

# A Comparative Study on Government Intervention in Medicine Supply to the Tuberculosis and Diabetes Diseases

Dr. M.S.Geetha

Assistant Professor,  
Department of Humanities  
Sahrdaya College of Engineering & Technology, P.B.No.17, Kodakara-680684, Thrissur, Kerala.

**ABSTRACT:** Medicine continuously receives a great deal of attention in the ongoing debate over health-care policy. Though there are different types of medicines available in the country, usually patients choose allopathy treatment because it kills their pain immediately and give quick relief towards their ailments. Indian pharmaceutical industry has confirmed the ability to provide low-cost but quality generic drugs for diseases even to the world outside and has the capacity to meet our entire drug needs, though India has many successes to her credit with regard to reductions in communicable diseases and surviving with Non-communicable diseases. But much more remains to be achieved in the areas of Medicine supply, government should reorient its policies towards supply of Medicine to all affected person without any hindrance. Government Intervention in supply of medicine to the TB Patients at lower cost leads to decrease of TB patients than Diabetes patients. This Paper focuses on the importance of government intervention in the medicine supply for reducing the non-communicable diabetes disease in the country by comparing the government intervention on Tuberculosis disease.

**Keywords:** Medicine supply, Pharmaceutical Industry, Communicable & Non-communicable diseases, Tuberculosis, Diabetes, Government Intervention.

## INTRODUCTION

Medicine is a remedy to all diseases; but it becomes remedy only when it is used by the patients. However affordability to buy medicine acts as a major constraint in the life of patients, if the patient is unaffordable to buy the prescribed medicines due to their socio-economic situation will insist them to opt for low price medicine without knowing its dosage in turn it changed their life into threat. Pharmaceutical Medicines provide some restricted sovereignty in the life of diseased patients. In the early era, our country is afraid off the outbreak of new Communicable diseases but today for time-being it changed into Non-Communicable diseases. Among the various non-communicable diseases diabetes shows a highest growth rate in India. Diabetes is a disease which can be controlled by medicine but not curable. Tuberculosis is a disease, one among the Communicable diseases which can be spread easily to the community. But it is curable if it is identified in the initial stage by taking regular medicine. On the whole our country is travelling in a downward trend of tuberculosis disease with the help of pharmaceutical medicines and government intervention. Government intervention towards the foremost battle against communicable disease (tuberculosis) is slowly succeeding with the proper supply-chain management; medicines are supplied to the affected patients through DOTs, RNTCP etc. at free of cost is turning to wipe-out the disease completely from our society (like polio) in the adjoining years. But Diabetic patients are really affected with medicine price. To overcome this situation, government intervention is needed in this hour likewise accurate regulation of medicine supply and reliable price of diabetes medicines can reduce the burden of diabetic patients. In-turn it will help to reduce the socio-economic paucity of the diabetic patients.

## Increase in the Out-of-pocket expenditure

Expenditure on health services are increasing day-by-day, particularly medicine expenses. Though medicine price in India is very low comparing to other countries, Patients spend more on medicines than on diagnosis indulging them into debt as medicine is a necessary one for survival to the Tuberculosis and Diabetic patients. Out-of-pocket expenditure on health is increasing due to medicine price. Research activities on diabetes and tuberculosis medicines by Pharmaceutical industries are showing enormous progress to develop a low cost medicine for diabetes. A new anti-diabetes drug from the 'gliptin' family soon to be launched in India promises to lower treatment cost for patients by 55-60%. The launch of new medicine by Glenmark Pharma under Ziten and Zita Plus brands at an affordable price could prove to be a game-changer with savings of over Rs.10, 000 per year for diabetics. On the other hand a new BCG-based TB vaccine for tuberculosis is getting readied at the Pune-based Serum Institute of India Limited. It has shown promising results in animal and human trials, perhaps it will reach in the hands of TB patients in couple of years only through the government allocation of fund because the project is strangling due to lack of fund. If the government boosts the pharmaceutical industry in their research work our country can show wonders to the world.

