

Critical Analysis of Tuberculosis in Pakistan and England

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Abstract: *The paper titled “Tuberculosis in Pakistan and England” will be doing critical analysis of the issue. Tuberculosis is a severe infectious disease which led burden to many countries especially 3rd world countries. It is estimated by the WHO that about 9.4 million people are infected with disease; also 3 million deaths occur annually. Many strategies like DOT, DOT-PLUS and STOP TB have been proposed by WHO to tackle down TB. The DOT strategy and NTP has done a lot in controlling TB in Pakistan and England, but Pakistan is still facing the causing determinants like: poverty, injustice, socio-cultural and influx of Afghan refugees. To overcome the burden of TB, media can play a pivotal role to attain and maximize the functions of government and private sector.*

Keywords: Tuberculosis, Multiple Drug Resistance (MDR-TB), STOP TB, STAG T, Direct Observational Therapy (DOT)

1. Background of the Issue

Tuberculosis is known as one of the early reported infectious diseases which date back to the era of Pharaohs (Donoghue & Zink, 2003). Normally TB attacks lungs but may also spread to other parts of the body. It spreads through sneezing, cough or the transmission of the saliva through the air (konstantinos, 2010). There are two factors which are known to be causative agents of Tuberculosis. Microbiological and sociological factors; microbiological factors are mycobacterium tuberculosis and mycobacterium boves, while sociological factors may be injustice, conflicts, poverty or inequity (Zumla & Grange, 2002). There are two types of TB; active TB when a person actually has the disease and has the ability to infect other person is called active TB (Wouk, 2009). While other type is called latent TB in which a person carries the germ but is not sick and don't have the ability to infect others (Wouk, 2009).

Tuberculosis still is a major public health problem to many countries, even after declaring it as a global emergency in 1993 by World Health Organization, especially for developing countries where it requires immediate attention from the government, private sector and media (Division of Communicable Disease, 2010). Principles of whole system approach should be followed in controlling TB in this regard French (2007) argues that “a whole system is a multi sector engagement which works together in order to improve the health”.

Main risk factors of TB in developing countries are; poor nutrition, poor housing, poor hygiene, insufficient health care and AIDS (WHO, 2008). It is known as the disease of poverty which hit the young adult at the age of their production (WHO, 2009). WHO regional director for Europe Jakab argues that “TB effects the poorer and vulnerable greatly, therefore, together with our member

states we should address this with urgency and call upon them to give priority to the TB control strategy and utilize their resources to implement the STOP TB strategy more effectively”.

2. Global Strategy for TB 2006-2015 (WHO, 2006)

While preparing the strategy, particular attention has been given to the target set for TB, which is TB should be decreased by 2015. Following are the WHO recommended new six points STOP TB strategy on the basis of DOTS, which aims to achieve some drastic results in TB controlling by the year 2015(WHO, 2006).

- Follow high quality DOT expansion and improvement
- Deal with TB-HIV, MDR-TB and the needs of poorer and vulnerable population.
- Contribute to health system and strengthening based on primary health care
- Engaged all health care providers.
- Empower people with TB and communities through partnership
- Enable and promote research

3. Epidemiology

3.1 Pakistan

Tuberculosis infection is very prevalent in Pakistan and contributes about 44% of TB burden in the region (WHO, 2009). TB causes high mortality and morbidity in Pakistan, Number of TB cases raise every year in Pakistan due to the population growth, socio economic status and Afghan refugees (Maher et al., 2003). According to WHO incident rate of TB in Pakistan is 85-100/100,000 and is responsible for 5.1 % of the diseases burden of the country, incidence

rate varies in the country as in Northern areas of Pakistan where prevalence is 554/100,000 (Alvi, Ussain; Shalt et al., 1998).

High rise in Multiple Drug Resistance (MDR) and HIV/TB is of great concern in the country (USAID, 2009). Ministry of health implemented the WHO recommended strategy (DOT) in 1995. National TB programme is in charge of the DOT strategy, and was stretched out to all public health care services as an element of Primary health care by 2005 (WHO, 2009). Since then some drastic changes have been noticed as Pakistan has reached the milestone of 100% coverage of DOT in 2005 which mean that there are TB control set-ups in all Districts (WHO, 2009). In collaboration of Pakistan paediatric association policy guidelines were drafted in order to improve care of child TB (Safdar, Hindereaker, & Khan, 2010).

