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M. Serino^{a,*}, C. Freitas^{a,e}, S. Saleiro^b, B. Cabrita^c, M. Conde^d, M.G.O. Fernandes^{a,e}, A. Magalhães^a

^a *Pulmonology Department, Centro Hospitalar Universitário São João, Porto, Portugal*

^b *Pulmonology Department, Instituto Português de Oncologia do Porto, Porto, Portugal*

^c *Pulmonology Department, Hospital Pedro Hispano, Matosinhos, Portugal*

^d *Pulmonology Department, Centro Hospitalar de Trás-os-Montes e Alto Douro, Vila Real, Portugal*

^e *Faculty of Medicine, University of Porto, Portugal*

* Corresponding author.

E-mail address: mariana.serino@gmail.com (M. Serino). Available online 17 March 2021

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Literacy on tuberculosis in paediatric population and their caregivers. The importance of an outpatient tuberculosis centre



According to the most recent Tuberculosis Surveillance Report from the European Centre for Disease Prevention and Control, the prevalence of Tuberculosis (TB) has been steadily decreasing, from 21,3 per 100 000 inhabitants in 2014 to 20,5/100000 in 2018.¹ As a result, and also related to the centralization of health care, the general population and healthcare professionals have progressively less contact with TB, increasing misinformation about disease presentation, prevention and treatment, eventually compromising the timely detection and management of cases.² Raising awareness about the topic is therefore crucial as a strategy for disease control and public healthcare.²

The aim of this study was to assess the general population's knowledge about TB, by identifying, measuring and evaluating the differences between Outpatient Tuberculosis Centre users and Pediatric Hospital Department users, and highlighting the factors that lead to a better understanding of TB.

A comparative cross-sectional observational study was conducted from April to June 2019. Participants were divided into two groups: patients/caregivers admitted to a Pediatric Hospital Department (PHD) and patients/caregivers followed at an Outpatient Pediatric Tuberculosis Reference Centre (OTBC).

Participants filled in a questionnaire designed by the authors featuring fifteen multiple choice questions struc-

tured as: demographic information and general knowledge about TB, disease presentation/organ involvement and treatment/prevention. Questionnaires from children older than 10years-old or their caregivers were only included if completed in full.

A TB Knowledge Score (TB KScore) was obtained for intergroup comparison of results; each correct answer scored one point, with the final score ranging from 0 to 15 points. For multiple correct answers 0,1 was added or subtracted if right or wrong answer, respectively.

Data analyses was performed using IBM SPSS Statistics v.25®. General knowledge of TB was reported as absolute and relative frequencies; TB KScore was represented by mean and standard deviation; independent sample t tests were used for intergroup comparison. Multiple linear regression model was used to identify variables associated with TB KScore.

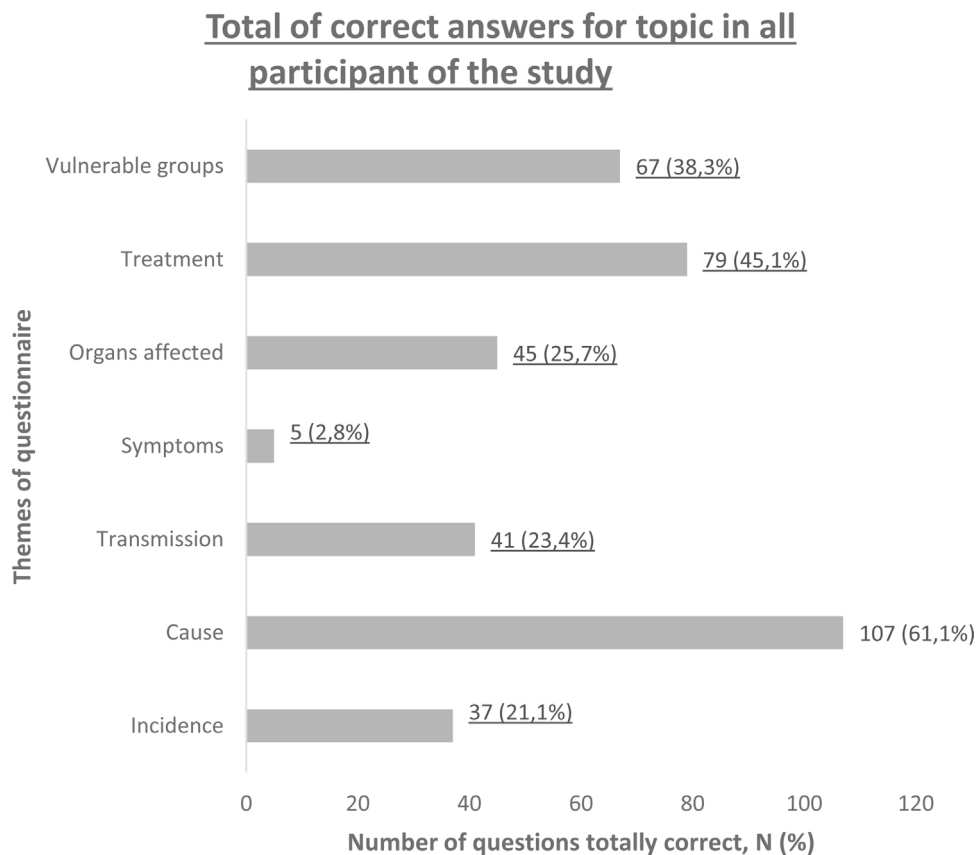
A total of 175 participants were included (Table 1), 50.9% (n=89) from the PHD and 49.1% (n=86) from the OTBC. 143 participants (81.7%) were female and the average age was 34.73 ± 13.07 years. Questionnaires were mostly answered by the mothers (n=122; 69.1%), and the majority of participants (n=53 (30.2%)) had a high school qualification. Fifty-nine percent (n=104) of the caregivers were employed and the monthly family income was mainly between 500 €–1000 € (n=67; 38.3%).

