

Socioeconomic Factors Contributing to Multidrug-Resistant Tuberculosis (MDR-TB)

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Abstract:

Multi drug resistant tuberculosis (MDR-TB) is a contagious disease, which spreads as a droplet infection. It is the leading killer of young adults worldwide. Multi drug resistant tuberculosis is a type of TB that often develops in patients who do not adhere to or complete the proper treatment for regular TB. Aim; was to study and analyze the socioeconomic factors which lead to multi drug resistant tuberculosis. Method; the data was collected from Gulab Devi Chest Hospital Lahore. A total of 25 patients of MDR-TB were enrolled in. Study data was collected randomly among all ages between the period of 15 June 2010 to 20 July 2010. Result; out of 25 patients 68% had previous history of TB and all the patients belong to poor class. Most of the patients are living a poor life style. and financially not able to purchase the medicines. Conclusion; the analysis revealed that lack of education, poor life style, poor nutrition, adverse effects of drugs, and absence of follow up visits led to non compliance. So there is a great need of patient counseling and follow up visits to improve their quality of life and safety of other people around.

Key words: *Non compliance, tuberculosis, socioeconomic factor.*

Introduction:

Tuberculosis (TB) is a contagious disease, which spreads as a droplet infection. It is the leading killer of young adults worldwide. Each year, 8 million people develop active TB and 3 million die. The largest number of cases occurs in the South-East Asia Region, which accounts for 33% of incident cases globally. Overall, one-third of the world's population is currently infected with the TB bacillus and someone is newly infected with TB bacilli every second. The emergence of Resistance to drugs used to treat tuberculosis (TB), and particularly multidrug-resistant TB (MDR-TB), has become a significant public health problem in a number of countries and an obstacle to effective global TB control. In many other countries, the extent of drug resistance is unknown and the management of patients with MDR-TB is inadequate. In countries where drug resistance has been identified, specific measures need to be taken within TB control programmes to address the problem through appropriate management of patients and adoption of strategies to prevent the propagation and dissemination of drug-resistant TB, including MDR-TB.

Drug resistant tuberculosis is a man made problem. While tuberculosis is hundred percent curable, multidrug resistant tuberculosis (MDR-TB) is difficult to treat. Inadequate and incomplete treatment and poor treatment adherence has led to a newer form of drug resistance known as extensively drug resistant tuberculosis (XDR-TB). XDR-TB is defined as tuberculosis caused by Mycobacterium tuberculosis strain, which is resistant to at least rifampicin and isoniazid among the first line anti tubercular drugs (MDR-TB) in addition to resistance to any fluoroquinolones and at least one of three injectable second line anti tubercular drugs i.e. amikacin, kanamycin and/or capreomycin. Mismanagement of tuberculosis paves the way to drug resistant tuberculosis. Emergence of XDR-TB is reported worldwide. Reported prevalence rates of XDR-TB of total MDR cases are; 6.6% overall worldwide, 6.5% in industrialized countries, 13.6% in Russia and Eastern Europe, 1.5% in Asia, 0.6% in Africa and Middle East and 15.4% in Republic of Korea. Better management and control of tuberculosis specially drug resistant TB by experienced and qualified doctors, access to standard microbiology laboratory, co-morbidity of HIV and

tuberculosis, new anti-TB drug regimens, better diagnostic tests, international standards for second line drugs (SLD)-susceptibility testing, invention of newer anti-tubercular molecules and vaccines and knowing the real magnitude of XDR-TB are some of the important issues to be addressed for effective prevention and management of XDR-TB. [1]

The costs of multidrug-resistant tuberculosis (MDR TB) reach far beyond the cost of the clinical treatment of the patient. The first impact of the discovery of MDR TB in a population is the need to recognize that all TB patients have the potential of being MDR. Public health measures to prevent the spread of MDR TB, or to control or reverse the problem where spread has already occurred, can be extremely expensive to implement. At the level of the individual patient, the second-line drugs used to treat MDR TB are more expensive, and the remaining first-line drugs will have to be used for a longer time than in drug-susceptible TB. Negative-pressure units add to the costs of treatment, as does the increased nursing intensity required. The cost to the wider economy includes lost productivity and lost tax revenue to the state as well as the cost of supporting the family if the patient is the breadwinner. [2]

