

WWJMRD 2017; 3(3): 47-54  
www.wwjmr.com  
Impact Factor MJIF: 4.25  
e-ISSN: 2454-6615

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## Knowledge, attitude and practice among tuberculosis patients treating in BPKIHS, Dharan: A hospital based study

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### Abstract

Tuberculosis (TB) is a major public health problem in Nepal. Assessment of knowledge, attitude, and health-seeking practice in this region is essential to plan, implement, and evaluate advocacy, communication, and social mobilization work. Objective of this study is to measure the association between knowledge, attitude and practice on tuberculosis of tuberculosis patient treated at BPKIHS, Dharan. A cross-sectional study was conducted among the 240 patients of tuberculosis treated in BPKIHS, Dharan, Nepal. Semi-structured questionnaire was administrated to the study subject and face to face interview was taken. Chi-square test was used to measure the association between knowledge, attitude and practice on tuberculosis of tuberculosis patient treated in BPKIHS, Dharan. We conclude that knowledge about Tuberculosis was significantly associated with attitude and practices towards Tuberculosis. But practice towards Tuberculosis was not associated with attitude towards Tuberculosis. That means those who had knowledge about Tuberculosis, they had positive attitude towards Tuberculosis and adequate practices about Tuberculosis.

**Keywords:** Knowledge, attitude, practice, tuberculosis, Dharan

### Introduction

Tuberculosis remains a major global health problem [1]. It causes ill-health among millions of people each year and ranks as the second leading cause of death from an infectious disease worldwide, after the human immunodeficiency virus (HIV) [1]. World Health Organization (WHO) estimated the global burden of disease caused by TB in 2011 as follows: 8.7 million incident cases, 12 million prevalent cases and 1.4 million deaths [1]. Most of the estimated number of cases in 2011 occurred in Asia (60%) and Africa (24%) [1].

Poverty and lack of awareness about TB are also considered the most important factors that increase the risk of exposure to TB [2]. In addition, poor access to health facilities [3], lack of financial source [4] and lack of knowledge about the cause, mode of transmission, and symptoms, as well as appropriate treatment of TB within communities [5] do not only affect the health seeking behavior of patients that favors the use of traditional healers over biomedical approaches, but also could contribute to poor adherence to TB treatment and/ or long delay in diagnosis, which pose a formidable challenge to control the disease [5].

Furthermore, when the community holds a strongly negative concept of TB, this can negatively influence the social relations and the moral identity of those afflicted by the disease and also efforts to control TB in general [4]. Therefore the present study was designed to measure the association between knowledge, attitude and practice on tuberculosis of tuberculosis patient treated at BPKIHS, Dharan.

### 2. Methods

A hospital based cross-sectional study was conducted to see the number of tuberculosis patients treated from 17<sup>th</sup> April-14<sup>th</sup> May 2016 in BP Koirala Institute of Health Sciences, Dharan, Nepal. This was a four weeks study to fulfill the elective posting carried out by students of MBBS 3<sup>rd</sup> year Batch 2013 of B. P. Koirala Institute of Health Sciences, Dharan, Nepal. A total of two hundred forty patients of tuberculosis of any age and gender in visiting pulmonary department are processing units of the study site.

Ethical clearance was taken by Undergraduate medical Research Protocol Review Board (UM-RPRB) of B P Koirala Institute of Health Sciences, Dharan, Nepal. The written consent was taken from the each patient of tuberculosis treated in BPKIHS. Tuberculosis positive case, any age and gender and those who gave written consent were included in the study.

Semistructured questionnaire was administrated to the study subject and face to face interview was taken. Questions were asked in Nepali language and then were recorded in English. The confidentiality and privacy of the study was maintained; name of the individuals or participating group was not disclose after the study.

All interviewed questionnaire were indexed and kept in file. Data were entered in Microsoft Excel 2007. The analysis was done by using statistical software SPSS (Statistical Package for Social Science) version 17. For descriptive studies, percentage, ratio, mean were calculated. For inferential statistics, Chi-square test was used to measure the association between knowledge, attitude and practice on tuberculosis of tuberculosis patient treated in BPKIHS, Dharan. The confidence level was set at 5% in which probability of occurrence by chance is significant if  $P < 0.05$  with 95% Confidence interval.

