

Knowledge about tuberculosis among public transportation users in Santiago de Cali, Colombia, 2017

Conocimientos sobre la tuberculosis en usuarios del transporte masivo en Santiago de Cali, Colombia

Jorge E. Figueroa¹, Diana Marcela Hoyos², Alexandra Rodas³, Lucy Luna³, Liliana Salamanca⁴, Susana Valencia⁵, Liliana Forero², Diana Dávalos¹, Constanza Díaz⁴, Yessenia Niño³, Rossi Marieth Meza², Luisa María Nieto⁶, Gustavo Díaz^{1,7}, Beatriz E. Ferro¹, Robinson Pacheco⁸

¹ Universidad Icesi, Facultad de Ciencias de la Salud, Cali, Colombia.

² Secretaría Departamental de Salud del Valle del Cauca, Cali, Colombia.

³ Secretaría de Salud Pública Municipal de Cali, Cali, Colombia.

⁴ Universidad del Valle, Facultad de Salud, Cali, Colombia.

⁵ Universidad Santiago de Cali, Facultad de Salud, Cali, Colombia.

⁶ Universidad Santiago de Cali, Facultad de Ciencias Básicas, Cali, Colombia.

⁷ Centro Internacional de Entrenamiento e Investigaciones Médicas, CIDEIM, Cali, Colombia.

⁸ Universidad Libre Cali, GRIEPIS, Cali, Colombia.

Correspondence: Jorge Enrique Figueroa Gómez. Telephone: 3159275827. Email: jorge.figueroa.gomez@gmail.com

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Abstract

Knowledge about Tuberculosis (TB) is limited among the general population of Cali, the second city in Colombia with the highest burden of TB. Here, we sought to determine the level of knowledge about TB among users of the public transportation system of the city. We conducted a cross-sectional study using a structured questionnaire to collect information in 12 main stations of the transport system. Data were collected in a working day of March 2017. Out of 193 interviewed users, 80% answered to have limited knowledge about TB. However, most of the participants identified coughing as a symptom of TB (74.6%) and recognized that TB is a contagious disease (75.1%) that could be transmitted by the air (61.7%). Seventy percent of participants knew that TB is a curable disease. On the other hand, there were misconceptions regarding TB transmission and the identification of other classical symptoms of TB was limited. Understanding the level of knowledge about TB among the general population is key to design communicative and educational strategies to control and prevent this disease.

Resumen

Poco se conoce sobre los conocimientos sobre tuberculosis (TB) en Cali, segunda ciudad colombiana con mayor carga de la enfermedad. Esta investigación buscó determinar el grado de conocimientos sobre TB en usuarios del transporte masivo. Se realizó un estudio descriptivo de corte transversal aplicando un cuestionario a usuarios de 12 estaciones principales del sistema de transporte público en un día laboral de marzo de 2017. De 193 encuestados, el 80% manifestó conocer poco o nada sobre TB. La mayoría identificó la tos como síntoma (74.6%) y refirió que es una enfermedad contagiosa (75.1%), transmitida por aire (61.7%) y curable (70.5%). No es tan frecuente la identificación de otros síntomas y hay concepciones erróneas sobre la transmisión. Identificar los conocimientos de la población acerca de la enfermedad permite orientar estrategias comunicativas y educativas para prevenir y controlar la TB, dirigidas al público que converge en el sistema de transporte masivo.

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Key contribution of the study

Objective	Explore the degree of knowledge of TB amongst transportation users on the MIO in Cali (a system of mass transportation)
Study design	Descriptive exploratory cross-sectional
Source of information	Structured questionnaire with sociodemographic questions and questions about knowledge, attitudes and practices regarding TB
Population/sample	193 users of the mass transport system of the city of Cali (MIO), randomly selected
Principle findings	Respondents identify cough and airway as risk factors for TB transmission. People under 30 years of age have a low level of knowledge about TB compared to the population over 30 years of age



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Introduction

Tuberculosis (TB) is a serious public health problem in some regions of the world. It was the leading cause of mortality from an infectious agent in 2017 (1). In that same year, the incidence of TB in Colombia reached 26.5/100,000 inhabitants, although the country presented foci that concentrate the TB burden higher in these areas. In the city of Cali, an incidence of 44/100,000 inhabitants was reported (2), positioning it as the city with the second highest burden of the disease, implying a higher risk of TB transmission.