The department of pharmaceuticals in association with the state governments has introduced Jan Aushadi stores (JAS) in 2008. All state government should provide space in government hospital for running Jan Aushadi stores. The main aim of these stores is to provide "quality medicines at affordable prices to all". Till 2015 only 176 stores was opened, which is not enough for a country like India. Apart from this stores, Drug Distribution Management System (DDMS) under the Tamil Nadu Medical Services

Corporation (TNMSC) started in 1994 was functioning with the aim of decentralized distribution of medicines at free of cost through all public health facilities is a pioneer to the pooled procurement system in India. Though government facilitates the diseased patients by introducing new schemes to supply medicine at reasonable rates, our country is suffering from high out-of-pocket expenditure comparing to other countries. Most of the diabetes drugs launched by MNCs in the country are currently imported. While manufacturing the drug entirely in the country, the pharma company has sought to connect its innovation to the Narendra Modi government's 'Make in India' programme, then the drug manufacturers will always stick on to the low price to help the diabetes patients.

### **Government Intervention on Diabetes control**

The Indian urban population has access to reliable screening methods and anti-diabetic-medications, such health benefits are not often available to the rural patients. There is a disproportionate allocation of health resources between urban and rural areas and in addition poverty in rural areas may be multi-faceted. The Government Hospital had been giving free medicine and insulin vials to Type I and Type II diabetic patients. At least 1,000 people receive treatment for diabetes out of the 12,000 out-patients who visit Rajiv Gandhi Government General Hospital (RGGGH) every day, "Sufficient medicines are given to these patients so they can come to the hospital once a month," Dr V Kanagasabai, Dean, RGGGH and MMC, informed that hospitals in Chennai had been witnessing highest number of diabetic cases in the State. "India has the highest number of diabetic cases; within the country Tamil Nadu has the most number of cases,"

More needs to be done to address the rural-urban inequality in diabetes intervention. Diabetes mellitus is reaching potentially epidemic proportions in India. The level of morbidity and mortality due to diabetes and its potential complications are enormous and pose significant healthcare burdens on both families and society. Worryingly diabetes is now being shown to be associated with a spectrum of complications and to be occurring at a relatively younger age within the country. In India the steady migration of people from rural to urban areas, the economic boom, and corresponding change in life-style are all affecting the level of diabetes. To reduce the disease burden that diabetes creates in India, appropriate government interventions and combined efforts from all the stakeholders of the society are required. Government policies may help in creating guidelines on diabetes management, funding community programmes for public awareness about the diabetes risk reduction, availability of medicines and diagnostic services to all sections of community. Efforts by various governments and agencies around the world to intervene in diabetes management have resulted in positive health outcomes for their communities.

### **Treating Tuberculosis**

Treatment of TB usually involves taking several antibiotic drugs for at least six months and sometimes for as long as 12 months. Four of the biggest high-burden countries —India, Indonesia, Pakistan, and Philippines – have a large private sector pharmaceuticals presence, capable of producing enough TB drugs to treat all incident TB patients with a full TB drug regimen. Although successful implementation of DOTS strategy in India, MDRTB has emerged as a major public health concern. India has the second highest number of (multi-drug resistant) MDR-TB cases in the world. However, at the policy level India has effectively moved towards rolling out DOTS-Plus plan for the control of MDR-TB, which besides being more difficult is also more expensive to treat. DOTS-Plus services have already been initiated in 18 states and will be available in all the states by 2012. India has successfully negotiated a grant from Global Fund of about Rs.1, 000 crore for scaling up of MDR treatment DOTS-Plus plan throughout the country.

Vaccination is one major preventive measure against TB. A vaccine called BCG (Bacillus Calmette-Guérin, named after its French developers) is made from a weakened mycobacterium that infects cattle. Vaccination with BCG does not prevent infection by *M. tuberculosis* but it does strengthen the immune system of first-time TB patients. As a result, serious complications are less likely to develop. BCG is used more widely in developing countries. The effectiveness of vaccination is still being studied; it is not clear whether the vaccine's effectiveness depends on the population in which it is used or on variations in its formulation.

