



## Tuberculosis in the homeless population: performance of primary health care professionals\*

A tuberculose na população em situação de rua: desempenho de profissionais da atenção primária

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**Objective:** to analyze the actions to control tuberculosis in the homeless population. **Methods:** this is an evaluative research that had the participation of 171 family health strategy professionals. An instrument addressing aspects of tuberculosis care for homeless people was used in the study. The performance of professionals was analyzed through the evaluation of variables extracted from an exploratory factor and reliability analyses. **Results:** in the factor 1, on actions to control tuberculosis in the homeless population, the variables were classified as incipient and partially satisfactory; in the factor 2, on the support that the teams should receive to direct tuberculosis control actions in the homeless population, the variables were classified as unsatisfactory and incipient. **Conclusion:** the actions to control tuberculosis in the homeless population do not consider the specificities of this population, contrary to the recommendations of the Ministry of Health.

**Descriptors:** Tuberculosis; Homeless Persons; Primary Health Care; Program Evaluation.

**Objetivo:** analisar as ações para o controle da tuberculose na população em situação de rua. **Métodos:** trata-se de uma pesquisa avaliativa que contou com a participação de 171 profissionais da estratégia saúde da família. Utilizou-se um instrumento que aborda aspectos da assistência à tuberculose para pessoas em situação de rua. A análise de desempenho ocorreu mediante avaliação das variáveis extraídas da análise fatorial exploratória e de confiabilidade. **Resultados:** no fator 1, ações para o controle da tuberculose na população em situação de rua, as variáveis foram classificadas como incipientes e parcialmente satisfatórias; no fator 2, apoio que as equipes devem receber para direcionar as ações de controle da tuberculose na população em situação de rua, as variáveis foram classificadas como insatisfatórias e incipientes. **Conclusão:** as ações para o controle da tuberculose na população em situação de rua não consideram as especificidades dessa população, contrariando as recomendações do Ministério da Saúde.

**Descritores:** Tuberculose; Pessoas em Situação de Rua; Atenção Primária à Saúde; Avaliação de Programas e Projetos de Saúde.

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## Introduction

Tuberculosis is currently considered a serious public health problem<sup>(1)</sup> and is directly associated with poverty, social exclusion and poor living conditions, besides difficult access to health services<sup>(2)</sup>. Due to greater social vulnerability and susceptibility to infections, the homeless population is considered a priority for the National Tuberculosis Control Program<sup>(3)</sup>.

Estimates of the Ministry of Health indicate that the incidence rate of the disease in this population is 44 times higher than in the general population<sup>(3)</sup>. The presence of barriers of individual nature and of access to health services contributes to this high incidence rate<sup>(4-7)</sup>.

Among the tuberculosis control measures recommended by the Ministry of Health, we highlight the adoption of differentiated strategies for more vulnerable groups, such as care in the place where the homeless population lives, with primary health care playing an important role in the control of this disease<sup>(3,6)</sup>.

Although the importance of tuberculosis in the homeless population and the difficulties faced by health services to control this disease are recognized, the discussion of the theme is still incipient. Research carried out on the evaluation of tuberculosis control actions in Brazil addresses the control of the disease in the general population<sup>(8-12)</sup>, but does not take into account the peculiarities of vulnerable populations such as homeless people, which demand specific actions.

Thus, this study aimed to analyze the actions for the control of tuberculosis in homeless populations.

## Methods

This is an evaluation research developed in Campina Grande, PB, Brazil. With a population of 407,754 inhabitants, this municipality has a primary

health care network composed of 105 family health strategy teams, nine family health support nucleus teams, and one of street clinic team<sup>(13)</sup>.

Family health strategy professionals with higher education and who were involved in actions to control tuberculosis participated in the study. Data collection took place from April to July 2017. All the 95 teams from the urban area of Campina Grande were visited; 171 professionals accepted to participate in the study and 16 refused. Thirteen professionals who were on vacations were excluded from the study.

A self-administered structured questionnaire covering aspects of tuberculosis care for homeless people provided by the primary health care network was used to collect data. The instrument was created by the researchers of the Operational Research and Qualification Group in Tuberculosis of the Federal University of Paraíba.

The questionnaire included 20 variables and was prepared as a basis in the recommendations of the Ministry of Health on the specific actions that should be adopted by services for the control of tuberculosis in the homeless population<sup>(3,6,11)</sup>. The best expected response and four response possibilities were defined for each variable so that there was a gradation of five assertions- in a Likert-type scale. The responses received a score between 1 (worst response) and 5 (best expected response).

