The incidence of tuberculosis and its relation to social inequalities:  
Integrative Review Study on PubMed Base 

A ocorrência da tuberculose e sua relação com as desigualdades sociais: Estudo de revisão Integrativa na Base PubMed  

La incidencia de la tuberculosis y su relación con las desigualdades sociales: Estudio de revisión integradora en la Base PubMed

Objective: to identify how the literature presents the relation between tuberculosis and social inequalities. Method: integrative review in which the combination of the descriptors "tuberculosis" and "social inequity" guided the search for articles available in PubMed. A total of 274 articles were identified, and after reading the title and abstract, 13 studies were selected. The empirical material was analyzed according to the hermeneutics, highlighting the variables related to social inequalities, seeking to understand the main themes that embody the association between tuberculosis and social inequalities. Results: In general, the literature presents the social inequalities as factors that can interfere in the cure and/or control of the disease, such as age, income, unemployment, unskilled labor, access to health services, among others. Therefore, it does not include a deeper relationship between the organization of society and the production of the disease. Conclusion and implications for practice: A comprehensive understanding of tuberculosis disease is required, in order to expand interventions to support the control and elimination of the disease and, above all, the reduction of social inequalities. The understanding of tuberculosis as a disease enables expanding strategies to face it.

Keywords: Community Health Nursing; Tuberculosis; Health Inequalities; Social Inequity; Public Health.

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INTRODUCTION

The tuberculosis (TB), although it is an easily diagnosed disease and liable to healing, remains as a public health problem and represents the ninth main cause of death in the world and the main cause by a single infectious agent. In 2016 approximately 10.4 millions of people have been affected by the disease, being 90% adults, 65% male, and 10% persons who were living with the human immunodeficiency virus (HIV). The drug resistance represents a challenge in tuberculosis control, as shown by data: 600,000 new cases present rifampicin-resistance, considered as the first line of drugs, of which 490,000 had multidrug-resistant TB multirresistent.1

The World Health Organization (WHO) established targets, aiming at TB elimination for the period 2016 to 2035, by means of the End TB Strategy, which includes reducing 95% of deaths and of 90% in the incidence of disease, compared with 2015. In line with these targets, the National Plan to End Tuberculosis established specific targets based on reducing the incidence coefficient to less than 100,000 inhabitants and the mortality coefficient for TB to less than one death per 100,000 inhabitants up to 2035. In order to achieve these targets, three pillars have been selected, one focused on prevention and integrated care of the sick individual, and other for the social component, and the third, which emphasizes the need to intensify the research and the knowledge innovation.2

In the last 20 years, the global response to the disease has presented moments of strength, as can be seen by means of improving the access to the medicines, the introduction of the treatment for multi resistance to drugs in the worldwide control and innovation policies in the diagnosis. However, each year, two million people die in the world due to illness, the majority in full potential of youth and almost half presents the TB/HIV co-infection.3

Although it may seem paradoxical, its incidence has been decreasing approximately 2% per year. Nevertheless, even if this decline meets the Sustainable Development Goals (SDGs) to TB, the worldwide population growth may be considered. Eighty percent of the cases are found in 20 of the 25 countries with greater disease burden, and more than one third of the occurrences are found in China and India, countries with significant social inequalities. In addition, around one billion people live in inadequate housing around the world, such conditions are associated with the continuity of the unjust nations development conditions, with the ethnic disturbances and with the wars, and can result in the duplication of this number in the coming decades.1

There are many challenges for the fulfilment of the 17 SDGs and, among the TB control efforts, this was included in the goal 3.3, and one of the challenges to achieve the agreed goals, within the deadline, involves the confrontation of the social inequalities, which makes it difficult to control the disease.4

The TB is well known to be a social disease, for this reason, this integrative review has been proposed, since the analysis of evidences available in the literature about the relationship between the social inequalities, and the TB contributes to supporting the elaboration of public policies more focused and consistent with the reality and in facing the disease.

OBJECTIVE

To identify evidences of the relationship between the TB and the social inequalities.

METHOD

This is an integrative review about the occurrence of TB and its relationship with the social inequalities. The integrative review allows it to bring together results of studies carried out according to different methodologies and allows carrying out the summary of such results, without infringing the epistemological affiliation of the empirical studies included.5

The study development met the six steps that are part of the integrative review: 1) Definition of the investigating question; 2) Bibliographic search; 3) Definition of the selected information and categorization of studies; 4) Evaluation of the selected material; 5) Interpretation of results; 6) Presentation of the review and synthesis of knowledge.6

The investigating question that guided the integrative review was: “How does the relationship between the social inequalities and the occurrence of TB has been addressed in the national and international literature?”. In order to answer to this question, the combination of the descriptors “tuberculosis” and “social inequity” guided the bibliographic research of scientific articles available in the PubMed database. It is justified using only one database, the PubMed, since it integrates more than 29 million biomedical literature articles, including behavioral sciences, which would answer to the aim of the present study.

