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A Descriptive Study to Assess the Knowledge Regarding the Dots Regimen and Factors Related to Non Compliance among Pulmonary Tuberculosis Patients in Selected Tuberculosis Units in Kamrup District, Assam

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Abstract: ***Background: Worldwide tuberculosis is one of the top 10 causes of death. Incomplete adherence to treatment has been identified as the most serious problem among the people living with the tuberculosis and major obstacle to the elimination of the disease from the community. Objective: To assess the knowledge regarding the DOTS regimen and factors related to non compliance among pulmonary tuberculosis patients. Material and method: A descriptive study was conducted in selected tuberculosis units.160 participants were selected using consecutive sampling technique. Data were collected from the participants by face-to-face interview schedule using a self-administered structured questionnaire. Results: Majority of the participants 122(76.2%) had adequate knowledge, only 38(23.8%) had moderate knowledge with mean score of 7.77 ± 0.549. Not single participants found to have inadequate knowledge. Overall rate of non compliance was found 23.8%. Experienced side effect and long duration of treatment were found to be a major reason for non compliance. There was significant association between knowledge regarding DOTS regimen with selected socio demographic variables. There was also significant association between factors related to non compliance with selected demographic variables. Conclusion: Experience of side effect and long duration of treatment were found to be major reasons for non compliance.***

Keywords: Pulmonary tuberculosis, Non compliance, Factors, DOTS regimen.

1. Introduction

The biggest disease today is not leprosy or tuberculosis, but rather the feeling of being unwanted.

-Mother Teresa

Tuberculosis (TB) is caused by bacteria called Mycobacterium tuberculosis that most often affect the lungs. Tuberculosis is one of the most communicable diseases which are spread from person to person through the air[1]. When people with pulmonary TB cough, sneeze or spit, they propel the TB germs into the air. When one healthy person inhales only a few of these germs, they become infected. Tuberculosis disease is now a day completely curable and preventable disease if we take proper care and treatment at appropriate time [2].

Tuberculosis can also be affect the organ other than lung i.e. intestine, meninges, bone and joints, lymph gland, skin and other tissue of the body. When it affects other body parts, then it is called extra pulmonary tuberculosis which is not contagious to others [3]. It is an ancient human disease that has been a major health challenge in the world and remains as a major health problems in most developing countries [4]. Incomplete adherence to treatment has been identified as the most serious problem among the people living with the tuberculosis and major obstacle to the elimination of the disease from the community [5]. Poor adherence to a prescribed treatment increases the risk of morbidity, mortality and spread of disease in world. Treatment adherence is essential to cure the disease, minimize the transmission of the bacilli in the community and for minimizing the development of drug resistance tuberculosis [6].

2. Background of the Study

Worldwide tuberculosis is one of the top 10 causes of death and leading cause from single infectious agent. A total of 1.5 million people died from TB in 2018. In 2018, the 30 high TB burden countries accounted for 87% of new TB cases. Eight countries account for two third of the total, with India leading the count, followed by, china, Indonesia, The Philippines, Pakistan, Nigeria, Bangladesh and South Africa[5].In 2018, India was able to achieve a total notification of 21.5 lakh TB cases of which 25% from the private sector. The 89% of the TB cases come from the age group of 15-69 year. In 2018, an estimated 10 million people fell ill with TB worldwide in which 5.7 million were men, 3.2 million were women and 1.1 million were children [10]. National Tuberculosis Programme has been in operation since 1962 but treatment success rate is very low. To overcome from this problem Revised National Tuberculosis Programme (RNTCP), an application of the WHO recommended Directly Observed Treatment, Short Course (DOTS) strategy was launched in 1992 with the objective of detecting at least 70% of new sputum positive Tb patients and curing at least 85% of such patient[11].

3. Need of the Study

Tuberculosis remain a worldwide public health problem despite the fact that the causative organism was discovered more than 100 years ago and highly effective drugs and vaccine are available making tuberculosis a preventable and curable disease[3].Globally, TB incidence is falling at about 2% per year. Ending the TB epidemic by 2030 is among the health target of the Sustainable Development Goals [5]. TB is completely curable. Government of India and state government are providing all the facilities to the TB patients like free treatment, free vaccine, DOTS, and even rehabilitation to the patients. Though TB is curable, and treatment is free, many TB patients are not cured because of non adherent or non-compliance to the treatment regimen [14]. As the tuberculosis is an infectious disease, treatment adherence is very important for all otherwise it placed the community in risk. Therefore, it is important to anticipate those at risk of being defaulters and make them adhere to anti-TB treatment. It is very rare to trace and know what happened to a defaulter after he or she has dropped out, especially after migrating from one place to another, in the absence of any documentation [15]. Although there is lots of improvement in technology for diagnosis and treatment for the tuberculosis, the burden of tuberculosis is still high. The main reason for this is treatment non adherence. Majority of the patient are belongs from the low socio economic background and most of them having inadequate knowledge regarding disease condition and treatment outcome. From previous review of literature and day to day observation in the clinical posting researcher felt to do this research study.

