original disease. Each year, more than 8 million people develop infected with TB, and as a consequence, at risk of developing Globally it is estimated that one third of the population is respiratory TB during expiratory action such as coughing, person by droplet nuclei from people with pulmonary or tuberculosis infection of bacteria, called Tuberculosis is an airborne infectious disease, caused by bacteria, called Mycobacterium tuberculosis (MTB). Tuberculosis is spread from person to person by droplet nuclei from people with pulmonary or respiratory TB during expiratory action such as coughing, sneezing or singing and inhaled by a susceptible contact. Globally it is estimated that one third of the population is infected with TB, and as a consequence, at risk of developing active disease. Each year, more than 8 million people develop disease and there are approximately 1.9 million deaths every year. In India 1.9 million tuberculosis cases occur annually accounting for one fifth of the world’s new tuberculosis cases and 2/3rd of cases in South East Asia region. This makes India highest tuberculosis burden country. India had a national Tuberculosis programme (NTP) in operation since 1962. Through it only 1/3rd of total patients receiving treatment used to complete the treatment. In 1992, Government of India (GoI) – WHO carried out review of TB programme in India and deficiencies found included inadequacy of budget allocation, overdependence on X-ray, poor treatment compliance and inadequate health infrastructure. Gol decided to pilot test RNTCP in 1993. RNTCP was pilot tested in 1993 as phase-I project covering population of 118 million. After a successful pilot in 1993 which established the technical and operational feasibility of strategy, expansion of DOTS services took place on a larger scale in India from 1997. The past eleven years have witnessed a rapid expansion of RNTCP, covering whole nation by March, 2006. Compliance is a major problem for tuberculosis control programme. Therefore to overcome the problem of default by patient, direct observation of the treatment is of paramount importance. In DOT, an observer (health worker or a trained community volunteer who is not a family member) watches and supports the patients taking drugs. It is this DOT provider who ensures that the patient takes right drugs in right doses at right interval for right duration. DOT providers should be accessible, acceptable and accountable. Health care worker’s knowledge, attitudes and perceptions about Tuberculosis play an important role in their ability to diagnose and care for individuals with
Tuberculosis. A variety of factors, such as training, cultural and ethnic background, practice settings, preferred sources of information and learning styles influence them. The successful completion of TB treatment is influenced greatly by ‘how’ care is delivered to individuals. It is paramount that Health care worker supporting clients with TB have positive attitudes.

So the present study was designed to know the knowledge and attitude of DOT Providers regarding TB and its treatment.

Materials and Methods:
The study was conducted in district TB Centre Patiala. There are 4 Tuberculosis Units (TU) in districts TB Centre Patiala which are: TU Patiala, TU Nabha, TU Samana, TU Rajpura.
The study was conducted in one of the Tuberculosis Units of district Patiala TB centre i.e. TU Patiala. There are 25 Government DOT centres in T.U. Patiala & there were 52 DOT providers in these centres including pharmacists, nurses, MPHWF, class IV, treatment organizer & radiographer. Out of 52 DOT providers, 50 gave consent for study. A pre-tested questionnaire was used to collect the relevant information from all the DOT providers. The questionnaire consisted of questions regarding their knowledge and attitude about Tuberculosis, RNTCP and DOTS. Their beliefs and perceptions regarding TB were also asked. The analysis of association between knowledge regarding TB and training status of the DOT provider was done using chi-square test.

Results:
Out of 50 DOT providers 37 (74%) were females and 13 (26%) were males. The mean age of the DOT providers was 39.98 years with standard deviation of 6.09 years. Out of 50 DOT providers there were 21 (42%) MPHWF, 15 (30%) pharmacists, 5 (10%) nurses, 7 (14%) class IV, 1 (2%) radiographer and 1 (2%) treatment organizer.

All of the DOT providers were aware that pulmonary tuberculosis is a communicable disease. 45 (90%) DOT provider said that pulmonary tuberculosis is the most common form of the disease. All DOT providers knew that TB spread by droplets. All the DOT providers knew that cough with expectoration is the disease. All of the DOT providers knew that cough with expectoration is the most common form of the disease. All DOT providers knew that TB spread by droplets. All the DOT providers knew that cough with expectoration is the disease. All of the DOT providers knew that cough with expectoration is the most common form of the disease. All DOT providers knew that TB spread by droplets. All the DOT providers knew that cough with expectoration is the disease. All of the DOT providers knew that cough with expectoration is the most common form of the disease. All DOT providers knew that TB spread by droplets. All the DOT providers knew that cough with expectoration is the disease.

