IDENTIFICATION OF SOCIO-DEMOGRAPHIC FACTORS AND THE CAUSES OF POOR ADHERENCES OF URBAN DOTS IN BIRATNAGAR

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ABSTRACT

Background : TB is a major public health problem. Though Investigation and chemotherapy is free of cost we are still facing poor compliance and severe degree of disease among the poorly treated ones. We have tried to explore into reasons behind it.

Methodology : It was a retrospective cross- sectional study done at Biratnagar Sub-metro Politian City.

Result : People accept DOTS. They visit as early as they are referred but are diagnosed lately. They have multiple reasons to quit the treatment before completion.

Conclusion : We found that early diagnosis and proper counselling about the need of prolonged regime of treatment and its side effects are important factors in preventing transmission and poor compliance.

Keywords : TB, DOTS, HIV, BPKIHS, cases, defaulters

INTRODUCTION

TB is a major public health problem. It is neither the stuff between patient and doctor nor controlled with provision of drugs made fifty years back and diagnostic modality developed hundred years ago. In 2006 there were estimated 1.5 million deaths among TB in HIV-negative people and 0.2 million among HIV positives. DOTS remain the only hope to control this public health problem amongst the third world country, but poor implementation of DOTS could be a double-edged-sword. DOTS therapy consists of two months of health worker observed treatment, followed by six months of treatment collected weekly from health facilities (2HRZE/6HE).[1] Resistances to Mycobacterium tuberculosis is being man made phenomena rather than bacterial virulence.[2] DOTS is considered as the best strategy to provision

and monitoring of chemotherapy but is not free of limitations. It does not address multi-drug resistant TB and TB/HIV co-epidemic.[3] International efforts are towards these burning issues whereas proper implementation of DOTS at root level is being placed in a shadow. Though people react differently to TB all of them are afraid of it.[4] Despite implementation of DOTS for thirteen years, TB still remains as difficult-to-control. The growing burden of drug resistance and co-epidemic with HIV has made TB more complicated than it was ever thought. Adequate amount of drugs could not solve the problem as expected. Many pitfalls will never be solved by DOTS alone. Keeping this in view we had conducted a study with the following objectives to identify the socio demographic factors, health seeking behaviour and health services provision and the causes of poor adherence among cases in Biratnagar DOTS Clinic.

In South East Asian Region the estimated incidence of TB is 1.4 million cases every year. Most cases occur in the age group of 15-54 years, with males being

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disproportionately affected. The male/female ratio among newly detected cases is 2:1. The TB epidemic in the region is in constant flux due to variations in the quality and coverage of various TB control interventions, population demographics, urbanization, changes in socioeconomic standards and, more recently, the growing HIV epidemic.[5]

About 45% of population in Nepal is infected with TB out of which 60% are adults.[6] TB affects 40,000 people annually of which 50% will spread disease to others.[6] DOTS has been successfully implemented throughout the country since April, 2001. It is recommended as the "National Standard Care" in many countries for the treatment of tuberculosis but non-compliance to treatment is giving the patient a "chance to fail" especially when failure can be so devastating not only to the patient, but also to the community. The devastating consequences of failure are relapse, treatment failure, RAD, MDR-TB and XDR-TB.

By achieving global target of diagnosing 70% of new cases and treating 85% of them, we will be able to prevent 6000 deaths and reduce the transmission rate yearly. Currently, with 874 centers and 3117 sub centers, DOTS is being implemented throughout the country. Inspite of this, about 10% of cases present themselves as non adherent. By keeping patient alive and failing to cure them, poor treatment augments the spread of TB and proportion of drug resistant cases. Non adherence is a multi factorial phenomenon. Adherence is the series of responsibility among patients, health care workers and society. Drug resistant TB is unavoidable in near future unless major steps are taken immediately. Four national surveys of anti-tuberculosis drug resistance have been undertaken in Nepal. The first carried out in 1996 showed a prevalence of 1.1% of multidrug resistance in patients never previously treated for tuberculosis. This prevalence was 1.0% in 1999, 1.3% in 2001 and 2.9% in 2006.[7]

As we keep on solving these problems we will be facing new problems. Hence, exploring our knowledge beyond microbiology, pharmacology and internal medicine is important.

