



A Study on Tuberculosis Patients: Their Knowledge and Awareness

Achinta Saikia¹, Bipin Gogoi²

¹Research Scholar, Department of Statistics, Dibrugarh University, Dibrugarh, Assistant Professor
Department of Statistics, Mariani College, Assam, Pin-786004, India

²Professor, Department of Statistics, Dibrugarh University, Dibrugarh, Assam, Pin-786004, India

Corresponding Author Email: - achintasaikia373@gmail.com

DOI:10.48047/ecb/2023.12.si4.745

Abstract

Tuberculosis is an infectious disease caused M. tuberculosis. The estimated 1/3 of the world's population has been infected tuberculosis (TB) and has become the world severe cause of death (WHO 2018). India is a country where the highest number of people suffering from tuberculosis. Tuberculosis has been seen traditionally as poor man's disease, but this no longer true in Assam. **Objective:** To study the affect of different socio-economic and demographic factors on awareness of Tuberculosis. **Methods:** This cross-sectional study took place from Jan. 2021 to Mar. 2021. It followed a descriptive, non-experimental research design with a quantitative measure to investigate awareness of TB patients in Dhemaji district, Assam. The majority of population had education upto Elementary level (34.62%) followed by secondary education Population containing 29.62%. **Results:** Here we have found that positive disease history is 68% more likely to be aware and this is found to be statistically significant. Again, persons in whose neighborhood TB is present are 23% more likely to be aware and this is found to be statistically significant and we found that 30-50 years age group persons are 1.5 times more likely to be aware than 70 & above people but it is not found to be statistically significant.

Keywords: Tuberculosis, DOTS, RNTCP, Awareness, Logistic Regression, socio-economic, Dhemaji.

1. Introduction

Tuberculosis is an infectious disease caused M. tuberculosis. The disease is mostly affects the lungs and it's also affects other parts of the human body includes bones, meninges, lymph nodes and kidneys (Paul et al 2009).

According to WHO, tuberculosis is infectious disease cause death worldwide associated to malnutrition, substandard housing, poverty, overcrowding and deficient health care. The estimated 1/3 of the world's population has been infected tuberculosis (TB) and has become the world severe cause of death (WHO 2018). India is a country where the number of people suffering from tuberculosis. About 40% people are infected with the tuberculosis bacillus (TB India 2009). Among these, 1/5 of the global incidence cases and 2/3 rd of the south east Asia cases (TB India 2009). The world health organization initiated one of the principle programme which is Directly observed treatment short course (DOTS) for the treatment and management of tuberculosis (TB) (WHO 2018). In India, DOTS was officially lunched as the

revised national tuberculosis control programme (RNTCP) strategy in 1997. The revised national tuberculosis programme control programme has introduced in our country India in mid 1990s for the control, prevention and cure of tuberculosis infectious through WHO endorsed DOTS strategy. In 1998 RNTCP was first implemented in Dibrugarh district of Assam. Currently 150 numbers of tuberculosis unit (TU), 350 numbers of designated microscopy centres (DMC) and more than 7000 DOTS centres are running in the state for providing DOTS to the TB patients (STO, Assam 2020).

Tuberculosis has been seen traditionally as poor man's disease, but this no longer true in Assam. There are no any studies to establish about TB patients pool (Masand Pratibha 2012). In directly observed treatment short course, patients are required to take medication in front of service provider or health workers (Heymann et al 1998).

Description of the health awareness strategy:

In-order to overcome reaching the missing and late diagnosis 3 million case globally, "Finding Active Case" strategy is introduced "Finding Active case" involves strategy, cross-sectional house-to-house visit among high risk community groups to identity TB disease symptom and link them to services. The primary objective of this happens is to visit the selected houses of vulnerable and marginalized communities, inform about TB disease, its diagnosis, symptoms, treatment and RNTCP services.

1.2 Objective of the study

The objective of the study was

- i) To study the affect of different socio-economic and demographic factors on awareness of Tuberculosis.

1.3 Research design and methodology:

This cross-sectional study took place from Jan. 2021 to Mar. 2021. It followed a descriptive, non-experimental research design with a quantitative measure to investigate awareness of TB patients in Dhemaji district, Assam. Each of patients was interviewed personally in DOTS center. Details of the patients were taken from the DOTS card provided to them and from the DOTS center in charge. For in-depth understanding of respondent's lifestyle the interviewer personally visited to selective patient's houses.

The questionnaire was divided into two sections. The first section focused on the TB patients profile while second section dealt with demography characteristics of TB patients in Dhemaji Area, Assam.