In Pakistan there are broad gaps between health research system, which is in developing stage, and the growing trouble of infectious disease (Khattak, 1997). National Tuberculosis Control Programme of Pakistan is facing many challenges relating to health system, community, and interventions for communicable disease and its failure to have a strong grip on communicable disease due to the lack of research knowledge (Siddiqi, Ghaffar, Muyunk, 2001).

Pakistan TB strategy

- The treatment regimen should be similar with those of DOTS and all possible supervisions must be explored
- Use of high quality fixed dosage which is globally recommended.
- Avoid TB drugs in non TB illness in order to avoid drug resistance.

3.2 England

It is the largest country in UK. It is estimated that around 9000 cases of TB occur annually (HPA, 2008). Data from health protection agency shows that there has been increase of 2% from 2005 to 2006 to 8,171 cases in Wales, England and Northern Island, most cases occurs in major cities like London which contribute 42% to the total number of cases (HPA, 2007), followed by West Midlands where total number of cases were 1,027 in 2008 which increased by 9% in 2009 (Sarah, 2009). Tuberculosis has reached to its highest level in UK for 30 years (Sarah, 2010). In 2009 the total number of cases were 9,040 which increased from 8,621 in 2008 (HPA, 2010). These results are quite shocking and put the doctors and TB campaigners on high alert to deal with the problem. TB can be a killer as it caused 334 deaths in 2008 (Office of National Statistics (ONS), 2009). In Western Europe Britain is the only country where cases of TB is rising (Stephan, & Adam, 2010). Also, it may be because of the reason that Britain consist of multicultural society as Professor (Zumla, 2010) argues that "most TB patients are non-UK born population in 2009 the 29 % cases were African, 27% were Indian and only 10% were white population. Poor housing condition, overcrowding and lack of proper ventilation were the main causes TB in Victorian Britain (Zumla, 2010). Trend of MDR-TB, XDR-TB and TB/HIV infection is on rise in urban population and also due to the immigrant influx (DOH, 2007; WHO 2009). Hence, resources have been provided by the Department of Health

(DOH) to the local PCTs to deliver TB control services according to the NICE TB guidelines (NHS, 2007). Although some progress has been achieved but still there are some deficiencies exist in delivering of NICE TB guidelines and local NHS planning. (HPA, 2009). Therefore, to attain worldwide achievements and sustain it there is need of funding, commitment and implementation of different strategies in STOP TB programme to control TB (WHO, 2009).

4. Response from the Governments

After WHO declared TB as a global emergency government of Pakistan also adjusted its national TB control policy and approved DOTs guidelines in 1994 (WHO, 2004). National Tuberculosis programme (NTP) was accelerated and it was suggested that each province will be responsible to develop their own plan and how to manage TB under the guidance of national guidance (WHO report 2005).

Government of Pakistan declared TB as a national emergency (WHO, 2008) and since great achievement were achieved as case detection rate dramatically increased from 13 % in 2002 to 67% in 2007 (WHO, 2009), which almost achieved the WHO target of 70%, while dots coverage increased from 42 to 99 percent between 2002 and 2007 (WHO, 2009).

In UK, England is thought to be accounted for the majority of cases that is 92% (HPA, 2009). Therefore, HPA responded to it and in collaboration with its partner's aims to reduce the incidence and consequences of tuberculosis which was highlighted in strategic plan for 2008-2013 (HPA, 2009). The strategy developed is used to support the indicators for successful TB control highlighted by Chief medical officer's (CMO) action plan for stopping TB.

CMO's Plan

- To decline the rate of TB at least by 2 percent /year in population born in England.
- To reduce the incidence of disease in those people who come to England and become resident here in last 5 years
- Resistance to anti tuberculosis drug Isoniazide should not exceed then 7% while multiple drug resistance should not increase than 2%
- Almost, 70% of the cases with pulmonary TB, their diagnosis must be verified from culture by laboratory
- Those who have the disease make sure 85% of them complete their treatment therapy.

To avoid MDR-TB Department of Health (DOH) has provided local PCTs with resources to run TB programmes according to NICE TB guidelines (NICE, 2006).

NICE Guidelines priorities

- Respiratory disease of children and adult is treated with 6 months 4-drugs initial regimen.
- Treat those with active meningeal tuberculosis
- Every single TB case must have a named key worker, who must educate the patient and help him/her in achieving the complete adherence. Name and contact information is available to every patient.

