Socio-demographic determinants of treatment seeking behavior among Pulmonary Tuberculosis suspects attending tertiary care centre of Jharkhand

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Abstract- **Introduction-** Health care seeking is a central issue in all kinds of morbidity, since the duration of symptoms increases the probability of severe morbidity and harmful sequelae. **Aim and Objectives**- 1.To find out duration and main reasons responsible for patient delay.2.To assess socio demographic determinants of patient delay. **Material and methods**- The present study was cross sectional, descriptive and hospital based study. The total study duration was 15 months (March 2013-May 2014).Data was collected in Medicine OPD of RIMS from May-2013 to March-2014(eleven months). 656 patients (>14 yrs.) having cough of two weeks or, more with or, without other symptoms suggestive of Pulmonary Tuberculosis(PTB) were taken as study subjects by the use of simple random sampling. A pre tested, semi structured questionnaire was used for data collection after getting their written consent which contains all necessary information regarding socio demographic profile, duration and reasons for patient delay. Statistical analysis was done by using descriptive statistics. Data were collected in a predesigned Microsoft® Excel 2007.Significant association was established by the use of Chi square test   (p<0.05).**Results**- Among 656 study subjects, majority (496, 75.61%) patients were having significant patient delay (>30 days).It was found that out of 496 patients with significant patient delay, most (202, 30.79%) of the patients took self medication from local shops for their initial symptoms. Majority of the cough symptomatic of every age group, females, illiterate, lower socioeconomic class, smokers and alcoholics had significant patient delay. **Conclusion**-Adequate Information, education and communication(IEC) materials should be disseminated in the community regarding early diagnosis and treatment of Pulmonary Tuberculosis.

Index Terms- Pulmonary Tuberculosis(PTB),PTB suspects, Patient delay.

I. INTRODUCTION

Tuberculosis (TB) is one of the oldest diseases known to mankind since time immemorial and continues to be a major public health problem even in today's modern world. It is a preventable and curable disease, but still millions of people suffer every year and a number of them die from this disease, resulting in devastating social and economic impact. [1] TB primarily affects the lungs but can affect other parts of the body such as intestine, meninges, bones, joints, lymph glands, skin and other tissues of the body. Pulmonary TB accounts for over eighty percent of the total cases suffering from tuberculosis. Transmission occurs by the airborne spread of infectious droplets and droplet nuclei containing the tubercle bacilli. When a person inhales, these micro particles get lodged in the terminal bronchiole and the alveoli to infect a person. This infection may later on result into tuberculosis disease.[2] The source of infection is a person with sputum smear positive pulmonary TB.[3] Each sputum positive case can infect 10-15 individuals in a year, if not treated.[4]

Globally in 2012, there were an estimated 8.6 million incident cases of TB and 1.3 million people died from this disease. [5] TB is second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent. [6] The Tuberculosis (TB) burden in India is truly staggering. About 40% of the adult population of the country is estimated to be already infected with Mycobacterium tuberculosis. Based on the National survey for annual risk of TB infection (ARTI) which is at 1.5%, the incidence of new smear positive TB cases in the country is estimated as 75 new smear positive TB cases per 100,000 populations. Once infected, an individual has on an average a 10% life time risk of developing TB disease. Every year nearly 2.2 million new TB cases occur, of which nearly 800,000 are infectious (smear positive pulmonary) TB cases. India has more people with active TB disease than any other country in the world. [6] Jharkhand is one of the major TB burden states of India. About 13,000 people die of Tuberculosis every year in this state i.e. more than 35 people every day. [7]

Health care seeking is a central issue in all kinds of morbidity, since the duration of symptoms increases the probability of severe morbidity and harmful sequelae. Illness or deviation from state of health is mostly a subjective awareness of an individual the relief of which may be sought within or outside of medical and health facilities.[8] Illness behavior refers to the activities undertaken by individuals in response to symptom experience. It typically includes mental debate about the significance and seriousness of these symptoms, lay consultation, decisions about action including self-medication, and consultation with health professionals.[9] As cough is one of the cardinal features of TB thus, screening of pulmonary tuberculosis (PTB) suspects using history of cough $\geq$ 2 weeks provides a quick, cheap and convenient way to identify individual at a high risk of tuberculosis. Tracing a history of cough plays an important role in earlier detection of Tuberculosis. With these

facts in mind the present study was conducted with the following aim and objectives-

1. To find out duration and main reasons responsible for patient delay.
2. To assess socio demographic determinants of patient delay.

