CHAPTER VI

DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1 DISCUSSION

The objectives of this study were to identify the proportion of sputum smear positive tuberculosis patients who did not comply the treatment and the factors associated with noncompliance of treatment among those sputum smear positive tuberculosis patients. To find out those factors a study was conducted among 190 sputum smear positive tuberculosis patients aged between 15-70 years (mean age = 38.97 years) who were treated between January 1997 to August 1999 at Keshabpur sub district hospital, Jessore, Bangladesh.

The result of the study showed that 70.5% of the Sputum smear positive tuberculosis patients complied treatment while 29.5% patients failed to comply treatment. Costa JSD and et al found in their study that 20% of the tuberculosis patients failed to comply treatment. [40] The proportion of noncompliance patients in this study was 9.5% more than their study. This might be due to difference in country perspective. As Bangladesh is a least developed country (LDC) where as the study was conducted in Brazil which was a developing/developed country. Moreover the factors analyzed in this study were not exactly the same in their study, which might be a cause of difference in the rate of noncompliance among the tuberculosis patients between the studies.

In the study among those who failed to comply treatment, 20 patients (30.7%) missed drugs for 2 weeks or more than 2 weeks, 28 patients (50%) missed doses of drugs sporadically and 8 patients (14.3%) after missing an appointment never returned again for treatment.

DEMOGRAPHIC AND SOCIOECONOMIC FACTORS :

No significant association was found between treatment outcome and different age groups of the TB patients (p = 0.388). Result from another study showed that there was a tendency to higher cure rates and lower default rates in younger age group. The differences found were not significant except for lower default rates in young groups (x^2=4.19;p < 0.05) and higher cure rate in young males (x^2=3.9;p < 0.05). [45] This study also showed that rate of default (non-comply) were more in the older age group of patients than younger groups.

The study findings showed that there was no significant association between noncompliance of treatment and sex of the TB patients (p = 0.171). But analysis of data by only one study found that male patients (n = 371) had a significantly higher default rate (52.3% vs. 39.9%; x^2= 7.94; p <0.01) and likewise significantly lower cure rate than female patients (n = 198; 42.8% vs. 53%; x^2 = 5.4; p < 0.025).[45] No other report on sex specific default was found in any other study.

In this study, findings showed that 36.7% of the females failed to comply treatment, which was 26.2% for the male patients. This may be due social, cultural and religious barriers persisting in Bangladesh which prevented the women community from going

outsides and taking different opportunities from the society in contrast to their male partners.

No significant association was found between treatment outcome and marital status of the patients (p = 0.102). But it was found that married patients non-complied more (32.1%) than unmarried patients (17.6%). This may be due to more familial and social responsibilities rendered upon the married people which prevented them from regular and timely intake of anti tubercular treatment. No other study was found to illustrate the association between marital status and noncompliance of treatment.

37.9% of the respondents had no formal schooling (Illiterate), 32.6% had attended only primary school (upto 5th class), 24.2% had gone to high school (from 6th to 10th class) and only 5.3% studied at the college level.

Among the patients, those who were illiterate (no formal education and can not read and write) showed more noncompliance of treatment (47.2%) than those who were literate (18.6%). A significant association was found between educational level and treatment outcome among tuberculosis patients (p < 0.001) which was also found in the study of West-away MS, who found that knowledge of the disease was clearly better among the educated patients and they complied treatment regimen more easily than the illiterate patients.[41] The literate patients were more conscious about their health. So they complied treatment more than illiterate group.

A large proportion of the patients (80%) worked as day labors, farmer/agriculture and self-business (patty shop, vegetable shop, cobblers and weaving) and 20% of the respondents were housewives.