India has the highest number of tuberculosis cases of any country in the world, and many of these cases are MDR TB. A combination of contributing factors has led to the current public health crisis: a failing National Tuberculosis Programme, denial and lack of compliance on the part of patients, lack of regulation of doctors in private practice, governmental policy failure and corruption, social and economic problems, and a growing HIV epidemic. This situation must be

combated on several fronts, including promoting social change; increasing government funding; seeking global aid; implementing DOTS, non-DOTS, and NGO programs; integrating TB and HIV programs; funding research; enacting regulatory legislation; and establishing continuing medical education programs among private practitioners. [3]

High-income countries are moving toward tuberculosis (TB) elimination. Sophisticated diagnostic tests and effective treatment regimens are readily available. The range of available resources even makes effective treatment of multidrug-resistant tuberculosis (MDR-TB) possible. The introduction of highly active antiretroviral therapy and specific TB control measures has reduced the incidence of HIV-associated TB disease. Unfortunately, the situation in low-income countries that carry 95% of the global TB burden is less positive. TB diagnosis still relies upon sputum smear microscopy. The management of MDR-TB remains problematic though guidelines for DOTS-plus programs have been developed, and cheaper second-line drugs are becoming available. The HIV epidemic continues to confound TB control efforts, particularly in sub-Saharan Africa. The appropriate package of interventions for controlling HIV/TB disease remains undefined and unimplemented. The international community must provide the funding and technical support to address the alarming dichotomy in TB control that exists between rich and poor countries. [4]

The World Health Organization estimates that up to 50 million persons worldwide may be infected with drug resistant strains of TB. The fatality rate of MDR-TB is 20-80%. Drug resistant tuberculosis cases are on the rise in Pakistan. The reasons for this menace are multiple including improper

prescription, compliance and over the counter sale of anti-TB drugs. The treatment cost of drug-resistant TB is high, both to the individual patient and society. This article is written to create awareness about the available second line drugs and those in the pipeline. Considering the fact that resistant tuberculosis is difficult to manage, it is suggested that these drugs should only be used after consultation with a physician experienced in the treatment of drug resistant TB. The most frequent mistake made by treating physicians is addition of one drug in the failing regimen. At present, 27 potential anti-TB drugs are at various stages of development. The aim is that by 2010 at least one of these molecules completes the journey and should come in the market. [5]

Materials and Methods:

The data was collected from Gulab Devi Chest Hospital Lahore. A total of 25 patients of MDR-TB were enrolled in. Study data was collected randomly among all ages between the period of 15 June 2010 to 20 July 2010. A Performa was designed to record patient profile regarding their residential, educational, family, personal and occupational history and the drugs to which patient had developed resistance.

The Inclusion criteria was that Both sexes were considered. The Age limits are 2-80 years. Patients reported with MDR-TB. All patients receiving second line drugs. Previously treated patients also considered.

In Exclusion criteria the Patients with MDR extra pulmonary TB and patients with severe psychiatric illness were not taken. The investigating methods performed on patients were X-ray chest, Sputum for AFB smear, Tuberculin test, Pleural fluid aspiration, Polymerase Chain Reaction, Needle biopsies, Culture.

Treatment failure occurred when the patient's sputum culture remained positive after 3 months or AFB smear remained positive after 5 months. Culture methods are also required for further drug sensitivity testing in cases of suspected drug resistant cases. Diagnosis of MDR-TB requires demonstration of resistance to at least Isoniazid (H) and Rifampicin (R) ("HR resistance").

Results:

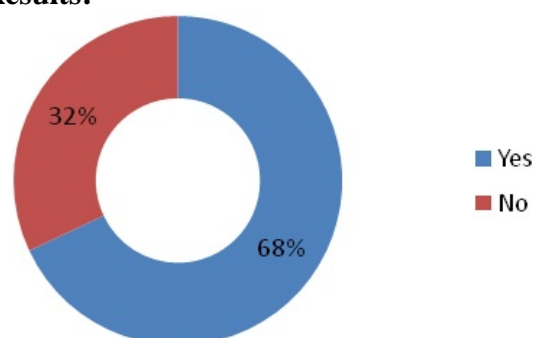


Fig. 1: Frequency of past history of TB

Figure 1 shows that out of 25 patients 68% of the patients have a past history of TB while 32% are new victims of TB.

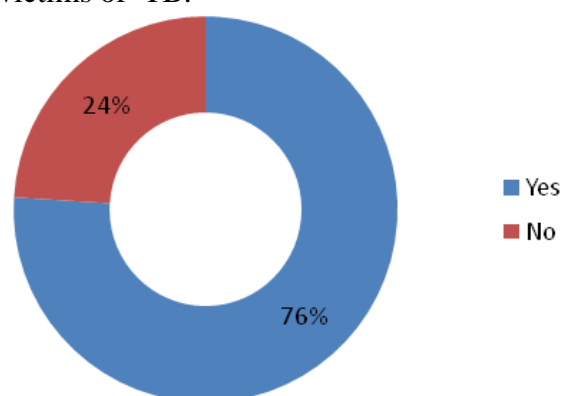


Fig. 2: Frequency of family history

Figure 2 reveals that 76% of the patients having a family history of TB while 24% don't have a family history of TB.