II. MATERIAL AND METHODS

Study design and study duration-
The present study was cross sectional, descriptive and hospital based study. The total study duration was 15 months (March 2013-May 2014).Data was collected in Medicine OPD of RIMS from May-2013 to March-2014(eleven months).

Hospital Background:
It is a tertiary care hospital which receives referrals from other private clinics, hospitals and general physicians not only from city but also from nearby districts and areas. Most of the cough symptomatics attending this center for seeking care belong to lower socioeconomic group. On an average, 16% of total patients of RIMS seek care from Medicine OPD only. Nearly 200-250 patients used to come Medicine OPD per day for seeking care.[10]

Sample size determination-
According to TB India 2012 Revised National Tuberculosis Control Programme(RNTCP) Annual status report, out of 1,55,736 suspects examined, total number of smear positive patients diagnosed were 23,051 in Jharkhand.[11]Thus, the sample size of present study was calculated by using the formula(N = $4Pq/d^2$) thus, the total sample size came out as 656.

Eligibility criteria-
Inclusion criteria- Patients (>14 yrs.) having cough of two weeks or, more with or, without other symptoms suggestive of PTB.
Exclusion criteria-Established cases of PTB and unwilling to participate in the present study.

Method of sampling-
In Medicine OPD, around 10 patients (those, who met our inclusion criteria) used to come between 9 AM to 1 PM on each working day. By the use of simple random sampling, we selected three patients daily as our study subjects. In this way, we achieved our sample size (656) in 219 working days, which is nearly equivalent to 11 months (considering 20 working days per month).

Tool used for Data Collection :
A pre tested, semi structured questionnaire was used for data collection after getting their written consent which contains all necessary information regarding socio demographic profile, duration and reasons for patient delay.

Statistical Analysis
Statistical analysis was done by using descriptive statistics. Data were collected in a predesigned Microsoft® Excel

2007.Significant association was established by the use of Chi square test (p<0.05).

Some operational definitions and diagnostic criteria for the study-

- **Pulmonary Tuberculosis suspect (PTB suspect)** - Persons having history of cough of 2 weeks or, more with or without other symptoms suggestive of TB. They were considered as Pulmonary TB suspect.[12]
  - **Patient delay**-It is defined as time interval between appearance of symptoms suggestive of pulmonary tuberculosis and their first contact with a health care professional or, facility. [13]
- **Acceptable patient delay**- As no scientifically agreed criteria could be found in the literature upon which to base a definition of acceptable patient delay, so references were taken from various other similar studies. In a study done by Goel et al[14] , Jagadish S et al[15] they defined maximum acceptable patient delay of 30 days.

III. RESULTS

A total of 656 PTB suspects were taken as study subjects after getting their consent. Among 656 study subjects, majority (496, 75.61%) patients were having significant patient delay(table no.1).The present study reveals that(graph no.1) out of 496 patients with significant patient delay, less than one-third (202, 30.79%) of the patients took self medication from local shops for their initial symptoms. In few (87, 13.26%) of the cases, patients thought that symptoms will disappear/not severe. Other less common causes were lack of awareness of health care facilities (76,11.58%),poor socioeconomic status(65,9.91%),inaccessible health care facilities (56, 8.54%) and social stigma (10, 1.52%).

It was found that majority of the cough symptomatic of every age group had significant patient delay.Majority of Sarna (181,82.3%) followed by Hindus(196,74.8%), Muslim(49,73.1%) and Christian(70,65.4%) respectively had patient delay of more than thirty days. On the basis of ethnicity, significant patient delay (>30 days) was seen in majority of the tribal and non-tribal patients. Significant patient delay was seen in majority (124,83.22%) of the illiterates and most (372,73.37%) of the literates. It was revealed that married patients had significant patient delay in nearly three-fourth (379,77.34%)of the cough symptomatic followed by divorced/widow(22,73.33%) and unmarried(95,69.85%) patients respectively. Out of 497 patients from rural area, maximum (395,79.48%) patients had significant patient delay(>30 days). Most(381,78.40%) of the patients from lower SES had significant patient delay. Majority (88, 88.4%) of the present smokers and alcoholics(127,81.94%) had significant patient delay(table no.2).

