



## Assessment of Knowledge, Attitude and Practice (KAP) in Tuberculosis Patients

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### ABSTRACT



Tuberculosis (TB) is a highly contagious airborne disease caused by *Mycobacterium tuberculosis* that primarily affects the lungs. TB is a significant and major public health emergency globally. According to the WHO Global Tuberculosis Report 2020, 10 million people developed TB disease in the year 2019. The main objective of the study was to assess the level of knowledge, attitude and practice in TB patients. The study also reveals the association between KAP and the demographics of the subjects. An observational study was employed to collect data from a total of 71 subjects. Both quantitative and qualitative statistical analysis were adopted. From the findings, the mean age of the study population was  $45.5 \pm 13.96$  years. Over 15.50% of subjects appeared to have adequate knowledge, 87.33% of subjects had a fair attitude, and around 58% of subjects were reported to have good practices towards TB. A weak positive correlation between knowledge and attitude ( $p = 0.051$ ), weak positive correlation between knowledge and practice ( $p = 0.138$ ) whereas, a significant and moderately positive correlation between attitude and practice ( $p = 0.002$ ) was observed. The mean knowledge scores of graduates and post-graduates were higher in comparison with other study subjects. The study findings showed that the majority of subjects had several misconceptions about TB and hence prioritized interventions and more awareness programs at the root levels are needed to aid TB control and eradication.

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### INTRODUCTION

Tuberculosis (TB) is an infectious disease and a major global public health concern. In 2020 WHO Global Tuberculosis Report revealed that TB still remains a biggest threat due to the fact that, in 2019, around 10 million people developed TB disease and 1.4 million deaths from TB. India alone accounts for about 26% of the world's annual incidence of TB, making it the highest contributor to the TB burden (WHO (TB Report), 2020). A KAP survey is a study of a specific population to gather information on what is known, believed and done in relation to a particular topic. In most KAP studies, data are

collected verbally by an interviewer using a structured, standardized questionnaire. A KAP survey can be designed specifically to accumulate information about TB-related topics, but it may also include questions about general health practices and beliefs. KAP surveys can identify knowledge gaps, cultural beliefs, or behavioural patterns that may support understanding and action, as well as pose problems or create barriers for TB control efforts. KAP studies help organizations in making policies regarding chronic diseases like TB.

They can also identify information that is commonly known and attitudes that are commonly held. To some extent, these studies can identify factors that can influence the behavior of people, reasons for their attitudes, and how and why people practice certain health behaviors (WHO, 2008). Deficient TB knowledge and poor attitudes towards TB may lead to delays in the diagnosis and treatment of TB. TB knowledge and awareness about medical treatment are important for the success of TB prevention and control.

## MATERIALS AND METHODS

### Study Ethics

Ethical approval was obtained from the Institutional Ethics Committee (IEC) of ESIC Medical College & PGIMS, Rajajinagar, Bengaluru.

### Study design and study population

This was an observational study. The subjects who were of age 18 years and above, those with a confirmed diagnosis of tuberculosis by sputum test or X-ray or CBNAAT with or without co-morbidities, subjects with active / inactive TB taking anti TB medications and subjects who were willing to participate in the study and signed the written informed consent were included. Subjects who were unable to answer, pregnant and lactating women, were excluded from the study.

### Data sources

The data were collected from sources like patient case sheets, laboratory reports, face to face and telephonic interviews.

Data was collected using a self-designed data collection form, which contains details like subjects' demographics, chief complaints, history of present illness, past medication, medical history and laboratory reports. Data regarding KAP was collected using a self-designed questionnaire. This scale consists of 17 questions targeting knowledge, attitude and practices of TB. Morisky Green Levine Scale is a self-reported scale comprising of four ques-

tions with yes/no responses that assess the patient's medication-taking behaviour.

### Statistical analysis

The results were analyzed and interpreted using Microsoft Excel and IBM-SPSS. Descriptive statistics such as mean & standard deviation were computed for quantitative variables, and frequencies and percentages were calculated for categorical variables. Histogram was applied to find the nature of data distribution. All statistics were considered significant if the p-value was less than 0.05. The results were also presented in the form of frequency format and diagrammatic representations whenever necessary.