The WHO has led multiple strategies to mitigate the impact of TB on affected populations. Within these is the strategy: strictly supervised shortened treatment (DOTS/TAES), promoted since 1995. This strategy reached 20 million patients in approximately 182 countries who were given treatment. In Colombia, the main strategies to control TB involve: implementation of the TAES, strengthening of public health surveillance and implementation of advocacy, communication and social mobilization strategies (ACMS) (3).

Despite multiple efforts by TB control programs to reduce the burden of the disease, it has remained refractory in recent years. Some authors recommend involving behavioral research on beliefs, knowledge, attitudes and practices of behavior in prevention and control strategies for TB. This has been suggested

in order to identify possible strengths and weaknesses for action through mass education strategies and the promotion of self-care.

Studies of attitudes and perceptions about TB demonstrated conceptual gaps, stigmatizing attitudes and risk practices. Results obtained in people who had contact with the disease at some point in their life, either as health workers, patients or relatives. Regarding some TB transmission factors, such as person-to-person transmission, it was determined that only 67% (66/98) of the contacts of infected patients knew the form of transmission, highlighting a region of the country where only 27% (5/19) of the surveyed contacts “believed” in the possibility of person-to-person transmission.

Or the finding that only 30% (50/166) of the Latino population surveyed in Utah recognized it this as a risk factor for TB. Studies have been carried out in private communities, finding a variable level of knowledge about transmission, symptoms and etiology of TB, which also varies according to country or city of origin, level of education or in some cases age, income, amongst other factors (4-7). In Latin America, especially Cuba and Peru, research has concluded that specific knowledge about symptoms and forms of transmission is insufficient and there is a low perception of risk (8,9). Additionally, stigma persists for patients in many cultures (10).