### 3. Result

**Table 1:** Sociodemographic characteristics of study population

Characteristics	Frequency	Percent
Age		
<18 years	20	8.3
18-40 years	111	46.3
41-60 years	69	28.7
>60 years	40	16.7
Gender		
Male	136	56.7
Female	104	43.3
Religion		
Hindu	205	85.4
Buddhist	34	14.2
Christian	1	0.4
Ethnicity		
Brahmin/Chhetri	72	30.0
Kirati	108	45.0
Janajati	37	15.4
Dalit	10	4.2
Terai caste	13	5.4
Education		
Illiterate	78	32.5
Below SLC	90	37.5
SLC & above SLC	72	30.0
Occupation		
Agriculture	85	35.4
Service	4	1.7
Business	43	17.9
Housewife	35	14.6
Others (Students, workers)	73	30.4
Marital status		
Unmarried	83	34.6
Married	157	65.4
Economic status		
Below poverty line (<1.25 US\$)	138	57.5
Above poverty line ( $\geq$ 1.25 US \$)	102	42.5
Type of family		
Nuclear	182	75.8
Joint	52	21.7
Three generation	6	2.5
Overcrowding		
Present	162	67.5
Absent	78	32.5
Ventilation		
Adequate	144	60.0
Inadequate	96	40.0
Chronic illness in the family		
Yes	41	17.1
No	199	82.9
<b>Total</b>	<b>240</b>	<b>100.0</b>

Out of 240 respondents, male was higher (56.7%) than female (43.3%). Almost 46.3% of respondents were in age group 18-40 years, 28.7% were in age group 41-60 years,

16.7% were in age group more than 60 years and 8.3% were in age group less than 18 years. Almost 37.5% of the respondents were below SLC followed by Illiterate (32.5%)

and SLC & above SLC (30%). Almost 57.5% of respondents had fall in below poverty line (<1.25 US\$) and 60% of the respondents had ventilation in their home. In

total 41 (17.1%) of the respondents family members were found to be suffering from Chronic disease. (Table 1)

**Table 2:** Knowledge towards tuberculosis

Characteristics	Frequency	Percent
Ever heard about tuberculosis		
Yes	150	62.5
No	90	37.5
If heard then source of information about TB (n=150)		
Radio	30	20.0
Television	24	16.0
Newspapers/Magazines	60	40.0
Family/ Friends	36	24.0
What is Tuberculosis		
Headache with dizziness	12	5.0
Harmless cough	210	87.5
Don't know	18	7.5
Cause of tuberculosis		
Germs	84	35.0
Evil spirits	114	47.5
Alcohol	36	15.0
Cigarettes	6	2.5
Mode of transmission of TB		
Droplet/coughing/sneezing	174	72.5
Drinking unboiled milk	60	25.0
Overcrowding	6	2.5
Sign and symptoms of tuberculosis		
Productive cough for > 2 weeks	216	90.0
Fever for >2 weeks	18	7.5
Weight loss	6	2.5
Diagnostic modalities of tuberculosis		
Chest X-ray	12	5.0
Sputum examination	180	75.0
Blood examination	48	20.0
Duration of treatment of tuberculosis		
1-4 months	72	30.0
5-8 months	156	65.0
>1 year	6	2.5
Don't know	6	2.5
Can be relapse of tuberculosis		
Yes	0	0
No	240	100.0
Know about DOTS		
Yes	77	32.1
No	163	67.9
Consequence of not taking drugs		
Nothing happens	30	12.5
Disease will relapse	18	7.5
Death	192	80.0
Relation between HIV and TB		
Yes, HIV/AIDS makes more vulnerable to TB	222	92.5
Yes, with TB you are less vulnerable to HIV/AIDS	6	2.5
Don't know about HIV/AIDS	6	2.5
Don't know	6	2.5
<b>Total</b>	<b>240</b>	<b>100.0</b>