A pilot study was carried out with eight professionals from the teams of the street clinics of João Pessoa and Campina Grande to check the clarity of statements and responses, type and quantity of variables of the items of the questionnaire. Data from this pilot test were discarded from the sample. Data on social and demographic characteristics of the participants were also collected (data not presented in tables in the results).

The Statistical Package for the Social Sciences, version 17, was used to analyze the data. Initially, an exploratory factor analysis was performed, which has three main goals: to understand the structure of a set of variables, to construct a questionnaire for measure

an underlying variable, and reduce a set of data to a more manageable size. The principal components method was used to extract the factors in the exploratory factor analysis<sup>(14)</sup>.

In order to measure the adequacy of the sample for the exploratory factor analysis, the Kaiser-Meyer-Olkin test was applied and the anti-image correlation matrix was inspected, in which values higher than 0.5 are expected. Then, a correlation matrix analysis - significance of the correlation coefficients - and the Bartlett sphericity test was applied to evaluate the adequacy of the data; data need to be statistically significant ( $p < 0.05$ ) to be adequate for these analyses. We opted for the oblique rotation of the factors (direct oblimin) because of the theoretical assumption of relationship between the factors found. Factorial loads were analyzed after rotation, where absolute value loads greater than 0.3 are considered important. The correlation matrix analysis was also carried out based on the model for evaluation of residues, in which at least 50.0% of the residues are expected to be found with an absolute value lower than 0.05 in relation to the matrix based on the initial data<sup>(14)</sup>. The parallel analysis criterion was adopted for extraction of factors. Finally, the reliability of each extracted factor was analyzed. The analysis was measured by Cronbach's alpha and values equal and above 0.7<sup>(15)</sup> are acceptable.

A descriptive analysis was also performed to present the characteristics of the study participants. The performance in the development of actions to control tuberculosis in the homeless population was analyzed through an evaluation of the variables resulting from the exploratory factor analysis. For each variable, points were summed, considering the response of all study participants, and then the performance was calculated as follows: sum of the points of each variable divided by the sum of the maximum possible values, multiplied by 100.

From these percentages, the following classi-

fication of level of performance was established: satisfactory (81 to 100.0%), partially satisfactory (61 to 80.0%), incipient (41 to 60.0%) and unsatisfactory (0 to 40.0%). In order to provide support for the analysis of performance, the main results of the descriptive analysis of the questionnaire were also presented. Data from the descriptive analysis were not presented in tables in the results.

The research was approved by the Research Ethics Committee of the Health Sciences Center of the Federal University of Paraíba, Opinion nº 383,425 and CAAE: 20446513,0,0000,5188. The participants expressed their willingness to participate in the study by signing the Informed Consent Term.

## Results

A total of 171 professionals from all districts of the urban area of Campina Grande participated in the study. The majority of the professionals were female (86.0%), nurses (50.3%) with a mean age of 41.5 years, and nine years of service on average.

After all steps of the exploratory factor analysis, five variables were excluded from the total of 20, so that the final model had 15 variables. Table 1 shows that the final model resulted in the extraction of two factors that reflect the behavior of the 15 variables, and the model explained 49.2% of the total variance.

In the analysis of extracted factors, it was observed that factor 1 was composed of the first 11 variables listed in Table 1. The analysis of these variables showed that they were related to the development of "actions to control tuberculosis in the homeless population". Factor 2 consisted of the last four variables listed in Table 1, associated with the help and "support that the teams should receive to direct tuberculosis control actions in the homeless population".

In the analysis of performance related to the factor 1, five variables were classified as incipient and six as partially satisfactory (Table 2).

**Table 1** – Care to the homeless population - principal component analysis: factors, factor loads, commonalities and explained variance

Variable	Factors and factorial loads		Commonalities
	1	2	
Identification of patients with respiratory symptoms	0.73	0.07	0.58
Collection of material from patients with respiratory symptoms	0.72	-0.12	0.47
Registration of information in the medical record of tuberculosis patients	0.72	-0.05	0.49
Organization of the service to assist patients with respiratory symptoms or with tuberculosis	0.69	0.05	0.50
Development of intersectoral actions for the care of tuberculosis patients	0.69	0.05	0.50
Development of some type of specific actions for the homeless population in the territory	0.68	0.16	0.57
Mapping of institutions of the care network for tuberculosis patients	0.68	-0.02	0.45
Criteria for identification and examination of respiratory symptoms	0.67	-0.05	0.43
Realization of treatment for tuberculosis	0.66	-0.03	0.43
Record of the homeless population	0.65	-0.03	0.41
Identification and evaluation of the homeless population in the territory	0.61	0.14	0.45
Matrix link/partnership between street clinic teams and primary health care teams	-0.08	0.87	0.72
Street clinic team	-0.11	0.81	0.61
Training of professionals on tuberculosis	0.16	0.56	0.40
Health care manuals	0.17	0.53	0.38
Percentage of total variance	38.6	11.0	49.6

