

PRESCRIPTION ANALYSIS OF COUGH SYMPTOMATICS ATTENDING MEDICINE OUTPATIENT DEPARTMENT OF A TERTIARY CARE HOSPITAL IN JHARKHAND

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ABSTRACT

Introduction: Prescription analysis of cough symptomatics seems to be an effective way to assess early detection of pulmonary tuberculosis.

Objectives: To assess the socio demographic profile, chief presenting complaints of these patients apart from cough and to observe the type of medication and investigations prescribed by Medicine Outpatient department(OPD).

Material and Methods: This was a cross-sectional, descriptive study conducted between May 2013 and March 2014. It was conducted in Medicine OPD of Rajendra Institute of Medical Sciences (RIMS), Ranchi. A total of 656 prescriptions were selected by simple random sampling and were observed regarding socio-demographic profile of cough symptomatics, type of medications and investigations prescribed including referral to DOTS centre.

Results: Majority of the cough symptomatics were males (491, 74.85%) and most (456,69.51%) of the patients belonged to productive age group (26-65yrs.). Chief presenting complaints apart from cough were fever in (80,12.20%) cases, blood in cough (61,9.30%) cases, recent loss of weight was noticed by (68, 10.37%) patients and chest pain was present in (55,8.38%) patients. Other symptoms like night sweats, weakness, loss of appetite, melena etc. was present in only few (62,9.45%) of the study subjects. Out of 612 prescriptions, less than half (260,42.48%) of the patients were referred to DOTS centre for sputum smear examination. Chest X-ray was prescribed in (92,22.87%) prescriptions. It was found that antibiotics, antipyretics and antiallergics were present in (220,33.54%), (121,18.45%) and (78,11.89%) prescriptions respectively.

Conclusion: Prescription audit seems to be an effective way to avoid indiscriminate use of medications and investigations in case of cough symptomatics.

Keywords: Cough symptomatics, Pulmonary tuberculosis, Antibiotics.

INTRODUCTION

Tuberculosis (TB) is one of the oldest diseases known to mankind 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 a heavy impact on social and economic development.⁽¹⁾ 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.⁽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⁾

There were an estimated 8.6 million incident cases of TB and 1.3 million people died from this disease globally in 2012.⁽⁵⁾ TB is second only to HIV/AIDS as the greatest killer worldwide due to a single infectious agent.⁽⁶⁾ It kills more women in reproductive age group than all other causes of maternal mortality combined, and it may create more orphans than any other infectious disease. 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. 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.⁽²⁾

Thus, screening of cough symptomatics (history of cough \geq 2 weeks) provides a quick, cheap and convenient way to identify individuals at a high risk of tuberculosis. Cough is one of the cardinal features of Tuberculosis. Tracing a history of cough plays an important role in earlier detection of Tuberculosis. Revised National Tuberculosis Control Programme (RNTCP) also defined Pulmonary TB suspects (PTB suspects) as persons, having cough of 2 weeks or more, with or without other symptoms suggestive of tuberculosis. They should have 2 sputum samples examined for AFB.⁽³⁾

Majority of the cough symptomatics used to seek care from General Physicians (public/private) for their initial symptoms. As they serve the first point of contact for a significant number of patients with TB.⁽⁷⁾ Therefore, it is very important to carry out such study revealing socio demographic profile of cough symptomatics, chief presenting complaints, type of medication and investigations prescribed in Outpatient department (OPD) slip. For this, Prescription analysis of cough symptomatics seems

to be an effective way to assess early detection of pulmonary tuberculosis. As Prescription order is an important transaction between the physician and to the patients. It brings into focus the diagnostic acumen and therapeutic proficiency of the physician with instruction for palliation or restoration of the patient's health.⁽⁸⁾

AIM AND OBJECTIVES

1. To describe socio demographic profile of cough symptomatics.
2. To assess chief presenting complaints of these patients apart from cough.
3. To observe the type of medication and investigations prescribed by Medicine OPD.

MATERIAL AND METHODS

Study Design and Study duration:

This was a cross-sectional, descriptive study conducted between May 2013 and March 2014 (eleven months). It was conducted in Medicine Outpatient Department (OPD) of Rajendra Institute of Medical Sciences (RIMS), Ranchi.