It was found that most of the persons were heard about tuberculosis. Almost 40% of respondents have got knowledge about Tuberculosis by newspapers/magazines followed by family/ friends (24%), radio (20%) and

television (16%). Majority of respondents did not know about DOTS. Almost Majority of respondents reported that HIV/AIDS makes more vulnerable to Tuberculosis. (Table 2)

**Table 3:** Attitude towards tuberculosis

Characteristics	Frequency	Percent
Possible to prevent tuberculosis		
Yes	204	85.0
No	36	15.0
Can be TB cured		
Yes	198	82.5

No	30	12.5
Don't know	12	5.0
Can traditional ways and modern medicines treat TB		
Agree	42	17.5
Disagree	48	20.0
Don't know	150	62.5
Follow up after starting medicines		
Needed	192	80.0
Not needed	36	15.0
Increases the cost of treatment	6	2.5
Don't know	6	2.5
How serious disease is TB		
Very serious/killer disease	162	67.5
Serious	6	2.5
Not so serious (Self-healing)	66	27.5
Requires treatment	6	2.5
How serious TB in the community		
No problem at all	24	10.0
Mild problem	168	70.0
Major problem	48	20.0
How feel the TB patient in the community		
Most people reject them	162	67.5
Most people are friendly but avoid them	66	27.5
Most people support and help them	12	5.0
What would be your reaction if you had TB		
Shame/embarrassment	30	12.5
Hopelessness and fear	36	15.0
Take it normally and seek for treatment	174	72.5
If you had TB then with whom you talk first		
Health workers	204	85.0
Family members	24	10.0
Friends	12	5.0
Change in relationship if your family member has TB		
Sympathy, support and help	42	17.5
Hatred	12	5.0
Friendly but avoid	186	77.5
<b>Total</b>	<b>240</b>	<b>100.0</b>

Majority of respondents think that tuberculosis can be prevent and cure. Most of the respondents think that tuberculosis is mild problem in the community but majority

of people reject the patient of tuberculosis. Regarding reaction of tuberculosis patient, majority of respondents take it normally and seek for treatment. (Table 3)

**Table 4:** Practice towards tuberculosis

Characteristics	Frequency	Percent
In which age TB mostly attack		
<5 years	6	2.5
5-18 years	6	2.5
19-60 years	222	92.5
>60 years	6	2.5
Cost of treatment		
Free	234	97.5
Don't know	6	2.5
Was difficulty in getting medicines		
Didn't get medication	12	5.0
Very difficult	6	2.5
No difficulty	222	92.5
How often do you seek care at health institution		
< 1 per year	72	30.0
Twice per year	132	55.0
More than 2 times per year	30	12.5
Never visited hospital	6	2.5
Distance of nearest health Centre from house		
< 30 min	204	85.0
30 min-1 hour	36	15.0
Where you prefer to visit		
Government hospital	186	77.5
Private hospital	54	22.5
Reason for not go to the health facility		
Not sure where to go	24	10.0
Cannot afford the cost	120	50.0

No access to health facility	42	17.5
Can't leave work	54	22.5
Have you taken BCG vaccine		
Yes	72	30.0
No	150	62.5
Don't know	18	7.5
Your family member Have taken BCG vaccine		
Yes	222	92.5
No	6	2.5
Don't know	12	5.0
Any history of substance abuse		
Alcohol	89	37.1
Smoking	78	32.5
Drugs abuse	66	27.5
Chewing tobacco	7	2.9
<b>Total</b>	<b>240</b>	<b>100.0</b>

Tuberculosis attack all age group and majority of respondents reported that tuberculosis mostly attack in 19-60 years of age group. Majority of respondents reported that medicines of tuberculosis are found free of cost and there was no difficulty in getting medicines. Majority of

respondents reported that distance of nearest health Centre from house is less than 30 min. Most of the tuberculosis patient was taking alcohol (37.1%) followed by smoking (32.5%), taking drugs (27.5%) and chewing tobacco (2.9%). (Table 4)

