

A Study on Awareness of Tuberculosis among the Population of the Field Practice Area of Urban Health Centre, Panagal, Nalgonda District, Andhra Pradesh.

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Abstract

A descriptive cross sectional study using Simple Random Sampling technique was used to select a sample of 310 houses from universe of 2373 houses of during the time period of 28th of May to 28th of July for a period of two months. There were 171 ((55.2%) males and 139 (44.8%) females in the study population. Most of the study population were of the age group of 20-29 years. The average age of male was 41.67 years and that of females was 38.10 years. About 51.9% of the study population had not heard about Tuberculosis, Cough with sputum was the predominant symptom known by most of the study population. Literacy status also played a role as in the study seen that more literate a person more was awareness. Only 13.6% of the total respondents were able to say that the gold standard i.e. the sputum examination is required in case of Tuberculosis. Majority (68.7%) were optimistic that tuberculosis is curable. Majority (57.1%) preferred Government hospitals to Private Hospitals for diagnosis and treatment and therapy of choice was Allopathy (85.8%). 77.1% of the study population were aware of the presence of DOTS center in UHC, Panagal. Only 67.7% were aware that Anti TB drugs were given on 'gratis' in Government Hospitals. Majority (20.0%) of the study population heard about TB from mass media. Majority (79.9%) were aware of BCG Vaccination and majority of them who were aware said that it should be given as a part of routine immunization to an infant. The lacunae in the awareness about the epidemiology, diagnosis treatment, precautions, preventive measures taken for tuberculosis, DOTS regimen, DOTS Center and BCG vaccination, as observed in the study can be mitigated by a multipronged approach utilizing the public-private partnership.

Keywords : T.B., DOTS , Sputum

Introduction

Tuberculosis is a major public health problem in India, coupled with rising number of cases of AIDS, in whom the most opportunistic infection is tuberculosis ¹, it has gained even greater importance. Tuberculosis is not only a medical problem, but also a social and economic problem as well ².

India account for nearly one third of global burden of tuberculosis. Every year, approximately 1-8 million persons develop tuberculosis of which 0.8 million are new smear positive highly infectious cases and about 4.17 lakhs people die of Tuberculosis every year, one person dies every minute, and about thousand people every day³. In India at any point of time, 4 out of 1000 persons of age five years and above are sputum positive for AFB (Acid Fast Bacillus). 16 out of 1000 persons have radiological actives sputum negative disease⁴.

The incidence and prevalence of tuberculosis in the year 2002 was 75/100000 population and 156/ 100000 population respectively⁵.

The Revised National Tuberculosis Control Program (RNTCP) depends on the passive reporting of chest symptomatic to the health institutions⁶. Therefore, it is important that the basic knowledge about this disease and availability of treatment is clear among the individuals in the community. Equally important is to access the practices of the people and to find out unhealthy practices if any.

The present study, taking the above background information into consideration was undertaken, in the field practice area of the Urban Health Centre to understand the knowledge and practices of tuberculosis in the community residing in that area

Materials and methods

STUDY SETTING: Field practice area of Urban Health Centre Panagal Nalgonda District, Andhra Pradesh.

Urban Health Centre, Panagal and its Field Practice Area and exactly located at a distance of 22 Kms from the Kamineni Institute of Medical Sciences, Medical College, located at Narketpally.

STUDY PERIOD: 28-05-06 to 27-07-06. The study was carried from the 21st May 2006 to 21st July 2006 for a period of two months as requested by the Shortterm Research Studentship (STS) 2006.

STUDY DESIGN: Descriptive, cross sectional epidemiological study design was used to collect data from the study population.

STUDY POPULATION: Resident members of sample houses of ward numbers 8,9 and 10 which constitute the field practice area of Urban Health Centre, Panagal.

STUDY METHODOLOGY: All the houses in the ward numbers 8,9 and 10 were enumerated and enlisted taking the help of ANM of UHC, Panagal. Ward No.8 had 927 houses, Ward No.9 had 961 houses and Ward

No.10 had 485 houses. The total numbers of houses that were enlisted were 2373 in number which formed the universe of the study. For obtaining the study sample, simple random technique was used. Around 310 houses (13.1% of the universe) approximately were surveyed in the two months study period, taking into account to cover a target of 10 to 15% of the universe. The head of the house- hold are in his or her absence any other member of the family other than children were interviewed by the investigator by a scientifically designed and tested questionnaire. Necessary help was taken from the ANMs and the youth of the ward areas for location of the sampled houses in the ward areas. In case the sampled house was found locked on three successive visits, the adjacent house was taken and the inmate was interviewed. On an average each interview lasted around 15 to 20 minutes. The data was analysed with the help of the guide from 29-07-2006 onwards and date was fixed to complete the Research project and send before 27-08.2006. i.e. the time frame of one month from date of tenure of student ship for the project to be sent to ICMR. STATISTICAL ANALYSIS: Mean, Range, Proportions.

Results

In this study it was found that the number of males constituted 171 (55.2%) and females 139 (44.8%) in the study population. Maximum 75 (24.2%) were found in the age group 20-29 years out of the total 310 (100%) study population. Minimum 8 (2.6%) were found in the age group of 0-19 years of the total 310 (100%) study population. It was found that the maximum number of males, 49(28.7%) were in age group of 40-59 years and the minimum 4(2.3%) were in the age group of 0-19 years. It was found that maximum number of females, 45(32.4%) were in age group of 20-29 years and the minimum 4(2.9%) were in the age group of 0-19 years. It was found that the average age of males in the study population was 41.67 years and the age range was 18-85 years, while the average age of females was 38.10 years and the age range was 17-80 years.

(Table-I)

Age and Sex Distribution of the study Population

Age(yrs)	Male (%)	Female (%)	Total (%)
0-19	4(2.3)	4 (2.9)	8 (2.6)
20-29	30 (17.6)	45 (32.4)	75 (24.2)
30-39	42 (24.6)	31 (22.3)	73 (23.6)
40-49	49 (28.7)	21 (15.2)	70 (22.6)
50-59	24 (14.1)	22 (15.9)	46 (14.8)
60-69	12 (7.1)	10 (7.2)	22 (7.1)
>=70	10 (5.9)	6 (4.3)	16 (5.2)
Total	171(100)	139 (100)	310 (100)

Average of Male = 41.67 yrs.

Age Range of Male = 18 to 85 yrs.

Average Age of Females= 38.10 yrs

Age Range of Females= 17 to 80 yrs.

It was observed in this study that the maximum 148(47.7%) of the 310 (100%) study population were from 9th ward followed by 103(33.2%) of the study population were in the 8th ward and 59 (19.0%) in the 10th ward. Out of total 171(100%) males maximum 60(35.1%) were in the 8th ward and the minimum 26(15.2%) were in the 10th ward. Out of the total 139(100%) females maximum 63(45.3%) were from the 9th ward and the minimum 33 (23.7%) were from the 10th ward.(Table-II)

Distribution of Study Population Ward Wise

Ward	Male (%)	Female (%)	Total (%)
8 th	60 (35.1)	43 (30.9)	103 (33.2)
9 th	85 (49.7)	63 (45.3)	148 (47.7)
10 th	26 (15.2)	33(23.7)	59 (19.0)
Total	171(100)	139 (100)	310(100)

In this study it was observed that out of 310 (100%) study population Hindus 298(96.1%) formed the majority while the Christians 3 (0.9%) formed the minority. Muslims constituted 9(2.9%) of the study population. (Table-III)

Distribution of the Study Population Religion Wise

Religion	Male (%)	Female (%)	Total (%)
Hindus	166 (97.1)	132 (94.9)	298 (96.1)
Muslims	4 (2.3)	5 (3.6)	9 (2.9)
Christians	1(0.6)	2 (1.4)	3 (0.9)
Others	0 (0.0)	0 (0.0)	0 (0.0)
Total	171 (100)	139 (100)	310 (100)

