* was replaced with *Vulnerabilidade de Desastres/Disaster Vulnerability*. However, we chose to use the descriptor *Vulnerabilidade/Vulnerability* to ensure that previously published studies were included in the sample.

The inclusion criteria were publications available online, in full, in Portuguese, English and Spanish, that addressed TB in humans and had no publication limit date. The exclusion criteria were duplicate publications and/or publications with a strictly clinical approach (biochemistry, pharmacology, immunology, microbiology and genetics). A total of 248 publications were found, of which 58 were selected for the review. Figure 1 presents the distribution of publications by the consulted databases.

Data were collected between January and February 2014. The following information regarding the selected publications was compiled on a spreadsheet: authors, title, type (article, dissertation, thesis), year, location, field of research, data source, topic, purpose and categorization of the concept of vulnerability used in the study.

Among the different approaches of vulnerability present in the field of health, we decided to use the conceptual framework found in the collective health framework to categorize and analyze the notion of vulnerability used in each publication<sup>(3-4)</sup>. The following three categories were defined: "epidemiological approach and vulnerability limited to individual risk"; "the tendency to expand analytical parameters: shifting between risk and social vulnerability" and "vulnerability in the multidimensional perspective: interactions between the individual, the social and the pro-

grammatic". All the analyzed works were cited together with their respective authors, in conformity with the ethical principles of research.

## RESULTS AND DISCUSSION

The sample consisted of 58 publications, of which 43 were articles, 12 were dissertations and 3 were theses. The predominant language of the publications was English (31), followed by Portuguese (24) and Spanish (3). The methodological approach of the publications was quantitative (30), followed by qualitative (9), review of the literature (9), quantitative-qualitative (4), reflections (3), theoretical review (1), case studies (1) and unspecified methodology (1). With respect to the years of publication, we included all the material published from 1992 to February 2014. The years with the highest number of publications were 2012 (16), 2011 (10) and 2009 (6).

The journals with the highest number of publications were: *Emerging Infectious Diseases*, *Bulletin of the World Health Organization* and *Revista da Escola de Enfermagem da Universidade de São Paulo* (3 each). In relation to the place of publication of the 43 articles, 15 were published in Brazil and 28 were published overseas. As for the 15 dissertations/theses, 10 were published in the state of São Paulo, Brazil. The most common fields of study were health units (14), hospitals (5), home (3) and community (2). The most common data sources were patients with TB and health professionals (7 each) and users of health services (6).

It was identified that the notion of individual risk is still significantly influential in publications on TB, even in cases where the authors addressed the subject with emphasis on vulnerability. On the other hand, in the publications where the subject was addressed in a manner that sought to broaden the focus on the individual, including social issues, the notion of vulnerability did not result in analyses

that emphasized the singularities produced at the intersection between social and individual factors.

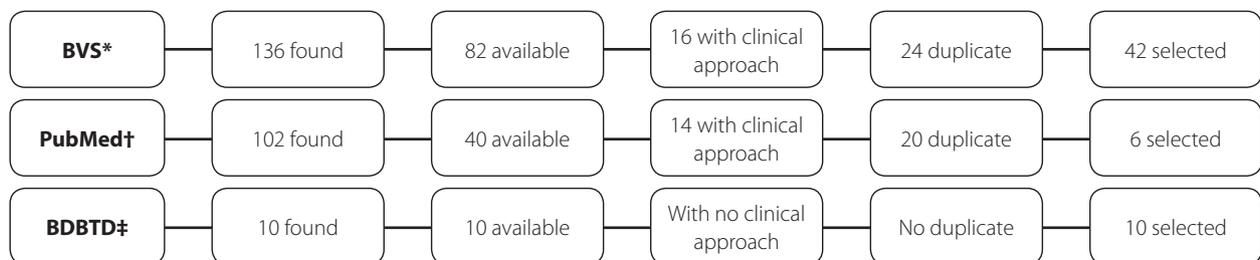
Although the notion of vulnerability was not been sufficiently explored in most publications, it was possible to find approaches where the relationship between the individual, social and programmatic dimensions of vulnerability were appropriately developed. Below, a more detailed presentation of these results.

### 1) Epidemiological approach and vulnerability limited to individual risk

In spite of mentioning "vulnerability" as a descriptor, the 15 publications included in this category<sup>(7-21)</sup> focused on identifying risk factors and groups for the development of TB, such as employment, income, education, housing conditions, gender, age, race/colour, debilitating diseases of the immune system, population deprived of liberty and healthcare workers.