1.4 Determination of sample size (n)

For calculating sample size required for the study,

We have at our hand that-

$$a) \quad n = \frac{[Z_{\alpha}\sqrt{P_1(1-P_1)} + Z_{\beta}\sqrt{P_2(1-P_2)}]^2}{(P_1 - P_2)^2}$$

- i) Around 60% female and 50% male are aware about TB.
- ii) Chance of occurring this difference is 95%. ($\alpha = .05$), power 90%.
- iii) Non response is around 10%.

$$n = \frac{[1.645\sqrt{0.6(1-0.6)} + 1.28\sqrt{0.5(1-0.5)}]^2}{(0.6-0.5)^2}$$

$$= 260$$

Accommodating 10% non response, we get $n = (110 \times 260) / 100 = 285$

So we have to go through records 285 approximately to get our 260 records.

Absence of the persons during survey time and some of the person though present they heisted to welcome me.

$$b) \quad n = \frac{2z^2p(1-p)}{(d)^2}$$

- i) Around 60% Female and 50% male are aware about TB.
- ii) We shall consider the difference as significant if at least (8 to 9) % difference is there.
- iv) Chance of Occurring this difference is 95%. ($\alpha = .05$)
- v) Non response is around 10%.

We have,

$$P_1 = .60$$

$$P_2 = .50$$

$$P = (p_1 + p_2) / 2 = .55$$

$$Z_\alpha = 1.645 \text{ (one tailed), } d = 0.08$$

Therefore,

$$n = \frac{2 \times (1.645)^2 \times .55 (1 - .55)}{(0.08)^2}$$

$$= 212$$

Accommodating 10% non response, we get $n = (110 \times 212) / 100 = 234$

So we have to go through the records 234 approximately to get our required 212 records.

2. Analysis of Data

2.1 Socio Demographic characteristics

A total of 260 patients were interviewed at various locations in Dhemaji. The survey sample contains 177 (68.08%) males and 83 (31.92%) females. Primary survey was carried out on the TB patients aged between 10 years to 80 years. The mean age of patients was 35.42 years. The demographic variable of the TB patients are presented in table 1.

Particulars	Distribution of surveyed person		
	Male (%)	Female (%)	Total(%)
Sex	177 (68.08)	83 (31.92)	260 (100)
Age Group			
10-30	2 (0.77)	9 (3.46)	11 (4.23)
30-50	21 (8.08)	15 (5.77)	36 (13.85)
50-70	105 (40.38)	37 (14.23)	142 (54.62)

70 & Above	49 (18.85)	22 (8.46)	71 (27.31)
Total	177 (68.08)	83 (31.92)	260(100)
Employment Status			
Unemployed	27 (10.38)	32 (12.31)	59 (22.69)
Farmer	72 (27.69)	28 (10.77)	100 (38.46)
Business	69 (26.54)	20 (7.69)	89 (34.23)
Civil Servant	9 (3.46)	3 (1.15)	12 (4.62)
Educational Level			
Illiterate	36 (13.85)	20 (7.69)	56 (21.54)
Elementary	54 (20.77)	36 (13.85)	90 (34.62)
Secondary	57 (21.92)	20 (7.69)	77 (29.62)
Graduate	23 (8.85)	6 (2.31)	29 (11.15)
Post Graduate	6 (2.31)	1 (0.38)	7 (2.69)
Total	177 (68.08)	83 (31.92)	260 (100)

Particulars	Survey Sample		
Caste			
Gen	15 (5.77)	5 (1.92)	20 (7.69)
OBC	72 (27.69)	36 (13.85)	108 (41.54)
ST	88 (33.85)	42 (16.15)	130 (50.0)
SC	2 (0.77)	0	2 (0.77)
Residence Type			
Kaccha	55(21.15)	29 (11.15)	84 (32.31)
Half Wall	98(37.69)	46 (17.69)	144 (55.38)
Full Wall	24 (9.23)	8 (3.08)	32 (12.31)

Monthly Income			
Below 10K	135 (51.92)	67 (25.77)	202 (77.69)
10K-20K	32 (12.31)	13 (5.00)	45 (17.31)
20K-30 K	6 (2.31)	1 (0.38)	7 (2.69)
30 & Above	4 (1.54)	2 (0.77)	6 (2.31)
Awareness Level			
Yes	67 (25.78)	24 (9.23)	91 (35.00)
No	110 (42.31)	59 (22.69)	169 (65.0)
Total	177 (68.08)	83 (31.92)	260 (100)

Table1: Primary Survey Composition

The majority of population had education upto Elementary level (34.62%) followed by secondary education Population containing 29.62%. In these, around half of the TB patients are unemployed while nearly 13% are self employed. About 78% of the patients have income below Rs 10,000.

2.2 Awareness of TB towards disease and its transmission:

The study was carried out in various locations across Dhemaji in Assam. Awareness towards the level of TB disease is very low amongst the households. About 65% of the population are not aware the treatment they are undergoing. The infectious natures of disease are less concerned about the TB patients. The family members of TB patients use common soap, Assamese gamosa, towels and napkins.

In rural areas of Assam the people of TB patients use common soap, Assamese Gamosa, towels and napkins. Only 40% of the TB patients use spit box for spitting while 60% of the population spit outside like, field and road. This unsafe sputum disposal was the predominant factors (practice) among the TB patients (Bhattacharyya et al 2005).