The eligibility criteria that guided the search were::articles available in full, published during the period of 2007 to 2017, in Portuguese, English or Spanish. The time delimitation was defined a priori, for the period of 10 years, in the sense of working with the productions of the last decade, since of the end of the 2000s the World Health Organization began to advocate with greater emphasis the relationship between the health grievances and the social determinants. Also, at this time, Brazil began to institutionalize such relationship through the creation of the National Commission of Social Determinants on Health.

Due to the particularities, articles that address the TB associated with comorbidities, which deal with the occurrence of the disease in children and of the resistance to drugs used in the TB treatment were excluded. The bibliographic search was carried out in October 2017. There were initially obtained, 274 articles and, after analysis of the title and abstract, and applied the eligibility criteria, 13 articles were selected (Figure 1).
The authors evaluated independently, the eligible articles and, in the event of disagreement, it was decided by consensus. The selected articles were analyzed in full, following the question of investigation. The hermeneutics guided the analysis of the empirical material, looking for apprehending the main themes that embody the association between the TB and the social inequalities.

RESULTS

The analysis of the empirical material identified 13 scientific articles, whose results of the object of study are presented in Chart 1, according to reference, scenario, design and main results of the study.

Of the analyzed articles, there was a greater gathering of published studies in 2014 (n=4). Most (n=10) articles was published in international journals. In general, articles present

| Reference | Study scenario | Study design | Main results |
|-----------|----------------|--------------|--------------|
| Boccia D, Hargreaves J, Stavola BL: Fielding K, Schaap A: Godfrey-Faussett P et al. The association between household socioeconomic position and prevalent tuberculosis in Zambia: a case-control study. PLoS ONE 2011;6(6):e20824.7 | Zambia Africa | Case-control | Strong association between socioeconomic position and TB. Interventions such as food supply may strengthen the actions of disease control. |
| Rocha C. Montova R. Zevallos K. Curatola A, Ynga Ws Franco J, et al. The Innovative Socio-economic Interventions Against Tuberculosis (ISIAT) project: an operational assessment. Int J Tuberc Lung Dis 2011; 15(Suppl 2):S50-7.8 | Lima Peru | Intervention | Interventions such as health care education, psychosocial support, professional training, food supply and money transfer contributed to the healing of disease. |
| Roza DL, Caccia-Bava MCGG, Martinez EZ. Spatio-temporal patterns of tuberculosis incidence in Ribeirao Preto, State of Sao Paulo, southeast Brazil, and their relationship with social vulnerability: a Bayesian analysis. Rev Soc Bras Med Trop 2012; 45(5):607-15.9 | Ribeirão Preto Brazil | Ecological | The distribution of TB showed to be heterogeneous, in areas of greater risk and social vulnerability. |
| Basta PC, Marques M, Oliveira RL, Cunha EAT, Resendes APC, Souza-Santos R. Social inequalities and tuberculosis: analysis by race color in Mato Grosso do Sul. Brazil. Rev Saúde Pública 2013;47(5):854-64.10 | Mato Grosso do Sul Brazil | Cross-sectional | It was observed that the incidence was six times greater in indigenous people, due to extreme poverty. It also noted a higher dropout rate between black and brown people. |
| Yamamura M, Santos Neto M, Freitas IM: Rodrigues LBB, Popolin MP: Uchoa SACs et al. Tuberculosis and social inequity in health: an ecological study using multivariate statistical techniques, São Paulo, Brazil. Rev Panam Salud Publica. 2014;35(4):270-7.11 | São Paulo Brazil | Ecological | The social position reflects on the chance of falling ill with TB and on the access to health technologies. The identification of the tuberculosis patterns and the social inequity indicators gave rise to discussions on the management and organization of a health system. |

