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GAP ANALYSIS OF TUBERCULAR SUSPECT REFERRALS TO A DIAGNOSTIC MICROSCOPY CENTRE IN A NORTHERN STATE OF INDIA

Community Medicine

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ABSTRACT

Sputum microscopy, the most reliable laboratory test for diagnosing Tuberculosis (TB) must be permanently accessible throughout the country and entails meticulous documentation. Recording and reporting from the TB laboratory registers provide critical management information. A hospital with very low referrals of TB suspect cases from the outdoor patient departments (OPD) to its diagnostic microscopy centre (DMC) but having large number of sputum examinations in this centre, pointed out to investigate for the reasons. Henceforth, the present study was conducted to analyze the sputum referrals and identify the gaps. The retrospective secondary data from the TB laboratory register of the DMC was analyzed. An alarmingly high 51.20 % of the total patients examined for sputum microscopy, were observed to be hailing from the peripheral regions where functioning DMCs already existed. The distant travel of TB suspects enhances the infectious pool in community and delays treatment. Follow up sputum microscopy, an important treatment guiding tool, when delayed, also hinders treatment protocol. Reasons for low OPD referrals from the hospital and high turnout of patients from peripheral regions must be investigated for in the region. Special emphasis should be laid over the probable poor service provisions by the DMCs at the peripheral regions.

KEYWORDS

Sputum microscopy, laboratory register, DMC, follow up, diagnosis

INTRODUCTION:

Infectious sputum comprising tubercular bacilli is implicitly responsible for majority of the tuberculosis disease transmission in the society. In India, the tubercular diagnosis from sputum in designated microscopic centre (DMC) is an integral part of Revised National Tuberculosis Control Programme (RNTCP). From the of evolution of National Tuberculosis Programme in 1962 to the full fledged Revised National Tuberculosis Programme (RNTCP) in 1997, the diagnostics of tuberculosis have gone through immense changes [1,2,3]. The success of RNTCP goals rely upon the DMC network of an area. There is one functional DMC per 50 000 in tribal and hilly areas to 100 000 population in general areas. Microscopy is first line diagnostic and treatment monitoring test except when Xpert MTB/Rif is available. Management of laboratory network is based on resources, the staff sensitization, political commitment, local autonomy and distances [4,5,6,7.] The work protocol of a DMC entails sputum collection, its processing and examination, recording and eventually reporting the results in laboratory register [8,9]. Moreover, the maintenance of results pertaining to detection and follow up of cases is the key to the tracking of patient compliance to the anti tubercular treatment [10, 11.] Review of laboratory records of a DMC of Himachal Pradesh, a northern hilly state of India, inferred very low outdoor patient (OPD) referrals from the district hospital housing this DMC. Contrarily, the DMC had a high load of sputum microscopy. Henceforth, the present study was undertaken with the objectives of (1) assessing the sputum referrals for diagnostic microscopy and (2) gap analysis of sputum referrals.

Methods: A retrospective hospital record based study was undertaken after seeking Ethics Committee clearance from a Medical College and securing permission from the district hospital health authority. The homogenous purposive sampling technique was employed. The largest hospital of the district i.e. Regional Hospital Solan, having the highest outdoor patients, was purposively selected for the study to capture the information about maximum of the patients attending the OPDS and thereafter being referred to the DMC as pulmonary TB suspects, for the sputum microscopy. One year sputum referrals to the DMC for the year 2017, elicited from laboratory register, were analyzed in IBMM SPSS version 21 and Microsoft Excel 2010 software. Descriptive epidemiology of the patients referred for sputum microscopy to the DMC was assessed. Situational analysis of the data was undertaken to study the distances from where the TB suspects were coming from and to investigate the presence of any DMC functioning in such areas.

Results: The perusal of data depicted in Table 1 inferred that a total of 1700 patients were subjected to sputum microscopy in the DMC of Regional Hospital Solan during the year 2017. Of these, 90.76 % were males and 9.24 % females. The mean age of the patients attending the DMC was 41.66 ± 36.17 years with the age range of one to ninety seven years.

The proportion of patients subjected for the microscopic detection of acid fast tubercular bacilli for initial diagnostic purposes was 89.23 %. Whereas, 10.77 % of total persons were tested microscopically during the follow up visits of their respective Directly Observed Treatment Short course therapy (DOTS) as per the national TB guidelines. Overall, a large proportion (51.20%) of tubercular suspects attending the DMC Solan either for diagnostic or follow up sputum microscopy, hailed from the peripheral areas where functioning DMCs already existed.

