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EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION AND TREATMENT OF MULTI DRUG RESISTANCE TUBERCULOSIS AMONG HEALTH WORKER

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Abstract

The quasi experimental research study showed the effectiveness of Structure Teaching Programme on knowledge regarding prevention and treatment of multi drugs resistant TB among health workers in a selected health workers. A 60 health workers were selected using purposive sampling technique. A structure questionnaire was used to assess the knowledge. The quasi experimental works were performed by using Structure Teaching Programme on knowledge regarding prevention and treatment of multi drugs resistant TB among health workers in a selected health workers. All statistical analysis were performed by using descriptive and inferential statistics. The data collection and analysis were based on objectives and hypothesis. The assessment of pre-test knowledge scores of health workers showed that majority (56.67%) had Average knowledge, whose scores ranged between 19-44, about 36.67% of the subjects had Poor knowledge, whose scores ranged between 0-18 and only 6.66% of subjects had Good knowledge, whose scores ranged between 45-60. The level of knowledge during pre-test and post-test were compared to prove the effectiveness of Structure Teaching Programme using paired "t" test ***t=18.50*, t(29)= 2.756, (P=<0.05).*** *Analysis of socio-demographic variables showed no any significant association between knowledge score at 5% level* ***(P>0.05).***

Keywords*: Structure Teaching Programme, Tuberculosis (TB)*

INTRODUCTION

"Infectious disease will last as long as humanity itself "

Tuberculosis (TB) is as old as the mankind. It is an ancient human disease that has been major public health challenge in the world and remains as a major health problem in most developing countries. Tuberculosis is the most common cause of death due to single infectious agent worldwide in adults. It is estimated that between 2002 and 2020 approximately 1000 million people be newly infected over 150 million people will get sick and 36 million will die of tuberculosis if proper control measures are not instituted.[1]

Indian Government launched National Tuberculosis Programme in 1962. However, the desired outcome could not be achieved. The program was reviewed, and then, Revised National TB Control Program (RNTCP) was launched in 1993 on a pilot basis. Yet by 1998, it covered only 2% of the population. By 2006, entire nation was covered by the RNTCP. Although RNTCP has made great strides in the last decade, but it is still facing challenges for example microscopy is still the mainstay of diagnosis, the disease is distributed unevenly throughout the country which makes it difficult to achieve the goals. Moreover, India has been in the news because of the international attention around the emergence of "totally drug-resistant" TB in Mumbai and the growing concern

that routine TB control (i.e., the directly observed treatment, short-course strategy) may not be sufficient for reducing TB incidence in the country.

Over the last National Strategic plan (NSP 2012–2017) period, significant gains were made. This includes mandatory notification of all TB cases, integration of the program with the general health services (National Health Mission), national drug resistance surveillance, and many more. However, more needs to be done to drastically reduce the TB incidence in India. The NSP 2017–2025 focuses on consolidating the achievements of previous NSP. The new National Strategic Plan (NSP) for TB elimination has incorporated certain new features like: Provision of digital X-ray preferably enabled with Computer Aided Diagnosis (CAD) and teleradiology services across the health sector, Universal Drug Susceptibility Testing (DST) to at least Rifampicin for all diagnosed TB patients through offer of Cartridge-based nucleic acid amplification test (CBNAAT), a sentinel surveillance system in the country with National TB Institute, Bangalore as the nodal centre and setting up sentinel centres at 10 sites with additional human resource and sequencing equipment and reagents, establishment of 2 additional National Reference Laboratory (NRLs) (West and North-East), National TB Policy and TB Bill, National TB Elimination Board: An apex body to facilitate policy development, implementation etc.

The organism causing tuberculosis was described by a century ago by Robert Koch on 24th march 1882.Tuberculosis is principally a disease of poverty, with 98 per cent of cases and 95 per cent of deaths occurring in developing countries.. Many of the cases are seen in South East Asian countries. According to the world health organisation, 8 million cases of tuberculosis occur each year, resulting in 4 million deaths.[2]

Tuberculosis is an infectious disease caused by the bacterium mycobacterium tuberculosis. Tuberculosis primarily affects the lungs although other areas such as kidneys, liver, brain and bone may be affected as well crowded or poor ventilated living conditions are the areas in which people are infected more. Tuberculosis spreads by droplet nuclei generated by coughing, sneezing talking, or by a person.

