



# Health Literacy And Knowledge Related To Tuberculosis Among Outpatients At A Referral Hospital In Lima, Peru.

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## INTRODUCTION

➤ **Health Literacy:** set of knowledge and skills that determine one's ability to obtain, understand, and apply health information in ways that promote and maintain good health. Consistent findings suggest a causal relationship between limited health literacy and adverse health outcomes.

➤ **Limitation of Current Studies:** In Latin America, very few studies evaluated level of health literacy and its impacts. In Peru only one study of gynecological patients evaluated health literacy and no study to date has examined the relationship between health literacy and TB knowledge.

➤ **Why Tuberculosis?** Peru has one of the highest burdens of tuberculosis (TB) in the Americas. The annual incidence rate is 117 cases per 100,000 population (2016). Lima, the capital of Peru, accounts for approximately 58% of the country's TB cases. As in most countries with high TB burden, TB case detection in Peru relies on passive case finding. This strategy relies on the assumption that the community is aware that a persistent cough is a possible symptom of TB and that formal health care needs to be sought. There are occasional education campaigns, but level of knowledge and awareness is not clear.

## OBJECTIVE

➤ To assess level of health literacy and TB knowledge among outpatients attending a referral hospital in Lima, Peru.

➤ Our goal was to ascertain knowledge gaps in TB, to identify subgroups for intervention, and to provide insight for interventions to increase health literacy.

## METHODS

➤ Cross sectional survey among outpatients at Hospital Cayetano Heredia in Lima, Peru from June – August 2017.

➤ Questionnaire to determine:

a) Knowledge on TB risk, transmission, and symptoms as well as prevention and treatment

b) Socio demographic data including validated socioeconomic scale

c) Health literacy with the Short Assessment of Health Literacy-Spanish (SAHL-S) tool (Validated for Spanish-Speakers, Short version (18 questions), Longer version SAHLSA-50 used in previous study in Peru)

➤ Those at least 18 years old were invited to participate, and those consenting were enrolled.

➤ Items were read out loud and responses recorded in a database designed on Qualtrics using iPads.

## RESULTS

Table 1 Characteristics of participants enrolled in the study, Hospital Cayetano Heredia, June-August, 2017.

Participant characteristics (N=272)	n (%)
<b>Age</b>	
Median (interquartile range)	39 (29-52)
18-32	98 (36.0)
33-47	85 (31.3)
48-62	67 (24.6)
≥63	22 (8.1)
<b>Gender</b>	
Female	180 (66.2)
Male	92 (33.8)
<b>District of residence</b>	
San Martín de Porres	83 (30.5)
Los Olivos	58 (21.3)
Independencia	34 (12.5)
Comas	19 (7.0)
Other*	78 (28.7)
<b>Highest education attained</b>	
None/primary	59 (21.7)
Secondary	125 (46.0)
Technical	40 (14.7)
University	48 (17.7)
<b>Occupation</b>	
None	18 (6.6)
Homemaker	91 (33.5)
Commerce	24 (8.8)
Student	24 (8.8)
Driver/collector	14 (5.2)
Construction	11 (4.0)
Health care workers	10 (3.7)
Other**	80 (29.4)
<b>Socioeconomic status</b>	
No Poverty	244 (89.7)
Poverty	28 (10.3)
<b>Health Insurance</b>	
None	30 (11.0)
State Health insurance (SIS)	187 (68.8)
Social Security (EsSalud)	46 (16.9)
Other/Private	9 (3.3)
<b>Frequency of medical visits to the hospital</b>	
At least once a month	72 (26.5)
Every three months	62 (22.8)
Twice a year	55 (20.2)
Once a year or less	83 (30.5)
<b>Self-reported perception of health status at the moment of the interview</b>	
"Good" or "excellent"	177 (65.1)
"Bad" or "really bad"	23 (8.5)
"Regular"	72 (26.5)

\*Other includes other less reported districts including Ate, San Juan de Lurigancho, and Ancon. \*\* Other includes other less reported occupations including secretary, seamstress, and administrative work.

## RESULTS

Table 2: Tuberculosis knowledge among outpatients attending Hospital Cayetano Heredia, June-August, 2017.

