Original Article

Treatment Compliance of Tuberculosis and Factors Associated in Bhaktapur District, Nepal

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ABSTRACT

Introduction: Tuberculosis is the worlds' most serious public health problem in spite of the availability of effective diagnostic and treatment. WHO recommended Directly Observed Treatment Short course (DOTS) as a new method of treating tuberculosis. The study was carried out to describe and identify the relationship between patient compliance in treatment and associated causes such as socio demographic characteristics, knowledge, perception towards tuberculosis, availability and accessibility of services.

Methods: A descriptive cross-sectional study was conducted from 1st November 2005 to 30th March 2006 in Bhaktapur District. Five treatment centers were selected for the study. The registered patients taking the continuous DOTS regimen were the respondent. The treatment centers were selected randomly and the respondent were selected purposively.

Results: Total of 50 interviews was conducted in the study. The range of age of the compliance was found from 6 to 72 years (mean age= 39) and most (84%) of the compliance of tuberculosis treatment were the age group of 15-49 year. Around 50% of the compliance was house wives and students. Most of the tuberculosis compliance have the education level primary (36%) to secondary (24%) and came from the middle level of economic status (<Rs6000/month). The mean commuting time to the DOTS clinic was 30 minutes (range 0 to 60 minutes). Majority (92%) of the compliance patients were more likely to have short traveling time (<30 minutes).Most of the compliance (90%) travelled by foot to visit in the DOTS clinic with bearing no travelling cost.

Conclusion: The compliance of tuberculosis in treatment and related factors were determined according to its objectives. Counseling and health education enhances the knowledge and motivates towards DOTS for completing full course. Accessibility and availability of the service are the major influencing factors for compliance.

Key words: Factors associated, Compliance, Tuberculosis, DOTS regimen, Treatment.

INTRODUCTION

Along with the advancement of science and technology, various kinds of fatal disease have challenged to the mankind. Tuberculosis is the world's most serious public health problem in spite of the availability of effective diagnostic and treatment measure. It is a disease of great antiquity and still a cause of suffering and death than any other bacterial infection Tuberculosis is an infectious bacterial disease caused by Mycobacterium tuberculosis.[1] Tuberculosis affects mainly lungs called as pulmonary tuberculosis. Eighty percentage of the tuberculosis cases are pulmonary. It also affects the organs accept lungs such as bones, intestine female pelvic organs (e.g. ovaries, endometrial), skin, brain and glands and called as extra pulmonary tuberculosis. Tuberculosis is the world's leading causes of death from a single agent.[2] Tuberculosis has become the number one infectious and killer disease globally. About one third of the world's population has been infected with mycobacterium tuberculosis. There are 16 million peoples living with tuberculosis. Every year about

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8 million new cases appeared and two million deaths occur due to tuberculosis in the world.[3]

It has the greatest impact on youth and adults and burden of tuberculosis is great and it affects directly the future of people and nation. On the other has become the most common cause of death. This population includes the most economically productive population in the society and parents on whom survival & development of the children depend. In one hand the social and economic hand we have very effective ant tuberculosis drug to cure this disease. World Health Organization (WHO) declared tuberculosis as a global emergency in 1993 and it advocated one of the most effective strategies available for tuberculosis control. WHO recommended Directly Observed Treatment Short course (DOTS) as a new method of treating tuberculosis. DOTS is the strategy for improving treatment outcome to control tuberculosis by giving drug to the patients under directly observation of health worker. DOTS have been found 100% effective to cure tuberculosis.[4]

Nepal, as a member of South Asian Region is not the exception to this global health problem. About every four out of ten cases worldwide live in this region. Bangladesh, India, Indonesia, Myanmar, Thailand and Nepal contribute more than 95% of regional cases. Every day more than 1500 people die from tuberculosis in this region. The situation is further complicated by the rapidly spreading of HIV/AIDS as pandemic and by the emerging drug resistant of tuberculosis. In Nepal tuberculosis is also an alarming public health problem. About 45% of total population is infected with tuberculosis, out of which 60% are of productive age group. Every year approximately 44,000 people develop active case of new tuberculosis and among them approximately 20,000 have infectious (smear positive) cases (and tremendous economic geographical and social barriers to case identification and treatment). Though tuberculosis is curable disease, mortality rate due to tuberculosis is high. It kills about seven to eight thousands people per year. Nowadays there are very good diagnostic tools like sputum microscopy and effective drugs are available everywhere in the world.[5]

