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YIELD OF TUBERCULINIC TEST BETWEEN TUBERCULOSIS CONTACTS IN A BASIC HEALTH UNIT

Gledsângela Ribeiro Carneiro*[1], Silvana Carvalho Cornélio Lira[2], Mônica Rita Simplicio da Silva[2], Tallita Viana Ferraz[2], André Luiz Sá de Oliveira[3], ElianeRolim de Holanda[4], Eliane Maria Ribeiro de Vasconcelos[5], Roberta de Souza Pereira da Silva Ramos[7] and Vânia Pinheiro Ramos[8]

[1]Doctoral student in Nursing, Universidade Federal de Pernambuco (Recife, Pernambuco, Brasil); [2] Tuberculosis Control Program. Recife Health Department (Recife, Pernambuco, Brasil); [3]Ph.D. in Public Health. Statistics and Geoprocessing Center ofFiocruz-PE. (Recife, Pernambuco, Brasil); [4]Ph.D. in Nursing. Universidade Federal de Pernambuco (Vitória de Santo Antão, Pernambuco, Brasil); [5]Ph.D. Professor of Nursing Department. Nursing field in Public Health; [6]Ph.D. in Nursing, Universidade Federal de Pernambuco (Recife, Pernambuco, Brasil); [7]Ph.D. in Neuropsychiatry and Behavioral Science, Universidade Federal de Pernambuco (Recife, Pernambuco, Brasil)

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Corresponding author:
Gledsângela Ribeiro Carneiro

ABSTRACT

***Objective*:** To describe the Tuberculinic test yield, between contacts of Tuberculosis treated in a Basic Health Unit. ***Methodology*:** It is a descriptive, cross-sectional, quantitative study carried out in a Basic Health Unit, in the capital of a state in the Brazilian Northeast. Data collection was of the secondary type, using forms from the Health Department of the municipality, which was under the study, when the contacts of Tuberculosis performed the Tuberculinictest, in local action. ***Results*:** One hundred and thirty-three contacts were examined, of which 62.4% were households. According to the unit of origin, 72.2% were from the unit where the action was carried out; according to sex, 67.7% were female; 42.1% contacts obtained a result ≥ of 5mm from Tuberculinic test (TT). According to the TT result, contacts ≥ of 10 years old with a result ≥ of 5mm were 52.5% and p-value = 0.001. ***Conclusion*:** Tuberculinic test showed a 42.1% efficiency of reactors between the contacts. The unit, which hosted the action in Basic Health Unit, had a greater number of contacts, thus demonstrating that close access to the service optimizes screening and adherence to the exam.

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INTRODUCTION

Tuberculosis is an ancient disease caused by Mycobacterium tuberculosis; the persistence of this pathogen is due - in part - to the persistence of asymptomatic latency state (Latent Tuberculosis Infection - LTBI), which can undergo a later reactivation and lead to the disease state active tuberculosis in short periods or even decades after the primary infection (CHEE *et al*., 2018). Progression risk - from latent to active disease - is greater in people with Acquired Immunodeficiency Syndrome (AIDS), recipients of solid and hematological transplants, use of tumor necrosis factor-alpha (TNF-α) blockers, children (< of 5 years old), elderly, renal failure in dialysis, silicosis, malignant neoplasms of the head and neck, fibronodular lesion of the stable upper lobe with negative sputum cultures, with no history of previous treatment for TB diabetes mellitus and smoking (BRASIL, 2018). According to epidemiological data of the disease, in 2018, ten million people became ill with TB world wide. In Brazil (in 2019), 73,864 new cases were diagnosed. In Pernambuco (in 2018), 5,026 new cases were reported. In Recife, (2019), 1,326 new cases. (BRASIL, 2020; PERNAMBUCO, 2020).TB is theoretically preventable since most cases come from reactivating LTBI.To reach the goals established for the elimination of this endemic 2050, it is necessary to combine the diagnosis of the case of active TB with the assessment and treatment of people with LTBI, according to a modeling study carried out in the countries of China and India (HOUBEN *et al*., 2016), which has also been ratified by the World Health Organization, for all countries with a high burden of TB cases (WHO, 2020).The test to detect LTBI, in the public system in Brazil, is carried out by means of the Tuberculinic Test (TT), from which the infection is inferred and defined by a positive immune response from the host to stimulation by Mycobacterium tuberculosis antigens in the absence of active TB.TT triggers a delayed hypersensitivity reaction to an intradermal injection of 0.1 ml with purified protein derivative (PPD) containing antigens from seven strains of sterile and concentrated Mycobacterium tuberculosis.The interpretation of the test result depends on the person's risk of recent bacillus infection and the risk of progression to active TB disease (BRASIL, 2014; CHEE *et al*., 2018).The applicability of the exam, in the system, is limited due to