continued...
| Reference | Study scenario | Study design | Main results |
|-----------|----------------|--------------|--------------|
| Laokri S: Dramaix-Wilmet M: Kassa F, Anagonou S, Dujardin B. Assessing the economic burden of illness for tuberculosis patients in Benin: determinants and consequences of catastrophic health expenditures and inequities. Trop Med Int Health 2014; 19(10):1249-58. | Benin África | Cross-sectional | The burden of the falling ill with TB reflects on direct and indirect costs, as lost work days. It is worth stressing, as strategies to cope with the treatment, the sale of material goods and cuts in the domestic budget. |
| Mondai MNI. Nazrul HM: Chowdhury MRK: Howard J. Socio-demographic factors affecting knowledge level of Tuberculosis patients in Rajshahi City, Bangladesh. Afr Health Sci 2014; 14(4): 855-65. | Rajshali Bangladesh | Cross-sectional | The knowledge about TB was considered to be unsatisfactory, being higher in persons with higher education and residents of the urban area. The greater the knowledge, the greater was the adherence to treatment. |
| Przbylski G: Dabrowska A: Pilaczynska-Cemel M, Krawiecka D. Unemployment in TB patients-ten-year observation at regional center of pulmonology in Bydgoszcz, Poland. Med Sei Monit 2014; 20:2125-31. | Bydgoszcz Poland | Cross-sectional | The poverty is a risk factor for TB: and the unemployment is frequent among the affected patients. Therefore, the job opportunitv would contribute to reducing the inequality and declining the occurrence of the disease. |
| Munayco CV, Mújica OJ, León FX, Granado M: Espinal MA. Social determinants and inequalities in tuberculosis incidence in Latin America and the Caribbean. Rev Panam Salud Pública 2015; 38(3): 177-85. | Latin American and the Caribbean | Ecological | Countries that presented less expenditure on health, reduced access to basic sanitation Services and lower life expectancy at birth had a higher incidence of TB. The disease control must address the social determinants, where the causes of the disease are found. |
| Zürcher K: Ballif M: Zwahlen M.. Rieder HL: Egger M, Fenner L. Tuberculosis Mortality and Living Conditions in Bern: Switzerland, 1856-1950. PLoS ONE 2016;11(2): e0149195. | Bern Switzerland | Historical series | The TB mortality reduced from the improvements of living conditions and public health measures. Population density, dormitories with disabled direct sunlight, number of Windows, radiological exams, investigation in schools, among others, should be considered in the health conditions analysis. |
| Gelaw SM. Socioeconomic Factors Associated with Knowledge on Tuberculosis among Adults in Ethiopia. Tuberc Res Treat _2016; 2016: 1-11. | Ethiopia Africa | Cross-sectional | The level of knowledge about the TB was considered low. It is important that the disease control actions consider education strategies on health addressed to the most vulnerable socio-economic groups, as women who live in rural areas, young people, socially disadvantaged people, with low or no education and unqualified workers. |

continued...
inequalities as factors, which can interfere with healing and/or disease control, with an emphasis on: age, income, income transfer, unemployment, unskilled work, access to feeding, to health technologies, exams, to health services (travel), health education, education, psychosocial support, professional training, social vulnerability/life conditions (population density, housing conditions), vulnerable groups (indigenous people, black, brown, women), live in rural/urban area, access to basic sanitation, poverty, life expectancy, tax expenditures on health care by the country, link to healthcare services network, religious belief, belief in the potential of medications.

DISCUSSION

The analysis of the selected studies reinforces the challenges for facing the TB and corroborates the strong relationship between the disease and the inequalities on health. In fact, it states the correlation between socioeconomic indicators and the occurrence of the disease both at the individual and collective scope, pointing out its close relationship with the life conditions.7-19

The greatest incidence of TB in places with greater income distribution shows a significant association between the incidence of the disease and the variables that reflect different dimensions of life conditions, such as consumption goods, habitation conditions and their surroundings, population agglomeration and distribution of incomes. It points to the need to reduce the socioeconomic inequalities and the strengthening of the control programs according to local realities, aiming at reducing the TB social burden.19

The structural determinants and the life conditions resulting from the different inclusions of social groups in the structure of the society are responsible for the most of the inequities on health with reflexes on the TB increase. The knowledge of the TB determinants is essential, mainly in low and middle income countries, which present an epidemiological transition, in which infectious diseases represent the main causes of deaths.20

With regard to the main findings of the studies that joined the current review, it found that, in most, the approach is multifactorial. Thus, gender, age and certain conditions such as occupation, education, income, among others, are variable used in the interpretation of the high incidence of TB in the less favored social groups, and considered as their inherent attributes, which limits the understanding of the disease causality, by generating restricted and focused interventions, which reduce the perspectives for its control.7,10-11,14,17

