Difference In Tuberculosis Related Knowledge And Attitude In Rural Population When They Know Or Do Not Know A Tuberculosis Patient.

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I.   Introduction

Tuberculosis is one of the top ten causes of death and the leading cause from a single infectious agent worldwide. Millions of people continue to fall sick with TB each year. India contributes to approximately one fourth of the global TB burden.[1] India has planned to eliminate the tuberculosis by 2025 through ambitious national strategic plan (NSP) 2017-2025, under Revised National Tuberculosis Control Programme (RNTCP).[2] Lack of knowledge is a major hurdle for appropriate positive healthcare seeking behaviours. Like other preventable diseases, knowledge and awareness about tuberculosis in population is very important for its control and elimination. Studies have shown that TB control can significantly be enhanced if more concern is given to improve knowledge and attitudes towards disease.[3-5] Knowledge and awareness are vary across the country according to state, rural and urban population, socioeconomic status, culture, etc. Rural population contributes more cases than urban but has less knowledge about the disease. It is also important to know the misconceptions and wrong practices in order to achieve success in any public health programme. This study was planned to assess knowledge and attitude among rural population depending on whether they know any TB patient or not.

II.   Methodology

Study area: Chiraigaon block of district Varanasi, state Uttar Pradesh, India.
Study population: all residents of 15 to 64 years age group in village Bariyasanpur (field practice area of department of Community Medicine, B.H.U).
Study type: community based cross sectional study
Sample size and Sampling technique: taking TB related knowledge and awareness at 50% and absolute permissible limit of 5%, in formula $\{Z_{\alpha/2}^2 \cdot P(1-P)\}/ L^2$,[6] sample size calculated to be 384., Houses were selected in a direction taking anganwadicentre to be centre point and taking one respondent from each house after obtaining their consent, respondents were interviewed.
Data collection and analysis: pre-tested semi-structured interview schedule was used for data collection, done by doctors, gathering information about socio demographic profile, knowledge about symptoms, transmission and prevention regarding TB and their attitude related to it. Data collection was done from august 2017 to November 2017, and analysed using EPIINFO software. Difference in proportions was determined by chi-square statistics, regression was applied to extract individual effect and p-value of less than 0.05 was considered to be significant.

III. Observation and Results

Table 1. shows significant association of respondent knowing any TB patient with gender (males know more than females), marital status (majority of married), occupation (maximum of service class and least by students and housewife) and socio-economic status (high class more than lower class). It also show that age group, social category, literacy and family type are not significantly associated.

Table 1. Comparison of Socio-demographic variables if Respondent know/don't know any TB patient

Socio-demographic variables	Respondent know any TB patient					Chi-square value	p-value
	Yes (N=216)		No (N=168)		Total (N=384)		
	n	%	n	%	n (%)		
Age group (years)							
15-24	44	44.0	56	56.0	100 (26.0)	8.654	0.070
25-34	58	58.6	41	41.4	99 (25.8)		
35-44	47	61.8	29	38.2	76 (19.8)		
45-54	34	59.6	23	40.4	57 (14.8)		
54-64	33	63.5	19	36.5	52 (13.5)		
Gender							
Male	115	67.6	55	32.4	170 (44.3)	**16.101**	**<0.001**
Female	101	47.2	113	52.8	214 (55.7)		
Category							
SC/ST	60	52.2	55	47.8	115 (29.9)	1.283	0.526
OBC	131	57.5	97	42.5	228 (59.4)		
Others	25	61.0	16	39.0	41 (10.7)		
Literacy							
Illiterate	51	54.8	42	45.2	93 (24.2)	0.099	0.753
Literate	165	56.7	126	43.3	291 (75.8)		
Marital status							
Married	159	60.5	104	39.5	263 (68.5)	**6.408**	**0.041**
Unmarried	37	45.1	45	54.9	82 (21.4)		
Divorce / widowed	20	51.3	19	48.7	39 (10.2)		
Occupation							
Service	52	81.3	12	18.7	64 (16.70	**34.478**	**<0.001**
Labourer / Farmer	74	65.5	39	34.5	113 (29.4)		
Housewife	63	45.3	76	54.7	139 (36.2)		
Student	27	39.7	41	60.3	68 (17.7)		
Family type							
Nuclear	98	53.6	85	46.6	183 (47.7)	1.034	0.309
Joint	118	58.7	83	41.3	201 (52.3)		
B.G. Prasad Socio-economic classification							
I (>Rs.6322)	20	95.2	1	4.8	21 (5.5)	**14.073**	**0.007**
II (Rs.3161-6322)	39	54.9	32	45.1	71 (18.5)		
III (Rs.1897-3160)	37	54.4	31	45.6	68 (17.7)		
IV (Rs. 948-1898)	69	55.2	56	44.8	125 (32.6)		
V (Rs. < 948)	51	51.5	48	48.5	99 (25.8)		