In Colombia, studies carried out in urban communities of Medellín

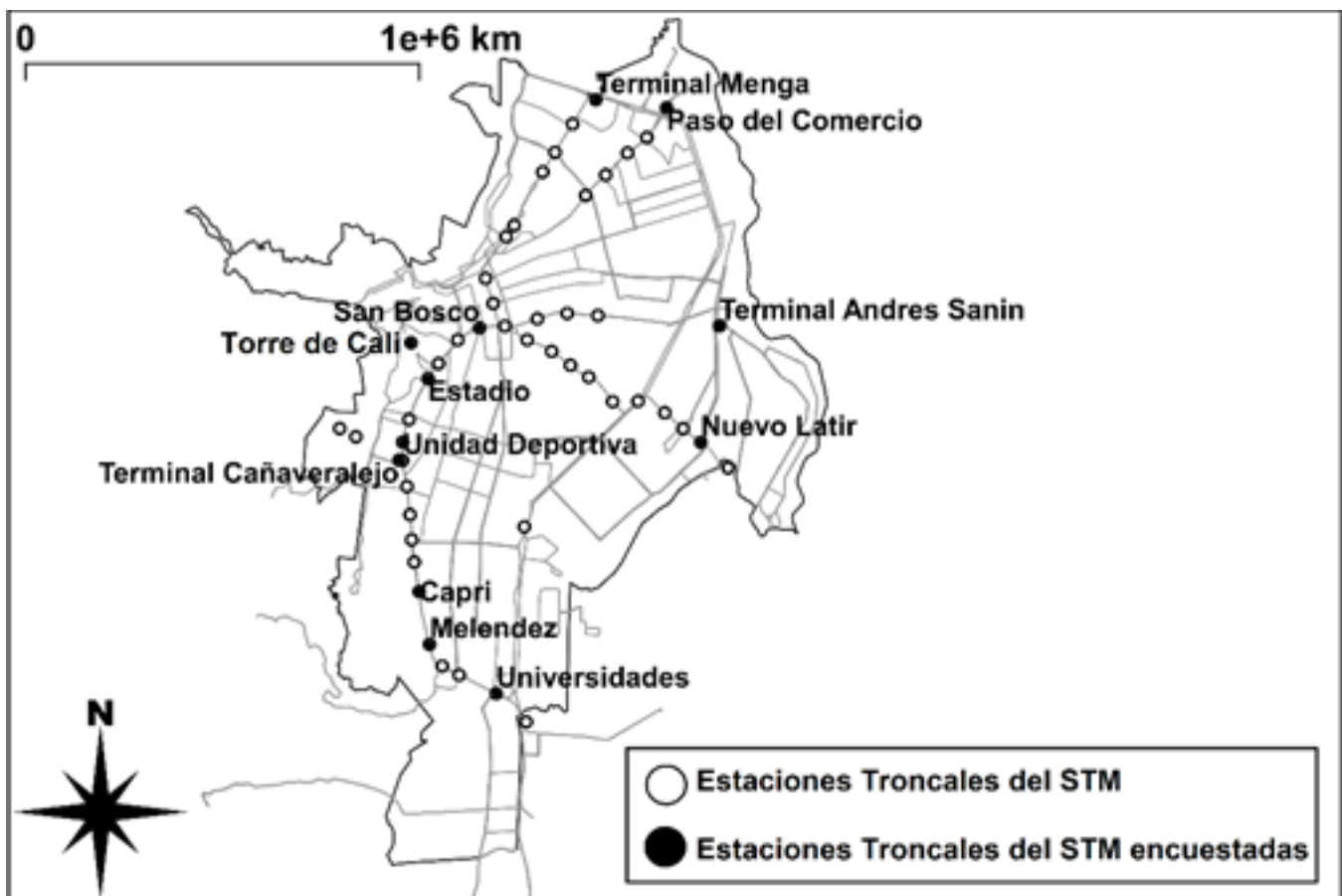


Figure 1. Map of the city of Cali with the general scheme of the Integrated Mass Transportation System of the West (MIO). The stations where surveys were conducted are represented by the black circles.

(11) and Santander (12), in indigenous Zenúes and inhabitants of rural areas (13), in health workers from the Pacific Coast (14) and with health students (15), have shown a lack of knowledge on topics such as the causative agent, the mode of transmission, clinical definition of the respiratory symptom, diagnosis, the DOTS/TAES control programs, vaccination, management of side effects and drug resistance. All of this weakens possible prevention strategies. No studies have been undertaken relating to knowledge, attitudes and practices (KAP) about TB of the general citizenship in Cali, despite the fact that these are an important dimension for the prevention, early detection and proper management of the disease. This study explores the knowledge about TB of users of the mass public transport system in Cali, a scenario that, being frequented daily by approximately 500,000 users, not only offers the opportunity to determine how much people know about topics of interest in public health, but also an excellent place to explore information and communication strategies about TB.

Methods

This work involved a descriptive, cross-sectional exploratory study, carried out on a working day in March 2017, with users of the integrated mass transport system of the city of Cali, (MIO), Colombia, who mobilized between 8:00 am and 12:00 pm. Twelve stations with high passenger flow were included at various geographical points of the city (Figure 1). The Human Research Ethics Committee of the ICESI University approved the research protocol. The informed consent process was carried out verbally; the participants were randomly selected and voluntarily agreed to be included.

A structured questionnaire was used, designed and validated by the research team, which included demographic data (gender, age, education), ten questions on knowledge, two on attitudes and three on practices about TB. Once the instrument was applied, the concerns of the respondents were resolved and they were informed in a general way about TB. The information collected was entered into a database and analyzed with SPSS software (IBM, version 25).

The results are presented through descriptive statistics, the qualitative variables are summarized with proportions; the only numerical variable was age and its distribution was evaluated through the Shapiro-Wilk test with 95% significance. Additionally, the Chi-squared test was included, comparing the differences between responses recorded by two groups according to age: group 1 (14-30 years) and group 2 (31-80 years).

Results

Of the total users of the MIO of Cali surveyed (n = 201), 8 were excluded because they did not answer all of the questions, leaving a total of 193 surveys. In general, the surveyed population had a medium-high level of academic training: 87% (167/193) reported medium, technical/technological or professional training. The majority (95%, 183/193) were of productive age (15-64 years). Table 1 describes the demographic characteristics of the respondents.

