A critical analysis of Bangladesh national tuberculosis control program.

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Background and Rationale

Tuberculosis (TB) is a major global public health problem, about 9.6 million cases were reported as newly diagnosed TB and about 13 million cases were reported as active TB patients in 2015. Most of the cases occur in lower middle-income countries [1]. This is an infectious disease caused by an organism called Mycobacterium tuberculosis. Locally known as 'Jakkha' or 'Khoy Rog', it is also one of the most important health threats of Bangladesh, and this country ranks sixth among the top twenty-two high burden countries (HBC) of tuberculosis by World Health Organization (WHO) [2]. Moreover, Multidrug-Resistant TB(MDR-TB) is increasing, the majority of the childhood TB is not reported [1]. Combating TB was part of one of the goals of Millennium Development Goals (MDGs), in Sustainable Development Goals (SDGs) it has been placed under health related targets to reduce its epidemics [3]. The target has been set to reduce TB incidence and TB-related deaths by 90% and 95% respectively in the year 2035 in comparison to 2015 [4]. The National Tuberculosis Control Program (NTP) is providing services throughout Bangladesh to combat tuberculosis [2].

The National Tuberculosis Control Program (NTP) was first launched by the then Pakistan government (now Bangladesh) in 1965 in the country. Bangladesh emerged as a new country after being independent of Pakistan in 1971. Now, the Government of Bangladesh in partnership with 44 national and international Non-governmental Organizations (NGOs) is implementing NTP. World Health Organization (WHO), United States Assistance in Development(USAID), Bangladesh Rural Advancement Committee (BRAC), International Center for Diarrheal Disease Research, Bangladesh (ICDDR, B), and Damian Foundation Bangladesh are the main partners2. Every organization plays some roles in the whole process. For instance, World health Organization provides technical support to epidemiological analysis, impact analysis, revision of the strategic plan, survey, development of guidelines, and capacity building [2].

The overall goal of the NTP is to reduce morbidity, mortality, and transmission of TB [2]. The vision of NTP is to eliminate tuberculosis from Bangladesh. Elimination of tuberculosis implies that incidence of TB would be less than one in per million population. The history, vision, strategy, delivery approaches, and other components have been described elsewhere [2].

The aim of this paper is to investigate the strengths, weaknesses, opportunities and threats (SWOT analysis) of National Tuberculosis Control Program of Bangladesh. The SWOT analysis was performed to identify existing competencies and gaps as well as drawing lessons to further scale up.

Strengths of the Program

First of all, the Directly Observed Treatment, Short course (DOTS) strategy, which is an integral part of NTP, is supported by evidence. Several studies have demonstrated the success of the DOTS strategy [5,6]. The goal is achievable if the components are fulfilled. Cure rate could be doubled if it is successfully implemented. The main benefits of DOTS: (i) High cure rates (up to 95%) (ii) Prevention of MDR--TB emergence (III) Improvement of longevity of AIDS patients by TB control, (iv) It is "one of the most cost-effective of all health interventions", according to World Bank [5].

The program was adopted after successful piloting, steps were adopted gradually. The coverage level of the program is exemplary, covering almost 100% of the population across the country regardless of age, gender, socioeconomic status, and place of residence [2]. The services are decentralized; recipients become beneficial in a successful decentralized system [7]. As a result of increased coverage, more TB patients are now being registered and treated [2].

All of the staffs are trained on tuberculosis. A major strength of the program is that it put a significant focus on field level staffs by providing training to them; one of the best examples of the programs where the concept of task shifting is being used effectively, similar to the program directed to AIDS [8]. Not so highly qualified technicians are trained to diagnose the TB organism by microscopy; tasks of a professional high skilled microbiologist are shifted to a midlevel staff. Easy, reliable & fast diagnosis by the microscopy made the treatment more accessible to the patients, and adequate quality assurance is done through checking a definite number of slides from all of the health centers in each month by the central laboratory [2].

To make a program successful, not only past evidence of the strategy/plan but also successful collaboration is important. The partnership between the public and private sector is significant for maintaining quality services; this partnership with reputed national and international NGOs in revised NTP is unique [2].

This program has a strategy to provide socioeconomic support to the patients of multidrug-resistant tuberculosis (MDR-TB) by providing foods, transportations for the patients and their families [2]. This will help the patients to adhere to the treatment regimen.

The framework is strong where targets are clearly stated, the ways to achieve them are clearly addressed, the obstacles of the target are also identified, and the possible solutions to these problems are also recommended.

To prevent a disease like tuberculosis, public awareness against the disease is important; raising public awareness about TB was also included in the plan. This is done by activities including orientation on TB among the folk team, involving women group, behavioral change communication. These activities also develop skills of community health workers, leaders, and volunteers [2].

Since its implementation, treatment success is increasing gradually. It has consistently achieved the WHO-recommended targets of case findings. The guideline was also updated based on international recommendations. It has also given a significant focus on smear negative, extra-pulmonary, and childhood tuberculosis [2].

Weaknesses of the Program

In this program, strengths outweigh the weaknesses. The least number of weaknesses include reaching all of the patients, one important weakness of the program is that it is not able to 'catch' a significant portion of all TB cases. Though this program aimed and tried to cover 100% of the population of Bangladesh, this is challenged by geographic locations of the patients, where it is difficult for the services to reach [9].