Ethics Committee Approval:

The Institutional Ethics Committee permission was taken prior to initiation of the study. Written Informed Consent was taken from all the cough symptomatics before their prescriptions were analyzed.

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. Approximately 16% of total patients of RIMS seek care from Medicine OPD only. On per day basis, nearly 200-250 patients used to come in Medicine OPD for consultation.⁽⁹⁾

Patient Enrollment:

Majority of the cough symptomatics seek advice from Medicine OPD. In Medicine OPD, approximately 10 patients (having cough \geq 2 weeks) used to come between 9 AM to 1 PM on each working day. On this basis, we prepared 10 uniform, similar looking chits, given a number from 1-10. These chits were mixed well. Out of these, 3 chits were randomly selected on per day basis. As per the number displayed on the three selected chits, accordingly study subjects were recruited for this study only after obtaining written informed consent. By using this technique, 656 prescriptions were observed in 219 working days (11 months,

approximately twenty working days per month). Physicians were asked neither to change their routine-practice behaviors nor to selectively invite cough symptomatics for participation.

Exclusion criteria:

Established cases of Tuberculosis and unwilling patients to participate in the present study.

Patient Data Collection Form:

Demographic profiles of cough symptomatics along with associated clinical features presented by them as written in their prescription records were noted on the Case Record Form. From prescription records, type of drugs, type of investigations and referral to DOTS centre were recorded.

STATISTICAL ANALYSIS

Statistical analysis was done by using descriptive statistics. Data were collected in a predesigned Microsoft® Excel 2007. Continuous variables were presented as mean values \pm standard deviation (SD), and categorical variables were presented as percentages.

RESULTS

A total of 656 prescriptions were observed in Medicine OPD of RIMS over a period of 11 months from May 2013 to March 2014. Demographic information is depicted in Table no.1.

Table 1: Socio-demographic profile of the patients (n=656)

Age (in completed yrs.)	Number	Percentage (%)
15-25	179	27.29
26-35	189	28.81
36-45	141	21.49
46-55	61	9.30
56-65	65	9.91
>65	21	3.20
Sex		
Male	491	74.85
Female	165	25.15
Religion		
Hindu	262	39.94
Muslim	67	10.21
Christian	107	16.31
Sarna*	220	33.54
Ethnicity		
Tribal	308	46.95
Non-tribal	348	53.04
Area		
Rural	497	75.76
Urban	159	24.23

*A local religion of Jharkhand

Above table shows that more than one-fourth (189,28.81%) patients were in the age group of 26-35 yrs., followed by 15-25 yrs. age group

(179,27.29%) and 36-45 yrs. age group (141,21.49%). Very few (21, 3.20%) patients were in the age group of more than 65 yrs. This reflects that most (456, 69.51%) of the patients belonged to productive age group (26-65yrs.). Thus, the mean age group was 35.53 with standard deviation of 14.

When it comes to gender of the cough symptomatics, majority were males (491,74.85%) while one-fourth (165,25.15%) of the subjects were females. As far as religion wise distribution of cough symptomatics were concerned, more than one-third (262,39.94%) of the patients were Hindu followed by 220 (33.54%) patients, who belonged to Sarna. Only some of the (107,16.31%) patients were Christian followed by Muslim in (67,10.21%) cases. On the basis of ethnicity, over half (348, 53.04%) of the cough symptomatics were non-tribal and rest (308,46.95%) were tribal. Among the study population, majority (497,75.76%) of the cough symptomatics belonged to rural background and nearly one-fourth (159,24.23%) of the patients were from urban area.