In Nepal among the total infectious cases registered with the National Tuberculosis Programme (NTP), only one third has been reported to complete treatments. It is one of the important facts accountable for high mortality due to tuberculosis other factors contributing for high mortality are lack of awareness, poverty and other socio- economic and cultural causes. DOTS strategy was adopted in 1995 under NTP with the main aim of reducing mortality, morbidity and breaking the chain of transmission of tuberculosis.[6] In the beginning, Dots was initiated by establishing four demonstration centers in Bhaktapur, Kailali, Nawalparasi and Parsa. DOTS has been successfully implanted throughout the country, by April 2001. Now, in Bhaktapur DOTS has approximately more than 90% treatment success rate though national treatment success rate has reached to nearly 85%.[7]

The aim of this study was to describe and identify the relationship between patient compliance and their socio-demographic characteristics, knowledge and perception towards tuberculosis, availability and accessibility of services regarding tuberculosis in Bhaktapur district.

In Bhaktapur district, there is one district hospital. One district public health Office, two primary health centers, seven health posts and twelve sub health post. Beside sanctioned governmental staffs, there are 189 female community health volunteers (FCHV).[9] The information related to public health activities are collected from sub health posts, health posts and concerned NGO's and Ingo's on monthly basis in HMIS format. The information related to tuberculosis control programme are reported in different types of forms and discussed in a seminar of tuberculosis, which is dropped every four months.

The compliance of patient in drug taking in most of developing country like Nepal is very low but the situation is improving after DOTS implementation. Under the DOTS the tuberculosis patient has to take 6 to 9 months regularly in order to get cure. Tuberculosis can be controlled if we can encourage high compliance of tuberculosis patient with treatment. The situation of compliance of tuberculosis patients in Bhaktapur district is increasing in comparison to other remote area of the country.[9] Therefore it is necessary to study the associate factors in compliance of tuberculosis patient with treatment so that the study will help to follow the result in other part of the country.

METHODS

A descriptive cross-sectional study was conducted from 1st November 2005 to 30th March 2006 in Bhaktapur District. Five out of 21 treatment centre and sub centers were selected for the study. 50 samples were taken

out of total 318 patients of tuberculosis who had been already registered in the DOTS center and sub center and continuously taking the treatment regimen. The treatment centers and the respondent were selected purposively. Data were collected through face-to-face interview with the patient who was compliance of tuberculosis treatment (DOTS) by using pre-tested structured schedule. Records of each treatment centers and sub centers (sub health post, health post, PHC and DHO) were reviewed for validity of the compliance on tuberculosis treatment. Permission was taken from district health office before conducting the study. Verbal consent from the respondents was taken before data collection. Data were analyzed by using the computer software SPSS 11.5.

RESULTS

Socio -demographic Characteristics and Compliance of Tuberculosis Treatment: A population plays an important role in the process of community as well as nation development. A demographic characteristic contains all aspects that are mainly an age and sex wise population, marital status, occupation, education and economical condition etc.

A total of 50 interviews were conducted in the study with the range of age of compliance was 6 to 72 years. (Mean age= 39). It was divided into four groups on the basis of child age (0-5) school going age (6-14), economically productive age (15-59) and old age ($\geq$ 60) years .The sex group was divided as male and female and similarly the marital status as single and married. Occupation was varied in different categories such as farming, labor, business, service holder and house wife and student. Educational status was categorized as illiterate, literate, primary education, secondary education and higher education (Table 1).

Knowledge on Tuberculosis and its Treatment: Regarding knowledge about disease and its treatments it was divided into some measure groups such as cause of tuberculosis, mode of transmission of tuberculosis, duration of treatment and impact of irregular in treatment of the tuberculosis. The knowledge was categorized as predisposing factors of tuberculosis, causes of tuberculosis, Mode of transmission of tuberculosis, Duration of full course, diagnosis of tuberculosis, impact of irregular treatment (Table 2).