No association was found between noncompliance of treatment and occupational status of the tuberculosis patients (p = 0.061) which is needed to be evaluated by conducting such type of study in other parts of the country but study finding revealed that rate of non-compliance were more among day labor and house wife (40.0% and 39.5%) than farmer/ agriculture and people doing self business (25.4% and 18.4%). This might be that day labor people had to go outside daily for their earnings in order to earn livelihood. So they might miss appointment and were the victims of noncompliance. Similarly the housewife had to look after their husband, children, father, mother and other members of the family, had to do most of the household works in rural Bangladesh. So they might forgot taking drugs and even miss hospital appointment.

In the study patients belonged to hindu religion non-complied more (33.3%) than muslim though there was no significant relation with religion and noncompliance of treatment among tuberculosis patients (p = 0.551).

In the study 76.3% and 23.7% patients belonged to upper and lower class group of families. (Classified according to the monthly in come of the patient's family). Median income of the patient's family / month was 6000.00 Takas. Proportion of non-compliant patients were more among lower class income group (35.9%) than higher class group of patients (8.9%). Statistically significant association was found between monthly income of the patient's families (p < 0.001) and noncompliance of treatment. Statistically significant association (P = 0.01) was also found between monthly family income and noncompliance of treatment by Barnhoorn F and et al in their study. [39]

Although anti-tubercular drugs are given free of charge, additional costs such as the fare of transport or the loss of daily wages can become insurmountable.

In the National Tuberculosis Control Program patients / patient's attendant had to attend the hospital every weekly for the first 2 months in the intensive phase and every fourteen days after for next six months in the continuation phase to collect the drugs. So they had to pay more money as the fare of transport and had to loss daily wages. This may be the cause of more noncompliance of treatment among lower class income group of patients.

Mull and et al, have pointed out in their study on Pakistani leprosy victims that economic and social aid appears to be a valuable tool in reducing the number of treatment defaulters among poor class people.[42] Patient whose disease was brought under control was given an interest free loan to help him / her to establish a house hold and / or means of earning a livelihood so that he could complete treatment.

ACCESS BARRIER FACTORS :

Significant association was found between distance of the patient's home and noncompliance of treatment (p = 0.046). A long home to hospital distance has been an well recognized risk factor for noncompliance among tuberculosis patients which were revealed by other studies.[43, 44] A study by Vanderwerf TS and et al, found significant association between longer home to clinic distance and higher default rates among TB patients. In their study 273 patients were defaulted (48%) out of 569 TB patients due to long distance from home to clinic (x^2 = 30.5; p < 0.0001). [45]

Out of 190 patients who replied about visit by health worker during treatment, 41.2% patients non-complied treatment who were never visited by the health worker where as 20.0% patients failed to comply who were visited by health worker at different times during treatment (p = 0.002). This findings correlate with the findings of another study where it was found that out of 33 patients only 10 patient was visited by liaison health worker (33.3%) and the rest 23 patients were not visited by them (69.7%).[45]

Because of their primary contact with the patients, health care providers can strongly affect the patient's commitment to a correct regimen and regular use of drugs by means of clear communication that can reduce the rate of noncompliance among TB patients.

Patients who missed hospital appointment on one or more times non-complied more (53.7%) than those who never missed hospital appointment (5.3%) (p < 0.001).

73.1% patients failed to complete treatment due to irregular and poor supply of drugs, 66.7% for lack of well behavior and 42.9% for charging money for treatment where as only 3.7% patients failed to complete treatment who felt no problem from hospital during treatment (p < 0.001). This means system of good service delivery, well behavior and regular supply of drugs are the important factors which are solely responsible from the providers point of view to reduce the noncompliance of treatment among the tuberculosis patients.

77.5% patients failed to complete treatment who had to buy drugs from outside in contrast to 16.7% non-compliant patients who need not to buy drugs from outside (p < 0.001). This finding recommends the necessity of regular and timely supply of drugs from the hospital authority.

Patient compliance can be enhanced by an understanding and sympathetic attitude of health care providers.[46,47] It has been shown that patient compliance can be enhanced significantly in chronic conditions like hypertension.[48] Thus it can be strongly believed that commitment together with willingness by the service provider can improve the rate of noncompliance among TB patients.

