

Effectiveness of Therapeutic Telephonic Intervention on Tuberculosis in Terms of Knowledge and Expressed Practices among Tuberculosis Patients Attending Selected Dots Centres of Haryana: A Quasi Experimental Study

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ABSTRACT

Tuberculosis (TB) continues to be a major public health problem in our country throughout the world. The present study aims to evaluate the effectiveness of therapeutic telephonic intervention on tuberculosis in terms of knowledge and expressed practices among tuberculosis patients attending selected DOTS centres. The research approach adopted for the study was quantitative research approach with Quasi- experimental Non- equivalent control group pre test-post test design. A total of 76 tuberculosis patients were selected for the study using purposive sampling technique. The data was collected by structured knowledge questionnaire and structured expressed practices rating scale through interview technique. Findings of the study revealed that mean post test knowledge and expressed practice scores of tuberculosis patients (18.50 ± 2.86 , 68.38 ± 3.32) in experimental group were significantly higher than mean post-test knowledge and expressed practice scores (15.30 ± 2.60 , 63.27 ± 4.24) in comparison group. Mild positive significant relationship ($r=0.41$, $p=0.01$) was found between post-test knowledge and expressed practice scores of tuberculosis patients in experimental group. A significant association was found between post-test knowledge scores with educational status in experimental group. Therefore, it was concluded that therapeutic telephonic intervention was an effective strategy to enhance the knowledge and improve practices of tuberculosis patients on Tuberculosis.

Key Words: Effectiveness, Therapeutic telephonic intervention, Knowledge, Expressed practices, Tuberculosis patients.

BACKGROUND

Tuberculosis (TB) continues to be a major public health problem in our country and throughout the world, two people die every three minutes, 1000 persons per day and four lakh per year. Tuberculosis is an infectious disease caused by the Mycobacterium tuberculosis bacteria that can spread through lymph nodes and

bloodstream to any organ of the body. [1] Globally, every one in three individual is infected with TB. The World Health Organization (WHO) 2014 reported that there were an estimated 9.6 million incident cases of TB (5.4 million men, 3.2 million women and 1 million children), and the incidence of the disease was at the rate of 146/100,000 population (Global report

2015). China and India together contributed 38% of the global TB cases. [2]

There have been many studies conducted with regard to Tuberculosis to evaluate the planned teaching programme on their knowledge but still there is lack of knowledge about tuberculosis among tuberculosis patients. Many international studies were carried out to evaluate knowledge and practices regarding TB disease in different parts of the world. Findings of these studies revealed misconception and limited knowledge about TB in tuberculosis patients. [3]

A cross sectional study was conducted between June 2011 and May 2012 to determine knowledge about tuberculosis among tuberculosis patients registered at Mount Meru Hospital in Arusha municipal, Enduleni Hospital in Ngorongoro district, and Haydom Lutheran Hospital in Mbulu district. Researcher selected some of their household relatives and individuals from the neighbourhood for comparison. Data was collected using a structured questionnaire. Results showed that out of all the participants, only two of the neighbours had never heard about tuberculosis in their life time. Ninety nine percent of tuberculosis patients had heard about tuberculosis, specific knowledge on causes, prevention and treatment was poor. Sixty seven percent of tuberculosis patients thought that transmission of tuberculosis occurs during sexual intercourse. Respondents thought that risk of tuberculosis was higher among adults (68.9%), alcohol users (39.6%), smoking (26.8%), consumption of raw animal products (6.1%) and childhood (23.2%). The study showed that selection of appropriate channels for public health education and awareness programmes targeting knowledge about prevention and control of tuberculosis may improve the situation. [4]

There is need for rehabilitation program which emphasized the healthy aspects of the patient's emotional and social adjustment which often served to counteract

any tendency to become dependent upon the hospital. Vocational training, equipment, and prescribed physical activity were not considered enough. It was noted that the rehabilitation program became more effective when patients realized that they were being offered a real opportunity to be helped emotionally, socially, and vocationally. [4]