IV. DISCUSSIONS

In the present study, patient delay of more than 30 days was considered as significant patient delay. Other studies [16-22] also reported patient delay ranging from 20-81% based on a 4 week/1 month cut off period for patient interval. Among reasons for significant patient delay, major reasons were self medication and symptoms will disappear/not severe. Our findings were in consistent to the findings of a study conducted by Wondimu et al[23] who observed that 33% of patients assumed that symptoms will disappear itself, 32% had financial constraints and 7% had absence of transportation. Another study conducted by Auer et al[24] observed that illness considered harmless(59%) and lack of money (22%) were the most frequent responses for the patient delays. In a study by Asch et al [25] 33% of the patients who had delay were unsure where to go for cure, 23% lacked the regular doctor, 23% felt that symptoms were not serious.

As all age groups had nearly the same duration of longer patient delay so it has not any statistical significance(p=0.792).While Jagadish et al [14] in their study revealed that patient delay was significantly high among the older age groups compared to younger ones(P<0.0001). Thakur et al [26] also found significant association of patient delay with advanced age in their study.

Majority (135, 81.82%) of the females had patient delay of more than thirty days. It was also statistically significant (p=0.03).This may be attributed to the fact that women had lower literacy, greater unemployment, lower median per capita income, and greater family size, as compared to men. Mohsin et al [27] found that women were somewhat more likely to experience patient delay than men (33% vs. 24%; $P = 0.28$). Other studies also found delay occurring more in women than men,[28-33] though the magnitude of the differences found may have been due to chance alone, given their sample size.

As the finding suggest that significant patient delay (>30days)was seen in all religions accordingly their distribution in the society and it was also statistically significant(p=<0.05).It was found that ethnicity did not have any influence on patient delay (p=0.194).However Thakur et al [26] in their study on Delay on diagnosis and treatment among TB patient registered under RNTCP Mandi, Himachal Pradesh, India found statistical strong relation with patient delay and scheduled caste/tribes.

On the basis of educational status, literacy has significant impact on patient delay(p=<0.05).Literate persons are more concerned towards their health related issues and consult health care services earlier than illiterate people.Jagadish et al [14] in their study on Impact of determinants of Patients and health system delays on tuberculosis diagnosis and treatment in Bangalore also reported longer patient delay in illiterate persons, which was also statistically significant. Thakur et al [26] in their study also revealed that illiterate persons had longer patient delay.

Most(381,78.40%) of the patients from lower SES had patient delay of more than thirty days. This was also statistically significant (p=<0.05).In Jagadish et al [14] study, the longer patient delay was found among patients having low per-capita income(p=0.0021). A study on determinants of knowledge and attitudes about tuberculosis among the general population of Metro Manila in Philippines[34] by Portero N J et al has shown that low family income was correlated with no intention of seeking health care and intention to self–treatment among TB patients.

It was revealed that smoking has a direct relation with the longer patient delay with statistical significance(p=<0.01). In a study by Selvaen et al in South India [35] also had a significant patient delay among smokers (p=0.001). Jagadish et al [14] also found that smoking had a role in longer patient delay.As evident from the finding of the present study that alcoholics had significant patient delay in majority(127,81.94%) of the cases as compared with the non-alcoholics(369,73.65%).It was also statistical significant(p=<0.05). The study by Van der Werf M J et al [36] in Ukraine also revealed a longer patient delay in alcoholics patients. Jagadish et al [14] also found the similar result.

