Knowledge, attitudes, practices among private practitioners regarding Tuberculosis patient screening in Kaluthara district Sri Lanka: A cross sectional study

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Institutional Review Board approval
This study was approved by the Ethics Review Committee of Post Graduate Institute of Medicine, University of Colombo with a waiver of informed consent (ERC/PGIM/2018/151).

Abstract-
Background

Tuberculosis (TB) is one of the 10 leading causes of death worldwide. In Sri Lanka, approximately one third of cases are not detected during routine practice. Poor contact tracing, inadequate detection, underutilization of MCs are major weakness in TB screening. The private sector provides 50% of outpatient services of Sri Lanka and this study aims to assess Knowledge, attitudes, practices among Private Practitioners (PPs) on TB patient detection and treatment in Kaluthara district Sri Lanka.

Methods

A descriptive cross-sectional study carried out among 153 PPs in Kaluthara District. Knowledge and Attitudes of PPs were assed using Self-Administered Questionnaire (SAQ) and Practices were assessed using open ended questions based on three clinical vignettes related to TB.

Results

Majority of PPs have satisfactory level of knowledge on TB screening (79.4%, n=62) with favourable attitudes (84.6%, n=66). More than one third of PPs (46%, n=36) do not suspect TB in patients presenting with cough more than 2 weeks. The salient practices of history taking, examinations such as checking socio economic status, checking previous antibiotics usage, exclusion of TB in pregnancy and diabetes, examining lymphadenopathies are missed by PPs during their routine work.

Conclusion

Overall knowledge and attitudes were satisfactory among PPs. Some salient points of history taking, examinations are missed by PPs during their routine. Referrals of patients with more than 2 weeks of cough to MCs are poor. PPs almost never use MC for sending sputum for AFB.

Index Terms- Knowledge, Attitudes, Practices, Private practitioners, Tuberculosis, Patient screening

I. Background

Tuberculosis is considered to be one of the 10 leading causes of death worldwide. Approximately about one third of the world population is infected with Mycobacterium TB and having the risk of getting disease[1]. A special project called "End TB Strategy" was initiated by the WHO for the period of 2016 – 2030 aiming at elimination of TB from Sri Lanka[2].

In Sri Lanka, there is a network of district level laboratories called District Chest Clinic Laboratories (DCCL) and Microscopic Centres (MC) at peripheral level are ultimately linked with the National Tuberculosis Reference Laboratory[3]. According to the District Tuberculosis and Chest Officer (DTCO) at Gampaha District, all the Pulmonary Tuberculosis (PTB) suspects come to the public sector are supposed to be referred to the nearest MC of which the primary responsibility is to examine of sputum for AFB. Patient with a single positive sample will be referred to the DCC for the confirmation of diagnosis and expert opinion. Chest X ray evidences and sputum culture results will be considered in confirmation of the diagnosis. After the diagnosis, DOTS treatment is started and notification will be done.

About 1-2% of the patients those who are presenting with respiratory symptoms are considered to be infected with TB[4]. Therefore NPTCCD emphasizes the importance of increasing the number of referrals to MCs in order to identify more and more cases, particularly at the early stages of the disease. However, there is a significant underutilization of MCs is evident, which may have undervalue the true TB picture in the country[5]. Further, poor contact tracing and inadequate detection of new cases have been identified as major weakness in TB control program in western province[6]. Even though annual estimate of new TB cases in Sri Lanka is about 17000, only about 11000 are being detected, keeping a 6000 gap. Nearly about 55% of the reported cases are having smear positive pulmonary TB making emphasis on early diagnosis and treatment[7].

Tuberculosis should be suspected in patients those who are having cough for more than two weeks. Some of the symptoms like, loss of appetite, night sweats, loss of weight, haemoptysis, excessive tiredness, and shortness of breath can be associated[8].