Several reports and studies have identified various educational methods to educate people regarding TB. Telephone support is one way of telemonitoring to give education related to disease and to support health consumers in self-management activities, such as medication adherence, physical exercise and diet. With the use of mobile phone, many functions, such as short message service (SMS), photos, video and direct calls, internet access and software application support can be used to help with patient self-activities. Telephone monitoring saves time and cost of transportation for patients living in long distance from healthcare centre. It can also overcome geographical problems or the difficulties facing elderly or disability patients. [4]

A systematic review was done to synthesize current evidence on the effectiveness of SMS interventions in improving patients' adherence to tuberculosis treatment revealed that use of SMS reminders increased rates of clinic attendance on scheduled days compared to standard care. Low quality of the current evidence implies that further studies on the subject are needed. [6]

METHODOLOGY

Quantitative research approach was adopted for the study and the design was "Quasi experimental: non-equivalent control group (pre test- post test design)." The independent variable was Therapeutic Telephonic Intervention and dependent variables were knowledge and expressed practices of Tuberculosis patients regarding Tuberculosis.

Sampling Criteria: Following Tuberculosis patients were included in the study who were:

- attending selected DOTS centre.
- willing to participate in the study.

A quasi experimental design was taken up and 80 tuberculosis patients were selected by purposive sampling technique. Four patients have missed the intervention in experimental group. They were excluded from the study. Analysis was done on 36 tuberculosis patients in experimental group and 40 in comparison group.

Development of tools

The tools were developed after reviewing the literature, seeking opinion from the experts. Performa for selected demographic variables consist of 12 items. Structured Knowledge Questionnaire to assess knowledge regarding tuberculosis consists of 30 multiple choices questions which are further categorized into four levels- very good ($\geq 84\%$), good (67-83%), average (51-66%), below average ($\leq 50\%$). Structured expressed practices rating scale to assess expressed practices regarding management of tuberculosis consists of 27 items. They were further categorized into three levels: healthy practices ($\geq 85\%$), moderately healthy practices (67-84%), unhealthy practices ($\leq 66\%$). Technique used to collect data was Interview technique.

Development of therapeutic telephonic intervention

Therapeutic telephonic intervention was comprised of concept of pulmonary tuberculosis, definition, signs and symptoms risk factors, diagnostic tests, prevention, treatment, complications of pulmonary tuberculosis. It also included the areas of diet adherence to treatment, cough hygiene and lifestyle modification (rest and sleep, physical activities, substance abuse). The information was given individually on telephone for 6-8 minutes for four consecutive days and repeated for another four days on same components.

The content validity of the tools was established by 7 experts. The reliability coefficient for structured knowledge

questionnaire and structured expressed practices rating scale were calculated by KR-20 and Cronbach's-alpha method and it was found to be 0.83 and 0.70 respectively.

Formal administrative approval was obtained from the Medical Superintendent to conduct the pilot study. The permission to conduct the study in the Civil hospital Ambala cantt. (Experimental group) and Yamunanagar (comparison group) was obtained from the Civil Surgeon of respective Civil hospital. Written informed consent was taken from each subject. Purpose of the study was explained to sample subjects before data collection.

Selected variables were used to collect data and to assess knowledge and expressed practices regarding tuberculosis by using structured knowledge questionnaire and structured expressed practices rating scale.

On the day one, Personal information of tuberculosis patients was collected by face to face interview in experimental group using Performa for demographic variables and pre -test was conducted for those who met the inclusion criteria. Tuberculosis patients were then given a debriefing session on basic structure of therapeutic telephonic intervention.

From day two to nine, Therapeutic telephonic intervention was given to individual patients in experimental group approximately for 6-8 minutes each day. Post assessment of knowledge and expressed practices was done one week after intervention i.e. on 17th day of data collection.

Data collection of comparison group was done after the administration of therapeutic telephonic intervention to the experimental group. No intervention was given to comparison group in the study period. After the post assessment of comparison group, intervention was given in same order as given in experimental group.

Statistical Analysis

Data was analysed using Statistical Package for Social Sciences (SPSS) version 20. Data analysis was done by using

descriptive statistics i.e. range, mean, median, standard deviation and inferential statistics such as t-test, ANOVA. Pearson's correlation coefficient was used to check the relationship between the variables. Level of significance for the present study was $p \leq 0.05$.