48 (96%) DOT provider, said that tuberculosis is more common in lower socio-economic status. Thirty nine (78%) DOT providers said that Sputum examination is the first line investigation to diagnose tuberculosis. 37 (74%) DOT providers said that 3 samples are needed to diagnose pulmonary tuberculosis, only 10 (20%) were aware about need of only two sputum samples according to new guidelines and 3 (6%) were not sure about this. Only 32 (64%) DOT providers knew about full terminology of DOTS i.e. Directly Observed Treatment Short-course & 36% did not know the correct terminology. 42 (84%) out of 50 DOT provider had received training under RNTCP.

Forty six (92%) of the DOT providers knew that drugs in Intensive Phase are given in thrice weekly doses. While 100% knew that in Continuation Phase treatment is given daily (including pyridoxine).

On statistical analysis the knowledge about treatment schedule between trained & untrained DOT Providers was found to be highly Significant.

All the DOT providers were aware that there are two treatment phases in category I, II and III i.e. Intensive and Continuation Phase. All the DOT providers had knowledge about duration of Intensive phase of category I and III i.e. 2 months but 48 (96%) knew about duration of IP in category II treatment. Knowledge about correct duration of continuation Phase of treatment in category I, II and III was known to all the DOT providers. 36 (72%) DOT providers knew correctly about follow up sputum examination in category I, 31 (62%) about category II and 35 (70%) about category III.

On statistical analysis knowledge about Follow up Sputum Examination between trained & untrained DOT Providers was found to be significant. 23 (46%) DOT providers consider treatment failure case if patient is sputum positive at 5th month. 41(82%) out of 50 DOT providers said a patient is labeled as defaulter if he/she is sputum positive after having left treatment for at least 2 months. 41 (82%) DOT provider knew that patient is labeled as a relapse case, if he returns smear positive after completing treatment and had been declared cured. 84% of DOT providers knew that additional dose of rifampicin is needed if patient weight is >60 kg. It was also noted that all the DOT providers (100%) used to weigh patient before starting treatment.

Knowledge about starting chemoprophylaxis if contact case is found at home was there in 35(70%) of DOT providers. 33 DOT Providers (66%) knew that urine colour will change on taking Rifampicin. Table 1 shows the knowledge about various side effects of ATT drugs. 31 (62%) of the DOT providers knew that jaundice is caused by Rifampicin. Most common reason told by DOT providers for default action of the patient was toxicity of drugs (52%) followed by improvement in symptoms (44%). Other reasons for default were change of address (24%), deterioration (12%) and affordability (8%). The source of latest information about tuberculosis to DOT providers were health officials (78%), books (22%), seminars (10%), media (10%).

Table 2 & 3 show the response to various questions regarding the attitude and beliefs of DOT Providers about TB. Table 4 shows the health education imparted to the TB patients by DOT providers.

<table>
<thead>
<tr>
<th>DOT Provider (n=50)</th>
<th>Itching</th>
<th>Nausea</th>
<th>Vomiting</th>
<th>Jaundice</th>
<th>Joint Pains</th>
<th>Vertigo</th>
<th>Visual Disturbance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists</td>
<td>8</td>
<td>14</td>
<td>14</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Nurses</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPHWF</td>
<td>11</td>
<td>16</td>
<td>17</td>
<td>12</td>
<td>6</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Class IV</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trt Organizer</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Radiographer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>25 (50%)</td>
<td>39 (78%)</td>
<td>39 (78%)</td>
<td>33 (66%)</td>
<td>13 (26%)</td>
<td>9 (18%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DOT Provider (n=50)</th>
<th>Fear of contracting the disease</th>
<th>Work for incentive</th>
<th>Trt of TB Patient should be kept confidential</th>
<th>TB is a social stigma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacists</td>
<td>2</td>
<td>0</td>
<td>11</td>
<td>Y</td>
</tr>
<tr>
<td>Nurses</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>Y</td>
</tr>
<tr>
<td>MPHWF</td>
<td>10</td>
<td>0</td>
<td>15</td>
<td>Y</td>
</tr>
<tr>
<td>Class IV</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>Y</td>
</tr>
<tr>
<td>Trt Organizer</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Y</td>
</tr>
<tr>
<td>Radiographer</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>Y</td>
</tr>
<tr>
<td>Total</td>
<td>20 (40%)</td>
<td>0</td>
<td>37 (74%)</td>
<td>16 (32%)</td>
</tr>
</tbody>
</table>
Discussion:
The present study comprised of sample of 50 DOT providers working in the Government DOT centres of Tuberculosis Unit Patiala.