On compilation of the data it was found that in the distribution of the study population 310(100%) by caste, Backward caste (BC) constituted 183 (59%) Scheduled caste (SC) 81(26%), Other Caste (OC) 40(12.9%) and Scheduled Tribes (ST) 6(1.9%) in the descending order of magnitude. (Table-IV)

Distribution of Study Population Caste Wise

Caste	Male (%)	Female (%)	Total (%)
BC	87 (50.9)	96(69.1)	183 (59.0)
SC	60 (35.1)	21 (15.1)	81(26.1)
OC	20 (11.7)	20 (14.4)	40 (12.9)
ST	4 (2.3)	2 (1.4)	6 (1.9)
Total	171 (100)	139 (100)	310 (100)

It was found in the study that out of total 310(100%) 184 (59.4%) of the respondents belonged to nuclear family, 82(26.4%) belonged to the joint family and 44(14.2%) belonged to 3-generation family. **(Table-V)**

Distribution of Study Population By Type of Family

Type of Family	Male (%)	Female (%)	Total (%)
Nuclear Family	110 (64.3)	74 (53.2)	184 (59.4)
Joint Family	46 (27.0)	36 (25.9)	82 (26.4)
3 Generation Family	15 (8.8)	29 (20.9)	44 (14.2)
Total	171(100%)	139 (100%)	310 (100%)

It was observed that maximum 85(27.4%) of the 310(100%) study population belonged to families having 4 members while the minimum 3 (0.9%) belonged to families having only one member. **(Table-VI)**

Distribution of Study Population by No. of Family Members

No. of Family Members	Male (%)	Female (%)	Total (%)
1	1 (0.6)	2 (1.4)	3 (0.9)
2	8 (4.7)	10 (7.2)	18 (5.9)
3	29 (17.0)	25 (17.9)	54 (17.4)
4	51 (29.8)	34 (24.5)	85 (27.4)
5	36 (21.1)	26 (18.7)	62 (20.4)
6	23 (13.4)	15 (10.8)	38 (12.3)
>7	23 (13.4)	27 (19.4)	50 (16.1)
Total	171 (100)	139 (100)	310 (100)

As per the distribution of study population by literacy status is concerned there were about 118 (51.3%) literates and 33(10.6%) who were just literates. Among the study population only 81(26.1%) had primary education and only 2(0.6%) were post graduates.(Table-VII)

Distribution of Study Population By Literacy Status

Literacy Status	Male (%)	Female (%)	Total (%)
Illiterate	50 (29.2)	68 (48.9)	118 (38.1)
Just Literate	23 (13.4)	10 (7.2)	33 (10.7)
Primary Edn.	44 (25.7)	37 (26.6)	81 (26.1)
Secondary Edn.	30 (17.5)	14 (10.1)	44 (14.2)
Graduate	23 (13.4)	9 (6.5)	32 (10.3)
Post Graduate	1 (0.6)	1 (0.7)	2 (0.6)
Total	171 (100)	139 (100)	310 (100)

It was observed that maximum 78(25.2%) of the study population 310(100%) were labourers who earn their living by labour on a day to day basis. There was only 1(0.3%) weaver, (0.3%) fisherman and 1(0.3%) toddy collector in the study population.(Table –VIII)

Distribution of Study Population By Occupation

Occupation	Male (%)	Female (%)	Total (%)
Labourer	42(24.6)	36 (25.9)	78 (25.2)
Carpenter	1 (0.6)	1 (0.7)	2 (0.6)
Weaver	1 (0.6)	0 (0.0)	1 (0.3)
Housewife	0 (0.0%)	72 (51.8)	72 (23.2)
Farmer	29 (16.9)	8 (5.8)	37 (11.9)
Fisherman	1 (0.6)	0 (0.0)	1 (0.3)
Cowherd	4 (2.3)	4 (2.9)	8 (2.6)
Business	38 (22.2)	6 (4.3)	44 (14.2)
Toddy collector	0 (0.0)	1 (0.7)	1 (0.3)
Tailor	3 (1.7)	2 (14.1)	5 (1.6)
Driver	5 (2.9)	0 (0.0)	5 (1.6)
Student	7 (4.1)	1 (0.7)	8 (2.6)
Others	39 (22.8)	9 (16.5)	48 (15.5)
Total	171 (100)	139 (100)	310 (100)

It was noted in this study out of 310 (100%) respondents maximum 130(41.9%) had a percapita monthly income range of Rs.0.00 – Rs.499.00. however there were no respondents who had a percapita monthly income of more than Rs.7000/-. (Table-IX)

Distribution of Study Population By Percapita Monthly Income

Percapita Monthly Income (Rs.)	Male (%)	Female (%)	Total (%)
0-499	67 (39.2)	63 (45.3)	130 (41.9)
500-999	63 (36.8)	52 (37.4)	115 (37.1)
1000-1499	25 (14.6)	9 (6.5)	34 (10.9)
1500-1999	8 (4.7)	8 (5.8)	16 (5.2)
2000-2499	2 (1.2)	2 (1.4)	4 (1.3)
2500-2999	2 (1.2)	0(0.0)	2 (0.6)
3000-3499	2 (1.2)	3 (2.2)	5 (1.6)
3500-3999	0 (0.0)	1 (0.7)	1(0.3)
4000-4499	1 (0.6)	0(0.0)	1 (0.3)
4500-4999	0 (0.0)	0(0.0)	0(0.0)
5000-5499	0 (0.0)	1 (0.7)	1(0.3)
5500-5999	0 (0.0)	0(0.0)	0(0.0)
6000-6499	0 (0.0)	0(0.0)	0(0.0)
6500-6999	1 (0.6)	0(0.0)	1(0.3)
>7000	0 (0.0)	0(0.0)	0(0.0)
Total	171 (100)	139 (100)	310 (100)

As per Prasad's Classification of Socio-economic Status it was found in the study that maximum 121(31.0%) under class V while minimum 9(2.9%) come under class I.(**Table-X**)

Distribution of Study Population as Per Prasads socio economic status classification

CLASS	Male (%)	Female (%)	Total (%)
Class I (>=Rs.2445)	4 (2.3)	5 (3.5)	9 (2.9)
Class II (Rs.1222-Rs.2444)	21(12.3)	22 (16.0)	43(13.9)
Class III (Rs.733-Rs.1221)	23(13.5)	6(4.3)	29(9.4)
Class IV (Rs.366- Rs.732)	60 (35.1)	48(34.5)	108(34.8)
Class V (<Rs.366/-)	63 (63.8)	58(41.7)	121(39.0)
Total	171 (100)	139 (100)	310(100)

It was observed in this study that out of 310(100%) 149 (48.1%) has heard about tuberculosis and 161(51.9%) had not heard about tuberculosis. Out of 171(100%) males 75(43.9%) had heard about tuberculosis while 96(56.1%) had not heard about tuberculosis. Out of 139(100%) females, 74(53.2%) females had heard about tuberculosis, while 65(46.8%) had not heard about tuberculosis. **(Table-XI)**

Heard about the disease Tuberculosis

Heard about Tuberculosis	Male (%)	Female (%)	Total (%)
Yes	75 (43.9)	74(53.2)	149(48.1)
No	96(56.1)	65(46.8)	161(51.9)
Total	171 (100)	139 (100)	310 (100)