Respondents who know a TB patient significantly have more knowledge about all TB symptoms except cough for more than two weeks and night sweat (Table 2). This can be attributed to the successful advertisement and awareness campaign regarding TB by the Government of India. But among all the symptoms, fever appears to be significantly (p value < 0.05) most influenced (2.7 times) by the fact whether the respondent know or do not know any TB patient.

Table 2. Comparison of knowledge of symptoms of TB if Respondent know/don't know any TB patient in multi-variate analysis.

Respondent know any TB patient	Knowledge of Symptoms of TB						
	Yes		No / don't know		Chi-square test, p-value	Adjusted Odds ratio (C.I.) (C.I.)	p value
	n	%	n	%			
Cough for more than two weeks							
Yes (N=216)	156	72.2	60	27.8	0.240 ($\chi 2$= 1.383)	0.886 (0.534-1.469)	0.638
No (N=168)	112	66.7	56	33.3			
Total (N=384)	268	69.8	116	30.2			
Sputum							
Yes (N=216)	108	50.0	108	50.0	**0.002** ($\chi 2$=**9.223**)	1.121 (0.652-1.929)	0.679
No (N=168)	58	34.5	110	65.5			
Total (N=384)	166	43.2	218	56.8			
Night Sweat							
Yes (N=216)	20	9.3	196	90.7	0.053 ($\chi 2$=3.749)	1.168 (0.441-3.091)	0.755
No (N=168)	7	4.2	161	95.8			
Total (N=384)	27	7.0	357	93.0			
Fever							
Yes (N=216)	73	33.8	143	66.3	**<0.001** ($\chi 2$=**26.229**)	2.696 (1.357-5.355)	**0.005**
No (N=168)	19	11.3	149	88.7			
Total (N=384)	92	24.0	292	76.0			
Chest pain							

Yes (N=216)	81	37.5	135	62.5	**<0.001** (χ2=**20.177**)	1.524 (0.798-2.911)	0.202
No (N=168)	28	16.7	140	83.3			
Total (N=384)	109	28.4	275	71.6			
Weight loss							
Yes (N=216)	90	41.7	126	58.3	**<0.001** (χ2=**12.528**)	1.166 (0.533-2.551)	0.700
No (N=168)	41	24.4	127	75.6			
Total (N=384)	131	34.1	253	65.9			
Loss of appetite							
Yes (N=216)	84	38.9	132	61.1	**0.003** (χ2=**9.030**)	1.042 (0.517-2.098)	0.909
No (N=168)	41	24.4	127	75.6			
Total (N=384)	125	32.6	259	67.4			

C.I.– 95% Confidence Interval

Respondents who know a TB patient significantly has more knowledge about correct modes of transmission (sitting, sneezing, coughing, eating from same plate) of TB than those who do not know (Table 3). Whereas there seems to be no difference between respondents who know/don't know a TB patient in terms of inappropriate modes of TB transmission like mosquito bite and flies.

Table 3. Comparison of knowledge of transmission of TB if Respondent know/don't know any TB patient in multi-variate analysis.

Respondent know any TB patient	Knowledge of transmission of TB				Chi-square test, p-value	Adjusted Odds ratio (C.I.) (C.I.)	p-value
	Yes		No / don't know				
	n	%	n	%			
Sneezing or coughing							
Yes (N=216)	159	73.6	57	26.4	**<0.001** (χ2=12.287)	1.688 (1.070-2.662)	**0.024**
No (N=168)	95	56.5	73	43.5			
Total (N=384)	254	66.1	130	33.9			
Eating from same plate							
Yes (N=216)	105	48.6	111	51.4	**<0.001** (χ2=23.498)	1.936 (1.140-3.287)	**0.014**
No (N=168)	41	24.4	127	75.6			
Total (N=384)	146	38.0	238	62.0			
Talking							
Yes (N=216)	76	35.2	140	64.8	**<0.001** (χ2=24.260)	1.620 (0.810-3.242)	0.172
No (N=168)	22	13.1	146	86.9			
Total (N=384)	98	25.5	286	74.5			
Handshaking or touching							
Yes (N=216)	30	13.9	186	86.1	**0.036** (χ2=4.415)	0.720 (0.310-1.675)	0.446
No (N=168)	12	7.1	156	92.9			
Total (N=384)	42	10.9	342	89.1			
Spitting							
Yes (N=216)	72	33.3	144	66.7	**<0.001** (χ2=25.350)	2.293 (1.129-4.657)	**0.022**
No (N=168)	19	11.3	149	88.7			
Total (N=384)	91	23.7	293	76.3			
Mosquito bite							
Yes (N=216)	18	8.3	198	91.7	0.258 (χ2=1.281)	0.922 (0.362-2.349)	0.865
No (N=168)	9	5.4	159	94.6			
Total (N=384)	27	7.0	357	93.0			
Flies							
Yes (N=216)	30	13.9	186	86.1	0.90 (χ2=2.875)	0.825 (0.382-1.781)	0.624
No (N=168)	14	8.3	154	91.7			
Total (N=384)	44	11.5	340	88.5			