Adherence to treatment is difficult as the period of treatment is longer and laborious. Discontinuation of Anti-TB drugs is common, as symptoms disappear within a couple of weeks after starting treatment; a major cause of multi-drug resistant TB9. Though raising awareness was a critical component of this program, some studies in Bangladesh revealed that perceived risk of TB was low and inequalities in treatment seeking behavior was high [10,11].

Another weakness is increasing HIV-TB co-infection. Though it is not a problem inherent in NTP, but this weakens success of national tuberculosis control program. The directly observed treatment may hamper privacy of the patients. Ensuring continuous logistical supply is another major predicament [9].

Efficacy of anti-tubercular drugs is also a constraint of the program. Studies have reported that efficacy of certain categories of anti-TB drugs is lower than expected. Due to the small number of drugs when there is resistance to drugs, treatment becomes difficult [12].

Treatment providers of the private sectors do not have access to the services of the program. A significant proportion of TB patients is treated by treatment providers of private sectors [11]. This includes patients mostly from low-income, rural households who are treated outside the NTP and are charged for it. One possible explanation for this is a lack of awareness of the program and its benefits among the local population. Similar problems or limitations were faced by India where the same program is in implementation [13].

Opportunities of NTP

The National Tuberculosis Control Program has significant impacts on existing health system of Bangladesh. In addition to reducing primary tuberculosis cases, this program is reducing tuberculosis-related complications. Costs of patients, costs of existing health system are also reducing by this programme [5]. As people are getting both treatment and diagnosis from the same facility, this helps to build trusts of patients on the health system. People are coming to the facilities, they are getting the opportunity to know about family planning, antenatal care (ANC), safe delivery practices, breast feeding, immunization, integrated management of childhood illness (IMCI), and other services of health facilities. Bangladesh is suffering from high maternal, neonate and childhood mortality in addition to the high burden of tuberculosis [14]. The concept of 'diffusion of information' could be successfully integrated here [15]. Treatment providers are getting additional training as a part the program, this is increasing skills of the service providers.

Several diseases can resemble TB [16], as patients are getting the diagnosis through laboratory investigations this is also helping to reduce over-diagnosis and over-treatment of some other diseases including lung infections, Chronic Obstructive Pulmonary Disease (COPD), lung carcinoma. The large inequality among several regions could be a huge challenge [17].

The patients are receiving the treatment without any cost, so this is benefitting them as they can spend the treatment-related costs for other purposes, for instance, nutritional purposes [5].

Threats (Challenges) of NTP

Maintaining this evidence-based program is important in the country context as this country has a high burden of TB and the people are at increased risk of tuberculosis due to the prevailing risk factors. Moreover, the disease can spread from person to person if it is not cured; the epidemic could return if this program ends.

Though patients get diagnosis and treatment from the same health facility, this may increase the number of patients in the health facilities where some of the health facilities are already under-staffed and over-tasked [18,19].

The NTP was implemented with sustainability in mind, it is in existence since 1965 in different phases, and however, maintaining funding is a major future challenge. Most of the funds come from external donors, the Government should take steps to support the program even after expiration of external funds. Unfortunately, the proportion of health budget in national budget of Bangladesh is very small and most of the public health programs including NTP, immunization programs depend on external donors [20,21]. Political commitment is an integral component of the DOTS strategy to make the program sustainable.

One excellent part is that infrastructure in the health facilities has been built by this period. As human resource development is a critical component of the revised NTP, all the staffs have been trained. These two would obviate the need for spending a huge amount of money if the external funds expire. This could also help the infrastructure for other purposes [22,23].

A large number of people in Bangladesh live in rural areas [24], rural people are deprived of most health facilities than their urban counterparts [14]. Covering this huge proportion of

patients is a major challenge for any program in Bangladesh [17].

Recommendations to Overcome the Impediments

To raise public awareness against tuberculosis, more advertisement in mass media could be a good solution. The government could make a law which would make it mandatory to broadcast awareness program about tuberculosis for a couple of minutes every day. These programs could incorporate awareness programs about AIDS, cancer, non-communicable diseases, immunization, breast feeding, family planning, hygiene practices, and other public health problems in addition to tuberculosis [17,22,23]. The disease could be included in text-books of schools.

A review of BRAC-ICDDR, B Joint Research Project Working Paper Series in Bangladesh concluded that microcredit programs improve maternal and child health, the Government of Bangladesh could also explore this to improve the condition of tuberculosis patients, as tuberculosis is closely related to poverty and lower socio-economic condition [25].

More investment in research is required to invent new drugs, diagnostics, and vaccines. The Government of Bangladesh could work through the South Asian Association of Regional Cooperation (SAARC) with other countries as most of the neighboring countries share this common problem of the high burden of tuberculosis. A common platform could be made with scientists and researchers from these countries. Sharing of the total costs of research would also reduce costs of an individual country.

The Government of Bangladesh could integrate the program with other programs of the country to make the program sustainable even after the external funds expire. A comparison between government sector's strategy and an NGO found that strategy of the NGO to use community health workers was more cost-effective, government could utilize this finding [11]. This program could also be incorporated with AIDS programs.

Conclusion

We have described several weaknesses and major challenges of the NTP, however, we believe the program is overall successful given its numerous strengths with possible opportunities. Though this program has made remarkable progress to provide diagnosis, treatment, and other supports to TB patients, controlling of the disease is still a major impediment. New drugs, diagnostics, and vaccine are required to combat the disease and achieve the targets of Sustainable Development Goals (SDGs). Funding is a significant issue for the sustainability of the program. The Government of Bangladesh along with other donors should take steps to boost funding in order to further increase and maintain the impact, and the effectiveness of the program.

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