The survey included a similar number of men and women; none of the responses showed a statistically significant relationship with gender.

With reference to knowledge about TB, the majority of those surveyed said they knew little (58%, 112/193) or nothing (24.5%, 48/193) of the disease. Approximately 75.0% identified cough as a symptom of TB and 75.1% responded that it was a contagious disease. Additionally, 61.6% identified the airway as a mode of transmission (Table 2). When the respondents were categorized into two age groups: group 1 (14-30 years) and group 2 (31-80 years), statistically significant differences were found when answering affirmatively if cough is a symptom of TB (48/82 and 98 / 104 respectively) and if TB is a contagious disease (53/85 and 95/106 respectively) (Chi square: p <0.0001).

Respondents identified immunosuppression (low defenses (59.5%) and HIV-AIDS (28.4%) as the main risk factor for developing TB, followed by close contact with an infected person (26.9%). Mainly, they associated TB with smoking (51.8%), poor diet (46.6%), drug use (31.1%) and sexual disorder (18.6%). Finally, 70.4% stated that TB is curable. The complete knowledge results are in Table 2. Regarding attitudes, 28.4% of those surveyed answered that they would avoid contact with people infected with TB, while 72.0% said that a person with TB should be isolated. Regarding practices, 53.8% of those surveyed stated that they do not wear a mask when they have a cough, expectoration or sneeze, and 44.0% do not go to the doctor when they present these respiratory symptoms.

Discussion

The objective of this study was to explore the degree of knowledge of the users of the mass transport system (MIO) in Cali in relation to TB. It is the first study in the country that sought to explore this knowledge in the general population of different areas, taking advantage of the mass transport scenario, different from the analyses previously carried out in specific communities of Medellín, the Pacific Coast and Bucaramanga (11,12,14).

Table 1. Demographic characteristics of the mass transit users surveyed in Cali, Colombia

Characteristics	n	%
Age		
14 - 26 years	77	40
27 - 59 years	92	48
60 years plus	24	12
Gender		
Femenine	94	49
Masculine	99	51
Level of schooling		
Primary	25	12
Secondary	90	47
Technical-Technological	41	21
Professional	36	19
No data	1	1

Table 2. Knowledge about TB amongst users of the MIO

Knowledge (n=193)	Age**		p*
	Group 1 n (%)	Group 2 n (%)	
¿How much do you know about tuberculosis?			
Nothing	27 (14)	21 (11)	<0.01
A little	50 (26)	62 (32)	
A lot	5 (3)	21 (11)	
¿Which of the following are symptoms of TB?			
Cough	47 (24)	98 (51)	<0.01
Fever	46 (24)	62 (32)	0.18
Headache	31 (16)	32 (17)	0.58
Respiratory difficulties	44 (23)	65 (34)	0.08
Vomiting	14 (7)	15 (8)	0.72
Weight loss	31 (16)	48 (25)	0.22
Night sweats	21 (11)	25 (13)	0.98
Stomach pain	13 (7)	11 (6)	0.36
Diarrhea	9 (5)	9 (5)	0.64
¿Do you think that TB is a contagious disease?			
Yes	52 (27)	95 (49)	<0.01
No	31 (16)	11 (6)	
¿How do you think that TB is transmitted?			
Air	47 (24)	72 (37)	0.08
Sexually	14 (7)	15 (8)	0.68
Touching an infected person	3 (2)	7 (4)	0.35
Sleeping with an infected person	10 (5)	25 (13)	0.02
Sharing cutlery	16 (8)	48 (25)	<0.01
Inherited	12 (6)	18 (9)	0.52

In addition, it also sought to go beyond those who suffer from the disease or someone who has close experience of the disease (relatives, support network, health workers).

In terms of knowledge, it was shown that, although more than 80% of the respondents said they knew little or nothing about TB, this information is contradictory with the specific answers presented in the rest of the survey. The study shows, for example, that people identify cough (75%, n = 145) and airway (61%, n = 119) as risk factors for TB transmission, local TB programs could use this information to develop a campaign for the free distribution of masks at the stations of the Cali mass transportation system; In this way, this recognition of risk of the community to promote a protection measure on a platform with high dissemination potential (about 500,000 users/day). Additionally, the results indicate that those under 30 years of age, in general terms, have a low level of knowledge of TB, compared to the older population. This information suggests that the design of educational campaigns around TB should target the young population.