4. Problem Statement

A descriptive study to assess the knowledge regarding the DOTS regimen and factors related to non compliance among pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam.

5. Objective

General Objective
To assess the knowledge regarding the DOTS regimen and factors related to non compliance among pulmonary tuberculosis patients.

Specific Objectives
1) To determine the knowledge regarding DOTS regimen among the pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam
2) To identify the factors related to non compliance with DOTS regimen among the pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam
3) To examine association of knowledge regarding DOTS regimen with selected socio demographic variables among pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam
4) To analyse the association of factors related to non compliance with DOTS regimen with selected socio demographic variables among pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam

Hypotheses
Hypotheses were tested at 0.05 level of significance.

H1- There is significant association of knowledge regarding DOTS regimen with selected socio demographic variables among pulmonary tuberculosis patients in selected tuberculosis units in Kamrup District, Assam".
H2-There is significant association of factors related to non compliance of DOTS regimen with selected socio demographic variables among pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam".

6. Research Methodology

Research approach
Quantitative research approach

Research design
Descriptive research design

Setting of the study
Study was conducted at selected Tuberculosis units in Kamrup District, Assam

Population of the study
Pulmonary tuberculosis patients who are registered under treatment card.

Sample and sample size
160 number of pulmonary tuberculosis patients

Sampling technique
Consecutive sampling technique

6.1 Variables

Research variable- Knowledge regarding DOTS regimen and factors related to non compliance.

Socio Demographic variables- Age, sex, marital status, educational status, occupation, type of family, monthly income per month, follow up to take prescribe medication.

6.2 Description of the tool

Study tool consist of 3 section

Section A: Socio-demographic proforma.
Socio-demographic proforma was used to collect the background information of the study sample. It include the socio-demographic variable like age, sex, marital status, educational status, occupation, type of family, monthly income per month, follow up to take prescribe medication.

Section B: knowledge regarding the DOTS regimen.
This section consists of 10 questionnaires to assess the knowledge regarding dot regimen among the pulmonary tuberculosis patients.

Scoring and interpretation:
The scoring pattern adopted was 1 mark for each correct answer and 0 mark for each wrong answer, Maximum score was 10. The knowledge score was divided into 3 areas:

- Inadequate knowledge= 0-4
- Moderate knowledge= 5-7
- Adequate knowledge= 8- 10

Section C: Factors related to non compliance with DOTS regimen.
This section contains 19 questions to find out the factors which are responsible for non compliance among the pulmonary tuberculosis patient.

7. Analysis and Interpretation

The data collected from the subjects were organized and presented for analysis according to the objectives of the study under the following sections-

Section I: Findings related to socio-demographic variables of pulmonary tuberculosis patients

Table 1: Frequency and percentage distribution of socio-demographic variables , N=160

S. No	Demographic Variables	Frequency (f)	Percentage (%)
1	**Age in a year**		
	a) 15-25 year	43	26.9
	b) 26-35 year	57	35.6
	c) 36-45 year	60	37.5
2	**Sex of patients**		
	a) Male	103	64
	b) Female	57	36
	c) Transgender	0	0
3	**Marital status**		
	a) Unmarried	40	25
	b) Married	112	70
	c) Divorced	3	1.9
	d) Widow	5	3.1
5	**Educational Status**		
	a) Profession or honors	3	1.9
	b) Graduation/post graduation	18	11.2
	c) Intermediate or post high school	15	9.4
	d) High school	19	11.9
	e) Middle school	46	28.7
	f) Primary school	42	26.2
	g) Illiterate	17	10.6
6	**Occupational Status**		
	a) Profession	4	2.5
	b) Semi profession	11	6.9
	c) Clerical/shop/farmer	15	9.4
	d) Skill worker	33	20.6
	e) Semi skill worker	31	19.4
	f) Unskilled worker	31	19.4
	g) Unemployed	35	21.9
7	**Type of family**		
	a) Nuclear	128	80
	b) Joint	32	20
	c) Extended	0	0
8	**Family income per month**		
	a) Rs. ≥78,063	0	0
	b) Rs.39,033-78,062	6	3.8
	c) Rs.29,200-39,032	24	15
	d) Rs.19,516-29,199	31	19.4
	e) Rs.11,708-19,515	70	43.8
	f) Rs. 3,908-11,707	29	18.1
	g) Rs.≤3,907.	0	0
9	**Follow up failure**		
	a) Yes	38	23.8
	b) No	122	76.2