Availability of Health Care Services and Compliance: Availability of health service such as availability of

drugs, presence of service provider, willingness on service providing, Service provider- patient relationship, service providing timing waiting time etc plays a vital role in compliance of tuberculosis treatment (Table 3).

Table 1: Compliance with treatment of tuberculosis according to age, occupation education and economic status

Characteristics	No. (N =50)	%
Age group		
0 - 5 years	0	0.00
6 – 14 years	2	4.00
15 – 59 years	42	84.00
$\geq$ 60 years	6	12 .00
Sex of compliance		
Male	28	56.00
Female	22	44.00
Marital Status		
Single	20	40.00
Married	30	60.00
Occupation		
Farming	4	8.00
Labor	12	24.00
Business/trading	4	8.00
Service (Private/government)	7	14.00
House wife/study	23	46.00
Education		
Illiterate	5	10.00
Literate	5	10.00
Primary school	18	36.00
Secondary school	12	24.00
Higher education	10	20.00
Illiterate	5	10.00
Family income Per month (in Rs.)		
$\leq$1000	12	24.00
1001-3000	15	30.00
3001-6000	14	28.00
> 6000	9	18.00

Accessibility to Health Care Facilities : Accessibility of service is the key principle of the primary health care. Accessibility of service is reflected by the travelling time for the service, cost bearing for the service, distance for service taking etc (Table 4).

Table 2: Knowledge on tuberculosis and its treatment

Knowledge statement	No. (N=50)	%
Predisposing factor of tuberculosis is smoking and alcohol	27	54.00
Causes of tuberculosis was microorganism	15	30.00
Mode of transmission of tuberculosis is droplet infection and respiration	35	70
Knowledge about duration of full course treatment is 6 -8 months	50	100.0
Tuberculosis is diagnosed with sputum examination	45	90.00
Impact of irregular in treatment seriousness of disease and death occur	47	94.00
Works after final sputum examination	46	92.00

Table 3: Availability of health care services and compliance

Characteristics	No. (N=50)	%
Counseling		
Yes	45	90.00
No	5	10.00
Availability of health education and discussion on problem in every visit		
Yes	42	84.00
No	8	16.00
Availability of health worker in every visit		
Yes	49	98.00
No	1	2.00
Willingness of service providing		
Yes	49	98.00
No	1	2.00
Availability of drugs		
Yes	50	100.00
No	0	0.00
Service providing time		
Before 10 o'clock	17	34.00
After 10 o'clock	33	66.00
Waiting time for service		
< 10 minutes	50	100.00
>10 minutes	0	0.00

Table 4: Accessibility to health care facilities and compliance

Characteristics	No. (N=50)	%
Traveling time for service delivery		
0-30 minutes	46	92.00
30-60 minutes	4	8.00
Transportation		
On foot	45	90.00
Public bus	4	8.00
Own vehicle	1	2.00
Traveling cost		
No cost	45	90.00
$\leq$ 10 Rs.	4	8.00
>10 Rs.	1	2.00
Distance of travel		
1-4 Km	47	94.00
4-8 Km	3	6.00

DISCUSSION

Tuberculosis control programs currently emphasize the DOTS strategy, promoted by World Health Organization (WHO) and International Union against Tuberculosis and Lung Disease (IUATLD). Direct observation and supervision of patients is assumed to be more effective than self administration to ensure that patients successfully complete the recommended six-to-nine month chemotherapy.

This study prevailed that of 50 interviews were conducted in the study with the range of age of compliance was 6 to 72 years. (Mean age= 39) Out of A total respondents, 84 % were economically productive aged group of 15 to 59 years with male and female ratio 1:1. There was no compliance under 5 years of age. Among the compliance 60% were married. Similarly the study showed that most of the compliance was economically productive age group. Around 50% of the compliance was house wives and students. Regarding the educational status 10% was illiterate and most of rest had the education level from primary (36%) to secondary (24%).About 46 % were house wives and student . The income ratio of total patients was range from Rs.300 to Rs.1, 00,000 per month. Most of the compliance on tuberculosis was found from the middle level income capacity (<6000).