It was seen that only 140 (45.2%) of the total study population 310(100%) were aware of cough with sputum as a symptom of tuberculosis. With regards to cough with sputum maximum awareness is seen in the age group of 40-49 years and minimal awareness is seen in 0-19 years. About 67(21.6%) respondents had said

fever as a symptom of tuberculosis. Maximum awareness with fever as a symptom is seen in the age group of 30-39 years and minimum awareness is seen in the age group of 0-19 years. About 29 (9.4%) respondents said haemoptysis as a symptom of tuberculosis. Maximum awareness about haemoptysis is seen in the age group of 60-69 years, while 0-19 years age group were not aware about it. About 24 (7.7%) respondents said chest pain as a symptom of tuberculosis. Maximum awareness about chest pain was seen in age group of 40-49 years while 0-19 years age group were not aware about it. About weakness and breathlessness about 62 (20%) were aware of this symptom. Maximum awareness about this symptom was seen in the age group of 60-69 years, while 0-19 years age group had minimal awareness. About 149 (48.1%) of the 310(100%) study population were not aware of any symptom of tuberculosis. **(Table-XII)**

Relationship of Knowledge of Symptoms with Age

Symptoms*	AGE GROUP							Total (n=310) (%)
	0-19 (n=8) (%)	20-29 (n=75) (%)	30-39 (n=73) (%)	40-49 (n=70) (%)	50-59 (n=46) (%)	60-69 (n=22) (%)	>=70 (n=16) (%)	
Cough with Sputum	1 (12.5)	25 (33.3)	40 (54.7)	39 (55.7)	20 (43.5)	11 (50.0)	4 (25.0)	140 (45.2)
Fever	1 (12.5)	12 (16.1)	21 (28.7)	18 (25.7)	7 (15.2)	5 (22.7)	3 (18.7)	67 (21.6)
Haemoptysis	0 (0.0)	4 (5.3)	8 (10.9)	8 (11.4)	5 (10.8)	3 (13.6)	1 (6.3)	29 (9.4)
Chest pain	0 (0.0)	4 (5.3)	4 (5.5)	11 (15.7)	3 (6.5)	1 (4.5)	1 (6.3)	24 (7.7)
Weakness & Breathlessness	1 (12.5)	12 (16.1)	19 (26.0)	10 (14.3)	10 (21.7)	7 (31.8)	3 (18.7)	62 (20.0)
Others	0 (0.0)	1 (1.3)	2 (2.7)	1 (1.4)	1 (2.2)	2 (9.1)	0 (0.0)	7 (2.3)
Not Aware	7 (9.3)	41(54.6)	32 (43.8)	26 (37.1)	24 (52.2)	7 (31.8)	11 (68.7)	149 (48.1)

* Responses are not mutually exclusive.

Out of the total 140(100%) respondents who aware of the cough with sputum as a symptom of tuberculosis, males (61%) had more knowledge than the females(39%). Like-wise it was also the males who had more knowledge about fever and haemoptysis, weakness and breathlessness and others. However females had more knowledge about chest pain as a symptom compared to males. It was also more males (50.3%) who were not aware of any symptom of tuberculosis than females(49.7%). **(Table-XIII)**

Relationship of Knowledge of symptoms of tuberculosis with sex

Symptoms *	Male n=171(%)	Female n=139 (%)	Total n=310(%)
Cough with sputum	85(49.7)	55(39.6)	140(45.2)
Fever	36 (21.1)	31(22.3)	67(21.6)
Haemoptysis	22(12.9)	7(5.03)	29(9.4)
Chest pain	13(7.6)	11(7.9)	24(7.7)
Weakness and breathlessness	38(22.2)	24(17.2)	62(20.0)
Others	4(2.3)	3(2.2)	7(2.3)
Not aware	7.5(43.9)	74(53.2)	149(48.1)

*** Responses are not mutually exclusive.**

As per the literacy status in relation to the knowledge of symptoms are concerned the following observations are noted. It was seen that as cough with sputum symptom is concerned those with primary education were maximum (26.4%) respondents out of 140(100%) respondents. Like-wise with fever those with secondary education where the maximum (40.3%) respondents out of 67 (100%) respondents. With haemoptysis those who were graduates where the maximum (31%) respondents out of 29(100%) respondents. With chest pain those who were graduates where the maximum (45.8%) respondents out of total 24(100%) respondents. Respondents with primary education were the maximum (32.3%) respondents out of total 62(100%) respondents. As far as other symptoms are concerned illiterate, just literate and primary class educated respondents where the maximum respondents out of the total 7(100%) respondents. It was illiterate respondents who are the maximum(32.2%) in the category of not aware of any symptom of tuberculosis.

(Table-XIV)

Relationship of Knowledge of Symptoms with Literacy Status

Symptoms *	Illiterate (n=118) (%)	Just literate (n=33) (%)	Primary (n=81) (%)	Secondary (n=44) (%)	Graduate (n=32) (%)	Post Graduate (n=2) (%)	Total (n=310) (%)
Cough with Sputum	26 (22.0)	30 (90.9)	37 (45.6)	30 (68.2)	16 (50)	1 (50.0)	140 (45.2)
Fever	11 (9.3)	11(33.3)	14 (17.2)	27 (61.4)	5 (15.6)	1 (50.0)	67 (21.6)
Haemoptysis	3(2.5)	5(15.2)	4 (4.9)	8 (18.2)	9(28.1)	0 (0.0)	29 (9.4)
Chest Pain	1(0.84)	1(3.03)	5 (6.2)	6 (13.6)	11 (34.4)	1 (50.0)	24 (7.7)
Weakness & Breathlessness	12 (10.2)	13(39.4)	20 (24.6)	10 (22.7)	6 (18.8)	1 (50.0)	62 (20.0)
Others	2(1.7)	2(6.1)	2 (2.5)	1 (2.3)	0 (0.0)	0 (0.0)	7 (2.3)
Not Aware	48(40.6)	28(84.8)	40 (49.3)	11 (25.0)	11 (34.4)	1 (50.0)	149 (48.1)

* Responses are not mutually exclusive

As with knowledge of mode of transmission tuberculosis with age group is concerned following observation were noted. Maximum (38.1%) respondents who said casual physical contact as a mode of transmission were of the age group of 30-39 years out of total 21(100%) respondents. Maximum (31.1%) respondents who said air as a mode of transmission were of the age group of 30-39 years. Like wise food was considered as a route of transmission by maximum 19(33.9%) out of 56(100%) in the age group of 30-39 years. Similarly with utensils, maximum respondents were of 30-39 years. However in other routes of transmission of category maximum 2 (40%) respondents where on the age group of 50-59 years. Maximum respondents who were not aware of any route of transmission were of the age group of 20-29 years.(Table-XV)

Relationship of Knowledge of Modes of Transmission of Tuberculosis with Age

	AGE GROUP
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Mode of Transmission*	0-19 (n=8) (%)	20-29 (n=75) (%)	30-39 (n=73) (%)	40-49 (n=70) (%)	50-59 (n=46) (%)	60-69 (n=22) (%)	>=70 (n=16) (%)	Total (n=310) (%)
Casual Physical Contact	0 (0.0)	4 (5.3)	8 (10.9)	5 (7.2)	3 (6.5)	1 (4.5)	0 (0.0)	21 (6.7)
Air	2 (25.0)	14 (18.7)	28 (38.4)	25 (35.7)	12 (26.1)	6 (27.3)	3 (18.7)	90 (29.0)
Food	0 (0.0)	8 (10.7)	19 (26.0)	16 (22.8)	7 (15.2)	4 (18.2)	2 (12.5)	56 (18.0)
Utensils	0 (0.0)	1 (1.3)	10 (13.7)	3 (4.3)	4 (8.7)	0 (0.0)	0 (0.0)	18 (5.8)
Others	0 (0.0)	0 (0.0)	1 (1.4)	1 (1.4)	2 (4.3)	1 (4.5)	0 (0.0)	5 (1.6)
Not Aware	6 (75.0)	50 (66.6)	37 (50.7)	35 (50.0)	30 (65.2)	14 (63.6)	14 (87.5)	186 (60.0)

* Responses are not mutually exclusive.