the difficulties inherent to the training process in the application and reading techniques of TT.In certain regions of the country, this test is still restricted to reference services for TB, hospitals and specialized clinics, when it should be offered in the routine of different types of health units, where individuals are seen, close to their own homes, like the Basic Health Units (BHU), which are part of Primary Health Care (PHC) (BRASIL, 2014).The evaluation of the contacts is an important preventive measure to be carried out in the control of TB (WHO, 2020), since it promotes disease early diagnosis or allows preventive actions, and interferes in the reduction of morbidity and mortality.The aim of the present survey was, therefore, to establish what is the tuberculinic test yields among contacts of Tuberculosis in a Basic Health Unit.

METHODS

A descriptive, cross-sectional, quantitative data study from an action carried out to examine contacts in a Basic Health Unit, in the Sanitary District VIII of Recife city, capital of Pernambuco state, Northeast Brazil.The action took place in the month of May 2019, lasting one week, from 8 am to 4 pm.This region of the city did not have a location for the examination.It covered the area of five Basic Health Units, which are close; thus, facilitating communicant displacement to perform the exam, in the neighborhoods of Cohab and Jordão.The Health units were: Family Health Unit (FHU) Josué de Castro (action location), FHU UR 03, FHU Jordão Alto, FHU Parque dos Milagres, Health centerIvoRabelo.The population was of census type.The sample consisted of all TB communicants of all clinical forms, from the referred units, who attended TT examination action at the FHU.Symptomatic contacts and pregnant women were excluded from the study.The study variables included: home or out-of-home contact, sex, age, health unit, previous TT, time of the previous TT, comorbidity (yes or no), TT result.The TT result was assessed according to the Ministry of Health (BRASIL, 2018): the lower limit ≥ of 5mm is intended for adult and child contacts, regardless of previous BCG vaccination.Readings were taken 48 hours after application.The database was performed by double typing and validated in Epi-info version 3.5.1 and analyzed in SPSS.The normality test was the Kolmogorov-Smirnov.Descriptive statistics with frequency, median and interquartile range distribution. The Chi-squareandFisher'sexacttestswereused.The survey was approved by the UPFE Research Ethics Committee (REC), in accordance with Resolution no. 466/2012 of the National Health Council, as well as its complementary regulations CAE 23366619.1.0000.5208.This article is based on the Doctoral Thesis of Nursing in Education and Health of the Graduate Program in Nursing at the Federal University of Pernambuco.

RESULTS

One hundred and thirty-three contacts were examined in the action carried out at the BHU Josué de Castro.Of these, 62.4% were households.According to the unit of origin, 72.2% were from the unit where the action was carried out; according to sex, 67.7% were female. The median age was 31 years old (AI = 41; CI = 29.59 - 37.15) with a range from 1 to 81 years. Concentratingonthe age group ≥ of10 yearswith 79.7%. Most did not have previous TT (97.7%); among those who performed TT, 75% performed more than one year ago; 82.7% did not have any comorbidity; 42.1% obtained a result ≥ of 5mm from TT (Table 1).

From the distribution of TT result (≥ of 5mm), according to the sociodemographic profile of TB contacts (Table 2), there was a higher prevalence in the male group (52.5%), aged ≥ of 10 years (52.5%), extradomiciliar and intradomiciliar remained with very close results (55.6% and 55.0%, respectively), live in the area covered by the FHUJosué de Castro (50.0%) and have a comorbidity (54.2%).The independence test was significant for the factor ≥ of 10 years (p-value ≤ of 0.001) indicates that this age has a higher exposure.

Table 1. Sociodemographic characterization of contacts of patients with tuberculosis in a screening action in a Basic Health Unit. Recife-PE. Brazil. 2019

Ratedfactor	N	%	p-value
Gender			
Male	83	62,4	0,001[1]
Female	50	37,6	
Age			
<10 years	27	20,3	0,000*
≥10years	106	79,7	
Contacttype			
Home	83	62,4	0,004[1]
Extradomiciliar	50	37,6	
Health Unit			
FHU Josué de Castro	96	72,2	
FHUUR 03	21	15,8	
FHUJordão Alto	12	9,0	0,000*
FHUdo Parque dos Milagres	1	0,8	
Health center Ivo Rabelo	03	2,3	
Previous TT			
Yes	3	2,3	0,000*
No	130	97,7	
PreviousTT time**			
Until 1year	1	25,0	0,005
More than 1 year	2	75,0	
Comorbidity			
Yes	24	18,0	0,000*
No	109	82,0	
TT result			
≤ of5mm	69	51,9	
≥ of5mm	56	42,1	0,000*
Did not return for reading	8	6,0	

[1]Chi-square test p- value for proportion comparison.
*p-value = 0,000. **calculated only from previous TT records.