**Table 5:** Association between Knowledge, Attitude and practice towards tuberculosis

Characteristics	Attitude towards Tuberculosis		Total	P-Value
	Yes	No		
Knowledge about Tuberculosis				
Yes	122 (95.3)	6 (4.7)	128 (53.3)	<0.001
No	52 (46.4)	60 (53.6)	112 (46.7)	
Total	174 (72.5)	66 (27.5)	240	
	Knowledge about Tuberculosis			
Practice towards Tuberculosis				
Yes	47 (78.3)	13 (21.7)	60 (25.0)	0.001
No	81 (45.0)	99 (55.0)	180 (75.0)	
Total	128 (53.3)	112 (46.7)	240	
	Attitude towards Tuberculosis			
Practice towards Tuberculosis				
Yes	48 (80.0)	12 (20.0)	60 (25.0)	0.133
No	126 (70.0)	54 (30.0)	180 (75.0)	
Total	174 (72.5)	66 (27.5)	240	

Knowledge about Tuberculosis was significantly associated with attitude and practices towards Tuberculosis ( $p < 0.001$ ) and ( $p = 0.001$ ) respectively. But practice towards Tuberculosis was not associated with attitude towards Tuberculosis ( $p = 0.133$ ). That means those who had knowledge about Tuberculosis, they had positive attitude towards Tuberculosis and adequate practices about Tuberculosis. (Table 5)

#### 4. Discussion

The present study showed that 62.5% of the persons were heard about tuberculosis. A study conducted by Tolossa D et al in Eastern Ethiopia which showed that the majority (94.9%) of the study participants have heard of TB disease [6], similar to previous studies done in the Shinile area [4] and middle and lower Awash valley of far region, Ethiopia [7], where 92.8% and 95.6% of the study participants were aware of the disease, respectively. This study indicated that almost 40% of respondents have got knowledge about Tuberculosis by newspapers/magazines followed by family/ friends (24%), radio (20%) and television (16%) respectively. Several studies explained that the majority of respondents heard about TB from health workers and personal experience for the first time [8-10]. This indicates that health workers, radio, and personal experience were

acting as a successful means of disseminating information about TB and it was a promising means for better detection of TB cases. However, study showed there was very little information from the TV, and this may be a result of the majority of the subjects not having a TV because they are in rural areas [11].

Majority of respondents (72.5%) reported that TB can be transmitted by Droplet, coughing and sneezing. Based on the findings, majority of the respondents mentioned that TB is transmitted by respiratory droplets and can be prevented by covering the mouth and nose [11]. This was also in agreement with studies done in Ethiopia and Pakistan [12,13], another study observed that there were numerous misconceived ideas about the causes of TB, transmission, and prevention [11]. Studies conducted in Pakistan, Croatia, and Ethiopia depicted similar finding [12,13,14]; those misconceived ideas might have a potential to create ground for stigmatization of TB patients a decrease the TB case detection rate. Through the air when a person with TB sneezes or coughs, and sharing cups with the patient were the common perceived modes of transmission in different studies [7, 10].

Majority of respondents reported that most common symptoms of tuberculosis was productive cough for more

than 2 weeks (90%) followed by fever for more than 2 weeks (7.5%) and weight loss (2.5%). Moreover, in other study majority of respondents were deficient or unaware of different symptoms of TB [11]. This finding was consistent with a study conducted by Mushtaq and others and Hoa and others [10,15]. Based on the results of this study, the respondents had basic knowledge about the common signs/symptoms of TB and its modes of transmission [6], which agrees with previous studies in a rural community in southwest Ethiopia [16], in northeast Ethiopia [7]. In this regard, it was reported that persistence cough for 2 or more weeks, coughing up sputum with blood, chest pain and weight loss were the common sign and symptom of TB. Studies show prolonged cough, at times chest pain, loss of weight, fever, difficulty in breathing, and coughing up blood are perceived to be associated with TB by the people [10,17]. In the another study the symptoms of TB reported by the patients indicated a fair level of knowledge. There were poor responses on some of the key symptoms regards coughing up blood and shortness of breath (37.2% and 25.1%) [18]. The reported basic communities' knowledge about the symptoms and transmission methods of TB has an important implication for the TB control program in the current study area in particular and also in the country in general in that it could reduce diagnosis and treatment delay, as well as the spread of the disease.

