Research Article

Practice of Cough Hygiene in Smear Positive Pulmonary Tuberculosis Patients on Treatment under RNTCP

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Tuberculosis spreads by droplet infection. When a patient with pulmonary tuberculosis coughs, sneezes or talks bacilli may get disseminated to the environment. Sputum smear positive patients are more infectious due to higher bacillary load in them. Proper cough hygiene may reduce the transmission of tuberculosis.

Aim of the study: To find the knowledge and practice of cough hygiene in smear positive pulmonary tuberculosis patients on treatment under RNTCP.

Materials and Methods: This was a hospital based cross-sectional study conducted on patients attending the DOTS center in A J institute of medical sciences over a period of 1 year. Patients with smear positive Pulmonary Tuberculosis who were on DOTS were interviewed to assess their knowledge. Smear negative and extra-pulmonary tuberculosis patients, patients were excluded. All these patients were given a pre-formed questionnaire and were interviewed regarding their knowledge about pulmonary tuberculosis, the mode of spread and symptoms of pulmonary tuberculosis. Cough hygiene and method of sputum disposal was asked in detail.

Results: Total of 150 respondents were included in the study of which females were 46 and males were104. Most of the respondents were less than 30 years of age. The education level of majority of the patients was elementary school. Majority of the respondents were aware that coughing is the mode of transmission. Majority were aware regarding the preventive measures for transmission (94%). Only a minority of the respondents (6%) were unaware of cough hygiene. Out of the 150 respondents, 149 patients (99.3%) demonstrated faulty coughing technique.

Conclusion: Majority of the people in the study population had good knowledge regarding cough hygiene. Majority of the people demonstrated faulty coughing technique. Proper cough hygiene and coughing technique should be taught to all patients with pulmonary tuberculosis so as to reduce the risk of transmission of the disease. Further studies are needed to assess the role of anti-tussive medications as they reduce cough, may thereby reduce the transmission.

Key words: Pulmonary tuberculosis, Cough hygiene, coughing technique.

Introduction

Pulmonary tuberculosis continues to be a major cause of morbidity and mortality worldwide [1]. Tuberculosis (TB) is caused by Mycobacterium tuberculosis which is an age old disease. TB is a public health problem with socio-economic implications especially in India. With the advent of the HIV/AIDS epidemic the problem has compounded.

The incidence of new cases of pulmonary tuberculosis was about 1.5 per 1000 population in year 2000 in India [2]. The Current global TB scenario in 2006 showed [3] that the number of New TB cases was 9.2 million (139/100,000), HIV co-infected cases were 0.7 million, New sputum smear positive cases were 4.1 million (62/100,000) and the prevalence of TB was 14.4 million (219/100,000). Annually, nine million new cases of active TB are reported around the world. About 1.7 million deaths occurred in 2009 due to tuberculosis.

When a patient with pulmonary Tuberculosis coughs sneezes or talks, bacilli get disseminated into the environment in the form of droplet nuclei. Patients with smear positive pulmonary tuberculosis can infect 10-15 persons in a year [4]. Hence it is important to educate patients with active Pulmonary Tuberculosis to practice proper cough hygiene [5]. Cough hygiene is one among the five steps in "Preventing TB transmission through good patient management" as recommended by WHO [6]. There is a need to ensure correct information is given to patients and general public regarding mode of spread of TB i.e. cough and sneeze as a method of spread of TB.

An annual decline in the newly occurring TB infection to the extent of 14% could halve the burden of tuberculosis in five years. Revised National Tuberculosis Control Programme (RNTCP) was started in India 1992. It mainly emphasizes on case detection and treatment. The programme was introduced in a phased manner and now covers the entire country [7,8]. RNTCP relies on case finding by screening of chest symptomatic in the community. This requires adequate knowledge and awareness regarding the symptoms of TB among the general public.

Aims and Objectives

To find the knowledge and practice of cough hygiene in smear positive pulmonary tuberculosis patients.

Materials and Methods

Method of data collection

Patients diagnosed as smear positive pulmonary tuberculosis who were attending the OPD in A J institute of medical sciences, Mangalore for treatment/ follow up were given a pre-formed questionnaire and were asked about their knowledge about the disease, the mode of spread, history of contact and any family members having similar symptoms. Cough hygiene and method of sputum disposal was inquired in detail. They were asked to demonstrate their coughing technique.