Screening for Pulmonary Tuberculosis in Sri Lankan setting: Screening can be done by doing chest X-rays and checking three sputum samples, which is the most reliable and cost effective, test[3]. According to consultant chest physician General hospital Kaluthara, first and third spot samples and second early morning sputum sample have to be checked. If two or three samples become positive for AFB, it is considered as having TB, whereas if only one sample becomes positive, it should be supported by chest X ray evidences of TB. In a case where all three sputum samples become negative for AFB with chest x ray with TB features and all the broad spectrum antibiotics are failing to improve the condition, diagnosis has to be made by Clinician. Some supportive tests like tuberculin test (Mantoux test) will be helpful in these conditions even though it is not a diagnostic test. Screening is recommended for pregnancy with poor weight gain, diabetes mellitus and severe malnutrition, close contact children below 5 years and close contacts of 5-15 years of age with pulmonary symptoms[9].

In Sri Lanka, private sector provides services for about 50% of the total healthcare seekers[10]. The study results of Knowledge, attitudes, practices among private practitioners regarding Tuberculosis patient detection and treatment in Kaluthara district, may help the NPTCCD to conduct knowledge improving programs, remove barriers in screening process and further improve attitudes of PPs if they are real matters on the ground.

Methodology

This is a descriptive cross-sectional study carried out among PPs in different areas in Kaluthara district where the Microscopic Centres (MC) are available.

Assessment of Knowledge and Attitudes: The PPs were defined as "the allopathic PPs who were full time or part time engaged in diagnosis and treatment process more than 6 months duration at their own places or the places belong to private owners by charging money from the patients". The PPs who were located at 5 Km radius from the MC and operated minimum of 5 days per week were selected for the study; Horana, Panadura, Kalutara, Beruwala, Ingiriya, Mathugama and Bulathsinhala. The total of 153 PPs was interviewed during 18.12.2018 to 18.12.2019.

Assessment of Practices: Ten PPs from the study population were selected proportionately to the number of PPs practicing in each area. The required number of PPs from an area was selected randomly.

Self-administered Questionnaire (SAQ) A: SAQ A consists of 42 items to assess some important demographic data, knowledge and attitudes of PPs' regarding Tuberculosis patient detection and treatment process.

Self-Administered Questionnaire B: Practices and some important socio demographic factors were assessed. It included 8 open ended questions on 3 case scenarios related to tuberculosis diagnosis and management.

Quality of data: The two questionnaires including case scenarios (clinical vignettes) were developed by co-investigators with the expert guidance of Chest Physician and District Tuberculosis Control Officer using WHO guidelines[11,12,13], National TB manuals[14,3,15,16,17], questionnaires used in previous studies[18] and literature[19].

Ethical issues and clearance: Ethical clearance was obtained by Post Graduate institute of Medicine, University of Colombo.

Analysis of Knowledge: The Data were entered in to "statistical package for social sciences" (SPSS) Version 17 software. Knowledge of the PPs was calculated according to a predetermined marking scheme given for each question and the total cumulative mark score was calculated for each PP. Most of the questions were stem framed Weighted marks were given for each of the question according to expert opinion and gold standards available in the guidelines developed by NPTCCD[2,3,9,14,15,17]. Each wrong answer, "Do Not Know" answer and missing values were given zero mark. The final mark obtained was expressed as a fraction of total cumulative knowledge score.

Criteria in setting up knowledge score limits

All the questions necessarily important for screening a PTB suspects were selected and their cumulative score percentage is 68%. Minimum to that score was categorized as "unsatisfactory" and above as "Satisfactory".

Analysis of Attitudes: Some questions were negatively phrased in order to assure thoughtful responses and to avoid mechanical responses from readers. The six point likert scale was used and the PPs had to choose single response from Strongly agree, Agree, and Slightly agree, Slightly disagree, Disagree and Strongly disagree which gets 6-1 marks respectively. Negatively worded items were reversely valued for scoring purposes. An individual should at least slightly agree for positively phrased statements and slightly disagree for negatively phrased statements by his response. Based on agreed or non-agreed status of answers score was categorized as "Favourable Attitudes" and "Unfavourable Attitudes"

Analysis of Practices: Thematic analysis was done for which Grounded theory along with constant comparative methodology[20] was followed.