Table 2. Distribution of the results of the Tuberculinic Test according to the sociodemographic profile of the contacts of patients with Tuberculosis. Recife-PE, Brazil, 2019

Ratedfactor*	TT result		p-value
	≥ of5mm	<of5mm	
Sexo			
Male	21(52,5%)	19(47,5%)	0,235[1]
Female	35(41,2%)	50(58,8%)	
Age			
<10 years	4 (15,4%)	22(84,6%)	0,001[1]
≥10years	52(52,5%)	47(47,5%)	
Contacttype			
Home	44 (55,0%)	36(45,0%)	0,952[1]
Extradomiciliar	25 (55,6%)	20(44,4%)	
Health Unit			
FHU Josué de Castro	46(50,0%)	46(50,0%)	
FHU UR 03	6(33,3%)	12(66,7%)	0,202[2]
FHU Jordão Alto	4(33,3%)	8(66,7%)	
HelthCenter Ivo Rabelo	0 (0,0%)	3(100,0%)	
Comorbidity			
Yes	13(54,2%)	11(45,8%)	0,305[1]
No	43(42,6%)	58(57,4%)	

[1]Chi-square testp-value
[2]Fisher's exact test p-value
*Among the contacts who completed TT exam.

DISCUSSION

The national panorama of tuberculosis is a challenge for the public authorities.Recife city has a high incidence of the disease (RECIFE, 2020), where the low adherence to examinations of communicants strengthens a dataset of infected people and is limited in controlling this endemic disease (MENDES *et al*., 2018).The lack of awareness

about the importance of evaluation among patients and contacts results in incomplete recruitment, in most cases (WYSOCKI *et al*., 2016).The health team, therefore, must be prepared to carry out systematic and effective health education strategies, as exemplified by an educational intervention trial in Nigeria, in which they identified a significant impact on contact investigation after community interventions (EKWUEME *et al*., 2014).It is recognized that TB contacts have organizational costs and limitations that prevent them from performing all the necessary tests.It is, therefore, useful to make the necessary arrangements and secure interactions with social and specialized services to provide support, for these factors may be related to the low performance of LTBI exams and treatments (WYSOCKI *et al*., 2016).An example was a survey conducted in Thailand that provided transport assistance (approximately U$ 8.00) and showed a tracking rate of 81.1% among contacts (INSANGUAN *et al*., 2020).However, in our study, most of the contacts came from the unit that hosted the application of TT (72.2%); it is shown that close access to services optimizes screening with increased adherence to the exam.The fact that non-home contacts are at an equal risk of TB such as home contacts that did not share the index case room, highlights the importance of a concentric circle approach for contact investigations, which incorporates all spheres of daily activities and not exclusively the home.Fifty years ago, the risk of TB in individuals with LTBI was estimated at 5% - 10%, with half of all cases identified within 2 years after exposure (HORSBURGH, 2004).However, there is evidence that the majority of secondary cases identified within 5 years of exposure occur in the first year, with the highest rates in the first 3 months.Thus, close contacts recently exposed to TB with a new diagnosis of LTBI are at high risk of progressing to active disease.The treatment of LTBI has been associated with a substantial decrease in the risk of active disease (REICHLER *et al*., 2020).In a study carried out in the United States of America and Canada, 48% of reactive TT was found (REICHLER *et al*., 2020) among TB contacts, similar to ours with 42.1% (including children), who should be screened for early detection of secondary cases or LTBI.Communicants with TT ≥ of 5mm, who use chemoprophylaxis early, will prevent the disease's future spread in the social environment, thus breaking the chain of disease's epidemiological transmission with a consequent reduction in active TB.Emphasis is placed on the need for a systematic routine of contact tracking performed at PHC services to assess the registration of information generated and the greater frequency of monitoring visits by Tuberculosis Control teams in the districts.In this way, it can, in fact, promote continuous support to the difficulties that the health teams present(WYSOCKI *et al*., 2016). To this end, the public administration must provide improved access to TB contacts for evaluation.And, also, to improve the qualification of professionals of Basic Health Units to perform TT and chemoprophylaxis.To motivate professionals to carry out more educational interventions in order to increase adherence to tests of contact with social empowerment and interrupt the chain of the disease transmission.The limitations of the survey involved the use of secondary data, as it depends on the records of databases, but also the absence of follow-up records of post-examination cases.

Conclusion

The tuberculin skin test showed a yield of 42.1% with a result ≥ of 5mm between the contacts who underwent the examination at the Basic Health Unit. The unit that hosted it had a greater number of contacts, so it is demonstrated that close access to contacts optimizes screening and adherence to the exam.

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