### **Nearly half-of Tuberculosis Patients are Diabetic**

Diabetes is a non-communicable disease that is rising rapidly in developing countries, where 80 per cent of all cases are projected to occur within the next 20 years with Asia predicted to be hit particularly hard, the report said. Half of those with diabetes would be unaware they had the disease until they developed a complication and TB is an infectious, airborne bacterial disease that lies dormant in one third of the global population.

International Union Against Tuberculosis and Lung Disease (IUATLD) senior scientific adviser Anthony Harries said in high TB-prevalence countries, diabetes increased the risk of somebody getting tuberculosis by two or three times. Diabetes reduces the body's immunity. So the immune system goes down and the body then becomes more susceptible to allowing the TB germs that are inside it, to basically multiply and get tuberculosis.

Despite a successful national TB programme in India, it is likely that the diabetes epidemic is hampering TB control efforts. Three recently published clinical research studies in Tamil Nadu, Kerala and Karnataka in about 1,500 patients with TB found a high prevalence of DM (diabetes mellitus): about 25 per cent in Tamil Nadu and about 44 per cent in Kerala and about 32 per cent in Karnataka. Nearly half of all patients with TB have diabetes or pre-diabetes, an international report says. It warns of a looming

co-epidemic of diabetes and tuberculosis that could have catastrophic consequences for health care systems around the world if not quickly addressed.

## OBJECTIVE

1. To evaluate the government intervention on the TB disease is more than the Diabetic disease.
2. To find out whether the Price of Drugs (Medicines) affects the Monthly Budget of both the Patients

## METHODOLOGY

The Source material for the study is both primary and secondary. The primary data collected from both Government and Private hospitals in and around Chennai city of Tamil Nadu, 500 samples from Tuberculosis patients and 500 from Diabetes patients were collected totally 1000 samples collected for the study to prove that government intervention is more on TB disease than on Diabetic disease and medicine Price affects the monthly budget of both the patients. For the Secondary source of material, the researcher referred various books, national & international Journals, Magazines and from various websites.

## RESEARCH DESIGN

The collected primary data are nicely presented in the form of tables. The Primary data analysed through the Yule's Coefficient of Association to validate the hypothesis.

## LITERARY REVIEW:

**Chapal Mehra & Ramya Ananthakrishnan (2015)** mentioned that free medicines can transform TB management is a well-established fact and it is a truly innovative intervention in disease control expands the reach of public health programmes improves patient satisfaction and health outcomes reduces patient costs and engages all stakeholders.

**Health News from The Times of India Life 2015** observed that Diabetes is described as an epidemic, the high costs of treatment of diabetes amongst all socioeconomic patient groups will result in a serious burden on both patients and state resources. In India the low income adult with diabetes has to spend 20 percent of his family income to diabetes care, for a diabetic child, up to 35 percent of their income spent for diabetes care.

## A CROSS SECTION ANALYSIS OF THE PRIMARY DATA

At the outset, for the sake of convenience in the analysis, both the patients (TB & Diabetes) were categorised into two groups. The sample size drawn for each disease is 500 for TB and 500 for Diabetes. This categorization is used for the analysis and proved with the particular statistical tools. The minimum and maximum monthly expenditure on medicines for both patients are ranging from Rs.1, 000 to Rs.5, 000 likely (1,000 – 2000; 2000 – 3000; 3,000 – 4,000; 4,000 – 5,000).

### Government Intervention on Diabetes and Tuberculosis Diseases

Both the diseases are highly dangerous to the health sector and only remedy is medicine which is not reaching in the hands of needy patients, predominantly speaking government intervention is more on tuberculosis disease than on diabetes disease, data shown in the below table gives us a clear picture that Government Intervention on Tuberculosis disease is good (80%) when compared with Diabetes disease which is only 40%. Government Aid and Awareness on TB disease is more than Diabetic disease. Government Intervention on providing medicine at subsidized rate to the TB disease is more than Diabetes disease.