Two modes of prevention of TB transmission i.e. early treatment (1.8 times) and avoid eating in same plate (3.8 times) is significantly more recognized by respondents knowing a TB patient whereas respondents not knowing any TB patient more recognize separate room for patient as a mode to prevent TB transmission (Table 4).

Table 4. Comparison of knowledge of prevention of transmission of TB if Respondent know/don't know any TB patient in multi-variate analysis.

Respondent know any TB patient	Knowledge of prevention of transmission of TB				Chi-square test, p-value	Adjusted Odds ratio (C.I.) (C.I.)	p-value
	Yes		No / don't know				
	n	%	n	%			
Covering mouth & nose when coughing/sneezing							
Yes (N=216)	126	58.3	90	41.7	**0.037** (χ2=4.362)	1.263 (0.807-1.977)	0.307
No (N=168)	80	47.6	88	52.4			

Total (N=384)	206	53.6	178	46.4			
			Avoid shaking hands				
Yes (N=216)	31	14.4	185	85.6	**0.026**	1.663	0.225
No (N=168)	12	7.1	156	92.9	(χ2=4.939)	(0.731-3.787)	
Total (N=384)	43	11.2	341	88.8			
			Early treatment				
Yes (N=216)	110	50.9	106	49.1	**0.002**	1.838	**0.012**
No (N=168)	59	35.1	109	64.9	(χ2=9.582)	(1.146-2.949)	
Total (N=384)	169	44.0	215	56.0			
			Separate room for patient				
Yes (N=216)	52	24.1	164	75.9	0.299	0.291	**0.002**
No (N=168)	33	19.6	135	80.4	(χ2=1.077)	(0.132-0.654)	
Total (N=384)	85	22.1	299	77.9			
			Avoid eating in same plate				
Yes (N=216)	84	38.9	132	61.1	**<0.001**	3.807	**<0.001**
No (N=168)	32	19.0	136	81.0	(χ2=17.646)	(1.935-7.491)	
Total (N=384)	116	30.2	268	69.8			

Sadness is the only reaction which is significantly perceived differently by respondents knowing a TB patient (1.6 times) than not knowing a TB patient in both test of association and multivariate analysis..

Table 5. Reaction of respondent knowing/not knowing TB patient if they are diagnosed with TB.

	Reaction if diagnosed with TB						
Respondent know any TB patient	**Yes**		**No / don't know**		**Chi-square test, p-value**	**Adjusted Odds ratio (C.I.) (C.I.)**	**p-value**
	N	**%**	**n**	**%**			
			Fear				
Yes (N=216)	103	47.7	113	52.3	0.127	1.371	0.139
No (N=168)	67	39.9	101	30.1	(χ2=2.333)	(0.903-2.082)	
Total	170	44.3	214	55.7			
			Shame				
Yes (N=216)	24	11.1	192	88.9	0.613	1.050	0.890
No (N=168)	16	9.5	152	90.5	(χ2=0.255)	(0.527-2.091)	
Total (N=384)	40	10.4	344	89.6			
			Surprise				
Yes (N=216)	32	14.8	184	85.2	0.621	1.246	0.474
No (N=168)	22	13.1	146	86.9	(χ2=0.231)	(0.682-2.274)	
Total (N=384)	54	14.1	330	85.9			
			Sadness				
Yes (N=216)	110	50.9	106	49.1	**0.023**	1.598	**0.025**
No (N=168)	66	39.3	102	60.7	(χ2=5.158)	(1.059-2.411)	
Total (N=384)	176	45.8	208	54.2			
			Hopelessness				
Yes (N=216)	26	12.0	190	88.0	0.891	0.942	0.851
No (N=168)	21	12.5	147	87.5	(χ2=0.019)	(0.504-1.759)	
Total (N=384)	47	12.2	337	87.8			

Feeling of respondents about TB patients as well as about seriousness of TB is significantly associated with knowing/not knowing of a TB patient (p value < 0.05). In question regarding feeling towards TB patient, respondents knowing a TB patient seems more compassionate than those respondents not knowing any TB patient. Also respondents knowing a TB patient are significantly less confused and have opinion towards seriousness of TB. (Table 6).