On the relationship of knowledge of modes of transmission with sex is concerned following observations were noted. It was seen that males (52%) outnumbered the females (48%) is having awareness about casual physical contact as one of the modes of transmission is concerned. Like-wise with air, food, utensils and others as modes of transmission males were having more awareness than females. It was also males who were not aware of any mode of transmission compared to females. (Table-XVI)

Relationship of Knowledge of Modes of Transmission of TB with sex

Modes of Transmission *	Male n=171(%)	Female n=139 (%)	Total n=310(%)
Casual physical contact	11(6.4)	10(7.2)	21(6.7)
Air	59(34.5)	31(22.3)	90(29.0)
Food	40(23.4)	16(11.5)	56(18.0)
Utensils	14(8.2)	4(2.9)	18(5.8)
Others	3(1.8)	2(1.4)	5(1.6)
Not aware	94(54.9)	92(66.2)	186(60.0)

* Responses are not mutually exclusive.

On relationship of knowledge of modes of transmission with literacy status is concerned following observations were made. It was seen that the maximum number of respondents were those who had primary education (38%) who said casual physical contact as a mode of transmission. Similarly maximum number of respondents who had primary education (28.8%) who said that air as a mode of transmission. Regarding food as one such route, maximum number of respondents were those who were just literate. Maximum number of respondents(44.1%) were illiterate who were not aware of any mode of transmission. (Table- XVII)

Relationship of Knowledge of Modes of Transmission of Tuberculosis with Literacy Status

Modes of transmission *	Illiterate (n=118) (%)	Just literate (n=33) (%)	Primary (n=81) (%)	Secondary (n=44) (%)	Graduate (n=32) (%)	Post Graduate (n=2) (%)	Total (n=310) (%)
Casual physical contact	2(1.7)	5(15.2)	8(9.9)	2(4.5)	4(12.5)	0(0.0)	21(6.7)
Air	18(15.2)	19(57.6)	26(32.1)	20(45.5)	7(21.9)	0(0.0)	90(29.0)
Food	13(11.0)	15(45.5)	15(18.5)	9(20.5)	3(9.4)	1(50.0)	56(18.0)
Utensils	4(3.4)	6(18.2)	4(4.9)	4(9.0)	0(0.0)	0(0.0)	18(5.8)
Others	2(1.7)	2(6.1)	1(1.2)	0(0.0)	0(0.0)	0(0.0)	5(1.6)
Not Aware	82(69.5)	22(66.6)	45(55.5)	18(14.9)	18(56.2)	1(50.0)	186(60.0)

* Responses are not mutually exclusive.

Following observations were recorded from the study of were relationship of awareness with the age group is concerned. Maximum (36%) of the respondents who said infective organism as the causative agent were from the age group of 40-49 years. Maximum (50%) of the respondents has said heredity as aetiology were from the age group of 30-39 years. Curse was not specified as an aetiology by any one of the age group. Maximum (34.8%) respondents who said smoking as aetiology were from the age group of 30-39 years. Like-wise with the alcohol as aetiology, maximum (36.4%) respondents were from the 30-39 years age group. Poor diet as an aetiology was quoted by maximum (47.8%) respondents who were from the age

group of 40-49 years. In other causes of aetiology maximum (46.2%) respondents were from age group of 30-39 years. Maximum (21%) respondents who were not aware of aetiology of tuberculosis were also from 30-39 years age group. (Table-XVIII)

Relationship of Awareness of Aetiology with Age Group

Aetiology*	AGE GROUP							
	0-19 (n=8) (%)	20-29 (n=75) (%)	30-39 (n=73) (%)	40-49 (n=70) (%)	50-59 (n=46) (%)	60-69 (n=22) (%)	>=70 (n=16) (%)	Total (n=310) (%)
Infective Organism	1 (12.5)	3 (4.0)	6 (8.2)	9 (12.9)	5 (10.9)	1 (4.5)	1 (6.3)	25 (8.1)
Heredity	0 (0.0)	1 (1.3)	5 (6.8)	1 (1.4)	3 (6.5)	0 (0.0)	0 (0.0)	10 (3.3)
Curse	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Smoking	1 (12.5)	2 (2.8)	8 (10.9)	7 (10.0)	1 (2.2)	4 (18.2)	0 (0.0)	23 (7.4)
Alcohol	0 (0.0)	3 (4.0)	4 (5.5)	2 (2.9)	1 (2.2)	0 (0.0)	1 (6.3)	11 (3.5)
Poor diet	0 (0.0)	2 (2.8)	2 (2.8)	11 (15.7)	4 (8.7)	3 (13.6)	1 (6.3)	23 (7.4)
Others	0 (0.0)	3 (4.0)	6 (8.2)	3 (4.3)	1 (2.2)	0 (0.0)	0 (0.0)	13 (4.2)
Not Aware	6 (75.0)	6 (82.7)	45 (61.6)	41 (58.6)	33 (71.7)	13 (59.0)	13 (81.3)	213 (68.7)

* Responses are not mutually exclusive.

As per the relationship of awareness of aetiology of tuberculosis is concerned, the following observations were made regarding aetiology of tuberculosis like infective organisms, heredity, smoking, alcohol and others are concerned males outnumbered the females in their awareness while only in poor diet as aetiology females outnumbered the males in the awareness. Again maximum number of males were not aware of aetiology of tuberculosis. (Table-XIX)

Relationship of Awareness of Aetiology of Tuberculosis with Sex

Aetiology*	Male (%)	Female (%)	Total (%)
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Infective Organism	21(12.2)	4(2.9)	25(8.1)
Heredity	7(4.1)	3(2.2)	10(3.3)
Curse	0(0.0)	0(0.0)	0(0.0)
Smoking	17(9.9)	6(4.3)	23(7.4)
Alcohol	6(3.5)	5(3.6)	11(3.5)
Poor diet	11(6.4)	12(8.6)	23(7.4)
Others	8(4.7)	5(3.6)	13(4.2)
Not Aware	110(64.3)	103(74.1)	213(68.7)

* Responses are not mutually exclusive.

Following observations were recovered as regards to relationship of awareness of aetiology of tuberculosis with literacy status is concerned infective organism as a cause of tuberculosis was said by maximum (28%) respondents who had secondary education. Heredity as one of the aetiologies were quoted by maximum respondents who were just literate (30%) and those who had primary education (30%). Nobody said curse was an aetiology of tuberculosis. Maximum (34.8%) respondents who said smoking as an aetiology had secondary education. Alcohol was quoted an aetiology by maximum (63.8%) respondents who had primary education. Poor diet as an aetiology was vouched by maximum(26.1%) respondents who were of just literate. Other causes of tuberculosis was quoted by maximum(38.5%) respondents who were just literate. Maximum(35.8%) respondents were illiterate out of total 213(100%) respondents who were not aware of any aetiology of tuberculosis.(Table-XX)

Relationship of Awareness of Aetiology of Tuberculosis with Literacy Status

Aetiology *	Illiterate (n=118) (%)	Just literate (n=33) (%)	Primary (n=81) (%)	Secondary (n=44) (%)	Graduate (n=32) (%)	Post Graduate (n=2) (%)	Total (n=310) (%)
Infective Organism	4(3.4)	6(18.2)	1(1.2)	7(15.9)	6(18.7)	1(50.0)	25(8.1)
Hereditiy	1(0.8)	3(9.1)	3(3.7)	1(2.3)	1(3.2)	1(50.0)	10(3.3)
Curse	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Smoking	1(0.8)	3(9.1)	6(7.4)	8(18.8)	5(15.6)	0(0.0)	23(7.4)
Alcohol	1(0.8)	2(6.1)	7(8.6)	0(0.0)	1(3.2)	0(0.0)	11(3.5)
Poor diet	4(3.4)	6(18.2)	4(4.9)	5(11.4)	3(9.4)	1(50.0)	23(7.4)
Others	3(2.5)	5(15.2)	3(3.7)	2(4.5)	0(0.0)	0(0.0)	13(4.2)
Not Aware	76(64.4)	28(24.8)	66(81.5)	26(59.1)	17(17.0)	0 (0.0)	213(68.7)

* Responses are not mutually exclusive.