This set of publications reflects the centrality of the concept of risk in epidemiological approaches that seek to understand and calculate the probability of the occurrence of any health condition<sup>(2)</sup>. The problem is that, despite the relevance of estimating harm to plan interventions, explanatory theories based on the concept of epidemiological risk are restricted, since they disregard the variability and dynamics of social meanings of the selected variables by means of calculations that decompose the whole into parts and associate them according to cause-and-effect relationships<sup>(22)</sup>. Contrary to the analytical perspective proposed by the notion of vulnerability, such approaches tend to individualize conclusions, while neglecting the interactive/multidimensional nature and the singularities of illness.

Diseases such as diabetes mellitus and cancer were highlighted as risk factors for TB because they reduce the



\*BVS – Biblioteca Virtual em Saúde

†PubMed – United States National Library of Medicine

‡BDBTD – Biblioteca Digital Brasileira de Teses e Dissertações

**Figure 1** – Distribution of publications according to the consulted databases. Using the notion of vulnerability in the production of knowledge about tuberculosis: integrative review. Porto Alegre, Rio Grande do Sul, 2015

immunological capacity of the organism<sup>(7-9)</sup>. Other studies<sup>(8-10, 15)</sup> focused on groups that are prone to illness, such as children who live with people infected with TB, the elderly hospitalized population deprived of liberty and health professionals. We also identified studies about the association between lifestyles and the process of acquiring TB<sup>(23)</sup>, about the identification of risk groups and factors for TB and about the indication of specific health interventions to correct and control behaviour and deviating groups<sup>(3)</sup>. All these studies were based on the perspective of epidemiological risk.

The TB/HIV co-infection<sup>(19-21)</sup> was addressed as a public health problem, noting that this association is responsible for the increase in morbidity and mortality and for the difficulties in adhering to the required treatment<sup>(19)</sup>. The influence of cultural aspects and religious dogmas on acquiring AIDS and how this influence is related to vulnerability to TB<sup>(20)</sup> and the approach of HIV/AIDS as a risk factor for TB, with a focus on the relationship between male homosexuality and the rise of AIDS cases among men<sup>(21)</sup> were also studied.

The analysis of the publications included in this category reveals that they do not present arguments that are coherent with the proposal and adoption of the descriptor 'vulnerability'. The publications simply characterize affected individuals and groups that are prone to infection and to the development of this pathology.

## 2) The tendency to expand analytical parameters: shifting between risk and social vulnerability

The analysis of 38 publications<sup>(24-59)</sup> included in this category supports the debate that, although scholars of TB may still be unfamiliar with the multidimensionality of situations of vulnerability, there is already a tendency to approach this reference, albeit with certain limitations. These publications extend the usual analytical parameters of the approaches on acquiring TB, while relativising analyses of risk and focusing on social vulnerability.

Three studies examined the territorial distribution of TB and concluded that people who live in the outskirts, in the slums or on the street are the most vulnerable to the disease<sup>(26, 28, 39)</sup>.

Another study highlighted differences between men and women with TB and the relationship of these differences with vulnerability to the disease. This study concluded that the condition of vulnerability among men was living alone after the age of 65, while the vulnerability factor among women was related to aging and the per capita income of the municipality of residence<sup>(31)</sup>.

A study conducted in Brazil showed that ethnicity and vulnerability to TB were related and that the indigenous population experienced the highest loads of the disease in comparison with the general population<sup>(36)</sup>.

Immigration was also addressed in the studies, especially in relation to problems resulting from bad working conditions and barriers to health services and treatment in the country of destination<sup>(47)</sup>, as in the case of pregnant women, that increase susceptibility to TB<sup>(41-43)</sup>.

Another two publications addressed the stigma, especially the social weight of TB<sup>(52)</sup> and its consequences: clinical aggravation of the disease, depression<sup>(44)</sup>, loss of social status, isolation, marital problems and offensive behaviour of the community toward the sick<sup>(32)</sup>.

Other situations that affect people with TB, in a clinical context, were also addressed in the publications, namely use of psychotropic drugs, HIV co-infection, and resistance to tuberculosis medication<sup>(55-56)</sup>.

Some studies established the conditions of vulnerability of specific groups as being the activities of the health care network and TB control programmes and the obstacles to access public health services. The problems highlighted by the authors were the working hours of health units, home visits that fail to monitor and control infection, delay in diagnosis<sup>(24, 30, 45)</sup>, inequality in the access to services for socially excluded populations<sup>(29)</sup>, failure to implement the actions required to control the disease<sup>(52)</sup> and lack of flexibility of assistance protocols, which impairs epidemiological surveillance<sup>(36)</sup>.

