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Public-Private Partnership for TB Control in Bangladesh: Role of Private Medical Practitioners in the Management of TB patients

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Abstract

Background: Despite enormous efforts, Bangladesh has one of the highest burdens of tuberculosis (TB) in the world. Treatment in the private sector is common and popular among TB patients in South Asian countries, including Bangladesh, even though the quality of diagnosis and treatment of TB patients has been shown to be poor in several such countries. The Bangladesh National Tuberculosis Programme (NTP) has recently shown considerable interest in exploring policy options to address this problem. Consequently, the NTP and non-governmental organization (NGO) partners planned to develop a public-private partnership (PPP) model for effective involvement of private medical practitioners (PMPs) in TB control. However, there was a lack of solid data on TB case management practice by PMPs, which was needed to appraise the potential role and contribution of PMPs in TB control. The purpose of the study is therefore to assess the knowledge, attitudes, and practices of PMPs on TB control in an urban setting in Bangladesh in order to inform development of a public-private collaboration model.

Methods: A cross-sectional study was carried out in four areas of Dhaka city involving the NTP and three NGO partners. A mapping of PMPs was carried out: of the 250 PMPs identified, 97 showed an interest in becoming involved in the public-private collaboration model and agreed to be interviewed. Information was also collected from focus group discussions with PMPs, and through a workshop.

Results: PMPs were not aware of the NTP-recommended regimen for treating TB: their prescribing patterns varied widely and were not related to the TB case categorization. X-ray was the preferred investigation of PMPs, who sent TB suspects to their preferred private-run laboratories for diagnostic tests. Virtually no PMP had knowledge of the Bangladesh national policy for TB control (based on the WHO Directly Observed Treatment Short course (DOTS) strategy), and the great majority did not know the locations of neighboring DOTS centers. The quality of care provided by the public sector was perceived as poor by PMPs, who were therefore reluctant to refer TB patients to the NTP.

Conclusions: There is enormous potential for improving TB treatment and control through partnerships between the NTP and PMPs, if the issues identified in this study are adequately addressed. PMPs must be encouraged to follow NTP guidelines for diagnosis and treatment. They should be motivated to refer patients to nearby DOTS centers. Proper training is required for PMPs to enhance their knowledge on diagnosis, treatment, and follow-up. Appropriate tools, protocols, and customized training packages need to be developed, focusing on appropriate diagnosis and treatment, including ways to refer patients to DOTS centers for diagnosis and treatment supervision.

Keywords: public-private partnership, tuberculosis, TB, PMPs, Bangladesh

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Introduction

Although over recent decades development indicators have been rising in developing countries, economic growth and disease control programs have not led to the elimination of infectious diseases (Brinkmann 1994, Banguero 1984). Communicable diseases still pose a serious threat, and affect the poorest disproportionately (Russell 2004), accounting for 25% of the disease burden in low- and middle-income countries, compared to only 3% in high-income countries. Eliminating communicable diseases would therefore dramatically close the mortality gap between the world's rich and poor populations (Cohen 2002).

The World Health Organization declared tuberculosis (TB) to be a global emergency in 1993, and it remains among the top 10 causes of global morbidity and mortality (Peabody et al. 2005). Thirty-two percent of the world's population is infected (Borgdorff et al. 2001). In 1997, 3.5 million new cases of TB occurred worldwide (Nshuti et al. 2001), increasing in 2004 to 8.9 million (WHO 2006). TB disproportionately affects low-income countries (Uplekar et al. 2001, Corbett et al. 2003), with the highest number of cases occurring in Asia (Borgdorff et al. 2001).