Design and setting

This was a cross-sectional study conducted for a period of 1 year. A sample size of 150 patients was calculated using previous year's quarterly OPD attendance of TB patients. Previous year's quarterly attendance of Tuberculosis patients attending the pulmonary medicine outpatient department of A.J Institute of medical sciences, Mangalore was 30-35. Respondents were smear positive pulmonary TB patients who were

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attending the outpatient department for follow up during anti tuberculosis treatment. The purpose of the study was explained to the patient, their consent was obtained. These patients were interviewed individually face to face based on a questionnaire prepared and their coughing technique was also assessed. The study was approved by the ethical committee of A.J Institute of medical sciences.

Inclusion and exclusion criteria

The study included respondents aged >18 years who were willing to participate in the study. Patients with smear positive Pulmonary Tuberculosis who were on Directly Observed Treatment Strategy (DOTS) were interviewed to assess their knowledge after informed consent. Health care workers and medical professionals were excluded to avoid selection bias. MDR suspects, extra pulmonary tuberculosis patients and sputum smear negative patients were excluded from the study. HIV seropositive individuals and patients who couldn't express themselves were also excluded.

Questionnaire

The questionnaire was taken from the WHO guide for developing knowledge; attitude and practice survey [9].The study instrument had 20 questions. It focused on basic demographic data (age and sex), socioeconomic status (education), knowledge about TB, questions about TB burden, symptoms, transmission, prevention, susceptible individuals, treatment, source of information regarding TB, cough hygiene, sputum disposal and contact with TB patients and demonstration of coughing technique

Data analysis

Data on TB knowledge were stratified by sex, age group and educational level.

The statistical analysis was done using SPSS software version-17 and P value was calculated using chi-square test.

Table1: shows the age distribution among the study population.

Age	Number	Percent
<30	43	28.7
31-40	40	26.7
41-50	26	17.3
>50	41	27.3
Total	150	100

Table 2: shows the sex distribution among the study population.

Sex	Frequency	Percentage
Female	46	30.7
Male	104	69.3
Total	150	100

In the study it was found that majority of the respondents had good knowledge regarding the cough hygiene which was statistically significant. (Chi square value-14.886, P value-0.021).Out of the 150 respondents, 141 patients (94%) did cover their mouth/nose while coughing/sneezing .There was no statistical difference among the age groups regarding their awareness on cough hygiene. Only a minority of the respondents i;e 6% were unaware of cough hygiene.

Table 3: shows the awareness regarding cough hygiene among the study population.

Awareness	Frequency	Percent
Yes	141	94
No	9	6
Total	150	100

Table 4: shows the knowledge among various age groups regarding cough Hygiene.

Cough hygiene			
Age	Yes	No	Total
<30	45	0	43
31-40	37	3	40
41-50	28	0	26
>50	35	6	41
Total	141	9	150

Table 5: shows the literacy level among the study population.

Education	Frequency	Percent
No school	33	22
Elementary	59	39.3
High school	38	25.3
College	10	6.7
Higher education	6	4
Religious schooling only	4	2.7
Total	150	100

Table 6: shows the knowledge & practice regarding cough hygiene among the various literacy groups.

Education	Yes	No	Total
No school	31	2	33
Elementary	56	3	59
High school	34	4	38
College	10	0	10
Higher education	6	0	6
Literacy classes only	4	0	4
Total	141	9	150