A study conducted in Malawi, Africa stressed the relationship between poverty and vulnerability to TB and concluded that poor individuals who do not benefit from the national TB control programme spend up to 240% of their monthly income on the disease<sup>(54)</sup>.

The importance of creating a bond and ensuring adherence to treatment<sup>(45)</sup> and the effective articulation between financial support for patients and health counselling as indicative of reduced vulnerability<sup>(28)</sup> should also be stressed.

The notion of social vulnerability is significantly represented in publications referenced here, however, the analysis is limited to situations that cause vulnerabilities in collectives. These studies do not distinguish the singularities of each of these individuals that are produced in the experience of being and living in a given social context. This undermines the alignment for a psychosocial perspective that is indispensable to analyse vulnerability from the perspective of collective health<sup>(3-4)</sup>.

Moreover, such publications fail to stimulate the transformation of studied scenarios by maintaining the same

rationale that the vulnerability framework is intended to overcome. In spite of upgrading the vocabulary, these works continue to develop approaches based on epidemiological risk that fail to appropriately promote social responses to reduce the vulnerability found in the scenario of TB<sup>(3)</sup>.

Below, some considerations on the publications that introduce a discursive innovation in the analysis by using the notion of vulnerability arising from the field of public health<sup>(3-4)</sup>.

### 3) Vulnerability in the multidimensional perspective: interactions between the individual, the social and the programmatic

The five publications<sup>(60-64)</sup> that integrated this category are of studies conducted in Brazil. They sought to understand and assess the process of acquiring TB from the individual, social and programmatic dimensions of vulnerability<sup>(3-4)</sup>.

One study led to the publication of two papers<sup>(60-61)</sup> that were used to characterise individuals with TB. We identified potential factors of vulnerability to the disease, such as being male and a migrant from another Brazilian state; having a low educational level, income and little access to material goods and medicine; being an informal worker in the labour market; residing in neighbourhoods with large populations and sharing a bedroom; having incorrect knowledge of TB, having a precarious relationship with the health team and being a user of the unified health system (SUS).

Another publication stressed the relationship between the lack of bond between the users and the health team and abandoning treatment for TB and the importance of consultations for monitoring and humanizing care. It was also highlighted that, in order to establish this link, the team must be familiar with the projects of happiness of the individuals and their families, and understand the behaviours and values involved in the health and disease process<sup>(62)</sup>.

Another publication addressed the validation of an instrument for the markers of TB treatment<sup>(63)</sup>, and concluded that adherence to TB treatment depends on individual, social and programmatic factors mediated by the subject/professional relationship<sup>(63)</sup>.

One study<sup>(65)</sup> analyzed educational practices related to TB in the family health strategy (ESF), a family-oriented public health initiative. It was concluded that the organisational and political aspects of the health system limit educational practices. The educational action is a social practice that is processed during social interaction and in the relationship between users and health workers, users and users and health workers and health workers, and mediated by the social places and cultural values of each group.

The individual, social and programmatic dimensions of the phenomenon of vulnerability to TB were included in the publications of the category in a manner that was not always articulated. Eventually, a characteristic that integrates a given dimension is set apart from the others. However, as dealing with vulnerabilities demands the analysis of a set of elements that make up reality, it was necessary to confirm, or at least suggest, the interdependence of these elements<sup>(5)</sup>.

Works that consider the three dimensions of vulnerability prioritize multidimensional interventions and analysis based on the assumption that individuals are not vulnerable, but may be vulnerable to some diseases and not to others depending on the conditions or the stage of life<sup>(65)</sup>.

## ■ FINAL CONSIDERATIONS

It is concluded that a large number of texts addressed aspects of vulnerability under an individualistic perspective that is characteristic of risk analysis, and presented “epidemiological risk” as a central analytical category. When the publications developed vulnerability analysis, they tended to emphasize the social dimension, although a lower number of publications did address vulnerability to TB from the perspective of multidimensionality.

Even if not always fully referenced to the constructs of the field of public health, the notion of vulnerability has been recognized as an important theoretical perspective from which to analyse issues that are related to acquiring TB. Adopting the framework of vulnerability as a guide to better understand the problems of TB can support the fight against this disease, reduce its incidence and impact and help fulfil the Millennium Development Goal. The development of approaches that observe the multidimensional nature of vulnerability proposed by the field of collective health can be especially important for nurses, who are usually responsible for promoting adherence to TB treatment. Although central to TB control policies and programmes, interventions that focus on adherence to treatment do not always consider the contextual factors that influence adherence.

The limitation of this study is that a greater number of publications on the notion of vulnerability from the perspective of “individual risk” could have been analyzed if the descriptor “risk” had been considered.

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