Majority of respondents think that tuberculosis can be prevented (85%) and cured (82.5%). Another important aspect noted in another study was that most of the participants were aware of the prevention and treatment methods of TB, which is more or less similar to a study performed by Melaku et al [4]. Accordingly, covering mouth and nose when a person with TB coughs or sneezes, using a separate room for the patient, avoid sharing cups with the patient, early treatment and good nutrition as a prevention methods were similarly documented by earlier studies from Ethiopia [4, 16]. In another study a majority of respondents defined TB as a curable disease with modern therapy, whereas only half of the respondents were aware of the free charge of TB diagnosis and treatment [11].

In current study most of the respondent (62.5%) did not know whether traditional ways or modern medicines can treat TB. Furthermore, respondents' knowledge regarding treatment of the disease using modern drugs was very high compared to the results of previous studies conducted in other parts of Ethiopia [16, 19]. It is interesting to note, however, that association of self-treatment options, traditional healers and praying to the treatment mode of the disease cannot be neglected, which is in consistence with findings by Deribew et al [19]. This may be due to, they may not suspect TB upon appearance of early symptoms (cough, fever, etc.) unless severe symptoms (hemoptysis, weight loss, etc.) set in, which can be evidenced by finding of Gele et al [20] as the Somali pastoralists consider persistent cough a normal phenomenon, not as a potential symptom of TB. The other reason could lie in the strong belief in spiritual healers in Somali society.

Majority of the respondents take it normally and seek for treatment (72.5%) but very less become hopelessness and fear (15%) and shame/embarrassment (12.5%) respectively. But other study revealed that the majority (58.3%) of respondents feared, stigmatized, and worried if they had TB [11]. Furthermore, this finding indicated the need to strengthen health education activities such as information,

education, and communication about TB and KAP seriousness, cause, the modes of transmission, the sequelae of treatment, interruption, and the curability of TB. It was also found out that participants from the study area considered that TB is a very serious disease in general and a very serious problem in their area. Furthermore, majority of the respondents indicated that they would feel fear or scare and sadness or hopelessness if they found they have TB [6]. On the other hand, a high proportion of the study subjects had no particular feeling towards people with TB disease, which means that there is no discrimination against TB patients. Moreover, more than half the study subjects said that TB patients are mostly supported and helped by the community [6]. This is in contrast to many other studies conducted in Kenya [21], and as well as India [22]. The perception of TB as a very dangerous disease resulting in fear might be due to the factors: relatively long time needed for its treatment, its mortality in the community, the coughing up of blood associated with many afflicted by the disease and comparison of TB with incurable tumors and cancer. Majority of the respondents indicated that they would be afraid. Surprise, sad and feel hopeless, embarrassed and ashamed if they learned they had TB. Similar feelings have long been associated with TB [23].

In current study majority of the participants (85%) would talk to the health worker about the TB illness. Similar study also showed that majority of the participants (67.2%) would talk to the Doctor or other medical worker about the TB illness [18]. Others (29.9%) would talk to other family members about the illness, there were about (2.2%) who would not tell anyone about the illness. This result was consistence with [17] which found that almost all of the respondents would talk to the health workers and family members about the illness.

In present study majority of respondent's family member (92.5%) have taken BCG vaccine.

But there were (25.5%) who were the very few admits to the practice of immunization of family members against TB infection; this is among the preventive measures to limit the disease spread. This is in contrast with [17] which showed good result (52%) on household immunization screening adherence. Majority of the respondents in the study had a good practice of going for checkups, ensured regularly eating of healthy food to boost immunity and regular taking of drugs (56%, 83%, 65%) respectively. As measures taken to ensure the disease did not get worse [18]. Regular attendance to checkups was in consistent with [17] study that find most of the participants (75.8%) coming for regular checkups. Study findings also show that (27.3%) of the participants are the few that are practicing covering of mouth while coughing.