METHODOLOGY

It was a cross- sectional study carried out for 15 days from 01/04/006 to 15/04/006. The study was carried out in Biratnagar, where DOTS is run by a non-

governmental organization, National Anti tuberculosis Association (NATA).The site and duration was chosen according to our convenience. Pre tested questionnaires containing close ended questions were used to collect information from TB cases and defaulters.

The questionnaire was prepared in English and translated in Nepali. All interviews were carried out after receiving the informed consent. TB cases were interviewed at DOTS centres and sub centres when they came for chemotherapy. Defaulters were traced out with the help of local personnel and were interviewed at their residences. Fund and logistics support were provided by B.P. Koirala Institute of Health Sciences (BPKIHS).The study was carried out under the guidance of School of Public Health & Ccommunity Mmedicine, BPKIHS. Among the 176 cases, only 113 cases were interviewed due to various reasons like refusal of consent, absence at the time of visit, inadequate number of interviewer with respect to the number of sub centres etc. Among the 16 defaulters, 14 were traced out of which 2 denied the interview. The limitations of the study were recall bias of the cases, short duration of study and need of translator among the cases whose local language were other than Nepali.

RESULTS

Table1: Demographic factors among the interviewed patients			
Factors	Subclass	Cases (%)	Defaulter (%)
1. Category	CAT I	67(59.29)	7(58.33)
	CAT II	33(29.20)	2(16.66)
	CAT III	13(11.51)	3(25)
2. Age(years)	<15	06(5.33)	0 (0)
	15-60	97(85.84)	9(75)
	>60	10(8.83)	3(25)
3. Sex	Male	67(59.29)	7(58.33)
	Female	46(40.71)	5(41.67)
4. Religion	Hindu	93(83)	4(33.33)
	Muslim	13(11)	7(58.33)
	Buddhist	07(6)	1(8.34)
5. Marital status	Single	20(17.68)	0(0)
	Married	88(77.86)	9(75)
	Divorce	05(4.46)	3(25)
Total		**113.00**	**12.00**

(Numbers in the parenthesis indicates percentage)

Male outnumbered female in both cases and defaulters' category (Table 1). Majority of the cases were Hindus (83%) but most of the defaulters were Muslims (58.33%). The proportion of divorce was higher among defaulters (25%) than that among cases (4.46%).

literacy rate among defaulters was only 16.66%. Tobacco was the main substance used by both cases (45.13%) and defaulters (75%).

Table 2: Socio cultural factors among the interviewed patients			
Factors	Subclass	Cases (%)	Defaulter (%)
1.Family size	<4	15(13.27)	0(0)
	4-6	65(57.52)	59(41.66)
	>6	33(30.21)	7(58.34)
2.Over crowding	Yes	89(78.76)	9(75)
	No	24(21.24)	3(25)
3.Literacy	Literate	65(57.52)	2(16.66)
	Iliterate	48(42.48)	8(83.34)
4.Earning	Daily wages	51(45.13)	8(66.67)
	Monthly salary	29(25.66)	0(0)
	Self employed	20(17.69)	1(8.33)
	None	13(11.50)	3(25)
5.Substance abuse	Smoking	51(45.13)	9(75)
	Alcohol	38(33.62)	5(41.66)
	Drugs	04(3.53)	1(8.33)
6.Travel time to DOTS Clinic (in minutes)	<15	50(44.24)	00(0)
	15-30	52(46.01)	02(16.67)
	>30	11(9.73)	10(83.33)

(Numbers in the parenthesis indicates percentage)

Overcrowding was experienced by 78.76% of the cases and 75% of the defaulters (Table 2). Lliteracy rate among cases was found to be 57.52% but the

Table3 : Health related behaviour among the interviewed patients			
Factors	Subclass	Cases (%)	Defaulter (%)
1.BCG vaccination	Yes	88(77.87)	11(91.67)
	No	25(22.13)	01(8.37)
2.Gap between symptoms and seeking help (in days)	<15	46(40.70)	NA
	16-30	41(36.28)	NA
	31-45	03(2.65)	NA
	46-60	04(3.53)	NA
	>60	19(16.81)	NA
3.Gap between seeking help and diagnosis (in days)	<15	13(15.92)	NA
	16-30	20(17.69)	NA
	31-45	12(10.61)	NA
	46-60	41(36.28)	NA
	>60	21(18.58)	NA
4.Symptomatic Relief (in weeks)	<4	55(48.67)	NA
	4-6	27(23.89)	NA
	>6	31(27.43)	NA
5.Faith on DOTS Treatment	yes	98(86.72)	2(16.67)
	no	08(7.07)	8(66.66)
	no comment	07(6.19)	2(16.66)

(Numbers in the parenthesis indicates percentage)

Table 3 shows that most of the cases seek medical help within 30 days but our medical and laboratory facilities diagnose them only after 30 days. Most of the Cases have faith on the DOTS (86.72%) but most of the defaulters do not (66.66%).