Among 190 patients, 42.6% reported that they developed no physical symptom due to intake of anti-tubercular drugs, 25.8% developed nausea and vomiting, 21.1% reported of drug reactions (eg, hepatitis, diarrhoea, skin reactions, neurotoxicity like, paresthesia. Numbness, confusion and muscular pain) and 10.5% loss of appetite which were found similar to the studies mentioned in literature review.[32,33,34] Those who developed drug reactions, their information were kept recorded in the hospital documents and their treatment regimen was changed to other drugs. A strong association was found between development of symptoms due to intake of anti-tubercular drugs and noncompliance of treatment among tuberculosis patients (p < 0.001).

NEED FACTORS :

Patients who felt no clinical improvement after taking anti tubercular drugs were found to be more non-compliant (79.5%) than those who felt clinical improvement (14.4%) due to intake of anti-tubercular drugs (p < 0.001). This result is different from another study which showed that most patients dropped out of treatment when they felt symptom free usually 1 or 2 months after effective treatment.[49] Study by Teklu B showed that 21.5% of patients discontinued anti-tubercular drugs as they felt clinically improved than only 0.9% patients who felt lack of improvement on therapy.[28]

Patients who reported that they had no confidence on hospital treatment non-complied more (69.4%) than those who had confidence on hospital treatment (5.1%) (p < 0.001).

Among 67 patients (35.3%) who reported that they received alternative treatment, 73.1% became non-compliers and 26.9% were compliers. On the other hand among 123 patients (64.7%) who did not receive alternative treatment, 5.7% were non-compliant and 94.3% became compliant (p < 0.001).

No association was found between the place of alternative treatment and noncompliance of treatment (p = .057). But the findings of this study follows with the findings of Vanderwerf TS et al, where it was found that 54 TB patients (9.5%) out of 569, admitted having consulted traditional healers/herbalists, attended healing churches and visited other hospitals for treatment at the time of their treatment in Agogo hospital, Ghana.[45]

SOCIAL BARRIER FACTORS:

The study finding showed significant association between moved residence / homelessness and the noncompliance of treatment among TB patients (p < 0.001) which was also found in another study described in literature review.[27] Another study finding showed that out of 344 tuberculosis patients 288 (83.7%) patients obliged to move out of the area before completing 24 months of therapy.[29]

In the study Three- fourths of the patients (78.9%) received support from their families while one-fourth of the patients (21.1%) failed to receive support. Those who received support from their families, 13.3% failed to complete and 86.7% completed their

treatment. On the other hand among those who failed to receive support from their families, 90% were non-compliant and 10% complied the treatment (p < 0.001). Such type of findings were found in the study of Barnhoorn F and et al.[39]

Most of the respondents, i.e. 88.3% of the compliers and 11.7% of the non-compliers were backed by their parents/ brother/sister and children followed by spouses (83.9% vs 16.1%). Perceived social support from family members on cooperation with medical treatment is considerable. This fact might be intensified by great value, which is attached to family ties and marriage in Bangladeshi culture.

However, multiple logistic regression analysis revealed that there were only five independent variables, which significantly affected the noncompliance of treatment among tuberculosis patients. They were time took by the patients to visit hospital from their homes (p < 0.001), buying anti tubercular drugs by the patients from outside during the treatment period (p < 0.001), development of physical problems by the patients due to drug intake including drug reactions (p < 0.001), homelessness or moved residence during treatment (p = 0.022) and family support by the patients during treatment (p < 0.001).

In summary this study is just a first step in investigating the factors which affected the noncompliance of treatment among sputum smear positive tuberculosis patients under DOTS strategy in Bangladesh. Health policy makers can utilize the findings obtained from this study which will ultimately reduce the rate of noncompliance among tuberculosis patients in Bangladesh.