Until middle of the 20th century, there was no definitive treatment available for tuberculosis. With the availability of streptomycin, isoniacid, Para amino salicylic acid (PAS), in the mid 1940 the predictable, curative treatment for tuberculosis became reality. The introduction of rimfampcin, pyrazinamide and ethambutol in the subsequent years ushered in the era of short course treatment.[3]

Drug resistance in mycobacteria is defined as a decrease in sensitivity to a sufficient degree to be reasonably certain that the strain concerned is different from a sample of wide strains of human type that have never come in contact with the drugs.

Multi drug-resistant tuberculosis (MDR-TB) is caused by bacteria that are resistant to at least isoniazid and rifampicin, the most effective anti-tuberculosis drugs Multi drug-resistant tuberculosis results from either primary infection with resistant bacteria or may develop in the course of a patient's treatment. Multi drug resistant strains of mycobacterium tuberculosis seriously threaten tuberculosis control and prevention effort. The people infected with this disease readily spread to others. Resistance to Mycobacterium tuberculosis is a manmade amplification of natural phenomenon. Multidrug-resistant Mycobacterium tuberculosis is an emerging problem of great importance to public health, with higher mortality rates than drug-sensitive tuberculosis, particularly in immune compromised patients.[4]

Early diagnosis and treatment of multi drug resistant tuberculosis is of paramount importance. Multi drug-resistant tuberculosis patients require treatment with more toxic second line drugs and remain infectious for longer than patients infected with drug-sensitive strains, incurring higher costs due to prolonged hospitalization. Multi drug resistance tuberculosis is a serious problem which threatens the success of directly observed treatment short course (DOTS) and eradication of tuberculosis, so it is very essential to know about this disease and if nurses offer a high quality care, we can achieve a nation with no tuberculosis.[5]

Multidrug-resistant tuberculosis (MDR-TB) is defined as tuberculosis (TB) that is resistant to at least isoniazid and rifampicin, the two most effective first-line TB drugs. The emergence of MDR-TB is a major public health problem and is an obstacle for national and global TB control programmes. Globally, nearly half a million people are estimated to have MDR-TB annually, and only one-fourth of them get adequate treatment. In 2016, there were an estimated 490 000 new cases of MDR-TB and approximately 240 000 deaths from MDR-TB. Treatment for MDR-TB has substantially longer duration, higher costs and more toxicity than the treatment for drug-susceptible TB.[6]

Lesotho is one of the countries with the highest *per capita* incidence of tuberculosis (TB) in the world. With 637 incident cases of TB per 100 000 people, it was the fifth most affected country by 2006.Despite having achieved a high detection rate of 84% and adopted the directly observed therapy short-course (DOTS) strategy, several cases of multidrug-resistant tuberculosis (MDR-TB) had been reported since 2005. By 2009, a least 259 cases of MDR-TB had been identified in a total population of about 1.8 million people. Given this alarming figure, it is imperative that healthcare providers in Lesotho be knowledgeable about MDR-TB and be able to adopt practices to curb further transmission of this serious condition.[7]

Although it is generally assumed that healthcare service workers (HCWs) know about MDR-TB and its implications, the evidence from several studies worldwide have found that HCWs do not always have sufficient knowledge or the correct positive attitude; and do not exhibit acceptable practices regarding prevention and treatment of MDR-TB.To date, no study has been found describing the knowledge and practices of HCWs with regard to MDR-TB at Botsabelo Hospital in Maseru, Lesotho.

This study was conducted to fill this gap by investigating the knowledge level and practices surrounding MDR-TB amongst HCWs at this health facility. It is hoped that the findings from the study could be used by decision makers and institutional managers so as to design and implement interventions to address the shortcomings that were identified.[8]

MDR-TB occurs in patients either due to the development of drug resistance during a course of first-line TB treatment (ie, acquired MDR-TB) or due to the transmission of a drug-resistant strain from an infectious patient to a susceptible host (ie, primary MDR-TB). Acquired MDR-TB occurs as a result of sub-optimal first-line TB treatment related to healthcare providers or patient factors. There is increasing evidence that primary MDR-TB is common and that many patients with MDR-TB had it from the start of treatment. Inadequate knowledge and poor practice of health professional towards the prevention and control of MDR-TB may exacerbate the transmission of MDR-TB in healthcare settings. Health workers have the potential to contact with MDR-TB patients and are very important stakeholders in healthcare settings to combat MDR-TB. Previous