Private treatment is common and popular among TB patients in South Asian countries (Uplekar et al. 2001, Newell et al. 2004, Habibullah et al. 2004) despite the fact that publicly funded and delivered TB care manages TB more effectively than private TB care providers (Lonroth et al. 2003). Private medical practitioners (PMPs) are preferred because of their easier accessibility (in terms of convenient practicing hours and location), shorter waiting times, greater convenience and privacy, availability of doctors, and considerate staff attitudes (Quy et al. 2003, Rangan et al. 2004). However, the quality of diagnosis and treatment of TB patients by private practitioners is generally poor (Singla et al. 1998, Portero and Rubio 2003, Ayaya et al. 2003), and costs for patients are high, contributing to low cure rates, ongoing morbidity, and high numbers of chronic transmitters in the community (Uplekar et al. 1998, Prasad et al. 2002, Portero and Rubio 2003, Habibullah et al. 2004). The inappropriate practice of the private sector is therefore a great threat to the efforts of National Tuberculosis Programmes (NTPs) to control TB in many developing countries (Rangan et al. 2004).

Bangladesh introduced Directly Observed Treatment Short course (DOTS) in 1993. Despite enormous efforts to combat TB since then, the country still ranks sixth among the 22 TB high-burden countries. In 2001, the Bangladesh NTP estimated that 300,000 people or 0.25% of the population became ill with TB, while 70,000 (0.05% of the population) died of TB (NTP 2004). Although the HIV prevalence is still low, HIV poses a

threat to TB control. The HIV prevalence in adult TB patients was about 0.1%, as revealed in three limited surveys conducted in 1999, 2001, and 2006-2007. The MDR-TB rate among new cases of TB was estimated to be 3.6% among new cases and 19% among re-treatment cases (NTP 2008). About 75% of morbidity and mortality due to TB occurs in the economically active age group (15-45 years), hampering overall economic development of the country (MOHFW 1998). The 5-year Health, Nutrition and Population Sector Programmes have therefore identified the reduction of the burden of TB as one of its priorities (PIP 2003).

The private sector in Bangladesh is large and diverse, and continues to expand. There are 790 private clinics/hospitals, 42% of which provide services in Dhaka division (MOHFW 2003). Almost 12,000 hospital beds are available in the private sector, representing 26% of the total beds in Bangladesh. There are 24,000 registered physicians providing services in the private sector, they generally cluster in urban areas (Zafar Ullah et al. 2004).

The NTP has recently shown considerable interest in exploring policy options to involve the private sector in TB control. Consequently, the NTP and selected non-governmental organization (NGO) partners have planned to develop a public-private partnership (PPP) model for effective involvement of PMPs in TB control. However, there was a lack of solid data on TB case management practice by PMPs, needed to appraise the potential role and contribution of PMPs in TB control. In April to July 2004 we therefore conducted research aiming to provide a systematic analysis of TB case management by PMPs in Dhaka, their knowledge on DOTS, and their willingness to collaborate with the NTP, to inform the process of developing the PPP. This paper presents the findings of that study.

Methods

Setting: Dhaka city, the capital of Bangladesh, with an area of 860 km², is one of the most densely populated cities in the world with a total population of nearly 12.5 million. This study was carried out in four areas of Dhaka city. We selected areas purposively where the NTP and one of the NGO partners jointly ran their TB activities: Kamrangir Char and Dokkhin Khan areas (where the NGO partner is BRAC), Rampura (NGO partner PSTC), and Mirpur (PSKP). The population of the four study areas is around 1.5 million with 268,000 households. The target group of the study was registered PMPs.

The Bangladesh NTP provides strategic leadership for successful partnership and collaboration of private and other public healthcare providers. The main activities of the NTP include promotion of early detection of sputum smear-positive patients, diagnosis of TB other than smear-positive cases, organization of treatment delivery through Directly Observed Treatment (DOT) at all levels through community participation, provision of regular training and refresher courses to all staff involved in the NTP, and strengthening cooperation and collaboration between the Government of Bangladesh and NGOs involved in the control of TB.