- Prioritize those at risk of poor adherence or have previous adherence issue

4.1 Prevention

There are two approaches used in preventing tuberculosis. In first approach, cases of active TB and their contacts are identified by the application of test, and then treat them accordingly, while in second approach children are immunized against TB with BCG vaccination (Fine, Floud, 2001). BCG vaccine is a part of routine immunization for infants in many countries including Pakistan and England. BCG vaccine provides protection against TB in children but can't be relied in adult TB as no vaccine is yet available for adult TB (Skeiky & Sadoff, 2006).

Numerous vaccines are in trial phase like Mtb726 in United States, MVA85a is in phase 2 clinical trial in South Africa. (Ibanga, Brooks, 2006). Health professionals may be able to administer these new developed vaccines without needle thus would be beneficial where HIV is common. Researcher and policy makers are introducing new economic models in order to support advance discovery (Bulletin of WHO, 2001). With the discovery of these new type of vaccine it would become more easy to tackle TB in more advance way.

4.2 Communication and its Impact

International tuberculosis is celebrated every 24 March, which is sponsored by STOP TB and help in bringing individual and government closer to work for fight against TB. It is the anniversary of DR. Koch who discovered TB bacillus in 1882. World Health Organization and International Union against Lung disease and TB started celebrating this day since 1982 (USAID, 2006). STOP TB strategy also runs campaigns to help in controlling, preventing, and treating of tuberculosis.

4.3 Role of Journalism

Journalism has great role to play in bringing awareness both to public population and at political level. There is a project in Pakistan which is under pilot stage called "Fight against TB by School Student" in this particular project which is funded by Global fund for Aids, TB and Malaria (GFAM), school students acts the role of ambassador and disseminate the message about the disease among their communities, classmates, schools and homes. Thus, this route of awareness increases the case recognition and treatment achievement rate in the target communities (Irfan, 2010).

In UK, TB alert created new awareness materials which were launched in 2008. It is a coaster and a bag, which was such, designed to aware the frontline and non-TB Health professionals (DOH, 2009). Leaflets in different languages are designed to convey the message to different ethnic groups (TB Alert programme, awareness material, 2009). TB alert along with Department of Health also designed such materials like mini cards, posters, factsheets and leaflets which help in awareness of public and other health professionals.

4.4 Strategies for tackling TB

The minimum requirement for tackling TB is the strategy of Direct Observed Treatment (DOT), which was recommended by WHO in 1994 that was a year after TB was declared as an emergency (Maher et al., 2003). One of the biggest hurdles in TB related treatment is the issue of adherence to the course (WHO, 2003). Therefore the DOT strategy not only focuses on the diagnosis of the disease and direct observation of the treatment course but it also make sure uninterrupted supply of the drugs, strong political commitment and also believe in proper recording and reporting of the data (Kochi, 1997). Since the introduction of DOT majority of the countries have achieved the targets set by WHO of 70% detection and 85% cure of those who are identified as active cases, while some countries in Africa and Eastern Europe still behind the defined targets (WHO, 2009). However, it is estimated that about 36 millions of these cases have been successfully treated under the DOT strategy (WHO, 2009), which proves that DOT strategy is most effective one in tackling TB on national, regional, and international level. Though, there is no question about its effectiveness but still there is some lacking in it. This particular strategy is incapable to address wider determinants of the disease like inequity, immigration issues, and poverty (Verma et al., 2004). Some limitations have been noticed by the critics relating to socio-cultural and management limitation of DOT strategy, which are lack of community participation, empowerment, stigmatization, and involvement of service users (Khan et al 2000). On the other hand it is feared that it can be more lethal if the drugs are taken without supervision and can lead to multiple drug resistance issues (WHO, 2009).

There is another important issue known as multiple drug resistance or MDR-TB. To deal with this issue WHO introduced another strategy in 1999 known as DOT-PLUS strategy which mainly deals with drug resistance issue (WHO, 2000). The strategy is different from DOT strategy in a way that it deals the cases with second line drugs (WHO, 2000). High rise in MDR-TB cases suggests the poor implementation of DOT strategy and ineffective TB management. Hence, it is clear that DOT strategy implementation may be difficult but with proper trained health workers and proper health system, it helps in preventing the development of MDR-TB. It is thought that MDR pose a serious threat to the success of TB control strategy (Zumla & Grang, 2002). So, DOT-PLUS strategy is only helpful in dealing with MDR -TB, but it is only feasible where DOT based TB programme s already exist (WHO, 2002). MDR-TB is a serious public health issue and to control it there is need of well planned integrated approach which involves all essential stakeholders (Caminero & Monedero, 2010). In light of this a set of suggested strategies were designed by WHO health assembly approved by the 192 member states in order to curb MDR-TB on regional, international and national level (WHO, 2009).