## RESULTS AND DISCUSSION

Out of 71 subjects, 54 (76.1%) were males, and 17 (23.9%) were females. The mean age was found to be  $45.5 \pm 13.96$  years. 37 subjects (52%) belonged to the above 45 years age group, 21 subjects (29.6%) belonged to 31-45 years age group, and 13 subjects (18.3%) belonged to 18-30 years age group as shown in Figure 1.

Smoking and alcohol consumption increase the risk of treatment failure and may lead to unfavourable clinical outcomes. Out of 71 subjects, 35.22% of subjects were indulged in habits like smoking and/or alcoholism, whereas the remaining 64.78% were not. The majority of subjects were educated; among them, 17 (23.9%) subjects had primary education, 25 (35.21%) subjects had secondary education, 9 (12.68%) subjects were graduates, and 20 (28.17%) subjects were illiterates, as shown in Figure 2. Among 71 subjects, 8 (11.26%) subjects were relapsed cases, and the remaining 63 (88.73%) subjects were new cases of a total number of subjects involved in the study, 59 (83.09%) subjects were in an initial phase of anti-TB treatment, and 12 (16.90%) subjects were in a continuous phase of treatment.

### Assessment of knowledge towards TB

Knowledge was assessed by questions focusing on aetiology, signs and symptoms, transmission and management. Each response was scored as 'yes' (1) or 'no' (0). The scoring range of the questionnaire was from 6 being the maximum score to 0 being the minimum score. A cut off level of <2 was considered as poor, and 3-4 was considered as moderate, whereas >5 was considered adequate knowledge about TB. Knowledge scorers for individuals were calculated and summed up to give the total knowledge score. Table 1 describes the responses of subjects to TB knowledge items.

Out of 71 subjects, 10 (14.08%) subjects were

**Table 1: Responses to TB knowledge items**

Knowledge items	Correct answer	
	N	Percentage (%)
K1: Which organ is most effected in TB disease?	17	24
K2: What are the signs and symptoms of TB?	61	86
K3: What causes TB?	8	11
K4: How can a person get TB?	40	56
K5: In your opinion, who can be infected with TB?	66	93
K6: Can TB be cured?	59	83

**Table 2: Responses to attitude items**

Attitude items	Strongly agree	Agree	Don't know	Disagree	Strongly disagree
	N (%)	N (%)	N (%)	N (%)	N (%)
A1: I take my medications regularly	59 (83.09)	6 (8.45)	0 (0)	4 (5.63)	2 (2.81)
A2: Complete medication adherence can cure TB	49 (69.01)	13 (1.83)	6 (8.45)	2 (2.81)	1 (1.40)
A3: BCG vaccination is the best preventive method for P-TB	2 (2.81)	1 (1.40)	66 (93)	2 (2.81)	0 (0)
A4: I don't wear a mask every time I go out	14 (19.71)	15 (21.12)	4 (5.63)	8 (11.26)	30 (42.25)
A5: I stop taking medicines when my symptoms improve	2 (2.81)	4 (5.63)	2 (2.81)	13 (1.83)	50 (70.42)
A6: Society treats me differently	1 (1.40)	3 (4.22)	0 (0)	17 (23.94)	50 (70.42)

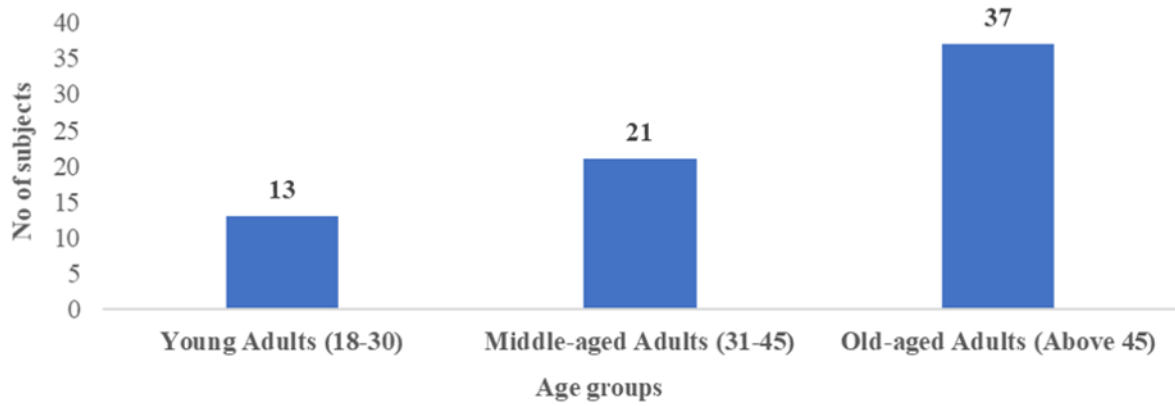
**Table 3: Responses to practice items**