Since the introduction of the tuberculostatics, in the 1940s, the approaches to control the disease have been extensively supported, from a predominantly biomedical view. The increased funding for the TB control, from the last decade of the 20th century, linked to the SDGs, has made an impact on the reduction of the mortality caused by the disease, although the reduction of the incidence still represents a risk for the sustainable development, especially in poor and vulnerable populations.21

The 2014 World Health Assembly deliberated on the need to accelerate actions to eliminate the TB to protect populations at risk. It requires, therefore, the improvement of inclusive actions, as well as the overcoming of exclusively biomedical approaches, searching for extrapolating approaches supported by social, economic and environmental actions, and that also include innovations in tests for diagnosis and treatment.
It also points out the need for multi sectorial coordination and actions that involve other government sectors than health, with the participation of civil society.21

The understanding that the TB is rooted in the poverty, in general entails a partial view, with a biosocial approach to control it, with fragmentation of actions, focused on the sick individual or at least, for the control of the contacts that also are revealed as individuals and not as an integral part of a wider social context. It does not take into account the important contributions of these studies for TB control, but it is essential to be careful not to reiterate stereotyped understandings about the health-disease process and, what is most compromising, to interpret its occurrence in a limited way, considering only the linearity of cause and effect. It is necessary to use other theoretical and methodological references to understand the TB epidemiology, not only in quantitative terms, but also in recognizing the deeper determinations of the disease.

It becomes clear that the relationship between TB and poverty is unquestionable, when this is considered a product of the society organization and is associated with determining factors, as environmental pollution, social isolation, inadequate working conditions and the limited access to health services. But, it has to be understood that the poverty requires an extended analysis, as pointed above, since it involves material, social and emotional deprivation. The difficult access to education and the basic resources for living generate exclusion and discrimination, compromising the control over the life.

In effect, the reasons why the developing countries to keep high rates of morbimortality in relation to TB and the increasing resistance to drugs are placed more in the weakness of the societies structure and in the organization of production and social reproduction processes, besides the limited effectiveness of health practices than in the affected individuals particularities. In these countries, the increase of the suffering burden of TB is expected, since the life conditions of an expressive part of its population remain at a similar level to the pre-industrial revolution in Europe, associated to poorly accessible health services and to low readiness in supplying adequate treatment, which, is generally restricted to the biological needs.22

It is necessary to highlight that the social inequalities do not constitute a new fact in the societies evolution. In the nineteenth century, with the advent of capitalism, the political and social conditions contributed to the emergence of the theme, due to working and living conditions of the working class, and of the political ideology which led to the bourgeois revolutions. The contradictions between the values of equality, fraternity and liberty and degrading reality of life of certain groups constituted argument of social reformers to denounce the social injustices in different areas, including health. The health inequalities cannot be limited to difficulties in accessing health services (which, generally, is attributed to the disability of the individual) and the use of available resources (whose approach in general is limited to the characteristics of the services organization).23

It becomes clear that the inequalities continue to exist in countries in which health systems have universal access to all social groups, for example, European countries, Canada, Australia, among others, what indicates that this specific scope of analysis should be extrapolated. When health inequalities are compared, among different countries, they can also be attributed to the different degrees of development of medical assistance, but this explanation is not able to justify the increase of inequalities over time.23

This is because the diffusion of medical technology, even in less developed countries, should result in reduction of inequalities. To explain differences in social groups among and within countries, specialists defend the vicious circle theory, in which the disease is the main determining element and this would occur in a continuous feedback effect.23 This explanation, however suppress the focus on the generation of inequality.

In another aspect of interpretation, among those who advocate the social context influence, the life style is considered the main responsible for social inequalities. This is a liberal perspective on the understanding of the health-disease process, in that the social is excluded from this process. From that perspective, the cause of the observed differences is attributed to individual choices. In this respect, it should be noted that epidemiological studies have been demonstrating that risk factors do not explain more than 25% of occurrence of the health chronic problems, which, generally, are attributed to life styles.23

More than repudiate the justifications that have been widely pointed in the publications and in the daily of health services we must look for interpretations that identify and analyze where are actually rooted, the social inequalities. Therefore, it is important to continue on these reflections, devoting efforts to discuss in greater depth the inequalities origins.

In that way, it is proposed that the social inequalities can be understood in the light of social determination of the health-disease process.24-25 This theory contemplates the capital accumulation mechanisms and the distribution of power and material goods and analyzes their particular ways of expression in the different societies. It further considers that the way in which people live has as substrate the material basis of existence, in addition to the symbolic dimension, that would translate the way people understand the health and disease.