Table 6. Multinomial regression analysis of feeling of respondent knowing/not knowing TB patient.

	TB Respondent know any TB patient						
How does respondent feel	**Yes**		**No / don't know**		**Chi-square test, p-value**	**Adjusted Odds ratio (C.I.)**	**p-value**
About TB patient	**n**	**%**	**n**	**%**			
Compassionate and desire to help (N=241)	148	68.5	93	55.4		5.797 (3.039-11.058)	**<0.001**
Compassionate buy stay away (N=45)	36	16.7	9	5.4	**<0.001** (χ2=44.786)	14.571 (5.693-11.058)	**<0.001**
Fear of infection (N=33)	18	8.3	15	8.9		4.371 (1.768-10.807)	**0.001**
No particular feeling (N=65)	14	6.5	51	30.4		REDUNDANT	
Total (N=384)	216	56.3	168	43.8			
Seriousness of TB	**n**	**%**	**n**	**%**			

Very (N=241)	154	71.3	87	51.8		9.736 (4.384-21.621)	**<0.001**
Somewhat (N=36)	18	8.3	18	10.7	**<0.001** ($\chi2$=43.484)	5.500 (2.029-14.908)	**0.001**
Not (N=55)	36	16.7	19	11.3		10.421 (4.086-26.575)	**<0.001**
Can't say (N=52)	8	3.7	44	26.2		REDUNDANT	
Total (N=384)	216	56.3	168	43.8			

IV. Discussion

We found that 43.75% respondents did not know any TB patient at the time of the study. Regarding symptoms of TB 69.8% knew cough for more than two weeks is a symptom. Among other symptoms 24.0% knew fever, 28.4% chest pain, 7.0% night sweat, 34.1% weight loss and 32.6% said loss of appetite as symptoms of TB. Similar results were found by Tolossa et al where 72.4% respondents had knowledge about cough for more than two weeks.[7] In a study by Easwaran et al 34.4% of the participants presented knowledge regarding at least one symptom of TB.[8] Study by Esmael et al [9] and Yadav et al [10] have shown findings almost similar to our study regarding knowledge of symptoms of TB. Respondents who know a TB patient significantly have more knowledge about all TB symptoms except cough for more than two weeks and night sweat (Table 2). This can be attributed to the successful advertisement and awareness campaign regarding TB by the Government of India. But among all the symptoms, fever appears to be significantly (p value < 0.05) most influenced (2.7 times) by the fact whether the respondent know or do not know any TB patient.

Regarding knowledge of modes of transmission 66.1% of respondents said sneezing or coughing, 23.7% spitting, 7.0% mosquito bites, 11.5% flies, 10.9% handshaking or touching, 38.0% said eating from same plate are modes of transmission. In a study by59.3% respondents answered coughing as mode of transmission.[11] In another study by Easwaran et al they found 26% knew that cough is the mode of transmission for TB.[8] In this study respondents who knew a TB patient significantly had more knowledge about correct modes of transmission (sitting, sneezing, coughing, eating from same plate) of TB than those who did not know (Table 3). Whereas there seems to be no difference between respondents who know/don't know a TB patient in terms of inappropriate modes of TB transmission like mosquito bite and flies.

Knowledge regarding methods of prevention of transmission of TB from one person to another was as follows- 53,6% said covering of mouth and nose when sneezing or coughing, 44.0% early treatment, 22.1% separate room for patient, 11.2% avoid shaking hands and 30.2% said avoid eating from same plate as methods of prevention of transmission. In a study by Tolossa et al. they found 45.4% of respondents responded covering mouth while sneezing and coughing and 28.5% said early treatmentas a method of prevention. In another study 77.4% of respondents agreed the avoiding contact with TB patient can halt transmission of TB.[12] We found that Two modes of prevention of TB transmission i.e. early treatment (1.8 times) and avoid eating in same plate (3.8 times) is significantly more recognized by respondents knowing a TB patient whereas respondents not knowing any TB patient more recognize separate room for patient as a mode to prevent TB transmission (Table 4).