Practice items	Yes	
	N	Percentage (%)
P1: Do you spend most of the time in crowded places?	41	58
P2: Do you report it to your doctor when you have red/orange coloured urine?	51	72
P3: Do you go for regular follow up?	59	83
P4: Do you avoid using your hands while coughing and sneezing?	28	39
P5: Do you take medications as prescribed by your physician?	66	93

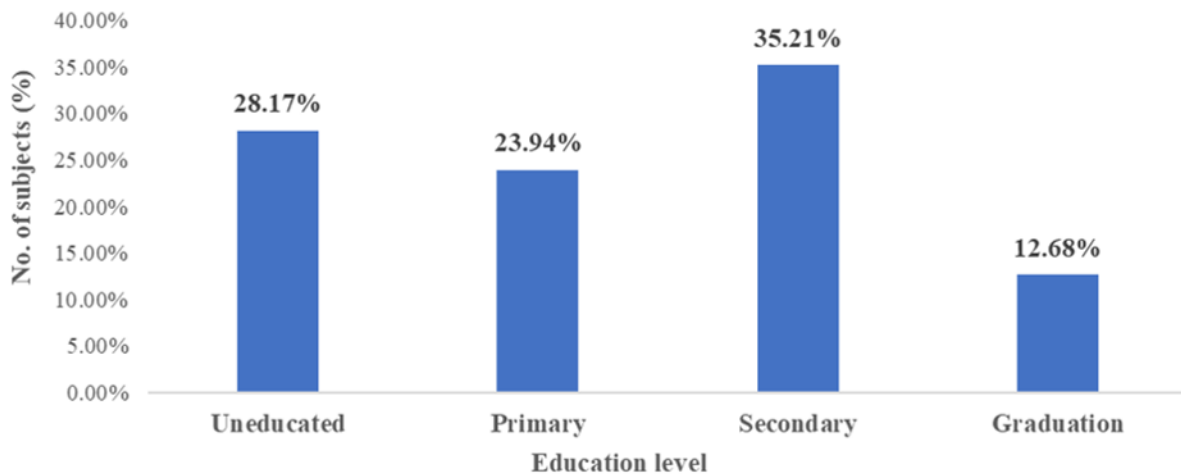
**Table 4: Correlation between attitude and practice**

		Attitude	Practice
Attitude	Pearson Correlation	1	0.358**
	Sig. (2-tailed)		0.002
	N	71	71
Practice	Pearson Correlation	0.358**	1
	Sig. (2-tailed)	0.002	
	N	71	71

\*\* Correlation is significant at the 0.01 level (2-tailed)



**Figure 1: Distribution of subjects between different age (in years) groups**



**Figure 2: Educational qualifications of subjects**

**Table 5: Comparison of mean knowledge scores with a level of education**

Education level	N	Knowledge		p-Value
		Mean	SD	
Uneducated	20	3.82	0.83	0.031
Primary	17	2.76	1.39	
Secondary	26	3.58	1.10	
Graduation	7	4.43	0.97	
Post-graduation	1	4	0	

within poor knowledge range, 50 (70.42%) subjects were in the moderate range, and 11 (15.50%) subjects appeared to have adequate knowledge. This was in contrary to a study conducted by [Hoa et al. \(2003\)](#) in Vietnam, where 51% of participants did not know signs and symptoms. Correct answers of about 86%, 93%, and 83% were highest in response to questions K2, K5 and K6, respectively. Poor knowledge was apparent in response to question K1 and K3. The mean knowledge score was  $3.54 \pm 1.18$ .