**Table 2** – Analysis of performance in the development of actions to control tuberculosis in the homeless population

Factors	Performance (%)	Classification
Factor 1 - Actions to control tuberculosis in the homeless population		
Identification and evaluation of the homeless population in the territory	63.0	Partially satisfactory
Record of the homeless population	51.2	Incipient
Development of some type of specific actions for the homeless population in the territory	56.3	Incipient
Organization of the service to assist patients with respiratory symptoms or with tuberculosis	68.9	Partially satisfactory
Mapping of institutions of the care network for tuberculosis patients	62.3	Partially satisfactory
Development of intersectoral actions for the care of tuberculosis patients	56.8	Incipient
Identification of patients with respiratory symptoms	61.5	Partially satisfactory
Criteria for identification and examination of respiratory symptoms	60.0	Incipient
Collection of material from patients with respiratory symptoms	54.0	Incipient
Realization of treatment for tuberculosis	71.6	Partially satisfactory
Registration of information in the medical record of tuberculosis patients	68.2	Partially satisfactory
Factor 2 - Support that teams must receive to direct tuberculosis control actions in the homeless population		
Street clinic team	47.8	Incipient
Matrix link/partnership between street clinic teams and primary health care teams	38.0	Unsatisfactory
Training of professionals on tuberculosis	42.7	Incipient
Health care manuals	42.6	Incipient

In general, the identification and evaluation of the homeless population was carried out in a partially satisfactory manner because a large number of professionals do this activity only when commanded to do so (42.1%). Likewise, most professionals do not register this population (57.9%), which shows an incipient performance.

The performance in the development of specific actions for the homeless population was also incipient. Some professionals (22.2%) are completely unaware of actions that could be developed for this special group of individuals and others simply do not implement them (25.7%). It is worth mentioning that 33.9% of the professionals reported that the interventions are carried out by the respective teams to which they are linked, and 18.2% only refer cases to specialized centers.

The organization of the service to assist patients with respiratory symptoms or with tuberculosis living on the streets had a partially satisfactory performance, considering that this activity is part of the routine of the teams of only 37.4% of the professionals.

As for the mapping of institutions of the care network for tuberculosis patients who live on the streets, the performance was partially satisfactory; only 36.3% of the professionals reported the existence of a definition of reference units for the care of the homeless population infected with tuberculosis.

In the case of homeless people with tuberculosis, adequate care require intersectoral actions. However, the implementation of such actions was still incipient, since 45.6% of the professionals were unaware or did not implement this type of actions.

Regarding the identification of homeless patients with respiratory symptoms, the performance was partially satisfactory. This activity is part of the routine of the teams of 36.9% of the professionals, but for 31.6%, the identification is done only when they are commanded to do this, and 31.5% are unaware or

do not carry out this action. One of the problems with the identification and examination of homeless patients with respiratory symptoms is that a significant percentage of professionals (36.8%) adopt the same criteria recommended for the general population.

Another important problem identified occurs in the collection of material for performing smear microscopy in homeless patients with respiratory symptoms, which was also incipient because instead making this test at the service, patients are referred to the reference unit.

The performance of the professionals on the treatment of tuberculosis was partially satisfactory. Although directly observed treatment (67.3%) was offered, such treatment is followed up only by professionals from the basic health unit (61.7%). The registration of the information in the medical record of homeless patients with tuberculosis was also partially satisfactory; only 33.9% of the professionals answered that, in addition to general information, the staff takes notes of specific information of the homeless population in the medical records.

Regarding factor 2, on the 'support that the teams should receive to direct tuberculosis control actions in the homeless population', one variable showed a poor performance of the professionals and three variables showed incipient performance (Table 2).

The descriptive analysis of these variables showed that, although the municipality of Campina Grande counts on one street clinic team, in general, there is a lack of knowledge of this team as a modality of care of even lack of knowledge of its existence in the municipality (56.7%), thus making the performance of this variable to score as incipient. Furthermore, the matrix link of the staff of the street clinic to primary health care teams was unsatisfactory, since 81.9% of the professionals reported not knowing this activity.

Regarding the training of professionals on tuberculosis in the homeless population, the professionals did not know if there is any type of training or

had not enrolled in such activities (82.5%). Likewise, there is a lack of knowledge about the availability of health care manuals for the homeless population (73.7%). Thus, the performance in these variables was incipient.