RESULT

Frequency, percentage distribution and chi square were computed for describing the demographical variables of tuberculosis patients in both experimental and comparison group. The groups were heterogeneous in terms of place of residence ($\chi^2 = 19.70$, $p = 0.001$), type of family ($\chi^2 = 12.90$, $p = 0.001$) and dietary habits ($\chi^2 = 10.86$, $p = 0.01$). The calculated chi-square value between experimental group and comparison group was found non-significant at 0.05 level of significance in terms of age ($\chi^2 = 1.90$, $p = 0.38$), gender ($\chi^2 = 0.02$, $p = 0.86$), religion ($\chi^2 = 0.01$, $p = 0.99$), educational status ($\chi^2 = 7$, $p = 0.13$), type of occupation ($\chi^2 = 0.10$, $p = 0.95$), total monthly income of family ($\chi^2 = 3.14$, $p = 0.37$), marital status ($\chi^2 = 3.99$, $p = 0.40$), time period of current treatment ($\chi^2 = 1.64$, $p = 0.44$) and category of treatment ($\chi^2 = 1.69$, $p = 0.19$) which indicate that groups were homogeneous and comparable in terms of demographic variables before administration of therapeutic telephonic intervention.

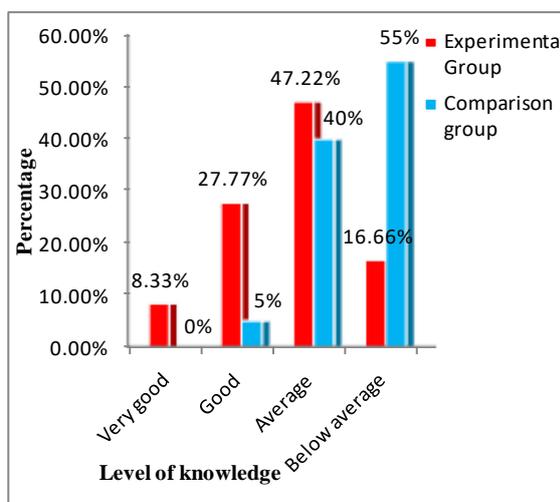


Figure 1 Bar graph showing the percentage and level of knowledge of tuberculosis patients regarding tuberculosis in experimental and comparison group after intervention

The data presented in figure 1 indicates that in experimental group, (8.33%) tuberculosis patients had very good level of knowledge, (27.7%) had good level of knowledge, (47%) had average level of knowledge and only 16 % had below average after intervention while in comparison group (55%) had below average level of knowledge, 40% had average knowledge and only 5% had good level of knowledge.

Table-1 Mean, mean difference, standard deviation of difference, standard error of mean difference and 't' value of post-test knowledge scores in experimental and comparison group N=76

Knowledge score	Mean	M _D	S.D _D	SE _{MD}	t	p value
Experimental group (n=36)	18.50	3.20	0.26	0.62	5.10	0.001*
Comparison group (n=40)	15.30					

t(74)=2.00^{NS} – not significant ($p > 0.05$)

*Significant ($p \leq 0.05$)

Data presented in table 1 show that mean post-test knowledge score of tuberculosis patients regarding tuberculosis in experimental group was 18.50 and comparison group was 15.30 with mean difference of 3.20 which was found to be statistically significant as evident from the calculated "t" value (5.10) is higher than tabulated value at 0.05 level of significance. This shows that the obtained mean difference was a true difference and not by chance. Thus it can be inferred that the therapeutic telephonic intervention on tuberculosis was effective in increasing the knowledge scores of tuberculosis patients.

Table 2 Mean, mean difference, standard deviation of difference, standard error of mean difference and 't' value of pre-test and post-test knowledge scores of tuberculosis patients in experimental and comparison group N=76

Knowledge score	Mean	M _D	S.D _D	SE _{MD}	t value	P value
Experimental group (n=36)	Pre test	3.66	1.54	0.25	14.20	0.001*
	Post test					
Comparison group (n=40)	Pre test	0.12	0.60	0.09	1.30	0.20 ^{NS}
	Post test					

t(35)=2.02, t(39)=2.02^{NS} – not significant ($p > 0.05$)

*Significant ($p \leq 0.05$)

The data presented in table2 shows that the mean post-test knowledge scores of

experimental group regarding knowledge of tuberculosis was (18.50) and mean pre-test knowledge score was (14.83) with mean difference of 3.66 which was found to be statistically significant as evident from the calculated “t” value 14.20 is higher than tabulated value at 0.05 level of significance.