studies have been conducted to assess the knowledge and practices of health workers towards the prevention and control of TB. However, there is a limited study regarding the knowledge and practices of health workers about the prevention and control of MDR-TB in Ethiopia.[9]
Ethiopia is one of 30 high TB and MDR-TB burden countries. The incidence of TB has decreased over time in Ethiopia following the implementation of different interventions, including the delivery of TB care by health extension workers and the expansion of directly observed therapies. However, the number of MDR-TB cases has increased over time and has become a challenge for the national TB control and prevention programme. Assessing the knowledge and practice of health workers on MDR-TB, and identifying factors associated with inadequate knowledge and low practice are important for the prevention and control of MDR-TB. Therefore, the aim of this study was to assess the knowledge and self-reported practice of health works related to MDR-TB and to identify factors associated with inadequate knowledge and low self-reported practice of health workers toward the prevention and control of MDR-TB in Amhara region referral hospitals, Ethiopia.

Tuberculosis (TB) is still a major health problem in the world. It has become one of the top ten causes of death worldwide in 2015.1 Mycobacterium tuberculosis, as a causative agent of TB, is mostly susceptible to isoniazid (INH) and rifampin (RIF) which both are known to be the most powerful antituberculosis drugs. Strains of Mycobacterium tuberculosis which are resistant to these drugs, are termed as multidrug-resistant TB(MDR-TB). Currently, MDR-TB posed a significant thread to global TB control.[10]

In 2010, the World Health Organization (WHO) recommended the utilisation of Xpert MTB Rif (Xpert) as a new automated molecular diagnostic test to rapidly identify Rifampicin Resistant-TB which can be a good proxy for MDR-TB.3 The use of Xpert is upscaled globally since it provides accurate results for RIF-resistance detection given pending results from conventional culture and drug susceptibility testing (DST).4 As part of the Indonesian National TB Programme (NTP), efforts to upscale programmatic management of drug-resistant TB (PMDT), Xpert is used as a routine test for presumptive MDR-TB patients. Treating MDR-TB patients is very challenging since it has a longer course of treatment, more severe side effects, and is more toxic, more difficult to acquire and much more expensive. Furthermore, it may take more than two years for MDR-TB treatment which leads to social isolation, loss of employment, socioeconomic crisis and psychosocial burden.[11]
In 2015, at least 504 new MDR-TB cases were identified in Indonesia. Based on this alarming condition, it is crucial that healthcare providers in Indonesia are knowledgeable about MDR-TB and certain measures to control its transmission. To control MDR-TB outbreak, prompt diagnosis, infection control and effective treatment are imperative. In general, it is assumed that healthcare workers (HCWs) especially the TB nurse know about MDRTB and its consequences. However, evidence showed that HCWs do not always have enough knowledge or the proper positive attitude; and do not consistently present correct practices about prevention and treatment about MDRTB.

Until now, no study has been found assessing the knowledge regarding MDRTB among HCWs in Indonesia. Therefore, this study aimed to measure knowledge about MDR-TB amongst HCWs working at public health centers in Bandung Municipality.[12]

METHODOLOGY

A quasi-experimental design was used for the present study & 60 Health Workers were selected using the purposive sampling technique. A structured questionnaire was used to assess the knowledge level. Self Instructional Module was used to determine variation between pretest and posttest knowledge scores. Descriptive and inferential statistics were used to analyze the data.

RESULTS AND DISCUSSION

This section presents the analysis and interpretation of data collected from 60 Health Workers in order to assess the effectiveness of STP on tuberculosis regarding prevention of tuberculosis. The data collected from the Health workers before and after the STP 0n tuberculosis was organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics. The data collection was done based on the objectives of the study. The main objectives were:

1. To assess the knowledge of junior health assistant female students about prevention of Tuberculosis.
2. To administer structured teaching to junior health assistant female students about prevention of Tuberculosis.
3. To evaluate the effectiveness of structured teaching programme among junior health assistant female students about prevention of Tuberculosis.
4. To find out association of knowledge regarding prevention and treatment of Multi drugs resistant Tuberculosis with their selected demographic variable.

Organization of Findings

The data is organized, analyzed and presented in two parts.

PART-1

SECTION –A

Frequency and percentage distribution of the demographic variables.