Another important strategy known as Stop TB which aims to free the world from TB by 2015 endorsed by Millennium Development Goals(MDGs) (WHO, 2006). Stop TB strategy is designed in such a way that it confront the issues facing by the TB control programme which include ethical issues

and empowerment, get all care providers on board, promote research, MDR-TB and TB/HIV issues and strengthening of health systems (khan et al., 2000). However, the strategy is capable of addressing the determinants of TB on international, local, and national level but it give the impression that it is unable to address the primary issues of poverty, globalization, inequity, and immigration issues (WHO, 2008).

4.5 Strategic and Technical Advisory Group for TB (STAG-TB)

Recently a meeting was held on 20-22 June, 2011 in Genève in which 22 experts from different field and regions participated (WHO, 2011). They re-evaluated and presented ways for those issues which can affect TB care, prevention and control. Including reshaping and prioritizing of WHO recommended STOP TB strategy, WHO new programme aims to involve civil society groups in community care, methods to expand the targeted TB screening regulation and develop such policies which ensure the safe and rapid adaptation of new TB drugs in 2012-13 (WHO, 2011).

All the strategies of tackling TB are in running condition both in England and Pakistan. Both the countries have achieved success in controlling TB. But beside this the issue of drug resistance is still an issue for both the countries as Pakistan is reporting more cases of MDR and accounts for 57% such cases in the region (WHO, 2009). While England reached 100% of DOT coverage but still receives cases of MDR from its urban areas (WHO, 2009).

5. Surveillance and Monitoring

"An ongoing, systematic collection, analysis and interpretation of health-related data essential to the planning, implementation, and evaluation of public health practice" (WHO, 2010)

Kuchia et al. (2007) argue that in all health programmes an element of surveillance is incorporated in order to control infectious disease, chronic disease and injuries. Relating it with the TB surveillance it can be concluded that TB data are collected for the purpose to analyse it which would help in shaping future policies for controlling TB. Hence, health system where there is lack of surveillance system may results in insurgence. Mainly surveillance system is used in infectious disease to detect possible outbreaks which may need immediate investigation and intervention (Kuchia & et al., 2007).

Acknowledging the importance of TB surveillance, England and Wales established a passive system of TB Incidence and Outbreak Surveillance (TBIOS) in 2004, in order to inform public health management and shape policies on evidence base (HPA, 2010). TB outbreaks are defined as when two or more cases are reported in non household contacts' cases may be reported to TBIOS from different sources like London prison surveillance, news report, local, and regional services incident reporting information centres (IRIS), weekly HPA infection update meeting, direct report by phone and by regular regional health bulletin (HPA, 2010).

Government of Pakistan has established a substantial system in collaboration with National TB programme and designed a set of instrument which helps in recording and reporting of any case identified (NTPP, 2007). Also, progress of the anti-TB programme is measured through different monitoring systems and data are obtain through health visitors and district, provincial and national level meeting are held every three months for the evaluation and to take further action accordingly (NTPP, 20007).

6. Conclusion

Tuberculosis is one of the early reported infectious diseases in the history. It is a major public health problem to many countries especially 3rd world countries. Almost, one third of the world population is infected with this disease. It is estimated by the WHO that about 9.4 million people are infected with disease; also 3 million deaths occur annually. There is also a huge variation of TB cases across the globe with south Asia accounts for the most 55%. Many strategies like DOT, DOT-PLUS and STOP TB have been proposed by WHO to tackle down TB. Pakistan and England both following proposed strategies, but the rising trend of MDR is still a problem for both communities. As in England there is huge influx from abroad, and also they receive most of their MDR cases from urban areas.

The DOT strategy and NTP has done a lot in controlling TB in Pakistan but still issues like poverty, injustice, socio-cultural and influx of Afghan refugees are the issues which provides hindrances in restraining tuberculosis. Finally, though TB is a major public health problem but multi sectors collaboration and commitment and involvement of private sectors, NGOs, different health agencies and policy makers can play their roles in dealing with the issue. There should be interaction between human resources and health system to support and strengthen the global plan of eradicating TB. Also, collaboration between civil society, pharmaceutical industry and other health sectors are crucial to make the TB programmes successful.