This shows that obtained mean difference between pre-test and post-test knowledge score was a true difference and not by chance. Thus it can be inferred that therapeutic telephonic intervention was effective in increasing the knowledge scores of tuberculosis patients.

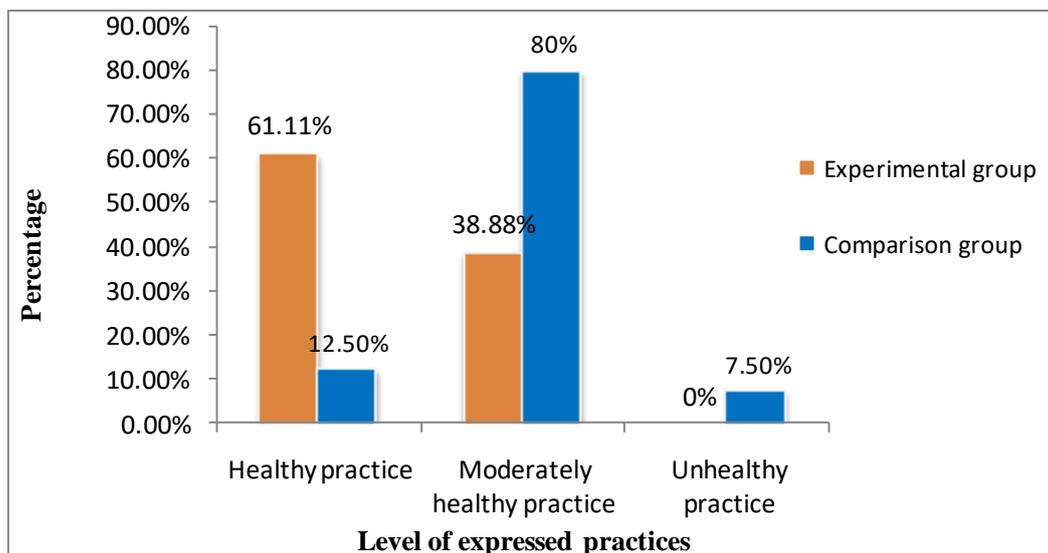


Figure 2 Bar graph showing the percentage and level of expressed practices scores of tuberculosis patients in experimental and comparison group after therapeutic telephonic intervention

The data presented in figure 2 depict that in the experimental group, more than half of tuberculosis patients (61.11%) were having healthy level of practices and only 38.88% of tuberculosis patients were having moderately healthy level of practices after administration of therapeutic telephonic intervention.

Data further revealed that in the comparison group, 80% of tuberculosis patients were having moderately healthy practices and 12.5% were having healthy level of practices.

Table 3 Mean, mean difference, standard deviation of difference, standard error of mean difference and ‘t’ value of post-test expressed practice scores of tuberculosis patients between experimental and comparison group N=76

Expressed Practice score	Mean	M _D	S.D _D	SE _{MD}	t value	p value
Experimental group (n=36)	68.38	5.11	0.92	0.88	5.80	0.001*
Comparison group (n=40)	63.27					

t(74)=2.00 *Significant (p<0.05)

Data presented in table 3 shows that mean post-test expressed practice score of

tuberculosis patients regarding tuberculosis in experimental group was 68.38 and comparison group was 63.27 with mean difference of 5.11 which was found to be statistically significant as evident from the calculated “t” value of 5.80 is higher than tabulated value at 0.05 level of significance. This shows that the obtained mean difference was a true difference and not by chance. Therefore, therapeutic telephonic intervention was effective in improving the expressed practices of tuberculosis patients.