Out of 50 DOT providers 37 (74%) were females and 13 (26%) were males. Females were more because more number of Multi Purpose Health Worker Female (MPHW-F) participated in the study who acted as DOT providers. All of the DOT providers were aware that pulmonary tuberculosis is a communicable disease. The figure is higher than those reported by Balambal (92%) (11). This shows that all the DOT providers were having the knowledge about communicability of pulmonary TB.

All the DOT providers knew that tuberculosis is a curable disease. So in this study all the DOT providers were aware that TB is curable because all were having experience under RNTCP.

Almost similar results were reported by Arora et al (12) Johansson et al (13) found that staff and patients considered Tuberculosis a ‘dirty disease’, which mainly affects poor people which is consistent with our study where 48 (96%) DOT provider, said that tuberculosis is more common in lower socio-economic status.

Thakur et al (14) found in his study that 72% of the participants stated that 3 samples are required for diagnosis. Similarly in our study 37 (74%) DOT providers said that 3 samples are needed to diagnose pulmonary tuberculosis.

Thirty two (64%) DOT providers who said that samples are collected in spot-morning-spot pattern. This finding is in contrast to the finding of Thakur et al(14) that only 6% of doctors knew correct timing of sputum collection. It could be because majority (84%) of DOT providers in this study are trained under RNTCP while in the study by Thakur et al(14) 17% of the participants were trained under RNTCP.

Similarly 47 (94%) DOT providers knew that National Program for Tuberculosis followed at present is RNTCP (Revised National Tuberculosis Control Program). This is in contrast to the finding by Thakur et al (2006) that only one third (33%) of the participants knew the name of the national programme for tuberculosis.

The most common source of latest information about TB was health official. This could be because DOT providers in this study are in government DOT centres so they are frequently visited by the health officials and all of them are paramedics so they are not aware of the latest updates of journals and not attending the conferences.

Balambal(11) found in his study that 78 (80%) out of 97 DOT providers knew the treatment rhythm, intermittent during phase-I and daily during phase-II. Similarly in our study Forty six (92%) of the DOT providers knew that drugs in Intensive Phase are given in thrice weekly doses. While 100% knew that in Continuation Phase treatment is given daily (including pyridoxine). All the DOT providers had knowledge about duration of intensive phase of category I and III i.e. 2 months but 96% knew about duration of IP in category II treatment.

Correct duration of Continuation Phase of treatment in category I, II and III was known to all the DOT providers. 38 (76%) knew correct combination of drugs used in intensive phase of category I treatment. About continuation phase only 36 (72%) knew the correct combination of drugs. Similarly Balambal(11) found that 72 (74%) out of 97 knew about drugs administered in each phase.

Majority of DOT provider (i.e. 90%) knew that failure, defaulter and relapse cases are put in category II. The most common reason told by DOT providers for default action of the patient was toxicity of drugs (52%) followed by improvement in symptoms (44%). Similarly Pandit & Cloudhary(15) observed that majority of patients on DOT stopped treatment because of toxicity of drugs.

In our study it is found that 40% of DOT Providers had fear of contracting the disease. Health education given by DOT providers on various aspects of TB were: regarding regular treatment (98%), for taking good diet (94%), proper disposal of sputum (92%), covering of mouth while coughing (94%), personal hygiene (90%), cessation of alcohol and smoking (74%). Similarly V.K. Arora et al(12) found that 85% of DOT providers proposed coverage of mouth during coughing and sneezing.

After assessing the knowledge and attitude of DOT providers gaps were found. There is a need to impart the training to the DOT Providers before they start administering DOTS Therapy. Reorientation courses should be organized periodically to update the knowledge of DOT providers regarding the TB disease, its diagnosis, treatment and follow up of patients. Knowledge about new and retreatment cases should be given to them. Constant monitoring and supervision is required by trained staff in Tuberculosis Unit.

References:
7. TB India 2008. RNTCP Status Report, Central TB Division Government of India, New Delhi. pp 10-16