Data on table 1 shows that majority (37%) participants were belong from 36-45 years of age group, 64% participants were male , 70% were married, 28% were studied till middle school, 21% were unemployed, 80% were lived in nuclear family and 43% participants were had monthly income Rs. 11,708 -19,515. Out of 160 participants only 23% (38) participants were missed their scheduled dose but 77% (122) were never miss anti tuberculosis treatment.

Section II: Findings related to knowledge regarding DOTS regimen among pulmonary tuberculosis patients

Table 2: Knowledge regarding DOTS regimen with mean and SD, N=160

S. No	*Knowledge*	*F*	*%*	*Mean*	*SD*
1	Inadequate knowledge	0	0	7.77	0.549
2	Moderate knowledge	38	23.8		
3	Adequate knowledge	122	76.2		

Data on table 2 shows that majority 122(76.2%) had adequate knowledge and 38(23.8%) had moderate knowledge with mean score of 7.77 ± 0.549.

Section III: Findings related to factors related to non compliance with DOTS regimen among pulmonary tuberculosis patients

Factors related to non compliance were categorized into 3 section i.e. client related factors, socio cultural related factors and health care related factors.

Table 3: frequency and percentage distribution of client related factors , n =38

S. No	Items	Yes		No	
		f	%	f	%
1	Feel ashamed of taking anti TB medication in front of others	3	7.9	35	92.1
2	Addiction to substances	12	31.6	26	68.4
3	Support from family member during treatment	37	97.4	1	2.6
4	Experience of side effect	30	78.9	8	21.1
5	Long course of treatment	38	100	0	0
6	Feel burden of taking anti TB medication continuously	6	15.8	32	84.2
7	Side effect of medication is too upsetting	6	15.8	32	84.2
8	Limiting Daily activities	3	7.9	35	92.1
9	Result in death if not treated	38	100	0	0

Data on table 3 shows that 78.9% were experience of side effect of medication and 100 % participants says that it is long duration of course that make them non compliance to the course of treatment. Only 7.9% i.e. 3 patients mentioned that course of treatment limit their daily activity and they also ashamed of taking medication in front of others.

Table 4: frequency and percentage distribution of socio cultural related factors, n =38

S. No	Items	Yes		No	
		f	%	f	%
1	Disclose of TB status to the family member	36	94.7	2	5.3
2	Someone whose opinion is important, is against taking anti TB medication	0	0	38	100
3	Visited Quacks	0	0	38	100
4	Having cultural belief on tuberculosis in locality	0	0	38	100

Data on table 4 revealed that all the socio cultural factors are not related factors for non compliance.

Table 5: Frequency and percentage distribution of health care system related factors, n =38

S. No	Items	Yes		No	
		f	%	f	%
1	Long distance from home	0	0	38	100
2	Availability of money to pay for travelling to reach hospital	38	100	0	0
3	Operating time of clinic make easy to receive treatment	38	100	0	0
4	Long waiting time in health centre for taking anti TB medication	0	0	38	100
5	Proper explanation given by the health care provider	38	100	0	0
6	Provide card for review	38	100	0	0

Data on table 5 shows that all the health care related factors are not related factors for non compliance.

Section - IV: Association of knowledge regarding DOTS regimen with selected socio demographic variables among pulmonary tuberculosis patients

This section deal with the association between the knowledge regarding DOTS regimen with selected socio-demographic variables among pulmonary tuberculosis patients In order to determine the association, the following research hypothesis was stated:

H_1: There is significant association of knowledge regarding DOTS regimen with selected socio-demographic variables among pulmonary tuberculosis patients in selected tuberculosis units in Kamrup District, Assam".