Study Design: A cross-sectional study was carried out in the selected areas by a trained research team composed of members from the NTP and the local NGO partner. An exploratory approach was adopted for this study as information about the knowledge gaps of the PMPs, their attitudes and practices, and guidance for ways to involve them in the NTP was clearly lacking in Bangladesh. Approval was obtained from the Directorate General of Health Services, Ministry of Health and Family Welfare, Bangladesh, and from the NTP Technical Committee. In this study, PMPs were defined as private, fee-for-service-oriented medical doctors, trained in allopathic medicine and registered with the Bangladesh Medical and Dental Council. Their knowledge of the components of the DOTS strategy was assessed. TB diagnostic and treatment practices were evaluated on the basis of compliance with NTP recommendations. We recognized that to reflect the richness of the complex nature of the phenomena under study—knowledge, attitudes, and practices of PMPs—multiple perspectives were needed. Both simultaneous and sequential triangulations were applied combining independent yet complementary research methods: one-to-one direct interviews, focus group discussions (FGDs), and a workshop. FGDs (moderated small group discussion) with selected PMPs were carried out in parallel with interviews, whereas the workshop (thematic discussion with a large number of participants) was held following an initial survey of PMPs in the study areas.

Two field investigators and a field supervisor were recruited to carry out direct interviews, and to facilitate the FGDs and the workshop along with the principal investigator. They were given practical training for 4 weeks through lectures and classroom-based practice.

To provide a sampling frame, the research team, with the help of the NGO partners, conducted a mapping of PMPs who were located close to the designated DOTS centers. Each of the three NGO partners was requested to prepare a list of PMPs who were practising in the selected areas. Taking the DOTS center as the central point, the list of PMPs was made based on their

distance from the DOTS center and their relationship with the chosen NGO working in that area on TB control.

A total of 250 PMPs were identified in this process and were categorized into two groups. Group A had PMPs close to the DOTS center with a referral relationship with the selected NGO. Group B had PMPs who practised further from the central point and had only weak links with the NGO. Two field investigators used a questionnaire with these PMPs to collect basic information (address, specialization, telephone number, practicing hours), to explain the rationale, aim, and objectives of the partnership project to them, and to assess their willingness to join the collaboration process. During this initial questionnaire survey, it was explained that their role in the collaboration would initially involve participation in a one-on-one interview, an FGD, and a workshop, and to subsequently attend training sessions and to work jointly with NGOs and the NTP to provide TB care. A total of 97 PMPs expressed interest in participating in the entire process of partnership: we decided to interview all, of them. Confidentiality was assured, and informed consent obtained.

The two interviewers pretested the draft questionnaire in Rampura and Kamrangir Char, interviewing a total of six PMPs. The questionnaire was slightly modified on the basis of the pretest process and results. The reliability, validity, and accuracy of data were ensured through strict monitoring mechanisms, including random spot checks of field data.

Table 1 gives a list of major variables and indicators elucidated in the study, the sources of this information, and the data collection instruments. To interview PMPs, we used a pretested semistructured questionnaire that included questions on TB case management, knowledge of NTP activities, willingness to collaborate with the NTP, and PMPs' suggestions on how to improve NTP activities and how to facilitate the partnership mechanism. We also selected 24 PMPs, six from each area, to participate in FGDs. An FGD was conducted in each area: each FGD included three PMPs from group A and three from group B. The principal investigator participated as the moderator. Issues discussed included the PMPs' knowledge of TB diagnosis, TB regimen, referral and follow-up mechanisms, the components of DOTS, the locations of DOTS centers, and levels of satisfaction regarding NTP activities.