Therefore, the way of life and the meaning of the health-disease reflects the production, distribution and consumption social characteristics. The health-disease social determination theory considers the collective conditions of the social groups and the behaviors of the individuals they consist of, that are not restricted to context of the individual dimension, but reflect the singularity according to the particular inclusion into society, that is, the behaviors, the values, the beliefs result from the social inclusion particularities of each citizen.
It is important to point out that this theory does not separate the individual from society and, neither, from cultural, psychic, biological and social dimension, but uses the inter-relation among such dimensions and the understanding of the dialectic relation individual-collective. This theory represents a joint effort to consider the health-disease profiles as life products on society, from the belonging to social groups that are peculiar, according to specificity of the inclusion in society.

This means that the consequences of the ways of life and work, of each social group to which individuals belong, are also determined by the economic organization and by what this is legally, politically and ideologically supported, intermediated by the relationships that occur in the daily of work and life, within the families and social groups. Thus, the economic, social, cultural and political affect the way in which people live and health-disease profiles. Understanding social inequalities goes beyond the simplification present in dichotomies: diseases of poor and rich people, or social and biological diseases. Every disease and its population distribution are products of social organization and reflect existing inequities in each society.  

The processes of production and social reproduction determine the epidemiological profiles of the social groups, in which the inequalities in living and working conditions, resulting from the differences in the process of social reproduction, configure health inequalities. In that case, the interpretations that have the historicity as one of the analytical axes, can represent a rupture with the multi-causality and with the risk paradigm and mean that the processes are dialectic and historically determined.

Actually, the social inequalities are not limited to unjust differences among individuals, but has a political content relating to social injustice and to the disrespect for the human rights, associated with the social processes that, systematically, place some groups at a disadvantage in regard to exercising the life with dignity and maintaining health.

Therefore, both the disease and the social structure should not be seen as dissociate elements or phenomena, but as parts of a historical and socially constructed totality. Therefore, the social determination implies considering the economic, political and social conditions and the analysis of intervention and control practices that the society adopts facing a given situation.

The TB may be interpreted in the light of this Theory because of being a neglected disease, socially determined and of low social visibility. As such, the treatment success involve multiple conditioning factors and only the access to actions and health services are not enough for an efficient adhesion.

To modify vulnerability to TB disease, is essential to understand the health-disease process as a social phenomenon and meet the health needs to face it, as well as quality of care, and the responsibility of teams with regard to care and attention to the patients and families.

The TB distribution is heterogeneous, therefore, to control it, the more vulnerable groups to disease by means of public policies and interventions that consider the particularities of each group, when incorporating actions for protection and poverty reduction. It thus, requires total understanding about the process that involves the TB, under penalty of that the ongoing interventions delay the control possibilities for control and elimination of disease.

As a limitation of the present study it is worth pointing out that, for this review, only scientific articles available in PubMed have been selected. Even so, the use of a database made it possible to reach a substantive number of articles that enabled the analysis from the perspective of the adopted theoretical referential.

CONCLUSION AND IMPLICATIONS FOR NURSING PRACTICE AND PUBLIC HEALTH

Before the TB importance in the national and international scenario and the SDGs, established for 2035, it emphasizes the need to expand understanding of TB, beyond the findings of most analyzed articles which, in general, present multiple factors that are associated to the TB web causality. This implies facing and being intransigent with the attempts of masking the reality, and do not conform with the interpretations and the practices that evidence the conservatism, the preconception, and that attribute to the subjects the responsibility for the inequalities, once they are interpreted with the perspective of their “attributes” and their behaviors. This must be the genuine commitment for facing both the social inequalities and the inequalities on health.

For this purpose, it is necessary to use interdisciplinary knowledges that, combined, will allow the ethical imperative to seek to construct a fair society, in which the differences that, historically, were excluding people from participation in the society and from the enjoyment to life with dignity, are exceeded. The health should be integrated to other inclusion policies. The TB approach requires the challenge of finding and operationalize ways to overcome this unfair and deprived reality of conditions that allow the citizenship and dignity universalization.

TB is unquestionably associated with precarious living and working conditions. It is worth highlighting the importance of the nurse professional in the development of disease control actions, related to best care provided, to the care planning and to the management activities.

Thus, the results of this integrative review reinforce the need for recognizing that social inequalities involves the understanding of processes that produce them and the identification of elements and aspects that act as mediators between macrosocial processes and epidemiological profiles of different social groups. This recognition is indispensable to face the social inequalities, in the context of public policies and the daily.