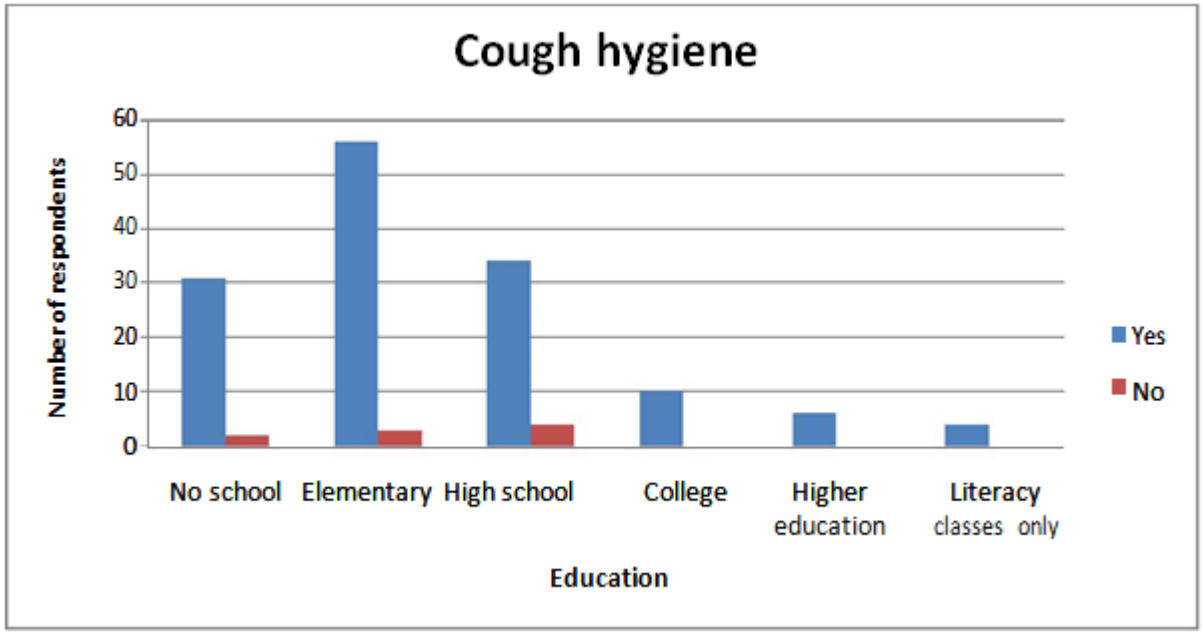

Chart 1: shows the knowledge & practice regarding cough hygiene among the various literacy groups.

In the study it was found that majority of the respondents even with minimal education had good knowledge regarding the cough hygiene which was statistically significant. (Chi square value-28.361, P value-0.002). Out of the 150 respondents, 141 patients (94%) did cover their mouth/nose while coughing/sneezing. There was no significant difference among the literacy groups regarding their awareness on cough hygiene. Only a minority of the respondents i.e.; 6% were unaware of cough hygiene.

Table 7: shows the frequency of contact exposure to TB patients among the study population.

Contact exposure	Frequency	Percent
Yes	39	26
No	111	74
Total	150	100

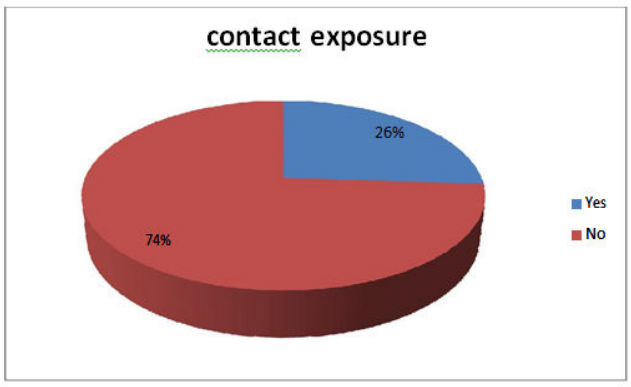

Chart 2: shows the frequency of contact exposure to TB patients among thestudy population.

Table 8: shows the awareness among the various literacy groups regarding the history of contact exposure.

Contact exposure			
Education	Yes	No	Total
No school	0	33	33
Elementary	21	38	59
High school	12	26	38
College	4	6	10
Higher education	2	4	6
Literacy classes only	0	4	4
Total	39	111	150

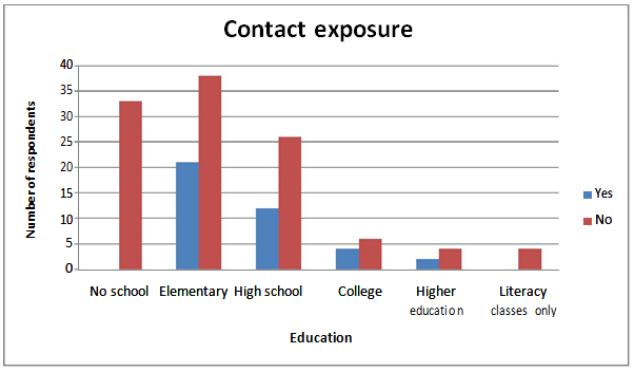

Chart 3: shows the awareness among the various literacy groups regarding the history of contact exposure.