Table 1. List of Variables, Sources of Information, Data Collection Instruments

Major Variables/Indicator	Method of Collecting Information	Data Collection Instrument
<i>General characteristics of the PMPs:</i> Sex, specialty, type of chamber	<ul style="list-style-type: none"> • Direct individual interview 	Semi-structured questionnaire
	<ul style="list-style-type: none"> • 	
<i>Knowledge of the PMPs:</i> Services provided by NTP, TB diagnosis, TB regimen, DOTS, methods of follow-up treatment of TB patients	<ul style="list-style-type: none"> • Direct individual interview • FGD • Workshop 	Semi-structured questionnaire; FGD notes; workshop proceedings
	<ul style="list-style-type: none"> • 	
<i>Attitudes of the PMPs:</i> Level of satisfaction regarding NTP activities, willingness to adopt NTP guidelines, and interest to participate in a public-private partnership	<ul style="list-style-type: none"> • Direct individual interview • FGD • Workshop 	Semi-structured questionnaire; FGD notes; workshop proceedings
	<ul style="list-style-type: none"> • 	
<i>Practices of the PMPs:</i> Practising hours, average number of suspected TB patients seen per month, type of diagnosis referred, preferred lab and X-ray clinic, tracing of defaulters	<ul style="list-style-type: none"> • Direct individual interview • FGD • Workshop 	Semi-structured questionnaire; FGD notes; workshop proceedings

The research team identified some incomplete responses to the questionnaire, and apparent conflicts between outcomes of interviews and FGDs. This indicated the need for follow-up discussions with PMPs to clarify such issues. We therefore organized a workshop including PMPs, policy makers, and health professionals involved in the TB control program.

Since the workshop was held for two purposes—information collection and consensus building for project preparation—all 97 PMPs were invited to attend: 40 PMPs finally participated. In the workshop, each of four groups containing 10 PMPs discussed one of the following themes:

- i) current practices of PMPs in TB case detection and treatment;
- ii) processes to establish a mechanism for involving PMPs in the NTP;
- iii) protocols, guidelines, and tools for greater participation of PMPs in TB control;
- iv) the role of the NTP in strengthening private sector participation in TB control.

Outcomes from the workshop were recorded using flip charts produced by participants, together with the field investigators' and the supervisor's notes.

The research team compiled a database incorporating the responses and recommendations from interviews, FGDs, and the workshop. Qualitative data were coded and analyzed using a thematic approach. Quantitative data were analyzed using SPSS. Bivariate tables, averages, and percentages were calculated for comparisons.

Results

The general characteristics of the respondents are shown in Table 2.

Table 2. Characteristics of PMPs Interviewed (n=97)

Characteristic of PMPs	Number (%)
<i>Sex:</i>	
Male	85 (88%)
Female	12 (12%)
<i>Specialty of the PMP:</i>	
Medicine	51 (53%)
Child Specialist	12 (12%)
Ph.D/MS/MPH/M.Phil	9 (9%)
Obstetrics and Gynaecology	7 (7%)
Only MBBS and Other	18 (19%)

<i>Type of chambers:</i>	
Clinic in pharmacy	74 (77%)
Polyclinic	9 (9%)
Free standing clinic	11 (11%)
NGO Clinic	3 (3%)
<i>Practicing hours per day:</i>	
<3	36 (37%)
3–5	53 (55%)
>5	8 (8%)

Respondents' Knowledge about TB Control: Responses to the interviews and FGDs demonstrated that there was a substantial knowledge gap among respondents about DOTS and the services provided by the NTP. In the interviews, one-third of total responses were an open acknowledgement of ignorance about the components of DOTS and the NTP's activities: a further third stated that the NTP was providing only free anti-TB drugs. The full data are shown in Table 3.

Although respondents had good knowledge about the symptoms of TB, most of them were not aware of the NTP-recommended regimen for treating TB. The findings of the workshop indicated that very few respondents had knowledge about DOTS, as DOTS is not a part of the medical curriculum, or knew the locations of DOTS centers near their practices.

Respondents believed that the patients were not receiving good quality TB care from the NTP. During the interview they were therefore asked to suggest ways in which the NTP services could be improved 23% suggested that access to TB care should be enhanced by increasing the number of clinics, especially in poor areas. A similar percent mentioned that regular follow-up with TB patients would improve services. They also recommended ensuring a regular supply of free medicine (15%), making pathology services available (15%), developing collaboration between public and private providers (8%), and training of technicians and service providers (8%) to improve TB services.