Similar study done in Kailali district reported that the mean age of the patients in the study sample was 35.9 years. The largest age groups were those between

15 and 34. The complain sample was sample was 64.1% were male, 83.1% were married, 40.8% were farmer, and 40% were illiterate.[10]

Regarding the knowledge on tuberculosis and its treatment, the study showed that most of the respondents (>80%) have good knowledge on the cause of tuberculosis (i.e. Alcohol and smoking is the predisposing factors and microorganism is main cause of tuberculosis). 70 % had the good knowledge on mode of transmission (i.e. respiration and droplet infection). Most of the respondent (90%) had the knowledge on for diagnosis of tuberculosis by sputum examination and sent percent (100%) respondent had correct knowledge on course of duration of treatment (6-9 month). Similar study done in Kailali district[11] showed that very few compliant (37.7%) were aware of the causative agent of tuberculosis. Coughing for two weeks or more was the most commonly cited symptom of tuberculosis for (80.8%) Compliant patients, (71.5%) stated that tuberculosis is spread by droplets. Similar study had done in Banke and Surkhet district[12] showed that compliance (27%) had good knowledge on Cause of tuberculosis and its mode of transmission.

Success in tuberculosis detection and treatment requires specific behaviors from patients and health care providers within contexts that facilitate those practices. Promoting adherence by directly observed treatment is much more important than expanding resources on defaulter tracing which is difficult and often unproductive, especially in poor countries.

Another important finding in our study is that the availability of DOT provider and the quality of healthcare provider-patient interaction accounts for differences in treatment adherence (Table 3). Almost (85-90%) of compliance of tuberculosis treatment was likely to be received counseling and health education in their every visit in DOTS centre. More than 98% of the compliance got the DOTS service in every visit with the health willingness of health worker for providing the service regularly in any time without waiting more than 10 minutes.

Similar study done in Kailali district[13] reported that almost compliant patients were likely to be received health education in their every visit to DOTS centre. Study in South Africa[12] has reported that the quality of the health practitioner-patient maintained counseling.

Another important finding of the study was accessibility of service. Distance to the clinic for patients ranged from 1 to 8 Km with a median of 2 Km. The mean commuting time to the DOTS clinic was 30 minutes (range 0 to 60 minutes). Majority (92%) of the compliance patients were more likely to have short traveling time (<30 minutes). Most (90%) of the compliance patients had travelled by foot to visit in the DOTS clinic without bearing travelling cost.

Similar study done in Banke, and surkhet[11] explained that most of the (65%) patient had faced problem of travelling (>1 hr) for taking the DOTS service.

The present study illustrated that the major factors influencing compliance behavior with DOTS in the Bhaktapur district are educational status, knowledge about tuberculosis and its treatment, availability of DOTS provider and DOTS at every visit to the DOTS clinic, mode of transportation, and traveling time to DOTS clinic. In addition, education is closely associated with knowledge of tuberculosis and its treatment pattern.

CONCLUSION

It is worth mentioning here that this study was not resource concentrated and was accomplished in a short time frame. One of the basics of tuberculosis control is to enhance patient adherence, which is a multifaceted issue involving an array of barriers, some of which have been noted in this study. In this study the compliance of tuberculosis in treatment were determined. DOTS programme is the key point in controlling the Tuberculosis. So DOTS strategies to treat the tuberculosis patients had focused for the reduction of non compliance of tuberculosis patients with treatment .The objective of the study is to determine the motivating factors for the high compliance in tuberculosis treatment. In the study district, patients' educational level, awareness to disease and closely linked to improving compliance with DOTS. Targeting the tuberculosis services to make it more acceptable and accessible to users, such as offering of different 'DOTS 'options, or expanding tuberculosis service near to the patients' home would be considered in improving adherence. Counseling and organizing health education sessions at the DOTS clinic enhances the patient's motivation and knowledge towards DOTS therapy to complete full course of tuberculosis treatment. Accessibility, and availability of the service are the major influencing factors for high compliance.

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