On asking the respondents what will be their reaction when they come to know that they have been diagnosed with TB, 44.3% said they will feel fear, 10.4% said they will feel shame, 14.1% said they will feel surprise, 45.8% said sadness and 12.2% said they will feel hopelessness. Sadness was the only reaction which is significantly perceived differently by respondents knowing a TB patient (1.6 times) than not knowing a TB patient in both test of association and multivariate analysis. Feelings of respondents about TB patients as well as about seriousness of TB was significantly associated with knowing/not knowing of a TB patient (p value < 0.05). In question regarding feeling towards TB patient, respondents knowing a TB patient seems more compassionate than those respondents not knowing any TB patient. Also respondents knowing a TB patient were significantly less confused and have opinion towards seriousness of TB. (Table 6).

References

[1]. World Health Organization. Global tuberculosis report 2018. World Health Organization. p1; accessed on 12/05/19; retrieved from https://www.who.int/tb/publications/global_report/tb18_ExecSum_web_4Oct18.pdf?ua=1

[2]. National Strategic Plan For Tuberculosis Elimination 2017–2025 p6; accessed on 09/05/19; retrieved from https://tbcindia .gov.in/WriteReadData/NSP%20Draft%2020.02.2017%201.pdf

[3]. Parija D., Patra T. K., Kumar A. M. V., Swain B. K., Satyanarayana S., Sreenivas A., et al. (2014).Impact of awareness drives and community based active tuberculosis case finding inOdisha India. The International Journal of Tuberculosis and Lung Disease, 18(9):1105-1107.doi: 10.5588/ijtld.13.0918

[4]. Talukder K., Salim M. A. H., Jerin I., Sharmin F., Talukder M., Marais B. J., et al.

[5]. (2012).Intervention to increase detection of childhood tuberculosis in Bangladesh. The International Journal of Tuberculosis and Lung Disease, 16(1):70-75.doi: 10.5588/ijtld.11.0060

[6]. Jaramillo E. (2001). The impact of media based health education on tuberculosis diagnosis in Cali Colombia. Health policy and planning, 16(1): 68-73.doi:10.1093/heapol/16.1.68

[7]. Sundaram, K. R., Dwivedi, S. N., &Sreenivas, V. (2015). Estimation of Sample Size, Medical statistics principles   & methods (pp. 249). New Delhi, New Delhi: Wolters Kluwer.

[8]. Tolossa D., Medhin G., Legesse M. (2014). Community knowledge, attitude, and practices towards tuberculosis in Shinile town, Somali regional state, eastern Ethiopia: a cross- sectional study. BMC public health, 14(1), 804.doi: 10.1186/1471-2458-14-804

[9]. Easwaran M, Ramachandran D, Ramasamy R, George N, Mathew M, Bazroy J, et al. (2015). Knowledge, attitude, and practice regarding tuberculosis among rural population in Tamil Nadu. International Journal of Medical Science and Public Health, 4(12):1681-1685.doi: 10.5455/ijmsph.2015.08052015344

[10]. Esmael A, Ali I, Agonafir M, Desale A, Yaregal Z, Desta K. (2013). Assessment of patients' knowledge, attitude, and practice regarding pulmonary tuberculosis in eastern

[11]. Amhara regional state, Ethiopia: cross-sectional study. The American journal of tropical medicine and hygiene, 88(4): 785-788.doi: 10.4269/ajtmh.12-0312

[12]. Yadav S P, Mathur M L, & Dixit A K (2006). Knowledge and attitude towards tuberculosis among sandstone quarry workers in desert parts of Rajasthan. Indian Journal of Tuberculosis, 53(4), 187.retrieved from   http://medind.nic.in/ibr/t06/i4/ibrt 06i4p187.pdf   accessed on 12/05/19.

[13]. Uchenna O. U., Ngozi C. J. (2014). Assessment of tuberculosis-related knowledge, attitudes and practices in Enugu, South East Nigeria. Journal of infectious Diseases and Immunity, 6(1):1-9.doi: 10.5897/JIDI2011.0020

[14]. Solliman M. A., Hassali M. A., Al-Haddad M., Hadida M. M., Saleem F., Atif M., et al. (2012). Assessment of Knowledge towards Tuberculosis among general population in North East Libya. Journal ofApplied Pharmaceutical Science, 2(4): 24,doi: 10.7324/JAPS.2012.2420