This study showed that knowledge about tuberculosis was significantly associated with practice towards Tuberculosis ( $P < 0.05$ ). Similar study conducted by Chinenye BM et al among Case of TB Diagnosed Patients in Kigali Urban and Rural Health Facilities which showed the knowledge and practice score distribution were strongly significant and is as represented above with  $P < 0.001$ . This means that participants' educational level has strong influence on the level of health practices. Participants who are well educated had greater level of health practices compared the reference that is not educated [18]. Same is in line with KAP study among TB patients in Sirindhorn Hospital Bangkok in which the study showed a good correlation between

knowledge and practices with a P- value of 0.001 [17].

In this study, efforts were made to assess the knowledge, attitudes and practices of TB patients towards TB which could support the TB control programs in the Nepal in general. However, the study has potential limitations including lack of focus group discussion which might be used to triangulate the findings, lack of questions about MDR and XDR-TB. Another limitation is the retrospective nature of the data collection. Their might have been subject to recall bias. This study was conducted in the BPKIHS and is not generalizable to the whole country.

## 5. Conclusion

Knowledge about Tuberculosis was significantly associated with attitude and practices towards Tuberculosis ( $p < 0.001$ ) and ( $p = 0.001$ ) respectively. But practice towards Tuberculosis was not associated with attitude towards Tuberculosis ( $p = 0.133$ ). That means those who had knowledge about Tuberculosis, they had positive attitude towards Tuberculosis and adequate practices about Tuberculosis. It was found that most of the persons were heard about tuberculosis. Majority of respondents reported that HIV/AIDS makes more vulnerable to Tuberculosis. Most of the respondents think that tuberculosis can be prevented and cured. Majority of respondents take it normally and seek for treatment. Medicines of tuberculosis are found free of cost and there was no difficulty in getting medicines. Most of the tuberculosis patient was taking alcohol followed by smoking and drugs abuse also. Therefore, a strategy (health education) directed towards bringing a significant change in their knowledge about TB, and means of transmission, prevention, and treatment is essential.

## 6. Acknowledgment

We would like to thank to School of Public Health and Community Medicine for approval of our research work. We would like to acknowledge the 6<sup>th</sup> semester students of MBBS Batch of 2013 who helped us during the study period and participants of the tuberculosis patient treated in B.P. Koirala Institute of Health Sciences, Dharan, Nepal for their kind co-operations.