TB knowledge (N=272)	Spontaneous n (%)	Elicited n (%)
<b>How do you think one gets tuberculosis?*</b>		
Through the air, when someone with TB coughs/sneezes?		
Yes	89 (32.7)	159 (58.5)
No	NA	24 (8.8)
<b>From malnutrition?</b>		
Yes	128 (47.1)	123 (45.2)
No	NA	21 (7.7)
<b>From being in contact with an untreated person?</b>		
Yes	76 (27.9)	156 (57.4)
No	NA	40 (14.7)
<b>From being on public transport?</b>		
Yes	13 (4.8)	229 (84.2)
No	NA	30 (11.0)
<b>What are the symptoms of tuberculosis?*</b>		
<b>Cough?</b>		
Yes	191 (70.2)	71 (26.1)
No	NA	10 (3.7)
<b>Fatigue and weakness?</b>		
Yes	48 (17.7)	203 (74.6)
No	NA	21 (7.7)
<b>Weight loss?</b>		
Yes	74 (27.2)	183 (67.3)
No	NA	15 (5.5)
<b>Fever?</b>		
Yes	92 (33.8)	117 (43.0)
No	NA	63 (23.2)
<b>Cough for two or more weeks?</b>		
Yes	66 (24.3)	188 (69.1)
No	NA	18 (6.6)
<b>Coughing sputum with blood?</b>		
Yes	35 (12.9)	158 (58.1)
No	NA	79 (29.0)
<b>Shortness of breath?</b>		
Yes	7 (2.6)	185 (68.0)
No	NA	80 (29.4)
<b>Night sweating?</b>		
Yes	36 (13.2)	154 (56.6)
No	NA	82 (30.2)
<b>Chest pain?</b>		
Yes	11 (4.0)	161 (59.2)
No	NA	100 (36.8)

\*Other\* spontaneous responses not reported in the table were "sharing utensils" (40 (35.2%)) and "low defenses" (14 (2.3%)). \*\* Other\* symptoms reported spontaneously by the participants were "poor appetite" (31 (27.3%)) and "backache" (18 (15.8%)). Fifteen (13.3%) did not know any symptoms of TB.

- 57.7% knew someone who had TB, 9% had TB in the past
- 96.3% identified cough as a symptom of TB
- 91.2% identified "through the air, when someone with TB coughs/sneezes" as the mode of transmission of TB
- High TB knowledge was found in 54.8%
- High health literacy was found in 71.0%
- Health literacy and TB knowledge were not significantly associated

Table 4: Bivariate and Multivariate Analysis of Participant Characteristics and Health Literacy among outpatients attending Hospital Cayetano Heredia, June-August, 2017.

Participant characteristics (N=272)	High health literacy n (%)	Low health literacy n (%)	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value
<b>Type of participant</b>						
Patient	164 (74.2)	57 (25.8)	2.2 (1.2-4.1) *	0.02*	-	-
Family/friend	29 (56.9)	22 (43.1)	1	-	-	-
<b>Occupation</b>						
None	12 (66.7)	6 (33.3)	0.6 (0.2-1.8)	0.38	-	-
Homemaker	72 (76.6)	22 (23.4)	1	-	-	-
Commerce	16 (66.7)	8 (33.3)	0.6 (0.2-1.6)	0.32	-	-
Student	22 (78.6)	6 (21.4)	1.1 (0.4-3.1)	0.83	-	-
Driver/collector	10 (71.4)	4 (28.6)	0.8 (0.2-2.7)	0.67	-	-
Construction	6 (54.6)	5 (45.5)	0.4 (0.1-1.3) *	0.12*	-	-
Health care workers	5 (45.5)	6 (54.6)	0.3 (0.1-0.9) *	0.04*	-	-
Other	50 (69.4)	22 (30.6)	n/a	-	-	-
<b>Socioeconomic status</b>						
No Poverty	181 (74.2)	63 (25.8)	3.8 (1.7-8.5) *	0.001*	3.8 (1.6-8.9)	0.002
Poverty	12 (42.9)	16 (57.1)	1	-	1	-
<b>Health Insurance</b>						
None	26 (86.7)	4 (13.3)	1	-	1	-
State health insurance (SIS)	123 (65.8)	64 (34.2)	0.3 (0.1-0.9) *	0.03*	0.4 (0.1-1.1)	0.08
Social Security (EsSalud)	38 (82.6)	8 (17.4)	0.7 (0.2-2.7)	0.64	0.8 (0.2-2.9)	0.71
Other/Private	6 (66.7)	3 (33.3)	0.3 (0.1-1.8) *	0.18*	0.2 (0.04-1.4)	0.12
<b>Frequency of hospital visits</b>						
At least monthly	43 (59.7)	29 (40.3)	0.5 (0.3-1.0) *	0.05*	0.7 (0.3-1.4)	0.31
Every three months	50 (80.7)	12 (19.4)	1.4 (0.6-3.1)	0.40	2.0 (0.9-4.8)	0.11
Twice a year	38 (69.1)	17 (30.9)	0.8 (0.4-1.6)	0.47	0.7 (0.3-1.6)	0.45
Once a year or less	62 (74.7)	21 (25.3)	1	-	1	-

\*variables with a p<0.2 in the bivariate analysis were included in the multivariate analysis. Adjusted odds ratio and 95% confidence intervals are reported only for variables that remained significant or acted as confounders in the final multivariate model.