References

- [1] Awofeso N, Schelokova I, Dalhatu A. Training of frontline workers from tuberculosis control: lesson from Nigeria and Kyrgyzstan Human resources health. 2008; 6:20
- [2] Bulletin of World Health Organization, 2001, 79(8)
- [3] Bartalesi, F., Vicidomini, S., Goletti, D., Fiorelli, C., Fiori, G., Melchiorre, D., ... Bartoloni, A. (2009). QuantiFERON-TB Gold and the TST are both useful for latent tuberculosis infection screening in autoimmune diseases. *European Respiratory Journal*, 586-593.
- [4] De Muynck A. Siddiqi, Ghaffar A, Sadeq H. Tuberculosis control in Pakistan, critical analysis of its implementation. *J pak Med Assoc* 2001; 51:41-7
- [5] Division of communicable disease control (DCD, 2010) pp. 1-5
- [6] Donoghue and Zink (2003): "Tuberculosis from basic science to patient care", pp.44-46
- [7] Fine P, Floyd S, Stanford J, Nkhosa P, Chaguluka S, Jenkins P, Yates M, Ponnighaus J(2001).

- “Environmental Mycobacterium in northern Malawi; implication of the epidemiology of tuberculosis and leprosy” *Epidemiol Infect* 126(3): 379-88.
- [8] <http://www.ntp.gov.pk/about.htm>
- [9] <http://www.hpa.org.uk/HPA/ProductsServices/InfectiousDiseases/ServicesActivities/1200055718370/>
- [10] Ibanga H, Brookes R, Hill P, Fletcher H, Adegbola R, McShane H (2006). “Early clinical trials with a new tuberculosis vaccine, MVA85A, in tuberculosis-endemic countries” *Lancet Infect Dis* 6 (8): 522-8.
- [11] Khan, MA, Walley, J and Newell J. Et al (2000) “tuberculosis in Pakistan: socio-cultural constraints and opportunities in treatment”, 50, pp.246-255
- [12] Khattak FH .Role of health systems research in policy (1997)
- [13] Kochi, A.(1997) Tuberculosis control-is DOTs the health breakthrough of the 1990? World Health Forum, 18, pp224-248
- [14] Konstantinos, A (2010) “Testing for tuberculosis” *Australian prescriber* 33(1); 12-17
- [15] Maher, D, Upleka, M and Blanc, L. Et al (2003) “DOT”: less faith, more science would be helpful, *BMJ*, 327, pp.823-824
- [16] National institute for Health and clinical Excellence (2006) “clinical diagnosis and management of Tuberculosis and measure for its prevention and control”
- [17] N kuchia M & Ruth L et al (2007) “Infectious Disease Surveillance” pp.136-138
- [18] Planning, management and Decision-making, with reference to Pakistan East Mediterranean health Journal 1997; 3:555-65
- [19] Safdar N, Hinderaker SG, Baloch NA, Enarson DA, KHAN MA, Morkve O: Diagnosis and outcome of childhood TB. *Int J Tuberculosis Lung Disease* 2010 14(7):871-876.
- [20] Skeiky YA, Sadoff, JC (2006) “advances in tuberculosis vaccine strategies” *nature reviews microbiology* 4(6):468-77
- [21] Verma, G. Upshur, R. E.G and Rea, E. Et al (2004) “critical reflection on evidence, ethics and effectiveness in the management of tuberculosis:public health and global perspective *BMC medical ethics*.
- [22] World Health organization .Global Tuberculosis Control 2009 Epidemiology, strategy, financing 2009, 411, WHO/HTM/TB/2009
- [23] World Health Organization “Global tuberculosis control-surveillance, planning, financing WHO report 2006 Retrieved on 6 July 2011
- [24] World Health Organization (2009) Global Tuberculosis control: epidemiology, Strategy, finances. Geneva
- [25] World Health Organization (2010) Multiple drug and extensively drug resistant TB (M/XDR- Tb): 2010 global report of surveillance and response
- [26] Zumla, A. Grange, J.M (2002) “the global emergency of tuberculosis: what is the cause? *The journal of Royal Society for the Promotion of Health*, 122(2), pp. 77-82