## Discussion

As limitations of the study, it is highlighted that the exploratory factor analysis produces results that are restricted to the sample collected. However, the study had the proposal to work with all professionals with higher education of the family health strategy teams of the urban area of Campina Grande, and obtained a response rate of 91.4%.

The results allowed the evaluation of actions to control tuberculosis in the homeless population and have, therefore, the potential to contribute to the organization of primary health care in Campina Grande by subsidizing the operationalization of more adequate responses to the control of the disease in this vulnerable population.

The analysis of performance showed a deficiency of primary health care professionals in Campina Grande in the development of actions to control tuberculosis in the homeless population. The results showed that the professionals are actually capable of developing specific actions for homeless population, but they do not take the specificities of this population into account and perform the actions in the same way as for the general population. Moreover, they often get limited to refer patients to specialized centers, thus restricting the role of primary health care.

In the care of the homeless population, it is important that health professionals take into account characteristics related to life habits and barriers to access the services that hinder the control of diseases such as tuberculosis<sup>(4-5,16)</sup>.

Given the peculiarities of this population, it is essential that some recommendations be taken into

account, especially by primary health care services. These recommendations involve the incorporation of programmatic actions to identify and evaluate the homeless population, the development of intersectoral actions with mapping of institutions that make up the service network, and the adequate registration of this population, including information such as places visited by the patients<sup>(3,6)</sup>.

Although recommended by the Ministry of Health, intersectoral actions occur in an incipient way mainly due to the lack of communication between the sectors. This lack of communication is pointed out as a problem that weakens the comprehensiveness of the actions, thus hindering the control of tuberculosis in the homeless population<sup>(17)</sup>.

The fact that the homeless population presents a tendency to lose the notion of time, of normalization of symptoms and, also, the fact that they are itinerant, thus hindering control actions<sup>(4-6)</sup>, caused the Ministry of Health to recommend a change in the criterion for the identification of homeless individuals with respiratory symptoms, with examination of all those who present cough, regardless of the time. Also, the collection of material for sputum smear microscopy should be performed at the institution itself, at the time of the consultation<sup>(3,6)</sup>.

Because tuberculosis is a transmissible disease, the diagnosis of tuberculosis must be performed as soon as possible to allow interventions in the chain of transmission of the disease, and it is essential that primary health care units assume responsibility in this process. However, what was observed is that professionals of this level of attention fail to identify homeless people with respiratory symptoms and to collect material for sputum smear microscopy. This activity should be performed in all situations because it allows the diagnosis of tuberculosis even if the person with respiratory symptoms does not return to the medical office<sup>(18)</sup>.

Once diagnosed, the new challenge are the tre-

atment in the directly observed modality offered by primary health care. As non-adherence to treatment is considered a serious problem in the case of the homeless population, the participation of governmental and non-governmental institutions is essential to minimize the negative impact of this problem<sup>(3,5-6,16)</sup>. It is known that directly observed treatment is the most effective modality for success in the control of tuberculosis; however, the treatment of the disease in this way in homeless people is difficult due to lack of institutional and social resources and professional training<sup>(9,17)</sup>.

The results obtained in this study regarding the actions for the control of tuberculosis may be related to the low performance in the variables of the factor 2, composed by the process of professional qualification, access to manuals, and the practice of the street clinic team. This set of variables is important, since it can potentiate and qualify the development of actions to the homeless population in primary health care.

In this sense, the lack of training and the lack of availability of manuals with guidelines for the control of tuberculosis were pointed out as problems that undermine support to the decision of implementing prevention, diagnosis and care activities by professionals who work in the control of the disease in the primary health care. Care for tuberculosis involves the continuing training of these professionals so that timely and quality care may be guaranteed for adequate control of the disease<sup>(8-9,11-12)</sup>.

One of the most serious problems identified in our study was the lack of partnership between street clinic teams and primary health care teams. This partnership could improve tuberculosis control actions, since the practice of street clinic teams can contribute more effectively to the access of the homeless population to health services, increasing early detection, treatment and monitoring of cases. These professionals should act in direct contact with homeless people, in the support and training of primary health care

professionals, and in articulation with health care and social assistance services, ensuring a comprehensive and personalized care<sup>(17,19)</sup>.

## Conclusion

It was observed that the specificities of the homeless population are not considered, which is contrary to the recommendations of the Ministry of Health. The lack of professional qualification, poor access to manuals, lack of articulation and support from street clinics may be further weakening the assistance provided by the family health strategy teams.

## Collaborations

Sá LD contributed to the design of the study. Queiroga RPF and Gazzinelli A contributed to the design of the study, collection, analysis, interpretation of data, writing of the manuscript, critical review of intellectual content, and final approval of the version to be published.

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