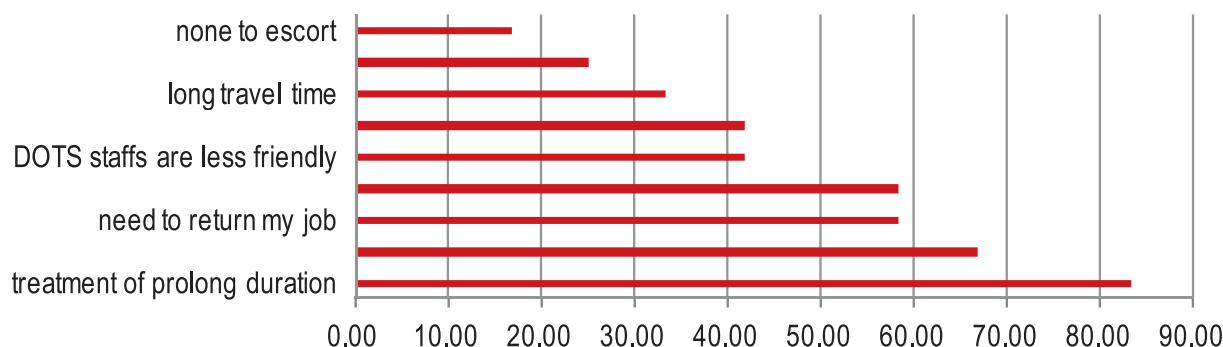## REASONS TO QUIT DOTS (IN %)

Fig. 1 Reasons for quitting DOTS among the traced drop out cases:

Above bar diagram shows that reasons for defaulting were multiple. The most common reported reason for defaulting was long duration of treatment (83.33%).

DISCUSSION

Like national demographic distribution, majority of cases belonged to CAT I (59.29%) and working age group (85.84%). TB is a disease of productive age group and majority of cases are infectious. About seventy eight percent were vaccinated. Different risk factors like overcrowding (78.76%), smoking (48.13%), and alcohol intake (33.62%) were present in the study subjects. About fifty eight percent of cases were found literate contradicting with the national figure. It could be due to health seeking behaviour among literates. This study showed that 83.33% of the cases were adherent to urban DOTS launched by an NGO. Similar results were found in Uganda with 81% adherence to community based DOTS and 48% to non community based DOTS by Byaranhanga et al.[8] P.G.Gopi et al found nongovernmental DOTS centre as a risk factor for poor adherence which contradict with our study finding.[9] Study in Kathmandu valley found a need of linking organisation between public and private sectors in treatment of TB patient.[10] NATA might have played bridging role, which could be the reason for good adherence. The associated factors among the defaulters were 58.33% male sex, 58.33% Muslim religion, 75% married, 83.34% illiterate and 66.67% daily wage workers. A study carried in 1997 in Islamabad found poor association between adherence with widow and divorcee.

The study conducted by P. Mishra,et.al.in a Western hilly district of Nepal concluded that the risk of non-adherence to TB treatment was significantly associated with unemployment (OR= 9.2), low occupational status (OR= 4.4), low annual income (OR= 5.4), and cost of travel to the TB treatment facility (OR =3.0).[11] Regarding accessibility, 33.33% of defaulters felt long travel time, 16.67% have no one to escort and 58.33% have to return to work place away from DOTS centre. Regarding knowledge, 25% never knew the duration of treatment, 58.33% thought microscopy negative means cure, 66.67% felt being cured after symptomatic relief. About forty two percent do not like chemotherapy for half a year due to side effects and same percent found DOTS staff being less friendly. P.G.Gopi et al found similar facts; among the non adherent, 67% have inadequate knowledge about treatment, 57% have difficulty in accessing health facility and 38% found DOTS staff less friendly.[9] A study carried by T.S.Bam et al found that 61% non adherent had insufficient knowledge about the need of taking drugs for more months after feeling better and 59% with long travel time.[12] A study by Garner et al among prisoners found that 60% of defaulters blamed the side effects of the drugs.[13]