**Assessment of attitude towards TB**

The attitude was assessed by a questionnaire con-

sisting of 3 items focusing on a positive attitude and 3 items focusing on a negative attitude. Each response was scored using the Likert scale. The subjects were then classified as those having low attitudes (<10), those with moderate attitudes (11-20) and those having high attitudes (21-30) towards TB. The responses towards attitude items are described in [Table 2](#).

Out of 71 subjects, 62 (87.33%) subjects were within the high attitude range, 9 (12.67%) subjects were within the moderate attitude range, and none of the respondents had a low attitude towards TB and its treatment. Overall, the subjects had a posi-

tive attitude towards TB with a mean score of  $24.59 \pm 3.14$ . It was seen that 93% of the subjects did not know about bacilli Calmette - Guerin (BCG) vaccination. Contrary to this is a study conducted by [Mush-taq et al. \(2010\)](#) which reveals that 37% of respondents reported BCG vaccination as a preventive measure for pulmonary TB.

### Assessment of practices towards TB

Practices towards TB were assessed by asking 5 questions to the subjects. Each response was scored as 'yes' or 'no'. A score of 1 was given to yes/good practice, while 0 was given to no/poor practice. The score range was from a maximum of 5 to a minimum of 0. Subjects were then classified into different levels based on cut off level. A cut off level of <1 was labelled as poor practice, 2-3 was considered as moderate, and >4 was considered as good practice. Table 3 describes the responses given to practice items.

Among 71 subjects, 41 (58%) subjects were reported to have good practices, 27 (38%) respondents were in moderate practice range, whereas 3 (4%) respondents revealed poor practices towards TB. In general majority of the subjects reported to have good practices towards TB with a mean score of  $3.45 \pm 1.07$ .

### Correlation between knowledge and attitude

Statistical analysis reveals a weak positive correlation between knowledge and attitude with

$r(69) = 0.233$ ,  $p = 0.051$  ( $p > 0.01$ ) meaning that, correlation between knowledge and attitude is statistically insignificant.

### Correlation between knowledge and practice

By using statistical analysis, a weak positive correlation was observed between knowledge and practice with  $r(69) = 0.178$ ,  $p = 0.138$ , which means that the correlation between knowledge and practice is statistically insignificant.

### Correlation between attitude and practice

Statistical analysis, as presented in Table 4, reveals a significant and moderately positive correlation between attitude and practice with  $r(69) = 0.358$ ,  $p = 0.002$ .

### Association between mean KAP scores and Subject demographics

Results of the KAP assessment were expressed in terms of three (Knowledge, Attitude and Practice) domains. Independent samples t-test ( $\alpha = 0.05$ ) was performed to compare mean KAP scores and gender. The t-test reveals that there were no statistically significant differences between males and females in

terms of KAP.

The association between KAP scores and different age groups was analysed by the Kruskal-Wallis test at a significance level ( $\alpha$ ) of 0.05. There were no statistically significant differences in knowledge, attitude and practice scores in relation to different age groups. In contrast, a study conducted by [Savicevic et al. \(2008\)](#) in Croatia showed that the mean knowledge score (8.85) was less among the youngest age group (18-29 years).

Kruskal-Wallis test was used to analyse the association between KAP scores and level of education. The test revealed that there was a statistically significant difference in knowledge scores ( $p < 0.05$ ) as presented in Table 5, whereas no significant differences in attitude and practice scores in relation to the level of education. A similar study conducted by [Esmael et al. \(2013\)](#) (Esmael et al., 2013) showed 48% of subjects with education levels of high school and above had good knowledge.

### CONCLUSION

The study findings showed that the majority of subjects had several misconceptions about TB and hence prioritized interventions and more awareness programs at the root levels are needed to aid TB control and eradication. Assessment of medication adherence showed that most of the subjects were highly adherent to therapy. This shows that the health care workers are doing best in their part of counselling patients in about the importance of proper medication adherence.

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### Conflict of Interest

The authors declare that they have no conflict of interest.

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