As per the relationship of awareness of investigations to be undertaken with sex following points were noted. It was the males who were more aware than females, with regard to the investigations that have to be conducted like sputum examination, x-ray, blood examination, urine examination, stool examination. It was more males who were not aware of any investigations on tuberculosis compared to females.(Table-XXI)

Relationship of Awareness of Investigations to be Undertaken

Investigations*	Male (%)	Female (%)	Total (%)
Sputum Examination	28 (16.4)	14 (10.1)	42 (13.6)
X-Ray	14 (8.2)	9 (6.5)	23 (7.4)
Blood Examination	48 (28.1)	34 (24.5)	82 (26.5)
Urine Examination	42 (24.6)	24 (17.3)	66 (21.3)
Stool Examination	7 (4.1)	3 (2.2)	10 (3.2)
Not Aware	105 (61.4)	100 (71.4)	205 (66.1)

* Responses are not mutually exclusive.

It was noted in exploring the relationship of awareness of curability of disease with sex that 56.3% of the males said that was curable compared to 43.7% of the females among the total 213(100%) respondents who said tuberculosis was curable. (Table-XXII)

Relationship of Awareness of Curability of Disease with Sex

Curability of Disease	Male (%)	Female (%)	Total (%)
Curable	120 (70.2)	93 (66.9)	213 (68.7)
Not Curable	51(29.8)	46 (33.1)	97(31.3)
Total	171 (100)	139 (100)	310 (100)

As per the preferred place for treatment and diagnosis of tuberculosis is concerned, out of 310(100%) study population about 177(57.1%) said they preferred Government Hospitals while 133(42.9%) said their choice was private hospital. As far as the choice 177(100%) of Government Hospital is concerned more males(58.2%) compared to females (41.8%) preferred it. But for private hospitals are concerned 133(100%), there was a small margin of difference between the sexes as a choice. For males it was (51.1%) and for females it was 48.9%. (Table-XXIII)

Preferred Place for Diagnosis and Treatment

Place of diagnosis and Treatment	Male (%)	Female (%)	Total (%)
Government Hospital	103 (60.2)	74 (53.2)	177 (57.1)
Private			

Hospital	68 (39.8)	65 (46.8)	133 (42.9)
Total	171 (100)	139 (100)	310 (100)

It was observed in the study that the preferred therapy of choice in treatment of tuberculosis was Allopathy(85.8%) followed by Homeopathy(0.9%) and Ayurveda (0.6%). There was no choice of Unani, Siddha and Others. Respondents unaware of any type of therapy constituted 12.6%. More males (54.5%) compared to females (45.5%) preferred Allopathy, out of 266 (100%) who said Allopathy as treatment of choice. Males preferred Ayurveda while no females made this choice. More females preferred homeopathy compared to males. (Table-XXIV)

Preferred Therapy of Choice

Therapy	Male (%)	Female (%)	Total (%)
Allopathy	145 (84.8)	121 (87.6)	266 (85.8)
Ayurveda	2 (1.2)	0 (0.0)	2 (0.6)
Homeopathy	1 (0.6)	2 (1.4)	3 (0.9)
Unani	0 (0.0)	0 (0.0)	0 (0.0)
Sidda	0 (0.0)	0 (0.0)	0 (0.0)
Others	0 (0.0)	0 (0.0)	0 (0.0)
Not Aware	23 (13.5)	16 (11.5)	39 (12.6)
Total	171 (100)	139 (100)	310 (100)

It was noted in the study that 77.1% were aware of DOTS center in UHC, Panagal, while 22.9% were unaware of the same in UHC, Panagal. (Table-XXV)

Awareness of DOTS Centre in UHC Panagal

Awareness	Male (%)	Female (%)	Total (%)
Yes	143 (83.6)	96 (69.1)	239 (77.1)
No	28(16.3)	43 (30.9)	71(22.9)
Total	171 (100)	139 (100)	310 (100)

Regarding awareness of Anti Tuberculosis drugs given of free of cost of tuberculosis patient in Government Hospitals, 67.7% of the respondents were aware of such a provision while 32.3% were unaware of the same.(Table-XXVI)

Awareness of Anti Tuberculosis Drugs Given Free of Cost to TB Patients in Government Hospitals

Awareness	Male (%)	Female (%)	Total (%)
Yes	127 (74.3)	83 (59.7)	210 (67.7)
No	44(25.7)	56(40.2)	100(32.3)
Total	171 (100)	139 (100)	310 (100)

DOTS for tuberculosis is for 6-8 months depending upon the category, the patient is allotted. Only 12.3% of the study population were aware of the duration of the DOTS while 87.7% of them were unaware of the duration of treatment.(Table-XXVII)

Awareness of Duration of Treatment of Tuberculosis Under DOTS Therapy

Awareness	Male (%)	Female (%)	Total (%)
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Yes (6 – 8 months)	18 (10.5)	20 (14.4)	38 (12.3)
No	153(89.5)	119(85.5)	272(87.7)
Total	171 (100)	139 (100)	310 (100)

Only 30.3% of the study population were able to say that if a tuberculosis patient did not take the drugs regularly other members in the family would be effected. Rest of them that is 69.7% were not aware whether drugs had any role in redcuing the infectiousness of the tuberculosis patient.(**Table-XXVIII**)

Awareness about Family Members being effected if Drugs are not taken Regularly By Tuberculosis Patient

Awareness	Male (%)	Female (%)	Total (%)
Yes	52 (30.4)	42 (30.2)	94 (30.3)
No	119(69.6)	97(69.8)	216(69.6)
Total	171 (100)	139 (100)	310 (100)

Regarding precautions to be taken if a family member is suffering from tuberculosis multiple answers were recorded from the respondents. About 38.7% were not aware of any precautions. Maximum (31.6%) said that separate utensils and food be utilized for a tuberculosis patient in a family which is a precaution to be followed. Only (4.2%) which is the minimum of the study population said that to avoid contact with children as a precaution. Only 12.3% of the study population said that proper sputum disposal as a precaution to be taken if a family member is suffering from tuberculosis.(**Table-XXIX**)

Precautions to be Taken If Family Member is Suffering from Tuberculosis

Precautions*	Male n=171(%)	Female n=139 (%)	Total n= 310(%)
Separate Utensils & Food	52 (30.4)	46 (33.0)	98 (31.6)
Patient Told to cover mouth while Coughing	18 (10.5)	18 (29.9)	36 (11.6)
Proper Sputum Disposal	30 (17.5)	8 (5.7)	38 (12.3)
Separate Room for Patient	37 (21.6)	25 (17.9)	62 (20.0)
Washing of Clothes	37 (21.6)	19 (13.7)	56 (18.1)
Clean Environment	12 (7.2)	19 (13.7)	31 (10.0)
Avoid Contact with Children	4 (2.3)	9 (6.5)	13 (4.2)
Patient Should not be allowed to stay in the house	19 (11.1)	27 (19.4)	43 (13.9)
Not Aware	68 (39.8)	52 (37.4)	120 (38.7)

*** Responses are not mutually exclusive**

In the study it was observed that 61(20%) of the study population had said that they have heard about tuberculosis from mass media like TV, cinema, newspapers, posters and pamphlets. Next important source was by interaction with community which 54(17.4%) of the study population opine. Health workers and Doctors come third and fourth important sources of information. About 111(35.8%) of the respondents were not aware of any source of information of tuberculosis. **(Table-XXX)**