SECTION – B

Analysis of pre-test knowledge of the Health workers regarding prevention of tuberculosis.

Assessment of level of knowledge.

Area wise mean, SD and mean percentage of knowledge score.

Item wise percentage of correct responses.

PART-2

SECTION –A

Evaluation of the effectiveness of the STP regarding prevention of TB.

Area wise effectiveness of the STP.

Item wise effectiveness of percentage of correct responses.

SECTION-B

Testing of hypothesis

Significance of the difference between pre and post test knowledge score.

PART-1 SECTION –A

Frequency and percentage distribution of the demographic variables.

Table-1:Frequency and percentage distribution of respondents according to age.

N=60

Age in years	Frequency	Percentage
20-23	16	20.00
24-27	17	56.66
27-30	13	10.00
31-34	14	13.34

The data presented in the table 1 reveals that the proportion of Health workers 16(20%) were in the age group of 20-23 years, 17(56.66%) were in the age group of 24-27 years, 13(10%) were in the age group of 27-30 years and the remaining 14(13.34%) were in the age group of 31-34 years.

Table 2: Frequency and percentage distribution of respondents according to religion.

N=60

Religion	Frequency	Percentage
Hindu	57	90.00
Muslim	2	6.66
Christian	1	3.34
Others	-	-

The data presented in the table 2 reveals that the proportion of Health workers 57(90%) were the Hindus, 2(6.66%) were the Muslims and the remaining 1(3.34%) were the Christians.

Table 3: Frequency and percentage distribution of respondents according to place of residence N=60

Area of residence	Frequency	Percentage
Rural	34	46.66
Urban	26	53.34

The data presented in the table 3 reveals that the proportion Health Worker 34 (46.66%) were living in Rural area and the remaining 26 (53.34%) were living in the Urban area.

Table-4: Frequency and percentage distribution of respondents according to marital status. N=60

Marital status	Frequency	Percentage
Married	17	23.33
Unmarried	43	76.67
Divorced	-	-

The data presented in the table 4 reveals that the proportion of Health workers 43(76.67%) was unmarried and the remaining 17(23.33%) were married.

Table-5: Frequency and percentage distribution of respondents according to previous knowledge N=60

Previous knowledge	Frequency	Percentage
Yes	16	20.00%
No	44	80.00%

The data presented in the table 5 reveals that the proportion of health workers 44(80%) were not having previous knowledge and the remaining 16(20%) were having the previous knowledge.

Table 6: Frequency and percentage distribution of respondents according to educational status. N=60

Educational status	Frequency	Percentage
S.S.L.C	17	23.33%
P.U.C	37	56.67%
Graduation	6	20.00%

The data presented in the table 6 reveals that the proportion of Health Workers 37(56.67%) were passed P.U.C, 17(23.33%) were passed S,S.L.C and the remaining 6(20%) were studied up to Graduation.

SECTION – B

a) Analysis of pre test knowledge of the Health workers regarding prevention of tuberculosis.
b) Assessment of level of knowledge.
c) Area wise mean, SD and mean percentage of knowledge score.
d) Item wise percentage of correct responses.

a). *Level of knowledge of Health Workers regarding prevention of tuberculosis.*

In order to find out the level of knowledge of the Health Workers, a Three point scale was used. Students who scored between 0-20 were referred as poor, 21-40 as average and 41-60 as good.

Table-7

Level of knowledge of Health Workers regarding prevention of TB.

Level of knowledge	Range of scores	Number of respondents	Percentage
Poor	0-18	18	36.67
Average	19-44	27	56.67
Good	45-60	15	6.66
	Total	60	100

Assessment of level of knowledge of Health Workers regarding prevention of TB reveals that majority (56.67%) had Average knowledge, whose scores ranged between 19-44, about 36.67% of the subjects had Poor knowledge, whose scores ranged between 0-18 and only 6.66% of subjects had Good knowledge, whose scores ranged between 45-60.

a) Area wise mean, SD and mean percentage of knowledge score.

Table-8

Area wise mean, SD and mean percentage of knowledge score.

Knowledge areas	Maximum possible score	Mean score	SD	Mean %
Meaning, causes and mode of transmission.	25	7.5	1.16	50.00

Signs and symptoms and diagnosis.	17	3.5	0.95	50.00
Treatment and prevention.	18	8.0	1.87	44.40
Total	60	19.0	3.41	47.50

SECTION-B

Testing of hypothesis

Hypothesis was tested using paired 't' test. Paired 't' value was calculated to analyze the differences in knowledge of the Health Workers in the pre and post-test. **Hi:** There is a significant improvement on knowledge about prevention of TB among Health Workers after STP.