Thematic analysis: The meaning units which were in the data set that related to the study objective were identified and coded. Similar codes were grouped as themes and further to subthemes. Information extracted from the in depth interviews grouped into o4 themes. They were ranked on the frequencies of the repetition by each PPs.

Results

The results of the assessment of the knowledge and attitudes regarding Tuberculosis patient detection and treatment process among private practitioners are shown below.

Male and Female PPs were equally distributed (50%, n=39) and their mean age was 41.06 years (SD=11.5). Highest percent of PPs were in 40- 44 year age group (20.5%, n=16) and lowest percent were in 55-60 year group (6.4%, n=5)**.** Majority were Sinhalese (97.4%, n=76) and Buddhist (96.2%, n=75). Highest responded area was Ingiriya (88%, n=7) and Panadura (68%%, n=23) while lowest responded area was Kalutara (29%, n=13).

The majority of PPs belonged to other category (Grade-2, Preliminary grade and RMP) (61.5%, n=48) while the other category was grade-1 (38.4%, n=30). The experience of majority of the participants had less than 14 years (51.3%, n=40) and more than 14 years experienced category was 35.8% (n=28).

Majority of Participants had no post graduate qualifications (65.4%, n=51), no work experience in NPTCCD or CC (78.2%, n=61) and not trained in TB programs (66.7%, n=52) during their career.

Level of knowledge of PPs on TB screening

Majority of PPs have satisfactory level of knowledge on TB screening (79.4%, n=62) shown in Table 1. As described in Table 2, majority of PPs correctly answered to knowledge questions correctly. Nevertheless, only 44% of PPs (n=33) have correctly identified the higher risk of getting extra pulmonary TB bellow 5 year age group. Majority of PPs have identified duration of cough in diagnosing PTB (91%, n=71) and relationship between malnutrition and TB (92.3%, n=72) correctly. But knowledge on diabetes, TB relationship (79.5%, n=62) and pregnancy, TB relationship (70.5%, n=55) is at comparatively low.

Majority of PPs knew CXR (90.1%, n=64) and sputum AFB (97.4%, n=76) as essential investigations for diagnosing PTB. Of the participants, majority knew the correct combinations of investigations in diagnosis of PTB (Two positive sputum samples (89.7%, n=70) or single positive sputum sample with CXR abnormalities (87.2%, n=68)) and majority knew that PTB diagnosis cannot be done only with CXR abnormalities (70.8%, n=51) and Mantoux test (83.3%, n=60).

Attitudes of PPs on different aspects of TB screening

Mean attitude score of the study population was 41.6 (SD±5.4). Majority of PPs have favourable attitudes towards screening of PTB (84.6%, n=66) as described in Table 1. In Question-3, only 53.8% (n=42) PPs have favourable attitudes to feel as PTB when a patient present with cough more than 2 weeks which is a main criteria of diagnosis. In Question-4, only 60.7%, (n=47) has a favourable attitude in doing a CXR when a patient presents with cough more than 2 weeks (Table3).

Factors associated with attitudes on Screening for PTB

Unfavourable attitudes of PPs are significantly associated with experience over14 years **(**P= 0.04), being a Grade 1 PPs (P= 0.007), other tested variable were not found significant associations (Table 4).

Practices of PPs on different aspects of TB screening

The thematic analysis of practices is shown in Table5. There were eight respondents in this section and their mean age was 38.4 years. Majority thought that evening low grade fever and contact history with TB patients are highly suggestive of TB and very few of them consider blood stained sputum also as a possibility. Almost all the PPs practiced the auscultation of lung basses for crepitation. They were not interested in looking for lymphadenopathy. None of them practiced percussion dullness at their settings **"Usually in this set up it is not practical to look for percussion dullness".**

All of the PPs used to order CXR as the first line investigation if the history suggestive of. Most of them also interested in ordering full blood count. They also used to order ESR and C reactive protein as second line treatment. **Even though it is not necessary to do these, with FBC it is convenient to do it at the same time and provided some clue."**

Regarding the management of such patients most of the PPs claimed that they used to refer them to a tertiary care unit. They were not interested in patient education due to the fact that it takes time. None of them were practiced referring the patients to Microscopic centres as they were unaware about these centres and their function "**Exact functions and the location of such places are not aware there for it is easy to refer the patients to tertiary care unit."**

Discussion

The knowledge and the attitudes of the PPs were quantitatively analysed while practices were subjected to thematic analysis in this study. The overall response rate of the PPs was 51%.