Sources of Information about Tuberculosis

Sources of information*	Male n=171(%)	Female n=139 (%)	Total n=310(%)
Doctors	19 (11.1)	24 (17.3)	43 (13.8)
Health Workers	33 (19.3)	11 (7.9)	44 (14.2)
Mass Media: TV, Cinema, News Paper, Posters, Pamphlets	32 (18.7)	29 (20.8)	61 (20.0)
Government Hospitals	15 (8.7)	6 (4.3)	21 (6.7)
Private Hospitals	2 (1.2)	3 (2.2)	5 (1.6)
TB Patient	9 (5.3)	7 (5.0)	16 (5.2)
Friends	7 (4.1)	3 (2.2)	10 (3.2)
Neighbours	16 (9.4)	10 (7.2)	26 (8.4)
Interaction with Community	33 (19.3)	21 (15.1)	54 (17.4)
Not Aware	54 (31.6)	57 (41.0)	111 (35.8)

*** Responses are not mutually exclusive**

Out of the 310(100%) members of the study population 223(71.9%) were aware of BCG vaccination and 87(28.1%) were not aware of BCG vaccination.(Table-XXXI)

Awareness about BCG Vaccination

Awareness	Male (%)	Female (%)	Total (%)
Yes	119 (69.6)	104 (74.8)	223 (71.9)
No	52 (30.4)	35(25.2)	87 (28.1)
Total	171 (100)	139 (100)	310 (100)

Out of the 223(100%) respondents who were aware of BCG Vaccination, maximum 90(40.4%) said that the reason for giving BCG was because it is a part of routine immunization. The next important reason was protection from tuberculosis which was quoted by 34.5% of the study population. The minimum, 17(7.6%) respondents said that the reason for giving BCG was, they were directed by health personnel to give so. About 20(9.0%) were not aware of any reason for giving BCG vaccination (**Table-XXXII**)

Reasons for giving BCG vaccination

Reasons	Male (%)	Female (%)	Total (%)
Protection from Tuberculosis	45(37.8)	32(30.8)	77(34.5)
Routine immunization	51(42.9)	39(37.5)	90(40.4)
Directed by health personnel	10(8.4)	7(6.7)	17(7.6)
Health adverts.	7(5.9)	12(11.5)	19(8.5)
Not aware	6(5.0)	14(13.5)	20(9.0)
Total	119(100)	104(100)	223(100)

Discussion

The present study were conducted by using a structural questionnaire among 310 individuals of which males constituted 171 (55.2%) and females 139 (44.8%) respectively. This is contrast to the study made by Subramanian, Thilakavathi, Charles N, Balasubramanian R et.al.¹³ who had undertaken a study among 433 individuals and in a south Indian rural community where female constituted 66% and male 34%. It is also in contrast to the study made by Malhotra R, Taneja DK, Dhingra VK et.al¹² which was done among 213 individuals, out of which 102 (47.9%) were males and 111 (52.1%) were females. The present study shares a similar observation with a study done on patients and their families in out patient hospitals setting in Karachi, Pakistan as far as sex representation is concerned. In this study 203 individuals were interviewed of which 131(65%) were males and 72 (35%) were females¹⁴.

In the present study Hindus formed a majority (96.1%) of the study population. Similarly in the study by Malhotra R, Taneja DK, Dhingra VK et.al.¹², Hindus form a majority (99.1%) of the interviewed individuals. 59.4% of the study population in the present study were from nuclear families which formed the majority which is similar to the study done on awareness regarding TB in a rural population of Delhi where the majority (53.6%) of the study population were from nuclear families¹².

The present study showed that the number of illiterates constituted 38.1% which formed the majority which is supported by the similar studies ^{12,13} where the majority of the interviewed study population were illiterates. In our study it was seen that the most of the respondents were labourers followed by housewives, businessmen, farmers, where as in the study done on the rural population of Delhi¹² most of the respondents were housewives followed by Government/Private service employees and owner cultivators.

In our study it was 48.1% of the respondents who had heard about tuberculosis while the study by Malhotra R, Taneja DK, Dhingra VK et al¹², found all the respondents 213(100%) had heard about Tuberculosis. The mean percapita of monthly income of the respondents was found to be Rs.691/- and the range was Rs.71.43-Rs.6,667/- in the present study where as in the study¹² in a rural population of village Barwala, Delhi it was observed that the mean percapita per month was Rs.911.42/- and the range was Rs.187.50/- to Rs.5833.33/-. This difference would be quite natural given the fact that this present study was conducted in year 2006 while the other study was in year 2001 where the consumer price index would grossly vary with present one.

The present study also differs from the study¹⁴ done on the patients and families where the authors stated that half of the respondents (51%) had reviewed less than 12 years of formal education. Mean income ranged from Rs.5001/- (US \$83) to Rs.10,000/- (US \$166). Of the 203 respondents, 106(52%) were not wage earners (unemployed students or woman in home), while 53(26%) were in government service and 44(22%) generated income working privately or through land ownership. Nearly everyone (98%) has heard about Tuberculosis.

In the present study cough with sputum (45.2%) formed the predominant symptom followed by fever (21.6%), weakness and breathlessness (20%) haemoptysis (9.4%) and chest pain (7.7%). Majority (48.1%) were not aware on any symptoms. This is in contrast to the study on rural population in Delhi¹² where the predominant symptoms was cough with sputum (73.7%), followed by weakness and breathlessness (40.4%), fever(34.3%) haemoptysis (30.0%) and chest pain (5.6%) . 18.3% of the individuals were not aware about any symptoms of tuberculosis. Other studies like the study on knowledge of tuberculosis in south Indian rural community¹³ where the respondents mentioned cough (60%), haemoptysis (15%) and fever (8%) as the symptoms of tuberculosis which differ from our study.

Mukund ,Uplekar and Sheela Rangan¹⁸ had reported the similar findings like the South India study¹³ (66%,13% and 6% mentioning cough, hameoptysis and fever) confirming a fairly high degree of baseline knowledge about symptoms which is in contrast to our study. Croft¹⁹ reported 44% individuals to be aware of cough as a symptom fo tuberculosis in Bangladesh.

In our study males were more aware of the symptoms of Tuberculosis compared to females and also the respondents who had schooling had better knowledge about the symptamatology compared to illiterates and just literates. This is similar to the study by Malhotra R, Taneja DK, Dhingra VK et.al.¹² where they observed that males and those respondents with schooling were more aware about symptoms of tuberculosis. It was observed in the present study that with an increase in the age there is an increase in the awareness about the symptomatology of tuberculosis as evidenced by an increase in respondents in higher age group. This is similar to a study on a rural population in Delhi by the authors Malhotra R et.a1.¹²

In the present study it was observed that most of the respondents said air (29%) was the mode of transmission of tuberculosis, followed by food(18%), casual physical contact (6.7%), utensils (5.8%).This is

similar to the study by Malhotra.R et.al.¹² where the majority (65%) said tuberculosis could be transmitted by air followed by food and utensils. With an increase in age it was observed there was increase in awareness in our present study which is similar to the study¹² conducted in a village near Delhi.

Males were more responsive than females with regards to mode of transmission of tuberculosis in the present study. However this contradicts with this study¹² in a village near Delhi, where it was observed that more females said that food and utensils and casual physical contact were modes of transmission compared to males. In the present study it was observed that literacy plays a role in awareness. It was seen that literate respondents were better aware than illiterate ones regarding modes of transmission. Similar observations were made in the study by Malhotra et.al.¹² who observed that those who has schooling were aware of the correct modes of transmission.

In the present study wrong knowledge about food and utensils as route of transmission needs to be addressed to remove any misconceptions about the disease so as to help in removing the stigma associated with the disease. This incorrect concept has reflected as about a section of the respondents said separate utensils (5.8%) and separate food (18.0%) as modes of transmission.