## 7. References

- World Health Organization: Global tuberculosis report. WHO report. Geneva; 2012.
- Lienhardt C. From exposure to disease: the role of environmental factors in susceptibility to and development of tuberculosis. *Epidemiol Rev*, 2001; 23: 288-301.
- Cambanis A, Yassin AM, Ramsay A, Squire BS, Arbide I, Cuevas EL. Rural poverty and delayed presentation to tuberculosis services in Ethiopia. *Trop Med Int Health*, 2005; 10 (4): 330-335.
- Melaku S, Sharma RH, Alemie AG. Pastoralist Community's Perception of Tuberculosis: A Quantitative Study from Shinille Area of Ethiopia. *Hindawi Publishing Corporation Tuberc Res Treat*, 2013, 475605. <http://dx.doi.org/10.1155/2013/475605>.
- Gele AA, Bjune G, Abebe F. Pastoralism and delay in diagnosis of TB in Ethiopia. *BMC Public Health*, 2009; 9:5.
- Tolossa D, Medhin G, Legesse M. Community knowledge, attitude, and practices towards tuberculosis in Shinile town, Somali regional state, eastern Ethiopia: a cross-sectional study. *BMC Public Health*, 2014; 14: 804. <http://www.biomedcentral.com/1471-2458/14/804>.
- Legesse M, Ameni G, Mamo G, Medhin G, Shawel D, Bjune G et al. Knowledge and perception of pulmonary tuberculosis in pastoral communities in the middle and lower Awash valley of Afar region, Ethiopia. *BMC Public Health*, 2010, 10: 187. <http://www.Biomedcentral.com/1471-2458/10/187>.
- Hoang NP, Chuc NT, Thorson A. KAP about tuberculosis and choice of communication channels. *Health Policy*, 2009; 90: 8-12.
- Mushtaq MU, Majrooh MA, Ahmad W, Rizwan M, Luqman MQ, Aslam MJ et al. KAP regarding tuberculosis. *Int J Tuberc Lung Dis*, 2010; 14: 303-310.
- Mushtaq MU, Shahid U, Abdullah HM, Saeed A, Omer F, Shad MA et al. Urban-rural inequities in KAP regarding tuberculosis. *Int J Equity Health*, 2011; 10: 8.
- Esmael A, Ali I, Agonafir M, Desale A, Yaregal Z, Desta K. Assessment of Patients' Knowledge, Attitude, and Practice Regarding Pulmonary Tuberculosis in Eastern Amhara Regional State, Ethiopia: Cross-Sectional Study. *Am J Trop Med Hyg*, 2013; 88 (4): 785-788.
- Mesfin MM, Tasew TW, Tareke IG, Mulugeta GW, Richard MJ. KAP on pulmonary tuberculosis and their choice of treatment supervisor. *Ethiop J Health Dev*, 2005; 19: 21-27.
- Khan JA, Irfan M, Zaki A, Beg M. Knowledge, attitude and misconception regarding tuberculosis in Pakistan patients. *JPMA*, 2006; 56: 211.
- Savicevic J, Popovic-Grle A, Milovac S, Ivcevic S, Vukasovic I, Viali M et al. Tuberculosis knowledge among patients in out-patient settings. *Int J Tuberc Lung Dis*, 2008; 12: 780-785.
- Hoang NP, Thorson AE, Long NH, Diwan VK. Knowledge of tuberculosis and associated health-seeking behaviour among rural Vietnamese adults with a cough for at least three weeks. *Scand J Public Health Suppl*, 2003; 62: 59-65.
- Abebe G, Deribew A, Apers L, Woldemichael K, Shiffa J, Tesfaye M et al. Knowledge, health seeking behaviour and perceived stigma towards tuberculosis among tuberculosis suspects in a rural community in southwest Ethiopia. *PLoS ONE*, 2010; 5: 10. doi:10.1371/journal.pone.0013339.
- Jirapaiboonsuk S. Knowledge, Attitude and Practice towards childhood TB in guardians of patients visiting the Pediatrics OPD, Sirindhorn Hospital. Bangkok. *Emerging respiratory tract infection human Metapneumonia (Hmpv)*. *Vajira medical Journal*, 2009; 53 (1): 1010-108.
- Chinenye BM. Evaluation of Knowledge, Attitude and Practices of TB Diagnosed Patients in Rwanda towards TB Infection. Case of TB Diagnosed Patients in Kigali Urban and Rural Health Facilities. *International Journal of Scientific and Research Publications*, 2015; 5 (8): 1-19.
- Deribew A, Abebe G, Apers L, Jira C, Tesfaye M, Shifa J et al. Prejudice and misconceptions about tuberculosis and HIV in rural and urban communities

- in Ethiopia: a challenge for the TB/HIV control program. *BMC Public Health*, 2010; 10: 400. <http://www.biomedcentral.com/1471-2458/10/400>.
20. Gele AA, Sagbakken M, Abebe F, Bjune AG. Barriers to tuberculosis care: a qualitative study among Somali pastoralists in Ethiopia. *BMC Research Notes*, 2010; 3: 86. <http://www.biomedcentral.com/1756-0500/3/86>.
  21. Liefoghe R, Baliddawa BJ, Kipruto ME, Vermeire C, De Munynck OA. From their own perspectives: a Kenyan community's perception of tuberculosis. *Trop Med Int Health*, 1997; 2: 809-821.
  22. Yadav PS, Mathur LM, Dixit KA. Knowledge and attitude towards tuberculosis among Sandstone Quarry workers in desert parts of Rajasthan. *Indian J Tuberc*, 2006; 53:187-195.
  23. Eram U, Khan IA, Tamanna Z, Md. Khan Z, Khaliq N, Abidi AJ. Patient perception of illness and initial reaction to the diagnosis of tuberculosis. *Indian Journal of Community Medicine*, 2006; 31 (3): 21.