In rural areas of Assam the people generally share the things like- Axe, Spade, etc. among the neighborhood. They even share cooked food among themselves. So, the chances of frequent communication among neighborhoods are very high unlike urban people. As TB spread through physical contact so we thought the TB may spread in the neighborhood. For that I have collected information regarding the prevalence of the disease in the neighboring household.

Results of Multinomial Logit Regression of Awareness of TB are shown in table 2.

Predictor Variable	β	Std. Error	Wald	d.f.	p-value	e^{β}	95% Confidence Interval for Exp(B)	
							Lower Bound	Upper Bound
Yes Intercept	-.348	.397	.769	1	.381			
[Sex=1]	.102	.279	.133	1	.715	1.107	.640	1.914
[Sex=0]	0	.	.	0	.	.	.	.
[History of TB=1]	-.203	.096	.534	1	.038	1.23	1.036	2.629
[History of TB=0]	0	.	.	0	.	.	.	.
[Neighbourhood=1]	.503	.274	.527	1	.040	1.683	1.025	2.763
[Neighbourhood=0]	0	.	.	0	.	.	.	.
[Age groups=1]	.300	.686	.192	1	.661	1.350	.352	5.178

[Age groups=2]	.413	.437	.895	1	.344	1.512	.642	3.558
[Age groups=3]	.062	.311	.039	1	.843	1.064	.578	1.958
[Age groups=4]	0	.	.	0	.	.	.	.

a. The reference category is: No.

Table 2: Results of Multinomial Logit Regression of Awareness of TB

Logistic Regression

$$\text{Log} \frac{Y}{1-Y} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6$$

$$X_1 (\text{Sex}) = 1, \text{ if female}$$

$$= 0, \text{ if male}$$

$$X_2 (\text{History of TB}) = 1, \text{ if positive disease history}$$

$$= 0, \text{ if negative disease history}$$

$$X_3 (\text{Type of neighbor}) = 1, \text{ if disease present in the neighborhood}$$

$$= 0, \text{ if disease not present in the neighborhood}$$

$$X_4 (\text{Age groups}) = 1, \text{ if 10-30 years}$$

$$= 0, \text{ otherwise (70 \& above)}$$

$$X_5 (\text{Age groups}) = 1, \text{ if 30-50 years}$$

$$= 0, \text{ otherwise (70 \& above)}$$

$$X_6 (\text{Age groups}) = 1, \text{ if 50-70 years}$$

$$= 0, \text{ otherwise (70 \& above)}$$

$$\text{Log} \frac{Y}{1-Y} = -.348 + .102X_1 -.203X_2 + .503X_3 + .300X_4 + .413X_5 + .062X_6$$

3. Conclusion

Tuberculosis has been connection communicatory with environmental risk factors that go in hand in hand with poverty such as tobacco smoke, pollution, and excessive alcohol use (Moller et al 2010). Here we have found that positive disease history is 68% more likely to be aware and this is found to be statistically significant. Again, persons in whose neighborhood TB is present are 23% more likely to be aware and this is found to be statistically significant and we found that 30-50 years age group persons are 1.5 times more likely to be aware than 70 & above people but it is not found to be statistically significant. Also female is 1.1 times more likely to be aware than male but it is not to be statistically significant.

References

1. Global Tuberculosis Report, World Health organization (WHO), 2018. <http://www.who.int/publications/global-report/en/>.
2. Global Tuberculosis Report, World Health organization (WHO), 2018.
3. Heymann, S Jody, Sell, Randall, and Brewer, Timothy F. (1998): The influence of programme acceptability on the effectiveness of public health policy: A study of directly observed therapy for tuberculosis. American Journal of Public Health 88.3 page 442-5.
4. Indrayan A (2008): Medical Biostatistics, Second Edition, New York, p-583-586.
5. Krishnadas Bhattacharyya, Rama R, SP Mitral, SK Bhattacharyya, TK Sarkar, Dasgupta U and Goswami 2005.
6. Lwanga S.K and Lemeshow S (1991): Sample size determination in health studies, 36-39.

7. Masand Pratibha (2012): ‘Unhealthy life style, poor diet can make you prone to TB’ The Times of India, January 30, Page-7.
8. Moller, Valerie, Erstad, Ida Zani, Dalinyebop (2010) “Drinking, Smoking and Mortality: Do Drinkers and smokers constitute a stigmatized stereotype or a real TB Risk factor in the time of HIV/AIDS?” Social Indicators Research 98.2 (sep.) 217-238.
9. Paul P, Williams B Brunner and Suddarth (2009): Textbook of Canadian Medical Surgical Nursing; 5:598-658.
10. Retherford R.D and Choe M.K (1993): Statistical Models for Causal Analysis, New York, P-151-158.
11. State TB office, Assam.
12. TB India (2009): RNTCP Status, Central TB Division Directorate General of Health Services Ministry of Health and Family Welfare Nirman Bhawan, New Delhi-110011.