6.2 CONCLUSION

Noncompliers from tuberculosis treatment in Keshabpur Sub district hospital, Bangladesh experienced serious obstacles in achieving medical goals. Those individuals lived in poor socio-economic conditions, were in want of sound and correct health information, deprived of appropriate and well organized health service delivery system, lacked social support from family members and had an awkward relationship with their health care providers that prevented them from receiving better health service delivery and thereby failed to regain healthy life.

Health promotion investments like, social and economic aid, increased family support, training and regular supervision for health providers, good behavior and mental support by the service provider and family members among the tuberculosis victims, especially those with high-risk noncompliance features should stimulate patients to complete the treatment regimen. Areas of improvement needed to reduce the rate of noncompliance among tuberculosis patients would be administrative and organizational change and creation of awareness of the mentioned at-risk group through campaign by the help of mass media and community participation which was proved successful in the implementation of expanded program on immunization in Bangladesh.

6.3 RECOMMENDATIONS

- Patients detected as poor as well as underprivileged should be dealt with sympathetic attitude and if possible financial help should be rendered to them from the social welfare department of the Government.

- Distance of service is a component for patient compliance. It is a distance for a patient coming to a health facility. This factor was found to be responsible for noncompliance of treatment. So to overcome this problem anti-tubercular drugs must be supplied at each Union Sub Center that is close to the patient's home. That will lose less money by the patient, will not disturb his/ her daily work due to shortening of distance between hospital and home.

- The study findings showed that designated health worker rarely visited the patient's home during their treatment. To overcome this problem an intensive publicity campaign should be undertaken like 'National Immunization Day' to involve people in the tuberculosis control campaign locally to make awareness among them. At the same time recurrent and regular visit by the health worker to the patients home must be ensured. To make it successful a check list form may be supplied to each health worker with an instruction to visit the patient's home. He should be instructed to give his/her comments on each visit and also the patient's comments or the comments by his/ her relatives should be passed on that form regarding the treatment process going on and any other problem faced by the patient due to treatment. This type of administrative and technical restructuring of responsibilities for health worker might held them responsible for their job.

- Arrangements should be made for regular presence of respective staff responsible for anti tubercular treatment at the health facility or appointment of alternative staffs to minimize the date of missing hospital appointment by the patients to receive drug as was fixed earlier.

- To ensure regular and optimal supply of drugs to the patients there is a need to create reserve buffer stocks for drugs for a minimum period of six months so that patients need not to buy anti tubercular drugs from outside.

- Close cooperation with Government authorities at different levels and health care providers in charge of the tuberculosis control program at the Sub district level is to be ensured so that supply of drugs and logistics can be found available at all times as this factor was found to be responsible for noncompliance of treatment among sputum smear positive tuberculosis patients.

- The role of sub district hospital in tuberculosis treatment should be revised and reintroduced to complete the network with the hospital and the community in case finding, treatment and follow-up.

- Creation of the post of a psychosocial worker at the sub district level to provide psychological support to the patients during their treatment which will be helpful for them to become compliant to treatment.

- Health management committees, primary health care workers, other private sectors, religious groups, political leaders and other community leaders should be actively involved to find out the tuberculosis patients and helped the patient to complete the

treatment. This type of community participation was found to be successful in the implementation of Immunization program in Bangladesh.

- Direct observation of drug intake was not followed strictly. Self-administered treatment was an important cause of treatment failures. So before starting treatment one responsible person should be fixed for each patient to look after the daily intake of drugs till the end of treatment.

- Use of mass media, so that population can understand the natural history of tuberculosis, possible side effects of anti tubercular drugs, methods for its prevention, cure and importance of regular and timely use of anti tubercular drugs.

- Coordination and integration of tuberculosis control program with other primary health care programs.

- Strict supervision of the program activities at the sub district level.

- Monitoring the results of treatment and evaluate the progress of the program by means of quarterly cohort analysis.

- Provide regular training and refresher courses for the workers involved in this program.