Table 3. Respondents' Knowledge about Current TB Care

PMPs' knowledge on NTP/DOTS activities	Percent of Responses, by Area ^a				
	Mirpur	Dokkhin Khan	Rampura	Kamrangir Char	Total
Do not have clear idea about NTP/DOTS activities	32	42	53	29	37
<i>Correct knowledge:</i> <ul style="list-style-type: none"> • Three or more elements of DOTS, including free drugs and diagnosis using sputum microscopy • Urban Primary Health Care Project (UPHCP) NGOs provide TB treatment in urban areas 	43	7	4	43	25
	6	0	0	0	3
<i>Incorrect knowledge:</i> <ul style="list-style-type: none"> • NTP only provides free anti-TB drugs • NTP runs only awareness (IEC) activities 	19	47	43	28	34
	0	4	0	0	1
Total	100	100	100	100	100

^aCalculated as number of responses in each category/total number of responses.

Attitude Towards Collaboration with NTP: It was apparent in group discussions and the workshop that respondents perceived the quality of care provided by the public sector to be poor, and were therefore reluctant to refer TB patients to the NTP. When asked during the interviews, the vast majority of PMPs (90%) said it would be possible to follow NTP guidelines if appropriate training was provided to them. 52% said that they would be able to introduce DOTS at their practice. However, they argued that maintaining TB treatment cards and follow-up of TB patients would not be feasible because of time constraints (35%), lack of skilled manpower (25%),

heterogeneity in service provision (5%), and problems relating to storage and distribution of drugs (11%).

As this study was carried out to inform development of a PPP for effective involvement of PMPs in TB control in Bangladesh, the study explored the views of the PMPs on how to develop an effective mechanism of collaboration. In response to an open-ended question during interviews, the PMPs recommended that awareness-raising activities and media campaigns, regular meetings of PMPs with the NTP, supportive supervision, and uninterrupted free supplies of anti-TB drugs would be essential to develop and sustain a PPP project. A few PMPs also suggested giving PMPs financial incentives to refer TB patients to the NTP.

Practice of PMPs: PMPs followed fixed practice hours, either very early in the morning or in the evening. 53% of the PMPs practised 3-5 hr a day, whereas 36% practised less than 3 hr a day (Table 2). PMPs claimed that their practising hours were convenient to TB patients, in contrast to most government general outpatient services, because government health centers/hospitals operate from 9 am to 5 pm, which coincides with the working hours of poorer TB patients such as day laborers, garment workers, and rickshaw pullers.

The findings of direct interviews show that the median number of TB suspects that each PMP saw per month was 5. For diagnostic purposes, PMPs said they used both chest X-ray and sputum microscopy, although they preferred X-ray. PMPs sent suspected TB patients for these tests to their preferred private-run laboratories. Some PMPs also recommended other tests such as the Mantoux test (15%) and erythrocyte sedimentation rate (14%).

The lack of knowledge of PMPs about DOTS was reflected in their practice. During FGDs we presented a hypothetical description of different TB cases to the PMPs and asked what they would have prescribed in such a case. Their prescribing pattern varied widely and was not related to the case classification: on many occasions they advised different regimens for treating similar presentations and/or suggested similar drugs to patients with different categories of TB.

In FGDs, PMPs concluded that high rates of interruption of TB treatment in the private sector were attributable to poor referral of TB patients to DOTS centers and to the nonexistence of a follow-up mechanism. PMPs also agreed to the potential problem of drug resistance due to interruption of TB treatment. During one-on-one interviews, we asked PMPs to put forward suggestions on how to prevent TB patients from interrupting TB treatment. Table 4 shows the percentage of total responses under each

variable. Introducing DOT in their private practice, counseling of patients and strengthening follow-up and referral emerged as principal suggestions.