In the general knowledge section, 21.1% (n=37) correctly recognized the incidence of TB, with 53.0% (n=93) considering TB as a frequent disease and 23.0% (n=40) as rare. One hundred and seven participants (61,1%) knew that TB is caused by a bacterium. About disease transmission, 23.4% (n=41) answered correctly, with cough and breathing

Table 1 Characteristics of study participants.

Variable	Groups PHD (N = 89)	OTBC (N = 86)	PHD + OTBC (N = 175)	p value
Sex: Female, N (%)	79 (88,76)	64 (74,42)	143 (81,70)	0,014
Age in years, mean (\pm SD)	35,37 (12,23)	34,07 (13,94)	34,73 (13,07)	0,526
Identification of the person responding: N (%)				0,068
Patients' mothers	69 (77,53)	53 (61,63)	122 (69,71)	
Patients' fathers	8 (8,99)	12 (13,95)	20 (11,43)	
Patient himself	7 (7,87)	17 (19,77)	24 (13,71)	
Other	5 (5,52)	4 (4,65)	9 (5,14)	
Level of education, N (%)				0,27
Primary school (1st-4th grade)	9 (10,11)	1 (1,16)	10 (5,71)	
Middle school (5th-6th grade)	8 (8,99)	8 (9,30)	16 (9,14)	
Middle school (7th-9th grade)	27 (30,34)	22 (25,58)	49 (28,00)	
High school degree (10th-12th grade)	25 (28,09)	28 (32,56)	53 (30,29)	
Graduation	14 (15,73)	13 (15,12)	27 (15,43)	
Master	2 (2,25)	2 (2,33)	4 (2,29)	
Household monthly income N (%)				0,008
<500 €	17 (19,10)	5 (5,81)	22 (12,57)	
500–1000 €	37 (41,57)	30 (34,88)	67 (38,29)	
1000–1500 €	17 (19,10)	21 (24,42)	38 (21,71)	
>1500 €	9 (10,11)	20 (23,26)	29 (16,57)	
Professional situation, N (%)				0,001
Employed	48 (53,93)	56 (65,12)	104 (59,43)	
Unemployed	30 (33,71)	9 (10,07)	39 (22,29)	
Student	3 (3,37)	16 (18,60)	24 (13,71)	

Legend: PHD - Pediatric Hospital Department; OTBC - Outpatient Tuberculosis Centre.

**Figure 1** Total of correct answers for topic in all participant of the study.

identified by 76.0% ($n=133$) and 53.1% ($n=93$), respectively; 14.3% ($n=25$) answered that TB could be transmitted by touch or contaminated water or food; the possibility of sexual transmission was considered by 8.0% ($n=14$) of participants. Regarding presentation, 2.9% ($n=5$) correctly identified all the symptoms, with cough ($n=149$; 85.1%) and fever ($n=122$; 69.7%) being the most commonly provided answers. Twenty participants (11.43%) thought that the disease is asymptomatic. About TB location, 25.7% ($n=45$) answered it could affect several organs, mostly the lungs ($n=109$; 62.3%). Regarding treatment of TB, 45.1% ($n=79$) correctly identified the appropriate treatment, with antibiotics selected in 65.1% of the cases ($n=114$), rest in 20.0% ($n=35$) and AINE's in 10.3% ($n=18$). Six participants (3.43%) chose all possible answers about preventive treatment in childhood and 38.3% ($n=67$) selected all vulnerable groups (Fig. 1).

The global TB KScore was $8,14 \pm 3,30$ (min=0,0; max=12,5), being higher in OTBC group ($40 \pm 3,52$ versus $6,9 \pm 3,52$ for PHD).

In multiple linear regression models, TB KScore was significantly and mainly associated with provenience group (PHD versus OTBC), but also with their age and level of education.

Compared to other studies, a higher knowledge was detected for the topics about the disease cause and presentation.^{2–5} However, results also indicate that literacy related to transmission, vulnerable groups and treatment were poorer than similar studies.^{2,5} The higher TB Kscore detected on the OTBC group may be related to a closer contact with the disease or its suspicion in a reference centre, with more frequent health education on the theme. As other studies have shown, age and level of education have a positive effect on a person's knowledge of TB.^{2,4–7} The authors recognize that most of participants were female and acknowledge that this could be a bias when generalizing results to the general population.

The results reveal that literacy on TB is far from optimal. The correct diagnosis and early treatment depend on popular knowledge about the disease, so the authors highlight the importance of developing a control strategy based on education programs and health campaigns inside the community. Hereupon, it is crucial to create a patient-centred approach to improve knowledge of and alertness for the disease, aiming to achieve a more successful control of TB.

Ethical disclosures

The study was approved by the Ethical Committee and Administrative Council of the hospital and outpatient TB centre. Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data

The authors declare that no patient data appear in this article.

Right to privacy and informed consent

The authors declare that no patient data appear in this article.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Joana Pinho*, Vilma Lopes, Isabel Ayres Pereira, Joana Brandão Silva, Maria Adriana Rangel, Isabel Carvalho

Department of Pediatrics, Centro Hospitalar de Vila Nova de Gaia Espinho EPE Vila Nova de Gaia, Vila Nova de Gaia, Portugal

* Corresponding autor.

E-mail address: joana.pinho@chvng.min-saude.pt

(J. Pinho).

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