Table 2: Distribution of patients on the basis of characteristic symptoms of TB (n=656)

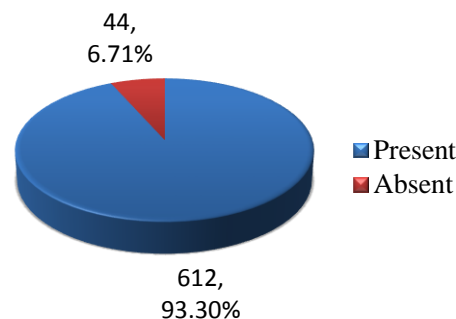
Nature of cough	Number	Percentage (%)
Productive	171	26.07
Non-productive	485	73.93
Presence of fever		
Yes	80	12.20
No	576	87.80
Presence of blood in cough		
Present	61	9.30
Not present	595	90.70
Recent loss of weight		
Present	68	10.37
Not present	588	89.63
Presence of chest pain		
Yes	55	8.38
No	601	91.62
Presence of any other symptoms like night sweats, weakness, loss of appetite, melena etc.		
Yes	62	9.45
No	594	90.55

In the present study, all patients having cough of ≥ 2 weeks were taken as study subjects. Among 656 cough symptomatic, productive cough was present in only (171,26.07%) cases. While majority (485, 73.9%) patients were having non-productive cough. Fever was present in (80,12.20%) cases. In few (61, 9.30%) of the cases, blood was present in cough. Recent loss of weight was noticed by (68,10.37%) patients and chest pain was present in (55,8.38%) patients. Other symptoms like night sweats, weakness, loss of appetite, melena etc. was present in only few (62,9.45%) of the study subjects.

Table 3: Medication given by Medicine OPD to cough symptomatics (n=656)

Medication written at Medicine OPD	No. of prescription	Percentage (%)
Antibiotics	220	33.54
Antiallergic	78	11.89
Antipyretics	121	18.45
Multivitamins	66	10.06
Combination of two or, more medicines (mentioned above)	171	26.07

After observing prescription, it was revealed that antibiotics, antipyretics and antiallergics were present in (220,33.54%), (121,18.45%) and (78,11.89%) prescriptions respectively. Multivitamins were prescribed in (66, 10.06%) prescriptions. Combination of two or, more medicines were present in (171,26.07%) prescriptions.



Graph 1: Presence of any investigation prescribed in OPD slip (n=656)

From the above graph, almost all (612,93.30%) prescriptions carried one or, more investigations. Only (44,6.71%) prescriptions did not carry any investigation.

Table 4: Type of investigation prescribed in OPD slip (n=612)

Type of investigation	No. of prescription	Percentage (%)
Referred to DOTS centre for sputum smear examination	212	34.64
Chest X ray	92	15.03
Other blood test(TC, DC, ESR, Hb%, Peripheral blood smear)	260	42.48
Multiple(All of the above)	48	7.84
Total	612	100.00

Out of 612 prescription, approximately half (260, 42.48%) of the patients were referred to DOTS centre for sputum smear examination. Chest X-ray was prescribed in (92,22.87%) prescriptions. In over half (260,50.32%) of the prescriptions, other blood

tests (TC, DC, ESR, Hb%, Peripheral blood smear) was prescribed. According to RNTCP guidelines⁽¹⁷⁾, all cough symptomatic must be referred to DOTS centre for sputum smear examination. But this protocol was not followed in the present study.

DISCUSSION

Medication problem is potentially tragic and costly in both human and economic terms for patients and professionals alike. In health care settings, there are many problems regarding drug administration which includes errors in prescribing and transcription.⁽¹⁰⁾ The irrational use of drugs both by prescribers and consumers is in fact a global problem which can be assessed by a standardized method of prescription analysis.⁽¹¹⁾ One of the ways of assessing prescribing practices is prescription audit, with which prescriber get regular feedback about their prescriptions.

In the present study, age-wise distribution of cough symptomatics revealed that most (456, 69.51%) of the patients belonged to productive age group (26-65yrs.). Thus, the mean age group was 35.53 with standard deviation of 14. This may be attributed to the fact that productive age group persons are the bread earners for their family so, they used to ignore the early symptoms being entangled in various household responsibilities and liabilities.

In a similar study by **Karanjekar et al** carried out among chest symptomatics in urban slums of Aurangabad city, India⁽¹²⁾ observed that out of total 105 chest symptomatics, 24.8% chest symptomatics were in the age group 15-24 years, followed by 21.0% in 25-34 years age group. Similar results were observed in a study by **Sudha et al** in 2003.⁽¹³⁾ Another study by **Nair et al** in 2002⁽¹⁴⁾ observed 29.7% chest symptomatics in 15-24 year age group followed by 24.6% chest symptomatics in 25-34 year age group and a study in Karnataka⁽¹⁵⁾ observed that 18.4% of the chest symptomatics belonged to 15-24 year age group (**Jagot et al, 1999**).