V. CONCLUSION

Majority of the PTB suspects were having significant patient delay and the main reasons behind that were self medication and perception of symptoms will disappear/not severe. As far as socio demographic variables were concerned, patients of every age groups, females, illiterates, lower socioeconomic status, smokers and alcoholics had significant patient delay. Lack of knowledge, poverty, substance abuse makes the patients vulnerable for longer patient delay. So, there is high need of wider dissemination of Information, Education and Communication (IEC) material in the community regarding early diagnosis and treatment of Pulmonary Tuberculosis.

REFERENCES

[1] Revised National Tuberculosis Control Programme (RNTCP) Jharkhand 2012.Jharkhand Rural Health Mission Society-TB control Programme. Available at RNTCP%20Jharkhand%202012.pdf

[2] Revised National Tuberculosis Control Programme(RNTCP) Jharkhand 2013.Jharkhand Rural Health Mission Society-TB control Programme. Available at RNTCP%20Jharkhand%202013.pdf

[3] RNTCP Training module for Medical Practitioners, Central TB division, Directorate General of Health Services, Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi. Available at training%20Module%20for%for%20Medical%20Practitioners .pdf.

[4] WHO Tuberculosis Fact sheet No104 Nov.2010.

[5] WHO Global Tuberculosis Report 2013. Available at apps.who.int/iris/bitstream /10665/91355/1/9789241564656_eng.pdf.

[6] WHO Tuberculosis Fact sheet NO 104, Oct.2012.

[7] Kishore J: revised National Tuberculosis Control Programme (RNTCP), DOTS Strategy in; National Health Programmes of India 7th Ed., Kishore J, Century Publications; 2007, 173-199.

[8] Rabin D and Schach E. Medicaid, Morbidity and Physician. Medical Care 1975; 13 : 68-73.

[9] Tones K. Health education, behavior change and public health. In Oxford textbook of public health (ed. 3rd), vol 2, New York: Oxford University Press 1997; 787-88.

[10] Medical record department of RIMS(Rajendra Institute of Medical Sciences),Ranchi, Jharkhand.

[11] Revised National Tuberculosis Control Programme(RNTCP) Jharkhand; Tuberculosis control.

[12] Central TB Division, MOHFW,GOI.TB India 2012 Status Report. Available at http://tbcindia.nic.in/pdf/TB%20India%202012-%20Annual%20Report.pdf

[13] Agarwal SP, Chauhan LS. Tuberculosis control in India. DGHS, MOHFW. Elsevier. 2205, p. 15-19.

[14] Goel K,Kondagunta N,Soans S J,Bairy A R,Goel P. Reasons for patient delays and health system delays for tuberculosis in South India. Indian Journal of Community Health,vol.23,No.2,July 2011-Dec.2011.

[15] Jagadish S,Saraswathi S,Divakar SV:A study of impact of determinants of patients and health system delay on tuberculosis diagnosis and treatment in Banglore; Indian Journal of Community Health,Vol.24,No.4,Oct.2012-Dec.2012.

[16] Uplekar M, Juvekar S, Morankar S. Tuberculosis patients and practitioners in private clinics in India. Int J Tuberc Lung Dis 1998;2:324-9.

[17] Lawn SD, Afful B, Acheampong JW. Pulmonary tuberculosis: diagnostic delay in Ghanian adults. Int J Tuberc Lung Dis 1998;2:635-40.

[18] Mori T, Shimao T, Jin BW, Kim SJ. Analysis of case finding process of tuberculosis in Korea. Tuberc Lung Dis 1992;73:225-31.

[19] Steen TW, Mazonde GN. Pulmonary tuberculosis in Kweneng district, Botswana: delays in diagnosis in 212 smear-positive patients. Int J Tuberc Lung Dis 1998;2:627-34.

[20] Lonnroth K, Thuong LM, Linh PD, Diwan VK. Delay and discontinuity-a survey of TB patients' search of a diagnosis in a diversified health care system. Int J Tuberc Lung Dis 1999;3:992-1000.

[21] Godfrey-Faussett P, Kaunda H, Kamanga J, van Beers S, van Cleeff M, Kumwenda-Phiri R, et al. Why do patients with a cough delay seeking care at Lusaka urban health centers? A health systems research approach. Int J Tuberc Lung Dis 2002;6:796-805.