Figure 3 shows that 56% of the patients are smokers, 32% are non smokers and 12% are alcoholics.

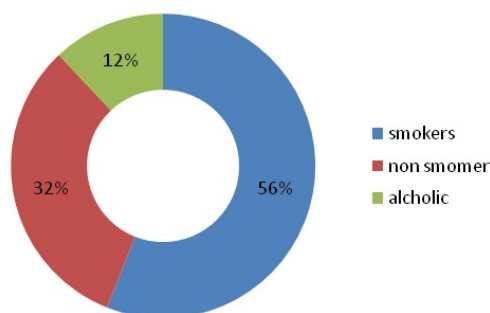


Fig. 3: Patient profile regarding their personal history

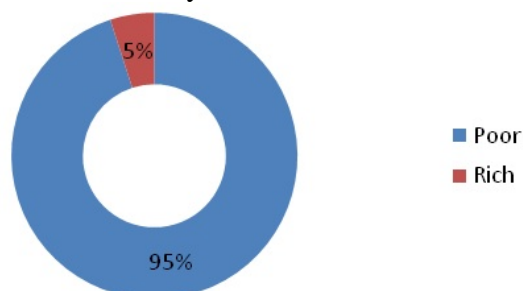


Fig. 4: Patient profile regarding their economic status

Figure 4 shows that 95% patients belong to poor class while 5% belong to the upper class.

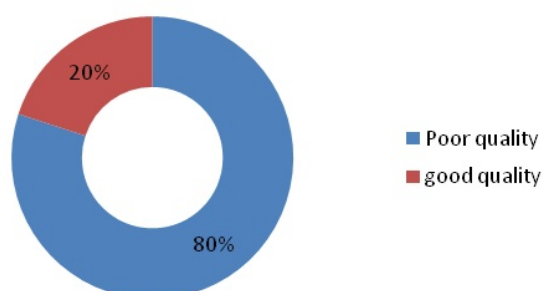


Fig. 5: Patient profile regarding their nutrition level

Figure 5 reveals that 80% patients have poor nutrition level while only 20% patients eat quality food.

Discussion:

The focus of the study to know about socioeconomic factors that lead to MDR-TB. A closer learning of cases clearly indicates the issue of non-compliance and ATT (Anti TB Therapy) lead towards Multi- Drug Resistant Tuberculosis.

The study shows that there are some factors affecting compliance, which are: lack of clarity of instructions (written, verbal or other), particularly if the patient is

confused by conflicting advice by different health care professionals.

Most of the patients are leading a poor life style, and are financially not able to purchase the medicines and carry on treatment. Many patients feel better and do not appreciate the need to continue with their medication and many patients stop taking medicines as the number of tablets to be taken per day increases, and if doses have to be taken frequently through the day. Adverse effects or symptoms perceived to be adverse effects, reduced compliance among many patients under study which led to the emergence of Multi Drug Resistance TB.

Some patients consider Tuberculosis a havoc and afraid of disease itself along with social isolation and attitudes of the society.

Most of the patients faced trouble by worsening of their symptoms which lead to more lengthy treatment period due to emergence of Multi Drug Resistance TB. These patients again need hospitalization although the treatment is free of cost at Gulab Devi but increases financial burden over patient's care takers and relatives. Treatment prolongation also increases cost to the patient because transport adds to the expenses of patient who had to come for follow up visits at the hospital. Infected persons indirectly affect the economy of country due to long term disability at work places and increased risk of transmission of infection to the people in surroundings.

Conclusion:

It is concluded that lack of knowledge and awareness about TB, unpleasant behavior of staff, long waits, discomfort caused by the side effects of poly pharmacy, patient's personal problems, poor economic conditions, and long duration of treatment after symptomatic improvement leads to MDR-TB.

Acknowledgement:

My gratitude to respected Vice Chancellor, Prof. Dr. Bushra Mateen (L.C.W.U) for her support and giving this opportunity as well as to my Head of Pharmacy Department. Special thanks to my honorable teacher Mr. Khawaja Tahir Mehmood. I am extremely indebted to M.S of Gulab Devi Hospital, Lahore.

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