The other very important finding of our study is lag period of about two months between health seeking behaviour and diagnostic modality. Following is the graph plotted from the factor number 2 and 3 from table 3 with x axis as duration in days and y axis as numbers of cases. In the graph health seeking behaviour is right skewed whereas the diagnosis is left skewed.
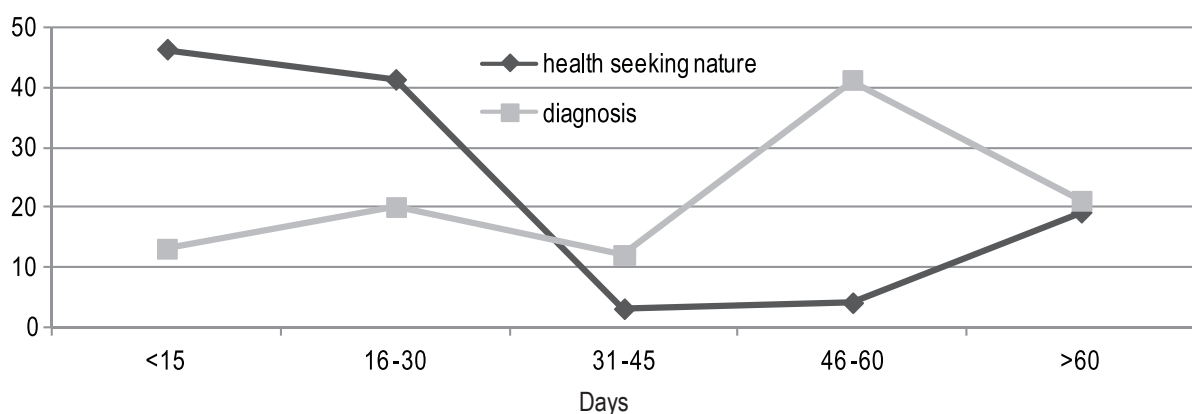
Fig. 2 Graph showing relation between health seeking nature and diagnosis

Health seeking nature before 30 days of symptoms covers more than 75% of areas whereas more than 75% of diagnosis falls after 30 days. There can be many explanations to it. As we know diagnosis is a multistep procedure involving sample collection, processing, reporting and report collection. So delay in any above steps could lead to delayed diagnosis.The delay could be due to late referral from local practioner or improper sample collection technique like three samples collected on third day, sample contaminated with saliva, postponding sample collection to office day if the third day is a public holiday etc. We neither have any screenning test nor have any diagnostic test that can diagnose all types of TB. We hardly culture specimen of the highly suspected stain negative patients; even if cultured the reporting is after six weeks. Our reporting system is not equipped with good technology and technicians. We are not being able to afford recent diagnostic methods. There is a chance of delayed report collection because most of the patients rely on daily earning and so they hardly want to lose a day for report collection. Whatever the reason there is a great impact on transmission of disease.

More than 75% TB cases will be spreading bacteria for two and half months since the first day of symptomatic presentation, provided the DOTS is started on them. Hence early referral or rapid diagnostic approach or both are very necessary to prevent this transmission.

CONCLUSION

DOTS was well accepted by TB patients in Biratnagar. Despite early help seeking nature they are received at the desk of DOTS lately. Lack of knowledge about the duration and the side effects had made the cases to quit the course before schedule.

RECOMMENDATION

In the race of achieving the global target we might be putting less effort regarding proper implementation of DOTS. We may be adopting the new internationally accepted methods without modifying socio cultural factors and addressing the factors not touched by DOTS. Non adherent and defaulters go on increasing unless we understand this as a multi-factorial phenomenon. Development of new drugs and rapid diagnostic methods will be important tools to control TB but the proper implementation of any programme at grass level is equally important. Early diagnosis and treatment are fundamental to tuberculosis (TB) control. Nevertheless, the effectiveness of TB management continues to be influenced by treatment adherence. The diversity of patients' attitudes towards the disease and the extreme variability of access to care, especially in resource-poor countries, are amongst the many factors of social context that profoundly affect the ability of control programmes to implement this policy effectively.

ACKNOWLEDGEMENT

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