In the present study about 8.1% knew about the correct aetiology of tuberculosis i.e infective organism and 68.7% were not aware of any aetiology. Other causes of tuberculosis were given as smoking (7.4%), poor diet (7.4%) alcohol (3.5%) and heredity (3.3%). Curse was not cited by any of the respondents. It can be seen that more causes of tuberculosis were known with an increase in the age. This is contrast to the study¹² conducted in the field practice area of Community Medicine, Maulana Azad Medical College, where it was observed that only 48.4% individuals knew the correct aetiology of tuberculosis i.e. an infective organism. The other causes cited by the individuals included smoking and alcohol consumption along with a poor diet (9.4%), heredity (4.7%), curse (0.5%) and others (7.1%) like Motijhara, occurs from within, pollution and mental anxiety. In a descriptive cross sectional study conducted among the patients and their families at the Agha Khan University Hospital, Karachi by SS Ali, F Rabbani, UN Siddiqui et.al.¹⁴ it was observed that 16(8%) did not know that microorganism cause tuberculosis. Regarding the risk factors for tuberculosis only 67 (33%) correctly mentioned malnutrition, 22 (11%) listed overcrowding and 37(18%) incorrectly identified poor hygiene as the main risk factor. Smoking, pollution and stress were some of the other

inappropriately stated risk factors. Aetiology in this study is slightly different as were the various causes of tuberculosis mentioned in the present study.

In the present study causes cited more by males than females were infective organism, heredity, smoking and alcohol while more females than males poor diet was cause of tuberculosis. This is in contrast to the study by Malhotra et.al.¹² where more males compared to females have opinioned infective organism, smoking+ alcohol+ poor diet combined as cause of tuberculosis while more females than males have quoted heredity and curse as causes of tuberculosis. The literates in the present study were more aware than the illiterates and just literates which is similar to the study by Malhotra et.al.¹² which stated the awareness of aetiology of tuberculosis was more among those who had schooling and the above courses. The low awareness (8.1%) about the correct aetiology of tuberculosis in present study, coupled with lack of knowledge or incorrect knowledge about the causes such as heredity, smoking, alcohol and poor diet might lead to harbouring of wrong belief and misconceptions about the cause of diseases which may affect the family reporting of patients to the health centers and hospitals. Females and individuals without schooling were observed to be the groups with a significantly lower level of knowledge about the symptoms, transmission and causes of the disease. Purohit SD, Gupta ML, Madan A et.al.²⁰ in a pilot study of awareness about tuberculosis among general population also observed a poor level of knowledge of tuberculosis among illiterate population. These groups should be given health education about the disease and its control on a priority basis, so as to improve early reporting and regular treatment by the patient.

In the present study about 66.1% were not aware of any investigations to be undertaken for tuberculosis. 26.5% said blood, followed by urine examination 21.3% followed by sputum examination (13.6%), x-ray(7.4%) and stool examination 3.2%. This is similar to the study¹² conducted at the village near Delhi, where majority (55.4%) were not aware of any investigation. About 30.5% stated sputum examination, 25.4% stated x ray, 24.4% said blood examination and 7.1% stated other investigation like urine or stool examination which contradicts the observations in the present study. The importance of sputum examination as a tool for investigation of tuberculosis should be emphasized and awareness to be generated among the lay public regarding the same by the health authorities and also by medical students in the community.

It was observed in the present study that 68.7% of the respondents said that tuberculosis was curable. This is supported by a similar observation by Malhotra et.al.¹² where in his study a large number of respondents (94.4%) believed that tuberculosis is curable. Similar observations were cited by SS Ali et al¹⁴ where nearly all respondents (98%) were aware that tuberculosis was curable.

It was observed in the study that a majority respondents 57.1% preferred Government hospital while 42.9% preferred private hospitals. Similar observations were stated by Malhotra et.al.¹² in their study where a large number 73.7% of respondents preferred Government health facilities were stated to be the place of choice for diagnosis and treatment, 13.1% had faith in private practitioners and 12.7% had no pre decided choice.

It was noted in the present study that Allopathy (85.8%) was the preferred therapy of choice in the respondents followed by Homeopathy (0.9%) and Ayurveda (0.6%). There was no preference for Unani, Siddha or other Indigenous Systems of Medicine as they were not existent in that area of study. About 12.6% were not aware of any therapy for tuberculosis probably because they might be illiterate and ignorant. Similar observations were noted in the study¹² of awareness of tuberculosis in village near Delhi where it was found Allopathy (73.7%) was therapy of choice followed by Ayurveda (0.5%). There was no hint of Homeopathy or other Indigenous Systems of Medicine in the study. A strange practice of consumption of tortoise meat was observed to be prevalent in the study population with 3.3% individuals admitting to have eaten it themselves or given it to relative, on being diagnosed as a tuberculosis patient and 11.7% of having heard about the practice. In the study on tuberculosis in Pakistan¹⁴ nearly all the respondents (95%) felt that those who suffer from tuberculosis should be taken to a hospital/ TB center for treatment.

About the awareness of the presence of DOTS center in Urban Health Centre (UHC) Panagal, the present study noted that 77.1% of the respondents replied positively while 22.9% were unaware of the same. This is in contrast to the study by Malhotra et.al.¹² where they had enquired about the awareness of microscopy center in the village. 55.9% of the respondents had knowledge about the microscopy center where 15% were unaware of any facility for treatment of tuberculosis. The fact that in the present study about 22.9% of the respondents were unaware of a DOTS center of UHC Panagal requires the attention of District Health authorities and also the medical college authorities for advocating a concerted campaign creating awareness of same.

The present study stated that only 12.3% of the respondents were aware of the deviation of treatment of tuberculosis under DOTS which 87.7% were unaware. This speaks about the huge gap communication and awareness generation by the health authorities and requires an urgent need for health education campaign to convince the general population of the short course chemotherapy available under DOTS and also the effectiveness of such regimens. Malhotra.R

et.al.¹² in their study also share similar observations. The study stated only 31.5% of the respondents were aware of the treatment.

It was observed in the present study that 67.7% of the respondents were aware of the free Anti TB drugs given at Government hospitals and 32.3% said that they were not given free. Malhotra et.al.¹² shared similar observations in their study where 72.8% of the respondents has idea of free Anti TB drugs given at Government Hospitals, 1.4% respondents said they were not given free or no free treatment while 25.8% said they were not aware of the status. In the present study basing on the sizeable chunk who were not aware of free treatment the health authorities should emphasize the concept of "Free" Anti TB drugs availability in their health education campaigns and how it would cost if the patients buy privately. Such motivation would enable more people and TB patients to seek for Anti TB drugs at Government Hospitals.

In the present study, 30.3% respondents said that family members would be affected if drugs taken regularly by a TB patient while 69.7% respondents were aware of the same. This is in contrast to the study¹² conducted at the rural field practice center of MAMC, Delhi where almost all the individuals responded that the patient and the family members could be adversely effected if the patient did not take the Anti TB drugs regularly as per the schedule.

Following observations were made in the present study regarding the precautions to be taken if a family member is suffering from tuberculosis in the descending order of preference. They are separate utensils and food (31.6%), separate room for patient(20%) washing of clothes (18.1%), patient should not be allowed to stay in the home(13.9%) proper sputum disposal(12.3%), patient told to cover mouth while coughing (11.6%), clean environment (10%) and avoiding contact with children(4.2%), 38.7% were not aware of any precaution to be taken. As far as knowledge regarding prevention is concerned Malhotra et.al.¹² had made some observations of which many were similar to the present study. It was seen in the study that majority

(97.7%) of the subjects stated that some precautions should be taken if a family member is diagnosed as a patient of TB. Separate utensils and food for the patient was the most common precaution (79.3%) which is similar to our observation in the present study. Other precautions included covering the mouth while coughing(46.6%), proper sputum disposal (38.9%) ,separate room and washing of clothes (28.4%), good diet and a clean environment (26%) and avoid contact with children (8.7%). Many respondents stated more than one precautions. Only 2 (0.9%) individuals were of the opinion that the patient should not be allowed to stay in the house and 3 (1.4%) stated that no precautions were to be taken. SS Ali et.al.¹⁴ in their study on awareness of tuberculosis in Pakistan found that 23% respondents thought that the secretion or discharges of the TB patient should be handled properly while 23% had misconceptions that cleanliness, abstinence and taking no action would suffice which contradict with observations in the present study. Though many of the precautions are not relevant in the present study after implementation of DOTS adequate health education regarding proper sputum disposal has to be given to the people for atleast 2-3 months of intensive therapy to a TB patient under DOTS.