Paired 't' value was calculated to analyze the difference in knowledge of Health Workers in pre-test and post-test on prevention of TB.

Table-08

Significance of difference between pre and post-test knowledge scores of Health Workers regarding prevention of TB.

	Areas	Df	't' value	Table value	Level of significance	
1.	**Knowledge about prevention of TB**	**29**	**18.50**	**2.756**	**16.81 P□0.005**	**VHS**

VHS: very highly significant

Findings revealed that there was very high significant difference between pre and post test scores of all the areas as well as overall knowledge on prevention of TB: i.e., the obtained value is much higher than that of table value. Hence the hypothesis is accepted and it is concluded that there is very high significant difference between the pre and post knowledge scores of Health Workers on prevention of TB, therefore STP was highly effective in improving the knowledge. of Health Workers regarding prevention of TB.

TO FIND OUT ASSOCIATION OF KNOWLEDGE REGARDING PREVENTION AND TREATMENT OF MULTI DRUGS RESISTANT TUBERCULOSIS WITH THEIR SELECTED DEMOGRAPHIC VARIABLE.

Table-9

Variables	Odds ratio (95% CI)	*p*-value
Age (Over 30 years vs. < 30 years old)	**1.21 (0.56, 2.59)**	**0.63**
Working experience (< 5 years vs. > 5 years)	**1.09 (0.51, 2.35)**	**0.81**
Male versus female	**1.03 (0.48, 2.23)**	**0.94**
Professional category MHW vs. FHW	**1.23 (0.65, 5.57)**	**0.73**
Knowledge level Vs. Insufficient Knowledge level	**1.01(0.54, 3.37)**	**0.65**

There is no any significant association found with demographic variable

DISCUSSION

PART-1 SECTION -A

Frequency and percentage distribution of the demographic variables.

SECTION - B

Analysis of pre-test knowledge regarding prevention of tuberculosis.

a) Assessment of level of knowledge.
b) Area wise mean, SD and mean percentage of knowledge score.
c) Item wise percentage of correct responses.

PART-II SECTION -A

Evaluation of the effectiveness of the STP regarding prevention of TB.

a) Area wise effectiveness of the STP.
b) Item wise effectiveness of percentage of correct responses.

SECTION-B

Testing of hypothesis

Distribution of demographic variables reveals that maximum number of Health workers 17(56.66%) were in the age group of 24-27 years, 16(20%) were in the age group of 20-23 years, 13(10%) were in the age group of 27-30 years and the remaining 14(13.34%) were in the age group of 31-34 years. Out of 60 Health workers 57(90%) were the Hindus, 2(6.66%) were the Muslims and the remaining 1(3.34%) were the Christians.The proportion Health Workers 26(53.34%) were living in Urban area and the remaining 34(46.66%) were living in the urban area.Out of 60 Health Workers 43(76.67%) were unmarried and the remaining 17(23.33%) were married.The maximum number of Health Workers 44(80%) were not having previous knowledge and the remaining 16(20%) were having the previous knowledge.Maximum number of Health Workers 37(56.67%) were passed P.U.C, 17(23.33%) were passed S,S.L.C.and the remaining 6 (20%) were studied up to Graduation.

The first objective was to assess the level of knowledge of Health Workers about prevention of TB. The level of knowledge regarding prevention of TB was assessed and tabulated in tables.out of 60 Health Workers (56.67%) had average knowledge, whose scores ranged between 19-44, about 36.67% of the subjects had poor knowledge, whose scores ranged between 0-18 and only 6.66% of subjects had good knowledge, whose scores ranged between 45-60. The area wise mean, SD and mean percentage of knowledge score reveals that, the total mean percentage of the scores was 47.50% with 19.00 ±3.41 as mean and S.D of the total score. Area wise mean percentage of knowledge score was 50.00% in the area “meaning, causes and mode of transmission”, with mean and S.D of the knowledge scores 7.5 ±1.16.In the area “signs and symptoms and diagnosis” the mean percentage was 50.00 with the mean and S.D 3.5 ± 0.95. In the area of “treatment and prevention of TB” the mean percentage was 44.40 with mean and S.D of 8.0 ± 1.87.