When it comes to gender of the cough symptomatics, majority were males (491, 74.85%) while one-fourth (165, 25.15%) of the subjects were females. This could be due to more exposure of males to outside environment, which gives greater chances to come in contact with infectious TB patients. And females often used to ignore their initial symptoms due to their responsibilities towards their families as well as children.

Similar finding was also observed by **Jethani et al** among cough symptomatic at Dehradun⁽¹⁶⁾ that maximum study subjects were male i.e. 74.9% as compared to 25.1% females. Similar male dominance for pulmonary tuberculosis was found in studies conducted by **Aarti Kaulagekar and Anjali Radkar**⁽¹⁷⁾ to assess tuberculosis scenario during National family health survey-2, in which they

found percentage of male versus female as 57.8% and 42.2% respectively.

As far as religion wise distribution of cough symptomatics were concerned, most of the patients were Hindu and Sarna (73.48%). This finding is in accordance with the religion wise distribution of the population in the state. Hinduism is the predominant religion of the State (68.6 per cent) but Hindu tribes constitute only 39.8 per cent.⁽¹⁸⁾ On the basis of ethnicity, over half (348, 53.04%) of the cough symptomatics were non-tribal and rest (308, 46.95%) were tribal. According to 2001 census, tribal population of Jharkhand constitutes 26.3 per cent of the total population of the state. And in Ranchi district only, 41.8-44.6% of tribal population are present⁽¹⁸⁾.

In a similar study conducted by **Jethani et al**⁽¹⁶⁾ reported that 74.3% of subjects were Hindus and 16.9% were Muslims. While **Karanjekar et al** in their study among chest symptomatics in urban slums at Aurangabad city⁽¹²⁾ found that 35% were Hindu, 32% were Muslims, 32% were Buddhist and others were 1%.

Among the study population, majority (497, 75.76%) of the cough symptomatics belonged to rural background and nearly one-fourth (159, 24.23%) of the patients were from urban area. This could be due to the fact that out of total population of Jharkhand, 75.95% of people live in villages of rural area and only 24.95% of people live in urban area⁽¹¹⁾. In rural area, there is lack of qualified health care professionals and lesser availability of health services. In a study done in Jharkhand by **Haider S et al**⁽¹⁹⁾ revealed that majority (89.3%) of patients hailed from rural areas. Similarly, **Gupta et al**⁽²⁰⁾ in their study found that only 7.7% of study populations were from urban area and 91.4% study patients were from rural area.

In the present study, all patients having cough of ≥ 2 weeks were taken as study subjects. Among 656 cough symptomatic, maximum (485, 73.9%) patients were having non-productive cough. Fever was present in (80, 12.20%) cases. In few (61, 9.30%) of the cases, blood was present in cough. Recent loss of weight was noticed by (68, 10.37%) patients and chest pain was present in (55, 8.38%) patients. Other symptoms like night sweats, weakness, loss of appetite, melena etc. was present in only few (62, 9.45%) of the study subjects.

As cough is one of the cardinal symptoms of Tuberculosis. RNTCP⁽³⁾ has also defined PTB suspect as persons having cough of ≥ 2 wks. with or without other symptoms suggestive of tuberculosis. Several other studies (**Syed et al**⁽²¹⁾, **Jethani et al**⁽¹⁶⁾, **Karanjekar et al**⁽¹²⁾) conducted their study on cough symptomatic/chest symptomatics. Other symptoms like weight loss, chest pain was also present associated with cough in these studies. **Jha et al**⁽²²⁾ reported weight loss was present in 30.32% of study

subjects contrary to **Jethani et al**⁽¹⁶⁾ where weight loss was present in quite a high number of subjects (84.3%). **Q H Khan et al**⁽²³⁾ found that chest pain was present in 39.3% of cases while **Jethani et al**⁽¹⁶⁾ reported 85.6% of study subjects were having chest pain. Similar observations were made by **Chattopadhyay et al** (1986)⁽²⁴⁾ in his study at registered villages of RHTC, Jawan, Aligarh, in which they reported the presenting symptoms of pulmonary tuberculosis as follows: cough 97.05%, Fever 89.5%, haemoptysis 38.23% and chest pain 23.52%.