**Table 1.1 Government Intervention on both the Diseases**

S.No	Government Intervention on Both the Diseases	Diabetes	%	Tuberculosis	%
1	Govt. Intervention	200	40	400	80
2	Non-Intervention	300	60	100	20
	<b>Total</b>	<b>500</b>	<b>100</b>	<b>500</b>	<b>100</b>

Source: Primary data

The Different proportions of Government Intervention on Tuberculosis Disease and Diabetes disease are verified by using Yule's co-efficient of Association.

### Applying Yule's co-efficient of association

**Let:** Diabetes = (A); Tuberculosis = ( $\alpha$ );

Government Intervention = (B); Non-Government Intervention = ( $\beta$ )

- ❖ Percentage of diabetic patients provided government aid:  $AB/A \times 100 = 40\%$
- ❖ Percentage of TB patients provided government aid:  $\alpha B/\alpha \times 100 = 80\%$

$AB/A < \alpha B/\alpha$  i.e. (40 % < 80%) Therefore, government aid for the two different diseases is negatively associated. Thus, the need for government intervention, or, the need for extra-care of the government in case of non-communicable disease is proved with Yule's co-efficient of association.

**Table 1.1(i) Yule's co-efficient of Association for different proportions of Government Intervention**

Test	Calculated Value	Measure the Association	Association
Yule's Method	-0.714	Q lies between -1 and +1	Negative

Calculated value is -0.714 which shows negative Association. Hence there is significant difference in the proportion of Government Intervention on Tuberculosis disease and Diabetes disease. In consequence to the above statistical analysis it has proved that there is more care is revealed on tuberculosis (Communicable) disease than diabetes (Non-Communicable) disease, both the diseases are harmful to the health sector, and it should be grabbed away from the society. Therefore proportion of government intervention should not appear any difference on both the disease.

#### Medicine Expenditure of both the patients

It has seen from the following processed data that diabetic patients are spending higher than tuberculosis patients for their medicine. Most of the TB patients at their severe condition go to Government hospital, but diabetic patients will go to private hospital and spend more.

**Table 1.2 Money spend on Medicine by both the patients**

S.No	Medicine Expense Per Month	Diabetes	%	Tuberculosis	%
1	1000 - 2000	64	12.8	220	44
2	2000 - 3000	161	32.2	149	29.8
3	3000 - 4000	222	44.4	64	12.8
4	4000 - 5000	53	10.6	67	13.4
	<b>Total</b>	<b>500</b>	<b>100</b>	<b>500</b>	<b>100</b>

Source: Primary data

Above data reveals the Money spend on medicines by both the patients. It is evident that from the total sample 44.4% of diabetic patients spend Rs.3000 - 4000 per month on their medicine. 32.2% of patients spend Rs.2000 - 3000. Patients spending Rs.1000 - 2000 and Rs.4000 - 5000 are about 12.8% and 10.6% respectively. But in case of Tuberculosis, patients spending Rs.1000 - 2000 on their medicine per month is about 44%. Reason is most of them were taking treatment from Government hospital. From the total sample 29.8% of patients will spend Rs.2000 - 3000, 13.4% of patients will spend Rs.4000 - 5000 and only 12.8% of patients will spend Rs.3000 - 4000.

Monthly budget of tuberculosis patients is less affecting owing to medicine price and the maximum number of diabetes patients constitute that Price of medicine is affecting their monthly budget. It has clearly witnessed from the following table.

**Table 1.3 Price of Drugs (Medicine) and Monthly Budget of both the patients**

S.No	Price of Medicine Affects Monthly Budget	Diabetes	%	Tuberculosis	%
1	Yes	412	82.4	244	48.8
2	No	88	17.6	256	51.2
	<b>Total</b>	<b>500</b>	<b>100</b>	<b>500</b>	<b>100</b>

Source: Primary data

It is obvious from the above table that among the 500 diabetes patients 412 of them states that their monthly budget is affecting due to high medicine price whereas 88 patients suggest that it is not affecting. On the other hand 244 of the tuberculosis patients reveals that the price of drugs (medicines) really affecting the monthly budget and 256 of them says that their monthly budget is not affecting due to high medicine price. It can be inferred that as the Price rises the level of monthly budget affected will also rise for both the patients. However medicine price increase or decrease both the patients cannot live without medicine, hence necessity of medicine will rule out the other variables.