[22] Rajeswari R, Chandrasekaran Y, Suhadev M, Sivasubramaniam S,Sudha G, Renu G. Factors associated with patient & health system delays in the diagnosis of TB in South India. Int J Tuberc Lung Dis; 2002; 6(9):789-795.

[23] Wondimu T, Michael K W, Kassahun W, Getachew S. Delay in initiating tuberculosis treatment and factors associated among pulmonary tuberculosis patients in East Wollega, Western Ethiopia. Ethiop J of Health Dev 2007, 21(2):148-156.

[24] Auer C, Sarol J Jr, Tanner M, Weiss M. Health seeking and perceived causes of tuberculosis among patients in Manila, Philippines. Trop Med Int Health 2000, 5(9):648-656.

[25] Asch S, Leake B, Anderson R & Gelberg L. Why do symptomatic patients delay obtaining care for Tuberculosis ? Am J Respir Crit Care Med, 1998,157:1244–1248.

[26] Rajesh Thakur and Manoj Murhekar. Delay in diagnosis and treatment among TB patients registered under RNTCP Mandi,Himachal Pradesh,India. 2010. Indian J Tuberc 2013; 60: 37 – 45.

[27] Mohsin Sohail Siddiqui, Hafiz Abdul Moiz Fakih, Waqas Ahmed Burney, Razia Iftikhar, Nazeer Khan. Environmental and Host-related Factors Predisposing to Tuberculosis in Karachi: A Cross-sectional Study.Journal of Pioneering Medical Sciences;Vol.1,Issue 1(April-June,2011).

[28] Lawn SD, Afful B, Acheampong JW. Pulmonary tuberculosis: diagnostic delay in Ghanian adults. Int J Tuberc Lung Dis 1998;2:635-40.

[29] Yamasaki NM, Ozasa K, Yamada N. Gender differences in delays to diagnosis and health care seeking behavior in a rural area of Nepal. Int J Tuberc Lung Dis 2001;5:24-31.

[30] Long NH, Johanson E, Lonnroth K, Eriksson B, Winkvist A, Diwan VK. Longer delays in tuberculosis diagnosis among women in Vietnam. Int J Tuberc Lung Dis 1999;3:388-93.

[31] Long NH, Johanson E, Lonnroth K, Eriksson B, Winkvist A, Diwan VK. Longer delays in tuberculosis diagnosis among women in Vietnam. Int J Tuberc Lung Dis 1999;3:388-93.

[32] Chakraborty AK. Missed opportunities for diagnosis of pulmonary tuberculosis: a study among rural patients seeking relief on their own under the tuberculosis program in India. Indian J Tuberc 2001;48:181-92.

[33] Needham DM, Foster SD, Tomlinson G, Godfrey- Faussett P. Socio-economic, gender and health services factors affecting diagnostic delay for tuberculosis patients in urban Zambia. Trop Med Int Health 2001;6:256-9.

[34] Portero NJ,Rubio YM,Pasicatan MA.Socio-economic determinants of knowledge and attitudes about tuberculosis among the general population of Metro Manila,Philippines.Int J Tuberc Lung Dis.2002;6(4):301-6

[35] Selvam JM,Wares F,Perumal M,Gopi PG,Sudha G,Chandrasekaran V,Santha T.Health-seeking behavior of new smear-positive TB patients under a DOTS programme in Tamilnadu,India.2003.Int J Tuberc Lung Dis.2007;11(2);161-7.

[36] Van der Werf M J,Checulin Y,Yegorova O B.,et al.Health care seeking behavior for tuberculosis symptoms in Kiev city,Ukraine;Int J Tuberc Lung Dis.2006;10(4):390-5.