International study done by **Asefa A et al**⁽²⁵⁾ in Southern Ethiopia revealed that cough was the most important symptom that derived patients to seek medical care from the health centers. More than 63% of patients had complaints of cough as a major symptom triggering to seek medical care. This was followed by chest pain in 19% cases, hemoptysis (9.1%), night sweats (3.8%) and fever in 2.3% cases.

After observing prescription, it was revealed that antibiotics, antipyretics and antiallergics were present in (220, 33.54%), (121, 18.45%) and (78, 11.89%) prescriptions respectively. Multivitamins were prescribed in (66, 10.06%) prescriptions. It has been observed frequently that many doctors are adopting the concept of polypharmacy leading to a steep hike in the cost of the treatment as well as adverse drug effects.⁽²⁶⁾ Antibiotics are the most commonly prescribed drugs in most countries of the world including India where it varies from 24% to 67%. Similarly, a study done in Madurai by **Kankambal S et al**⁽²⁷⁾ reported around half (48.9%) of the OPD patients were prescribed antibiotics.

Almost all (612, 93.30%) prescriptions carried one or, more investigations. Only (44, 6.71%) prescriptions did not carry any investigation. Similarly, a study done in Ethiopia by **Soloman Y et al**⁽²⁸⁾ revealed that among 307 (30%) TB suspects who visited a public clinic or health post, only 48 (15%) reported to have been referred to the next level of health care for further investigation and management. The majority of TB suspects were sent home with antibiotics or analgesics.

Out of 612 prescription, approximately half (260, 42.48%) of the patients were referred to DOTS centre for sputum smear examination. Chest X ray was prescribed in (92, 22.87%) prescriptions. In over half (260, 50.32%) of the prescriptions, other blood test (TC, DC, ESR, Hb%, Peripheral blood smear) was prescribed. And multiple investigations were present in (48, 7.84%) prescriptions.

According to RNTCP guidelines⁽⁷⁾, all cough symptomatic must be referred to DOTS centre for sputum smear examination. *But this protocol was not followed in the present study.* In a study done by **L.Nshuti et al** in Uganda in 1999⁽²⁹⁾ observed that none of the public or, private clinics met all standards for appropriate tuberculosis care, 33.3% of public

clinics and 23.1% of private clinics prescribed the WHO recommended regimen.

In another study by **Raman et al**⁽³⁰⁾ conducted a KAP survey among medical practitioners in a backward area of South India indicated that there was overdependence on X-ray for diagnosis and disparities in treatment. **Baxi et al**⁽³¹⁾ also reported that 100 % general practitioners gave first preference to X-ray and ESR for diagnosis and only 57.7% gave second preference for sputum examination.

Similarly, **Singla et al**⁽³²⁾ did a random survey of K.A.P. for TB control among private practitioners in Delhi revealed that 78.5% relied on X-ray chest for diagnosis and sputum examination was neglected for initial diagnosis. **Uplekar et al**⁽³³⁾ also found similar finding.

CONCLUSION

Majority cough symptomatics were of 15-54 yrs. age group, males, Hindu and belonged to rural area. Fever, loss of weight, blood in sputum and chest pain were other clinical features associated with cough in some of the patients. Antibiotics were prescribed in nearly half of the prescriptions. Almost all (612, 93.30%) prescriptions carried one or, more investigations. Out of 612 prescriptions, less than half (260, 42.48%) of the patients were referred to DOTS centre for sputum smear examination. Chest X-ray was prescribed in (92, 22.87%) prescriptions. But according to RNTCP guidelines, all PTB suspects (cough symptomatics) should be referred for sputum smear examination.

RECOMMENDATIONS

- Early diagnosis and prompt treatment of cough symptomatics is very important for control of pulmonary tuberculosis.
- Physicians should strictly refer all cough symptomatics (those, having cough \geq 2 wks.) to DOTS centre for sputum smear examination.
- Prescription audit should be conducted regularly so that inappropriate usage of different medicines and investigations should be discouraged.

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