In the study it was found contact with TB patients was reported by only 39 (26%) respondents. In the study it was also found that irrespective of the literacy levels of the respondents, majority were not aware of any history of contact with a TB patient which was statistically significant. (Chi square value-14.182, P value-0.003). Out of the 150 respondents, 111 patients

(74%) did not know the history of contact exposure. The study showed that 26% were aware of contact exposure with a TB patient.

Table 9: shows the frequency of people among the study population who practiced correct cough etiquette technique.

Coughing technique	Frequency	Percent
Correct	1	0.7
Faulty	149	99.3
Total	150	100

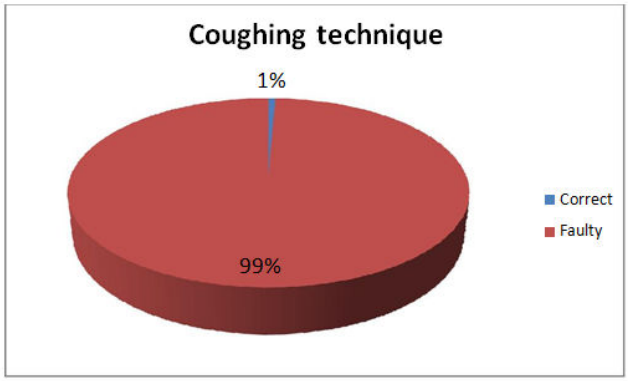

Chart 4: shows the frequency of people among the study population who practiced correct cough etiquette technique.

Table 10: Shows the coughing technique practiced among the various literacy groups.

Education	Correct	Faulty	Total
No school	0	33	33
Elementary	0	59	59
High school	0	38	38
College	1	9	10
Higher education	0	6	6
Literacy classes only	0	4	4
Total	1	149	150

In the study it was found that irrespective of the literacy levels of the respondents, majority had demonstrated faulty coughing technique which was statistically significant. (Chi square value-14.094, P value-0.015). Out of the 150 respondents, 149 patients (99.3%) demonstrated faulty coughing technique.

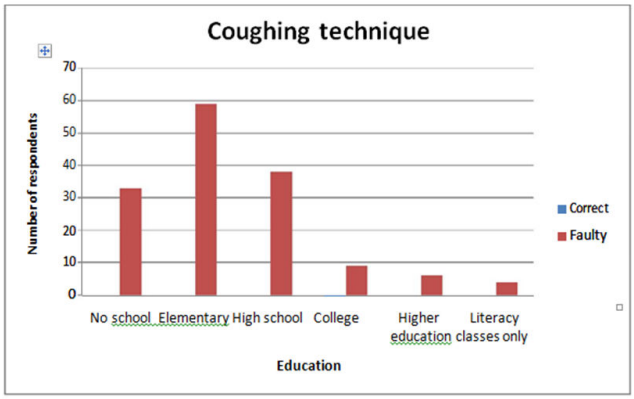

Chart 5: shows the coughing technique practiced among the various literacy groups.

Table 11: Transmission among the various literacy groups.

Transmission through								
Education	Handshake,coughing,sharing dishes,eating from same plate	Air while Coughing or sneezing	Air while Coughing or sneezing, sharing dishes	Air while Coughing or sneezing,sharing dishes, eating from same plate	Air while Coughing or sneezing, eating from same plate	Air while Coughing or sneezing,eating from same plate,touching items in public places	Air while Coughing or sneezing, do not know	Air while Coughing or sneezing, others
No schooling	0	14	2	0	0	0	0	0
Elementary	0	42	0	1	0	1	1	1
High school	1	26	2	0	2	0	0	2
college	0	9	0	1	0	0	0	0
Higher eduction	0	4	2	0	0	0	0	0
Literacy classes only	0	2	0	0	0	0	0	0
Total	1	97	6	2	2	1	1	3

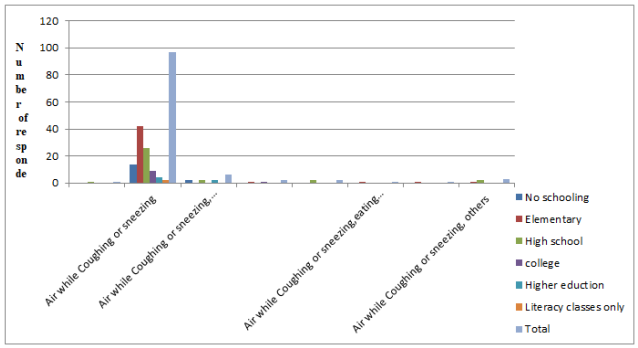

Chart 6: shows the awareness regarding the modes of transmission among the various literacy groups.