Table 4. PMPs' Suggestions for Preventing TB Patients from Interrupting Treatment in the Private Sector

PMPs' Suggestions	Percent of Responses, by area ^a				
	Mirpur	Dokkhin Khan	Rampura	Kamrangir Char	Total
<i>Introduce DOTS in their private practice setting</i>	35	13	8	40	22
<i>Counsel patients through community mobilization</i>	34	46	28	10	34
<i>Strengthen follow-up and monitoring</i>	18	14	43	10	23
<i>NTP should supply free drugs to private sector</i>	4	10	12	0	2
<i>Better relationship of PMPs and NTP through regular communication and contacts</i>	2	7	0	0	3
<i>PMPs should follow NTP guidelines</i>	2	0	0	20	3
<i>Provide incentive to the PMPs</i>	2	3	4	0	3
<i>Training and awareness raising activities for PMPs</i>	2	0	7	20	4
<i>No comment</i>	0	3	0	0	1
Total	100	100	100	100	100

^aCalculated as number of responses in each category/total number of responses.

Discussion

It emerged from the study that most respondents were not familiar with DOTS and NTP guidelines. They did not distinguish TB patients from other patients suffering from minor illnesses, and consequently followed a similar

process of prescribing. Participants prescribed different regimens for similar TB cases, and the same regimen for treating very different cases, thereby potentially putting patients in danger. They failed to prescribe WHO-recommended treatment regimens; rather they selected a regimen for treating TB cases based on their own choice, and without any systematic reasoning. Although PMPs knew the different categories of TB treatment, there were gaps in their knowledge of the relevance of different treatment categories to different types of TB cases. Inappropriate TB chemotherapy was widely prescribed by the PMPs. They were not aware of the NTP-recommended regimens for treating TB: we can only speculate whether the inconsistent prescribing behavior seen was as a result of this, because they felt NTP regimens were inappropriate, or because their prescribing did not have a systematic foundation.

The findings of our study reveal that TB care by PMPs deviates considerably from the NTP-recommended standard. Non-standard practices included diagnosis through X-ray findings alone, referring cases to preferred private laboratories for diagnosis, recommendation of inappropriate regimens, and little follow-up by PMPs. These findings are consistent with studies carried out in other developing countries (WHO 2006).

It is well recognized that effective and patient-friendly DOTS services are key to the success of TB control programs (Khatri and Frieden 2001, Zafar Ullah et al. 2006). However, it was apparent that although PMPs in the study areas had heard about DOTS, their knowledge was limited and their practice inconsistent. This knowledge gap was partly attributed to DOTS not being included in their medical curriculum. Moreover, PMPs were not aware of the latest developments in TB diagnosis and treatment, probably because of a lack of continuing professional development, for which there is no requirement in Bangladesh. PMPs were also dubious about the quality of services available under the NTP, which contributed to their reluctance to refer patients to NTP-designated DOTS centers. Furthermore, PMPs were not sure about the availability and locations of DOTS centers, even in their own locality.

Particularly worrying is TB case management practice in the private sector. PMPs do not maintain patient records for TB cases and there is no mechanism for follow-up. There is therefore no way for PMPs to trace patients if they discontinue treatment. As a result, treatment noncompletion is believed to be high in the private sector. This poses a serious risk of drug resistance and infection for others, although there is little information on the prevalence of drug resistance in Bangladesh, especially from private sector-managed patients.

The development of a collaboration model between NTP and PMPs requires information on PMPs' knowledge of NTP activities, and their attitude toward the NTP. It emerged from the study that to enable collaboration, PMPs expected mainly technical support from the NTP. They suggested that collaboration with the NTP would be possible if proper training and free drugs were provided. However, a lack of skilled manpower and logistic support, and problems with storing and distributing drugs were also identified as issues potentially impeding the implementation of DOTS in the private sector.