The use of bioinformatics tools should be explored, such as automatic informative text messages about TB to users who

Knowledge (n=193)	Age**		p*
	Group 1 n (%)	Group 2 n (%)	
¿Which people are at greatest risk of catching the disease?			
People of low socioeconomic class	8 (4)	8 (4)	0.29
Pregnant women	11 (6)	11 (6)	0.25
People with HIV/AIDS	10 (5)	19 (10)	0.47
People with low defenses	16 (8)	26 (13)	0.82
People that live, work or study with people with TB	9 (5)	19 (10)	0.37
¿Do you think that TB is associated with...?			
Poor diet	32 (17)	61 (32)	<0.01
Drinking alcohol	13 (7)	19 (10)	0.59
Smoke	39 (20)	62 (32)	0.07
Consuming drugs	24 (12)	37 (19)	0.23
Sexual disorder	13 (7)	24 (12)	0.15
¿A person with TB can do something to avoid transmitting TB to another person?			
Yes	65 (34)	98 (51)	<0.01
No	18	6	
¿Is TB transmitted more easily in closed and enclosed spaces?			
Yes	61 (32)	89 (46)	0.05
No	21 (11)	15 (8)	
¿Does TB have a cure?			
Yes	53 (27)	87 (45)	<0.01
No	24 (12)	14 (7)	
¿What methods could avoid TB transmission?			
Vaccine – BCG	55 (28)	68 (35)	0.38
Avoiding contact	21 (11)	34 (18)	0.18
Prophylactic medicines	33 (17)	34 (18)	0.49

*Group 1: 14-30 years Group 2: 31-80 years

** Pearson Chi-squared test

connect to the Wi-Fi of the transport system (Public Network: CALI DIGITAL). These exploratory results also, however, indicate a significant degree of ignorance of key aspects. For example, a high proportion of participants stated that they do not visit the doctor when they have respiratory symptoms. This could be related to the deficiencies of the country's health system, but it could also reflect the lack of knowledge about how the action of visiting the doctor is related to the interruption of transmission and cure of TB. Likewise, more than half of the participants reported not wearing a mask when presenting a productive cough, suggesting ignorance regarding potential strategies to reduce the spread of TB and other respiratory diseases.

A CAP study of TB in the general population conducted in Somalia (16) showed that a greater knowledge of the disease

encourages the search for medical help. Although in our study the majority of respondents referred cough as a symptom, the response levels in symptoms such as weight loss (39.9%), night sweats (23.8%) and fever (53.9%) are low. Similar to studies carried out in other communities (3-6), ours suggests that, in Cali, the level of knowledge about TB is influenced by age, finding a greater number of correct answers in the population older than 30 years. Therefore, a greater awareness of the symptoms may contribute to detecting the disease early, just as directing educational strategies to the younger population presumes a greater impact on the level of knowledge about TB in the population.

Determining what the population knows about the disease is useful to guide communication and educational strategies related to the prevention, detection and control of TB, as countries such as Brazil, Peru and Cuba have done, where the findings obtained offered a frame of reference for interventions (8,9,17). This type of approach allows the development of communication strategies adjusted to the specific sociocultural characteristics of local contexts (10).

The data obtained in this study are inputs to design a broader investigation that allows directing the implementation of informative and communicative strategies based on the knowledge of the inhabitants of Cali, especially the users of mass transport. However, the information collected contributes to developing more effective communication processes through bets such as the COMBI strategy (Communication to impact behavior). It would seek to impact the divergent knowledge about the modes of transmission, attitudes towards sick people and care practices, so that these are not a reason for rejection, marginalization and denial of the disease by those who suffer from it, as well as determinants of the low medical consultation and little attention to alarm signals.

Although the findings are relevant, it is important to highlight that the study has limitations. The most important is the small sample size, since data was only collected once. This circumstance does not allow the data to be representative of all the users of the MIO system. Another limitation may be related to the method of collection, given that some participants were able to respond hastily because it was a working day where there is usually restricted time to travel.