It was observed in the present study that the most common source of information to the respondents about tuberculosis was Mass media (TV, Cinema, Posters, Pamphlets) followed by interaction with community (17.4%) Health workers (14.2%), doctors (13.8%) neighbours (8.4%) Government Hospitals (6.7%), TB patient (5.2%), friends (3.2%) and private hospitals(1.6%). About 35.8% of the respondents had not heard of TB from any source. These findings contradict to the observations made by Malhotra et.al.¹² in their study where doctors and health care workers were stated to be the source of the information regarding various aspects of tuberculosis by 50.2%, followed by mass media (33.8%), friend or relative who had tuberculosis (32.9%) and interaction with others in the community (34.7%). The present study also differs from observations of a study by Subramanian T et.al.¹³ regarding sources of health information who stated that 70% of the respondents mentioned verbal communication, that is through TB patients and other like friends, relatives and health workers as the major source, followed by pamphlets (21%), mass media (14%) and other (15%). Some respondents mentioned more than one source. The tuberculosis study in Pakistan¹⁴ revealed that media (TV, Radio, newspapers and magazines etc) were listed tested as the main source of information of tuberculosis by 44% of the respondents which is similar to the observations in the present study. All the

sources of health information have to be utilized to in order to improve the existing level of knowledge and bring about a positive change in the practice of people regarding tuberculosis. Health education in order to be effective and sustained, it should be a continuous process.

In the present study about 71.9% of the respondents were aware of BCG vaccination while 28.1% were unaware of the same. This contradicts with the observation made by Malhotra et al¹² in their study where only 9.8% of the study population were aware of BCG. It also contradicts with the study by Subramanian et.al.¹³ where they reported 14% of the respondents knew about BCG Vaccine. S.C. Kim et.al.²¹ in their study reported 54% of the respondents were aware of the BCG vaccination which comes to very close to the observation in the present study.

In the present study the main reasons for giving BCG vaccine was a part of routine immunization (40.4%) followed by protection from TB(34.5%) health advertisements (8.5%) and as directed by health personnel (7.6%). 9% of the respondents were however unaware of any reasons for giving BCG vaccine .

There was no similar or contradictory studies recording for or against this observation because of paucity of literature.;;;;;;oo

Conclusion

The lacunae in the awareness about the epidemiology, diagnosis treatment, precautions, preventive measures taken for tuberculosis, DOTS regimen, DOTS Center and BCG vaccination, as observed in the study can be mitigated by a multipronged approach utilizing the public-private partnership. One approach would be conducting awareness camps in district authorities in collaboration with the medical college in the wards of the field practice area of Panagal. This can be done by using charts, posters, pamphlets, film shows, exhibitions by the District authorities. The medical students of medical college can be made to give health talks in small groups of resident community members using flip charts and conducting interactive question-answer sessions, thus spreading awareness of tuberculosis, availability of free drugs and treatment and demystify myths about tuberculosis. Providing basic information about the earliest symptoms of tuberculosis and the procedure for diagnosis can increase diagnosis tic coverage and thus strengthen the effect of control programmes by reducing risk of infection and achieving high cure rates. The health workers of UHC can motivate people to come for treatment in UHC for tuberculosis and enlighten them about DOTS center and

free Anti Drugs that are available in the center. They can hold Mahila Mandal Meetings to discuss tuberculosis and other diseases and form Swasth Sanghs (Health groups) for helping people to know about the disease and its treatment. Periodical training and health education programmes on tuberculosis should be organized in the form of lectures with slides, flash cards, role plays and film shows, group discussions and field demonstration to health workers like MPHW(Male), MPHW(Females), LHVs and other supporting field staff by the District Health authorities. Training should be given to Dais, volunteers, youth and Community Health Assistants as all these people are in close contact with community. The medical students can enact socio-dramas and role plays in the community to show the implications of tuberculosis on the lives and economy and how it is curable if timely medicines are taken.

References

1. Combating HIV/AIDS in India 1999-2000. Government of India; Ministry of Health and Family Welfare, National AIDS Control Organization. Section 1:6.
2. ICMR. Tuberculosis in India. National Sample Survey. New Delhi, 1958:55.
3. Govt. of India. Annual Report 2003-2004. Minsiter of Health and Family Welfare.2004.
4. NTI. Facts on Tuberculosis and National Tuberculosis Programme 1994:10.
5. WHO. Global Tuberculosis Control, Surveillance, Planning, Financing. WHO Report 2004.
6. Operational Guidelines for Tuberculosis Control. Revised National Control Programme. Central TB Division, Directorate General of Health Services, Nirman Bhavan, New Delhi, India, May 1997;1:1.
7. Iseman MD: Tuberculosis. In Lee Gordman, Dennis, Ausiello (eds): Cecil Text Book of Medicine, 22nd ed. Philadelphia, Pennsylvania, Saunders, 2004; pp 1894-5.
8. Available from [http:// www.tbcindia.org](http://www.tbcindia.org).
9. Chada VK, Tuberculosis epidemiology in India: a review. Int J tuberc Lung Dis.2005 Oct; 9(10):1072-82
- 10 Gopi PG, Subramani R, Radhakrishna S etal, A base line survey of tuberculosis in community in south India at commencement of DOTS programme. Int J Tuberc Lung Dis. 2003 Dec;7(12):1154-6
11. Trends in the prevalence an incidents of the tuberculosis in south India. Int J Tuberc Lung Dis. 2001 Feb;5(2):142-57.

12. Malhotra R, Taneja DK , Dhingra VK, Rajpal S, Mehra M. Awareness regarding tuberculosis in rural population of Delhi. *Ind J Community Medicine* 2002; 27(2) :62-8.
13. Subramanian T, Charles N, Balasubramanian R, Balambal R, Sundaram V, Ganapathy S et.al Knowledge of tuberculosis in a south India rural community, initially after health education. *Ind J tub.*1999 ;46: 251-4.
14. SS Ali, F. Rabbani, UN Siddiqui, AH Zaidi, Sophie A, Verani SJ et.al . Tuberculosis : do we know enough? A study of patients and their families in an out-patient-hospital citing in Karachi, Pakistan. *Int J Tuberc Lung Dis* 2003; 7(11) :1052-1058.
15. UP Singh, Bala A, RKD Goyal. Knowldege about tuberculosis in senior students of Punjab. *Ind J Comm. Med.* April- June 2006; 31(2) :93-95.
16. Gupta Dheeraj, Das Kshaunish, T Balamughesh, Aggarwal Ashutosh N, Jindal Surinder K, Role of socio-economic factors in Tuberculosis prevalence. *Ind J Tuberc* 2004;51:27-31.
17. Tuberculosis in Dhaar GM, Robbani I(eds) : *Foundation of Community medicine*; 1st ed. New Delhi, India, Alsevier, 2006, pp 626,628.
18. Uplekar MW and Sheela Rangan. Tackling TB: The search for solutions. *The foundations for Research in Community Health.*1996.
19. Croft RP, Croft RA, Knowledge, attitude and practice regarding leprosy and tuberculosis in Bangladesh. *Lep Rev* 1999;70:34-42.
20. Purohit SD, Gupta ML, Madan A, Gupta PR, Mathur BB, Sharma TN. Awareness about tuberculosis among general population: A pilop study. *Ind J Tub* 1988;35:183-7.
21. Kim SC, Jin BW and Mori T. Study on the knowledge of tuberculosis and attitudes towards the disease. *Bulletin of the International Union against Tuberculosis.* 1985;60(3-4):131.