Involving PMPs in TB control programs is a new approach in Bangladesh, and this study was the first initiative to develop a PPP model for TB management. As a pilot project, only four areas were chosen for collecting information and only 97 interested PMPs were integrated into the process. Caution is therefore required in generalizing the findings of the study to other settings.

Conclusions

In conclusion, we believe there is enormous potential for improving TB treatment and control through partnerships between the NTP and PMPs, if the weaknesses identified in this study are adequately addressed. PMPs must be encouraged to follow NTP guidelines for diagnosis and treatment. They should be motivated to refer patients to nearby DOTS centers for sputum microscopy and treatment. Proper training is required for PMPs to enhance their knowledge on diagnosis, treatment, and follow-up. Appropriate tools and protocols, effective advocacy, communication, and social mobilization campaigns, and customized training packages need to be developed, focusing on appropriate diagnosis and treatment, including ways to refer for diagnosis and treatment supervision to DOTS centers. Information about DOTS should be included in the medical curriculum.

Finally, it must be kept in mind that TB patients are a source of income for PMPs. Although PMPs expressed their willingness to collaborate with the NTP, any partnership model that threatens their income may fail. A collaboration model should address the needs of all stakeholders, including PMPs, while not compromising the quality of TB care it offers.

References

- Ayaya, S.O., J. Sitienei, W. Odero, and J. Rotich. 2003. "Knowledge, attitudes, and Practices of Private Medical Practitioners on Tuberculosis among HIV/AIDS Patients in Eldoret, Kenya." *East African Medical Journal* 80(2): 83-90.
- Banguero, H. 1984. "Socioeconomic Factors Associated with Malaria in Colombia." *Social Science & Medicine* 19(10): 1099-1104.
- Brinkmann, U.K. 1994. "Economic Development and Tropical Disease." *Annals of the New York Academy of Science* 740: 303-311.
- Borgdorff, M.W., K. Floyd, and J.F. Broekmans. 2001. "Interventions to Reduce Tuberculosis Mortality and Transmission in Low and Middle Income Countries: Effectiveness, Cost-effectiveness, and Constraints to Scaling Up." *Commission on Macroeconomics and Health Working Paper series Paper No. WG 5. 8.*
- Cohen, R. 2002 "An Epidemic of Neglect: Neglected Diseases and the Health Burden in Poor Countries" *Multinational Monitor* 23(6): 9-13.
- Corbett, E.L., C.J. Watt, and N. Walker et al. 2003. "The Growing Burden of Tuberculosis: Global Trends and Interactions with the HIV Epidemic." *Archives of Internal Medicine* 163: 1009-1021.
- Habibullah, S., A. Sadiq, T. Anwar, and M.A. Sheikh. 2004. "Diagnostic Delay in Tuberculosis and its Consequences." *Pakistan Journal of Medicine Science* 20(3): 266-269.
- Khatri, G.R., and T.R. Frieden. 2001. "In Reply to Why the Indian TB Control Programme Must Stop Ignoring Private Practitioners India." *International Journal of Tuberculosis and Lung Disease* 5(2): 202-203.
- Lonroth, K., L.M. Thuong, K. Lambregts, H.T. Quy, and V.K. Diwan. 2003. "Private Tuberculosis Care Provision Associated with Poor Treatment Outcome: Comparative Study of a Semi-private Lung Clinic and the NTP in Two Urban Districts in Ho Chi Minh City, Vietnam." *International Journal of Tuberculosis and Lung Disease* 7(2): 165-171.
- MOHFW. 1998. *Health and Population Sector Programmes(HPSP): Programme Implementation Plan (PIP)*. Dhaka: Ministry of Health and Family Welfare, Bangladesh.
- MOHFW. 2003. *Bangladesh National Health Account 1999-2001*. Health Economics Unit, Dhaka: Ministry of Health and Family Welfare, Bangladesh.