Finally, it should be emphasized that research on knowledge of a disease does not stop at pointing out gaps between the knowledge of the population and scientific knowledge, but must go further to identify why people have certain beliefs and what can be done to change or improve them. Therefore, the future development of studies that allow to explore in depth the beliefs and knowledge of the population around TB through a qualitative approach, may contribute to the implementation of ACMS strategies that respond to the social determinants of the Caleño context, addressing the issues of stigma and discrimination from the specificities of the population and promoting preventive actions, where scenarios such as mass transportation play an important role in their implementation and dissemination.

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Appendix 1: Survey

DATOS GENERALES				
1	Edad	2	1. Femenino	2. Masculino
3	Nivel de escolaridad alcanzado	1. Ninguno 2. Primaria Incompleto 4. Bachiller Incompleto 6. Técnico – Tecnólogo Incompleto 8. Educación superior Incompleto		3. Primaria Completo 5. Bachiller Completo 7. Técnico – Tecnólogo Completo 9. Educación superior Completo
CONOCIMIENTOS SOBRE LA ENFERMEDAD				
4	¿Qué tanto sabe de la tuberculosis?	1. Nada	2. Poco	3. Mucho
5	¿Cuál cree que es la causa de la tuberculosis?	1. Transmisión sexual 2. Vectores (ej. Mosquitos) 3. Transmisión directa 4. Malos aires 5. Otra, ¿cuál?		
6	¿Cuáles de los siguientes son síntomas de tuberculosis? RESPUESTA MÚLTIPLE	1. Tos 2. Fiebre 3. Dolor de cabeza 4. Dificultad respiratoria 5. Vómito 6. Pérdida de peso 7. Sudoración nocturna 8. Dolor de estómago 9. Diarrea 10. Otro, ¿cuál?		
7	¿Usted cree que la tuberculosis es una enfermedad contagiosa?	1. SI	2. NO	
8	¿Cómo cree que se transmite la tuberculosis? RESPUESTA MÚLTIPLE	1. Por el aire 2. Por Transmisión sexual 3. Por tocar a la persona 4. Por dormir con la persona 5. Por compartir cubiertos 6. Por herencia 7. Otro, ¿cuál?		
9	¿Cuáles son las personas que están en mayor riesgo de adquirir la enfermedad?	1. Personas de bajo estrato socioeconómico 2. Mujeres gestantes 3. Personas con VIH-Sida 4. Personas con defensas bajas 5. Personas que trabajan, estudian o viven con personas con TBC 6. Otra, ¿cuál?		
10	¿Cree usted que la tuberculosis se asocia a... RESPUESTA MÚLTIPLE	1. ... Mala alimentación? 2. ... Beber? 3. ... Fumar? 4. ... Consumo de drogas? 5. ... Desorden sexual? 6. Otro, ¿cuál?		
11	¿Una persona enferma de tuberculosis puede hacer algo para no contagiar a otras personas?	1. SÍ	2. NO	
12	¿La tuberculosis se contagia más fácilmente en lugares concurridos y encerrados?	1. SÍ	2. NO	
13	¿La tuberculosis tiene cura?	1. SÍ	2. NO	
ACTITUDES Y PRÁCTICAS				
14	¿Alguien cercano a usted ha sido diagnosticado con tuberculosis?	1. SÍ	2. NO	
15	¿Evitaría usted contacto con alguien infectado?	1. SÍ	2. NO	
16	¿Usted cree que una persona con tuberculosis debe ser aislada?	1. SÍ	2. NO	
17	¿Usted cree que una persona con sospecha de tuberculosis debe ser aislada?	1. SÍ	2. NO	
18	¿Usted usa tapabocas cuando tiene tos, expectoración o estornudo?	1. SÍ	2. NO	
19	¿Usted acude al médico cuando presenta tos o algún síntoma respiratorio?	1. SÍ	2. NO	
20	¿Cuáles pueden ser las medidas para prevenir la enfermedad? RESPUESTA MÚLTIPLE	1. Vacuna - BCG 2. Evitar el contacto 3. Medicamentos profilácticos 4. Aislar al paciente 5. Otra, ¿cuál?		