Table 6: Association of knowledge regarding DOTS regimen with selected socio demographic variables among pulmonary tuberculosis patients, N=160

Demographic variables	*Knowledge*		*Chi-value*	*df*	*p value*
	Moderate	*Adequate*			
Age in years					
a) 15-25 years	8	35	3.024	2	0.220^{NS}
b) 26-35 years	18	39			
c) 36-45 years	12	48			
Sex					
a) Male	21	82	1.804	1	0.179^{NS}
b) Female	17	40			
Marital status					
a) Unmarried	12	28	1.387	3	0.709^{NS}
b) Married	24	88			
c) Divorced	1	2			
d) Widow	1	4			
Educational status			9.937	6	0.127^{NS}
a) Profession or Honors	2	1			
b) Graduate or PG	5	13			
c) Post high school	5	10			
d) High school	4	15			
e) Middle school	6	40			
f) Primary school	9	33			
g) Illiterate	7	10			
Occupation			11.82	6	0.066^{NS}
a) Profession	2	2			
b) Semi profession	6	5			
c) Clerical/farmer	4	11			
d) Skill worker	5	28			
e) Semi skill worker	5	26			
f) Unskilled worker	5	26			
g) Unemployed	11	24			
Type of family			4.176	1	0.041*
a) Nuclear	26	102			
b) Joint	12	20			
Family income per month			16.36	4	0.003*
a) Rs.39,033-78,062	0	6			
b) Rs.29,200-39,032	6	18			
c) Rs.19,516-29,199	1	30			
d) Rs.11,708-19,515	18	52			
e) Rs.3,908-11,707	13	16			
Failure to take medicines			3.087	1	0.079^{NS}
a) Yes	33	89			
b) No	5	33			

***P<0.05 Level of Significance NS-Non significance**

Data depict in the table 6 shows significant association with respect to type of family and family income per month.

Section– V: Findings related to association of factors related to non compliance with DOTS regimen with selected socio-demographic variables among pulmonary tuberculosis patients.

This section deal with the association of factors related to non compliance with selected socio-demographic variables among pulmonary tuberculosis patients In order to determine the association, the following research hypothesis was stated:

H2-There is significant association of factors related to non compliance of DOTS regime with selected socio-demographic variables among pulmonary tuberculosis patients in selected Tuberculosis units in Kamrup District, Assam".

Study result reveal that there was significant association between factors related to non compliance with selected socio demographic variables with respect to feel ashamed with marital status (df=3, p=0.005), side effect of medicine with family income per month (df=4, p=0.004), burden of taking anti tuberculosis treatment with age (df=2, p=0.035)

and limited daily activities with family income per month (df=4, p=0.008).

8. Discussion

The present study finding contrast with the study conducted by Babu T, Ramasamy R, Nazeem T, Chandramouli R, Ashwin KM, Chinchumol B, Nancy AM, among 113 tuberculosis patients across DOTS centre in and around Bengaluru, South India (2016) to assess the knowledge on DOTS therapy among the tuberculosis patients. Study found that out of the 113 patients 46.9% were found to be had poor knowledge, 52.2% were found to had medium knowledge and 0.88% 0f the patients were found to had high knowledge.

Present study finding supported by a study which was conducted by Mittal C, Gupta SC, to find out the reason of treatment default from a cohort of tuberculosis patient treated under DOTS therapy. Important reasons of default were side effects following medication (43.2%), improvement in symptoms (14.4%), and lack of time (13.5%).

The present study support the study conducted by Kaur B, Samuel P, Kumari R, Garcha MK (2014) to assess the knowledge regarding DOTS therapy among tuberculosis clients and to find the association between knowledge score with selected socio demographic variables. Study was found significant association of knowledge and selected socio-demographic variables such a occupation, monthly income and education status at 0.05% level of significance.

The present study supported by one study which was conducted by De Oliveira MS, Stephan A, Zanon M, Sidney-Filho AL, Moreira SLA, Dalcin TDP, Garcez A, Hochhegger B, Moreira SDJ, Watte G from January 2014 to December 2014. The study result shows that the major factors related to non compliance were living in an area of lower income (OR = 4.35, 95%CI: 2.50±7.58), drug abuse (OR = 2.73, 95%CI: 1.47±5.09), non adherence to a previous treatment regimen (OR = 2.1, 95%CI: 1.28±3.45), history of smoking (OR = 1.72, 95%CI: 1.00±3.00). In the subgroup of retreatment cases, poverty (OR = 2.65; 95%CI = 1.06±6.66), smoking history (OR = 2.94; 95%CI = 1.09±7.92), male gender (OR = 3.25; 95%CI = 1.32±8.0) and young age (OR = 4.3; 95%CI = 1.15±16.07) were also associated with high risk of dropout.

9. Conclusion

Tuberculosis occurred every part of the world but we can reduce the risk of getting infection by taking proper care. Compliance to anti tuberculosis treatment is critical for cure of individual patients, controlling spread of infection, and minimizing the development of drug resistance TB. Study result found that maximum of the participants had adequate knowledge regarding the tuberculosis and its treatment. Out of 160 participants only 38 participants were non compliance. So we can conclude the study that if participants had more knowledge it will automatically reduce the rate of non compliance with tuberculosis medication.

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