The findings of the study is supported by Nakanishi Y, Izymi M, Abek, Harada J, Inoue K, Wataya H. conducted a study on impression and knowledge of tuberculosis in employees and students in a

University Hospital, Fukuoka, Japan. The aim of the study was to search the efficient way for the prevention of nosocomial tuberculosis infection in a University Teaching Hospital. Through a questionnaire information on the degree of interest in TB and basic knowledge of TB epidemiology were assessed. The study subjects included Health Workers also with nursing staff, 431 felt anxiety for tuberculosis infection and the disease. The study suggested that the employees and the students in the university hospital do not have enough knowledge on tuberculosis. They suggested establishing a system of education and health examination for the prevention of nosocomial tuberculosis infection.

The second objective was to administer the STP regarding prevention of TB. Teaching plan is a guide for the teacher because it helps to cover the topics comprehensively with proper sequence of points and without missing anything. (Ramachandran, 1993).

Steps in preparing the teaching plan:
→ Setting preliminary information with regard to background information of the group.
→ Framing the outline of the teaching plan.
→ Preparing outline of the content.
→ Deciding method of instruction and audio-visual aids.
→ Evaluation of the teaching plan.

Third objective was to assess the effectiveness of STP regarding prevention of TB among Health Workers. Comparison of mean, S.D and mean percentage of the knowledge scores of the pre and post test reveals an increase of 32.50% in total mean knowledge score of the Health Workers. Item wise effectiveness of STP with regard to percentage of correct responses by Health Workers also reveals very high significant difference (Table 13,14,15). The analysis of the differences in knowledge of the Health Workers in the pre and post test revealed that there was very high significant difference (16.81) between pre and post test scores of all the areas as well as overall knowledge on prevention of TB (Table-17).

The findings of this study is supported by a study conducted by Ramachandran, (1996), he states that the evaluation of any health education programme is to measure the change in the knowledge, change in attitude and change in behaviour. Evaluation may be required concurrently or terminally. The effectiveness of the health education can be assessed by evaluating the programme by various methods like face to face questions or questionnaire or asking them to narrate or by observing their practices.

CONCLUSION

The finding of this study showed that the structure teaching programme was effective as evidenced by the result of post-test knowledge score which was more than pre-test score. This study has proved that structure teaching programme helped to increase the knowledge knowledge regarding prevention and treatment of multi drug resistance tuberculosis among health worker, hence based on the findings, it was concluded that different methods of teaching can be used to improve the knowledge of health workers which will help in prevention and treatment of tuberculosis. Ultimately it will help to improve the quality of life among the patients with tuberculosis.

REFFERENCES

1. Jayarani premkumar and vijayanathan (June 2010), Management of multi drug resistance tuberculosis, Indian journal of continuing nursing education, volume11, issue 1, Pp: 30-39.
2. Mohan A and S.K.Sharma (June 2003), Multi drug resistance tuberculosis, journal of advanced nursing, Pp: 56-67
3. Lewis, Heitkemper, Dirksen, Medical Surgical Nursing, 7th edition, Mosby publishers, Pp: 569-574.
4. C.K. Paramasivan, (October 2004), Drug resistance in tuberculosis in India, Tuberculosis fact sheet, Pp: 141-145.
5. Ashok Raawath, , (April 2005), Emerging infectious diseases, journal of clinical nursing,Pp:14-18
6. World Health organization drug and multi drug resistant tuberculosis assessed on 2010, Available from www.who.int.
7. Available from http://www.ncbi.nlm.nih.gov/pubmed/12168658
8. Udwadia ZF, (April 2005), Article on India's multidrug-resistant tuberculosis crisis, Available from http://www.ncbi.nlm.nih.gov/pubmed/12168749.
9. Alcaide F and Santín M, (Oct 2007), Emergence and spread of multidrug-resistant tuberculosis, Pp: 34-36.
10 Matteelli A, Migliori GB, Cirillo D, Girard E, Raviglion M, (May 2007), Infectious and Tropical Diseases,Pp:146:157.
11. Manuela Pardini, (June 2008), Characteristics of drug-resistant tuberculosis, Pp: 65-68.
12. Aleyamma Thomas, Rajeswari Ramachandran, K. Jaggarajamma,(June 2007),Management of multidrug resistance tuberculosis, Pp:32-39.