- Newell, J.N., S.B. Pande, S.C. Baral, D.S. Bam, and P. Malla. 2004. "Control of Tuberculosis in an Urban Setting in Nepal: Public-Private Partnership." *Bulletin of the World Health Organization* 82: 92-98.
- Nshuti, L., D. Neuhauser, J.L. Johnson, F. Adatu, and C.C. Whalen. 2001. "Public and Private Providers' Quality of Care for Tuberculosis Patients in Kampala, Uganda." *International Journal of Tuberculosis and Lung Disease* 5(11): 1006-1012.
- NTP. 2004. *The National Tuberculosis Control Programme – Annual Report 2004*. Dhaka: Government of Bangladesh.
- NTP. 2008. *The National Tuberculosis Control Programme – Annual Report 2008*. Dhaka: Government of Bangladesh.
- Peabody, J.W., R. Shimkhada, T.C. Ji, and J. Luck. 2005. "The Burden of Disease, Economic Costs and Clinical Consequences of Tuberculosis in the Philippines." *Health Policy and Planning* 20(6): 347-353.
- Portero, J.L., and M. Rubio. 2003. "Private Practitioners and Tuberculosis Control in Philippines: Strangers When They Meet?" *Tropical Medicine and International Health* 8(4): 329-335.
- Prasad, R., R.G. Nautiyal, P.K. Mukherji, A. Jain, K. Singh, and R.C. Ahuja. 2002. "Treatment of New Pulmonary Tuberculosis Patients: What Do Allopathic Doctors Do in India?" *International Journal of Tuberculosis and Lung Disease* 6(10): 895-902.
- Project Implementation Plan (PIP). 2003. *Health Nutrition and population Sector Programme Project Implementation Plan 2003-2008*. Bangladesh: Health Economics Unit, Ministry of Health and Family Welfare.
- Quy, H.T., K. Lonroth, N.T.N. Lan, and T.N. Buu. 2003. "Treatment Results among Tuberculosis Patients Treated by Private Lung Specialists Involved in a Public-Private Mix Project in Vietnam." *International Journal of Tuberculosis and Lung Disease* 7(12): 1139-1146.
- Rangan, S.G., S.K. Juvekar, Monrankar S.N. Rasalpurkar, A.N. Joshi, and J.D.H. Porter. 2004. "Tuberculosis Control in Rural India: Lessons from Public-Private Collaboration." *International Journal of Tuberculosis and Lung Disease* 8(5): 552-559.
- Russell, S. 2004. "The Economic Burden of Illness for Households in Developing Countries: A Review of Studies Focusing on Malaria, Tuberculosis, and Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome." *American Journal of Tropical Medicine and Hygiene* 71(Supplement 2): 147-155.

- Singla, N., P.P. Sharma, R. Singla, and R.C. Jain. 1998. "Survey of Knowledge, Attitudes, and Practices for Tuberculosis among General Practitioners in Delhi, India." *International Journal of Tuberculosis and Lung Disease* 2(5): 384-394.
- Uplekar, M., S. Juvekar, S. Morankar, S. Rangan, and P. Nunn. 1998. "Tuberculosis Patients and Practitioners in Private Clinics in India." *International Journal of Tuberculosis and Lung Disease* 2(4): 324-329.
- Uplekar, M., V. Pathania, and M. Raviglione. 2001. "Private Practitioners and Public Health: Weak Link in Tuberculosis Control." *Lancet* 358: 912-916.
- WHO. 2006. *Engaging All Health Care Providers in TB Control: Guidance on Implementing Public-Private Mix Approaches*. Geneva: World Health Organisation.
- Zafar Ullah, A.N., M. Lubben, and J.N. Newell. 2004. "A Model for Effective Involvement of Private Medical Practitioners in TB Care." *International Journal of Health Planning and Management* 19: 227-245.
- Zafar Ullah, A.N., J.N. Newell, J.U. Ahmed, M.K.A. Hyder, and A. Islam. 2006. "Government-NGO Collaboration: The Case of Tuberculosis Control in Bangladesh." *Health Policy and Planning* 21(2): 143-155.