Table 3 Bivariate and Multivariate Analysis of Participant Characteristics and tuberculosis knowledge among outpatients attending Hospital Cayetano Heredia, June-August, 2017.

Participant characteristics (N=272)	High TB knowledge n (%)	Low TB knowledge n (%)	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value (<0.05)
<b>Age group</b>						
18-32	42 (42.9)	56 (57.1)	1	-	1	-
33-47	53 (62.4)	32 (37.7)	2.2 (1.2-4.0) *	0.01*	1.7 (0.8-3.5)	0.16
48-62	42 (62.7)	25 (37.3)	2.2 (1.2-4.2) *	0.01*	1.7 (0.8-3.8)	0.18
≥63	12 (54.6)	10 (45.5)	1.6 (0.6-4.1)	0.32	1.4 (0.5-4.1)	0.54
<b>Gender</b>						
Female	104 (57.8)	76 (42.2)	1.4 (0.9-2.4) *	0.17*	-	-
Male	45 (48.9)	47 (51.1)	1	-	-	-
<b>District where the participant lives</b>						
San Martín de Porres	41 (49.4)	42 (50.6)	0.5 (0.2-1.3) *	0.14*	-	-
Los Olivos	35 (60.3)	23 (39.7)	0.7 (0.2-2.1)	0.53	-	-
Independencia	18 (52.9)	16 (47.1)	0.5 (0.2-1.7)	0.28	-	-
Comas	13 (68.4)	6 (31.6)	1	-	-	-
Other	42 (53.9)	36 (46.2)	n/a	-	-	-
<b>Occupation</b>						
None	10 (55.6)	8 (44.4)	1.1 (0.4-3.2)	0.79	1.2 (0.4-3.5)	0.74
Homemaker	49 (52.1)	45 (47.9)	1	-	1	-
Commerce	15 (62.5)	9 (37.5)	1.5 (0.6-3.8)	0.37	1.2 (0.4-3.2)	0.73
Student	11 (39.3)	17 (60.7)	0.6 (0.3-1.4)	0.24	1.0 (0.4-2.8)	0.97
Driver/collector	3 (21.4)	11 (78.6)	0.3 (0.1-1.0) *	0.04*	0.2 (0.05-0.9)	0.03
Construction	8 (72.7)	3 (27.3)	2.4 (0.6-9.8)	0.21	3.0 (0.7-13.0)	0.15
Hospital workers	4 (36.4)	7 (63.6)	0.5 (0.1-1.9)	0.33	0.9 (0.2-3.7)	0.91
Other	49 (68.1)	23 (31.9)	n/a	-	-	-
<b>Health Insurance</b>						
None	20 (66.7)	10 (33.3)	1	-	1	-
State health insurance	95 (50.8)	92 (49.2)	0.5 (0.2-1.2) *	0.11*	0.5 (0.2-1.2)	0.11
Social Security insurance	26 (56.5)	20 (43.5)	0.7 (0.2-1.7)	0.38	0.8 (0.3-2.2)	0.64
Other/Private	8 (88.9)	1 (11.1)	4 (0.4-36.6)	0.22	4.6 (0.5-47.3)	0.20
<b>Previous TB diagnosis</b>						
Yes	16 (69.6)	7 (30.4)	2.0 (0.8-5.0) *	0.14*	-	-
No	133 (53.4)	116 (46.6)	1	-	1	-
<b>Knowing someone that had TB ever</b>						
Yes	104 (66.2)	53 (33.8)	3.1 (1.9-5.0) *	0.00*	2.7 (1.6-4.7)	0.00
No	45 (39.1)	70 (60.9)	1	-	1	-
<b>Health Literacy</b>						
High health Literacy	104 (53.9)	89 (46.1)	0.9 (0.5-1.5)	0.64	-	-
Low Health Literacy	45 (57.0)	34 (43.0)	1	-	1	-

- After controlling for sex, age, district, education, health insurance, frequency of hospital visits and previous TB diagnosis:
- a) High TB knowledge was associated to knowing someone with TB (aOR 2.7 (95%CI 1.6-4.7)) and being a public transport driver, (aOR 0.2 (95%CI 0.05-0.9))
- b) Not being poor was the single factor associated to high health literacy (aOR 3.8 (95%CI 1.6-8.9))

## CONCLUSIONS

- TB knowledge was fair, though 30% did not know the most important symptom of TB
- Transport drivers and collectors have higher risk of having low TB knowledge
- Living in poverty is associated with low health literacy
- Tailoring educational strategies to risk groups may enhance passive case detection

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