In the study it was found that majority of the respondents with minimal education had good awareness regarding the transmission of TB which was statistically significant. (Chi square value-67.287, P value-0.052).

It showed that out of 150 patients, 113 (75%) responded that TB spreads through the air when an infected person coughs or sneezes.

Among the 150 respondents, 59 patients (39%) had only basic elementary schooling. Among the 59 respondents 46 (78%) responded that TB spreads through the air when an infected person coughs or sneezes.

It also showed that, overall only a minority of the respondents i.e.; 37 (25%) reported otherwise.

Discussion

In the study it was found that majority of the respondents had good awareness regarding the mode of transmission of TB. It was found that majority of the respondents had good knowledge regarding cough hygiene. Out of the 150 respondents, 141 patients (94%) did cover their mouth/ nose while coughing/sneezing. There was no statistical difference among the age groups and the literacy levels regarding their awareness on cough hygiene. Only a minority of the respondents i.e.; 6% were unaware of cough hygiene. Our study showed that basic cough hygiene was accepted by 94% of participants.

TB still continues to be very high in our country. In the study it was found that contact with TB patients was reported by only 39 (26%) respondents. It was also found that irrespective of the literacy levels of the respondents, majority were not aware of any history of contact with a TB. This may indicate that majority had no close contacts but were exposed to tuberculosis in the community. Because of overcrowding in public places in India, these patients may have acquired infection from others during brief periods of exposure. Many of the people may not actually practice cough hygiene in public places in India. So people must be educated on practicing cough hygiene which may help to decrease the incidence of new cases of TB. In a study conducted by Barry T et al10 on the respiratory hygiene practices by the public during the 2009 influenza pandemic in New Zealand showed that a quarter of respiratory events (27·3%) were uncovered, and there was infrequent use of the responses recommended by health authorities (i.e. covering with a tissue or hand kerchief at 3·4% and covering with elbow or arm at1·3%).In a study conducted by Nizame FA et al11 in 2009 concluded that many people did not practice cough hygiene measures. In a study conducted by Gonzalez-Angulo Y et al12 in south Africa showed that basic cough hygiene was accepted by 98% of participants. In the study it was found that irrespective of the literacy levels of the respondents, majority had demonstrated faulty coughing technique. This indicates that even the literate respondents were not practicing correct coughing technique. Hence strict legislation and enforcement of cough hygiene in public places may be essential for adherence to cough hygiene.

Out of the 150 respondents, 149 patients (99.3%) demonstrated faulty coughing technique.

This shows that even though there is good knowledge and awareness regarding the disease, mode of transmission, majority did not practice adequate cough etiquette measures. This shows that patients have to be educated about the cough hygiene. Proper coughing technique should be taught to all patients. Health care personnel should be reinforce regarding cough hygiene on subsequent follow up visits and make sure that the patient practices the correct coughing technique and follows a proper cough etiquette measures.

In the study it was found that majority of the respondents even with elementary schooling had good knowledge regarding the sputum disposal. Out of the 150 respondents, 84 patients (56%) responded sputum disposal by collecting in a container and disposed as per the advice by the RNTCP health workers. Only a minority of the respondents ie; 23 (15.3%) responded as spitting it out in the open air as the method of sputum disposal.

Further studies are needed to assess the role of anti-tussive medications as they reduce cough thereby reducing the transmission.

Conclusion

1. Majority of the people in the study population had good knowledge regarding cough hygiene.
2. Majority of the people demonstrated faulty coughing technique. Hence proper cough hygiene and coughing technique should be taught to all patients with pulmonary tuberculosis so as to reduce the risk of transmission of the disease.
3. Further studies are needed to assess the role of anti-tussive medications as they reduce cough, may thereby reduce the transmission of TB.

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