The population which was however being catered by the DMC Rajgarh of the adjoining district Sirmour, contributed to the tune of about 13.05% of all the referrals made to DMC Solan. Similarly, patients from other areas, although being catered by the DMCs Saproon, Nauni,

Table 1. Status of TB suspect referrals to DMC Solan, 2017

No. of areas of cases referred from	DMC of the region	TB suspects referrals					
		Diagnosis		Follow up			
		Male	Female	Male	Female	Total	Percent
16	Solan	664	67	110	6	847	49.82
26	Rajgarh	193	21	8	0	222	13.05
4	Saproon	106	11	13	1	131	7.76
12	Nauni	81	7	15	0	103	6.05
18	Narag	71	7	8	0	87	5.10
12	Kandaghat	61	5	5	0	71	4.17

7	Dharampur	50	7	2	0	59	3.47
11	Chopal	20	4	0	0	24	1.41
9	Shimla	15	3	2	0	20	1.17
8	Kupvi	15	3	1	0	19	1.11
6	Subathu	12	2	2	0	16	0.94
4	Medical college	11	1	1	0	13	0.76
14	Other areas	68	12	9	0	89	5.19
Total	1367	150	176	7	1700	100.00	

Narag, Kandaghat and Dharampur contributed to the proportion of 7.76, 6.05, 5.10, 4.17 and 3.47 % respectively in the overall sputum microscopy being conducted at DMC Solan. The TB suspects residing in the areas being catered by the DMCs of Chopal, Shimla, Kupvi, Subathu and Medical College also attended the DMC Solan for their sputum tests, either for diagnostic purposes or during the follow up of the anti tubercular treatment in the respective proportions of 1.41, 1.17, 1.11, 0.94 and 0.76 %. The Solan DMC was also being attended by many patients (5.19 % of all the referrals) from other areas which although were having functional DMCs, but for the reasons unknown were not catering to these patients.

The mean distance from where the pulmonary TB suspects were travelling to Solan DMC for sputum microscopy was 24.41 ± 36.17 kilometers (kms) with a range of 1 to 269 kms. These regions also included the adjoining district of Shimla and Sirmor. The Table 2 illustrates the distance of major areas from where the patients were coming to the Solan DMC for sputum microscopy. The DMC Saproon was just 3 kms away whereas, the DMCs of Kupvi and Chopal were a distant faraway (130 kms). The areas had a hilly terrain and transportation avenues were rare and costly.

Table 2. Distance of Peripheral DMC from DMC Solan (kms)

DMC	Distance from DMC Solan (kms)
Rajgarh	50
Saproon	3
Nauni	16
Naarag	22
Kandaghat	20
Dharampur	13
Chopal	130
Shimla	56
Kupvi	130
Subathu	19
Medical college	20

DISCUSSION:

The present study was a gap analysis of the high numbers of sputum microscopy being conducted in a DMC of a hospital which itself however, was contributing to very low referrals for microscopy from the OPDs. A large proportion of patient travelling to a DMC from distant places for sputum microscopy although their respective regions were having functional DMCs hint out at huge gaps of the sputum microscopy services being provided at the peripheral levels. Cai et al. (2015) [12] in a study also had cited various reasons for distant travel of patients, about the patient delays and the service provider delays. Similar results have been observed in other studies also (Peri et al., 2018 and Gothankar et al., 2016) [13,14] wherein the diagnostic delays in TB were analyzed. Similarly, Nturibi (2010) [15] had analyzed the TB laboratory registers and had depicted the district level TB referral scenario. The distant travel of the presumptive TB cases not only entails the diagnostic delay but also is responsible for delayed onset of treatment. The long travel also exposes others to this communicable air borne disease. This overall augments in enhancing the infectious pool of tubercular bacilli in the community. Illangovan et al. (2015) [16] in a study conducted in India had elaborated the similar utility of the TB laboratory registers. Moreover, this also overburdens the patients with the cost of travel etc. The present study has also highlighted the low referrals from the OPDs to the microscopy centres (Palash et al., 2017) [17].

Conclusion:

It can be inferred from the study that the TB laboratory registers should be critically analyzed for any diagnostic gaps. The information retrieved from such a register in the present study had suggested about poor diagnostic microscopic services at peripheral functioning DMCs which thereafter probably could have been the reason for a large proportion of TB suspects getting tested at DMC of the district hospital only.

Recommendations: The reasons for the large number of referrals from the regions highlighted in the study should be investigated for especially in lieu of existing TB microscopy units in these regions.

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