The association between monthly budgets of both the patients affected by the price of medicines is statistically verified with Yule's co-efficient of association.

- Percentage of diabetes patients monthly budget affected by the price of medicines:

$$AB/A \times 100 = 412/500 \times 100 = 82.4 \%$$

- Percentage of tuberculosis patients monthly budget affected by the price of medicines:

$$\alpha B/\alpha \times 100 = 244/500 \times 100 = 48.8 \%$$

Thus  $AB/A > \alpha B/\alpha$  i.e. (82.4 % > 48.8 %) therefore, Price of Medicine and its impact on Monthly Budget of both the patients are positively associated. It shows that the medicine price of diabetic disease is highly affecting the monthly budget of diabetic patients than the tuberculosis patients. It can be proved through applying Yule's coefficient of association.

**Table 1.3 (i) Yule's co-efficient of Association for Price of Drugs (Medicines) and the Monthly Budget of both the Patients**

Test	Calculated Value	Measuring the Association	Association
Yule's Method	0.66	Q lies between -1 and +1	Highly Positive

Calculated value 0.66 shows Highly Positive Association. Hence there is positive association between medicine price and monthly budget of both the diseased patients. If the medicine price increases the level of monthly budget also increases, thus it is positively associated. But the diabetic patients are most affected with the rise in price due to less government interference in the medicine supply. To overcome this situation Government interference is needed in this epoch on diabetic medicine because medicines help them to live a long life with minimum pain.

## CONCLUSION

Communicable and Non-Communicable diseases are the diseases affecting people from time-being. For every disease medicines are available, as the technology progresses medicines also progressing. Government concentrated more on the communicable disease as it spreads and causes more damages to the health sector, but today whole world specifically India is suffering from Non-Communicable diseases especially diabetes. It is an alarm to our nation to reduce the increasing diabetes mass from our society. It can be possible only when the produced medicines reached into the hands of the diabetes patients regularly. Health is a collaborative factor but medicine is the only factor can control or eradicate the diseases. Dying without food is not only heartbreak; Patients dying without medicine is also one among. Ebola in 2014, Zika virus in 2016, Nipah virus in 2018.... dependence on pharmaceutical medicine further increasing....

## SUGGESTIONS

The study emphasizes some suggestions, attained through the statistical analysis of the observed data and from the valuable conclusion pertaining towards the topic is ensuing.

- ✚ Government should increase the stock of diabetic medicine in the government hospital and make available to the patients at reasonable price to help them to continue their medicine without affecting their daily expenditure.
- ✚ Tuberculosis medicines are available in the government hospitals, but the situation can be improved by increasing the number of days or supply of medicines throughout the month in the government hospital.
- ✚ Today the Insurance companies come forward to support the hospital expenses of the patients. Similarly they can formulate some policies to support the monthly medicine expenses of both the patients.
- ✚ In Tamil Nadu people have family card to purchase food items at concession rates, Even the government is running concessional Liquor shops (NyayaVilay Madukadaikal) which is hazardous to health. Apart from government hospital pharmacies, our state government should take initiative steps by starting concessional medical shops in all parts of the state which will help the patients to get their medicines at affordable prices. For example our nearby state Kerala is running several medical shops in the name of "Needhi Medical Stores" which provide medicine to general public at discount rates is successfully helping the patients to purchase their medicines at affordable prices. Even our Tamil Nadu government has started kamadhenu medical shops but not successfully attained its target.
- ✚ Department of Pharmaceutical industries in collaboration with the state government have started Jan Aushadhi stores (JAS) in 2008. Government should insist private industries to join hands with public sector industries to support Jan Aushadhi scheme. This will help to start more number of JAS in all over India.

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