Tables and Graphs-

**Table no.1- Duration of Patient delay among PTB suspects (n=656)**

Duration(in days) of Patient delay	Number	Percentage (%)
≤30(acceptable patient delay)	160	24.39
>30(Significant patient delay)	496	75.61
Total	656	100.00

Table no.2-Association between patient delay and socio demographic variables

Age	Patient Delay		Total No. (%)	P value, x^2,df
	≤30 days No. (%)	>30 days No. (%)		
15-25 yrs	47(26.26%)	132(73.74%)	179(100.00%)	x^2=0.465
26-65 yrs.	108(23.68%)	348(76.32%)	456(100.00%)	df=2
>65 yrs.	5(23.81%)	16(76.19%)	21(100.00%)	p=0.792
Gender				
Male	130(26.48%)	361(73.52%)	491(100.00%)	x^2=4.608
Female	30(18.18%)	135(81.82%)	165(100.00%)	df=1; P=0.0318*
Religion				
Hindu	66(25.2%)	196(74.8%)	262(100.00%)	x^2=11.634
Muslim	18(26.9%)	49(73.1%)	67(100.00%)	df=3
Christian	37(34.6%)	70(65.4%)	107(100.00%)	P=0.009*
Sarna(local religion of Jharkhand)	39(17.7%)	181(82.3%)	220(100.00%)	

Ethnicity				
Tribal	68(22.08%)	240(77.92%)	308(100.00%)	x^2=1.683
Non-tribal	92(26.44%)	256(73.56%)	348(100.00%)	Df=1 P=0.194
Education				
Illiterate	25(16.78%)	124(83.22%)	149(100.00%)	x^2=6.057
Literate	135(26.62%)	372(73.37%)	507(100.00%)	df=1; P=0.0138*
Socioeconomic status(modified Prasad classification,2013)				
I&II	25(40.98%)	36(59.02%)	61(100.00%)	x^2=11.732
III	30(27.52%)	79(72.48%)	109(100.00%)	df=2
IV&V	105(21.60%)	381(78.40%)	486(100.00%)	P=0.0028*
Smoking habit				
Present smoker	15(14.56%)	88(85.44%)	103(100.00%)	x^2=8.654
Past smoker	18(20.00%)	72(80.00%)	90(100.00%)	df=2
Non-smoker	127(27.43%)	336(72.57%)	463(100.00%)	P=0.0132*
Alcohol consumption				
Yes	28(18.06%)	127(81.94%)	155(100.00%)	x^2=4.404
No	132(26.35%)	369(73.65%)	501(100.00%)	df=1; P=0.0358*
Total	**160(24.40%)**	**496(75.60%)**	**656(100.00%)**	

*Statistical significant value(p<0.05)
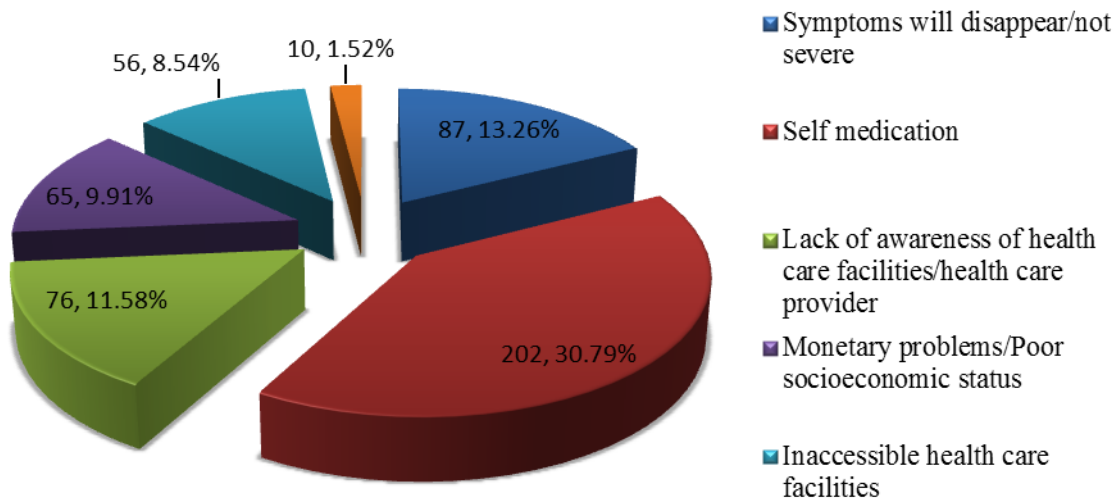
Graph.1-Main Reasons for significant patient delay in PTB suspects (n=496)