Knowledge among PPs on screening for tuberculosis

Majority of PPs have overall satisfactory level of knowledge in different aspects of diagnosis, investigations and management. Majority knows essential TB diagnostic investigations and correct combinations in diagnosing PTB (Table 2). Similar studies conducted in San Diego Country USA[21], India[22], and Pakistan[23], have shown the fact that the knowledge fraction of medical officers usually high. But in this study the relationship between uncontrolled diabetes with cough, pregnancy with cough and poor weight gain, vulnerability of children less than 5 years age group for Extra Pulmonary Tuberculosis have been identified in relatively low intensity (Table 2).

Attitudes among PPs on screening for tuberculosis and Associations

The overall attitude on TB screening is favourable among PPs (Table 01). However considerable amount of PPs (46%, n=36) do not feel possibility of PTB when a patient present with cough more than 2 weeks which is a major indication for screening. According to Table 4, PPs who have less than 14 year experience (p=0.04) and belongs to preliminary or grade 2 categories (P=0.008) have significantly favourable attitudes. Supporting this evidence the study revealed that majority of PPs did not have post graduate qualifications (65.4%, n=51), experience in NPTCCD or CC (78.2%, n=61) or any training during their career on TB (66.7%, n=52). Professional knowledge and experience may enhance if PPs are exposed to higher education, training or continues professional development.

Practices among PPs on screening for tuberculosis

Most of the PPs had enough knowledge on the findings related to history to come to a correct diagnosis. Lower socio-economic status is associated with increased risk of TB[24] of which PPs were not much concerned about. According to the consultant chest physician at Kaluthara Hospital, Quinolones (Ciprofloxacin and Levofloxacin) can mask the symptoms of TB in a greater scale but PPs were interested in recent intake of antibiotics.

Opinion on examination practices most of the PPs practiced auscultation even though literature suggestive of painless cervical and supraclavicular lymphadenopathies, abnormal breath sounds especially over upper lobes, rales or bronchial breath signs indicating lung consolidation[8]. Reason behind this might be the convenient method for them. Three sputum samples and chest x-ray are cost effective for diagnosis of PTB which is usually used in insufficient resourced settings[15]. However almost all the PPs

were knew the importance of ordering the chest X-ray. At the same time they also interested in ordering FBC, ESR and C reactive protein.

Views regarding management of such patients, majority agreed to refer them to tertiary care unit although six functioning Microscopic centres available in Kaluthara district. Further, knowledge regarding microscopic centres were very poor almost zero. Patient education was not considered as an important fact in this assessment.

Limitations

The practices were measured through an self-administered questionnaire using open ended questions based on clinical vignettes and could not be measured by direct observations.

Conclusions and Recommendations

Overall knowledge and attitudes were satisfactory among PPs. The salient points of history taking, examinations such as checking socio economic status, checking previous antibiotics usage, exclusion of TB in pregnancy and diabetes, examining lymphadenopathies are missed by PPs during their routine and the requirement of screening contact children less than 5 years. Referrals of patients with more than 2 weeks of cough to MCs are poor. PPs almost never use MC for sending sputum for AFB. However, the attitudes of PPs are suggested to be enhanced with continuous professional education and training. Implementation of Tuberculosis Suspect Register (TBSR) at PP setting and private hospitals mediating through Private Health Regulatory Council (PHRC), periodic review meetings with PPs at RDHS levels, compulsory In-service training programs for PPs are among the recommendations.

Conflicts of Interests

The authors declare that they have no conflicts of interests.

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