Table 4 Mean, mean difference, standard deviation of difference, standard error of mean difference and ‘t’ value of expressed practice scores of tuberculosis patients in experimental and comparison group N=76

Knowledge score	Mean	M _D	S.D _D	SE _{MD}	t value	p value
Experimental group (n=36)	Pre test	5.61	1.77	0.29	18.94	0.001*
	Post test					
Comparison group (n=40)	Pre test	0.10	0.63	0.10	1.00	0.32 ^{NS}
	Post test					

t(35)=2.02, t(39)=2.02^{NS} – not significant (p>0.05)

*Significant (p<0.05)

The data presented in table 4 shows that the mean post-test expressed scores of experimental group regarding expressed practices of tuberculosis was (68.38) with mean difference of 5.61 which found to be statistically significant as evident from the calculated “t” value 18.94 is higher than tabulated value at 0.05 level of significance. Hence this shows that obtained mean difference between pre-test and post-test expressed practice score was a true difference not by chance. Thus it can be inferred that therapeutic telephonic intervention was effective in improving the expressed practices scores of tuberculosis patients.

ANOVA/t value showing association of post-test knowledge score with selected demographical variables in the experimental group and comparison group was computed. The findings revealed that in experimental group, age (F= 0.08, p=0.91), gender (t=2.66,p=0.11), religion (F= 1.64, p=0.20), type of occupation (F= 1.09, p=0.34), family monthly income (F= 0.06, p=0.94), type of family (t=0.21,p=0.82), marital status (F= 0.88, p=0.45), dietary pattern (F= 0.28, p=0.75), time period of current treatment(F= 0.02, p=0.98), category of TB(t=1.76,p=0.08) were not found to be statistically significant while only educational status (F= 3.36, p<0.02) was found to be significant at 0.05 level of significance. In comparison group, there was no association between the post-test knowledge scores with selected demographic variables.

ANOVA and independent t values showing the association of post expressed practices scores of tuberculosis patients with selected demographical variables was also computed. The findings revealed that in experimental and comparison group, the expressed practices scores of tuberculosis patients were not statistically significant at 0.05 level of significance with demographic variables; age, gender, religion, place of residence, occupation, family monthly income, type of family, marital status,

dietary pattern, time period of current treatment, category of TB.

DISCUSSION

The present study findings shows that therapeutic telephonic intervention was effective in enhancing knowledge and improving practices of TB patients. The mean post-test knowledge score in experimental group was 18.50 and mean pre-test score was 14.83 with mean difference of 3.66. The computed “t” value was found statistically significant (t=14.20, p=0.001) at 0.05 level of significance. Similar findings were reported by study conducted by Badri Thapa, Banuru Muralidhara Prasad, Sarabjit S. Chadha, and Jamie Tonsing showed that the mean score for correct knowledge about TB increased from 60 % to 71 % which is a 11 % increase (p-value <0.001) after community level interventions including community meetings with youth groups, village health committees and self-help groups and through mass media activities. [7]

In present study, the mean post-test knowledge score in experimental group was 18.50 and mean post-test knowledge score in comparison group was 15.30 with mean difference of 3.20. The computed “t” value was found statistically significant (t=5.10, p= 0.001) at 0.05 level of significance. The findings of this study were consistent with study conducted by Blebil AQ, Sulaiman SA, Hassali MA, Dujaili JA, Zin AM on Impact of additional counselling sessions through phone calls on smoking cessation outcomes among smokers in 2014. The findings showed that 71.7% of the intervention group were successfully quit smoking compared to 48.6% of the control group (P<0.001) suggesting smoking cessation intervention consisting of phone calls counselling revealed significantly higher abstinence rates compared with a standard care approach. [8]

In the present study, ANOVA and “t” test values for association of post knowledge score with demographical variables was calculated. The findings

revealed that computed value of tuberculosis patients with all variables found to be non-significant except the educational status which was found to be significant in experimental group ($p=0.02$). In comparison group all the computed values of tuberculosis patients with all variables found to be non-significant. In contrast a study was conducted by Assadullah Rasooli, Elham Ahmadnezhad, Keramt Nouri Jelyani, and Kourosh Holakouie-Naieni on Knowledge toward Tuberculosis among Tuberculosis Patients Seeking Help in Diagnostic and Treatment Centres which revealed that all variables such as education, genders, marital status, employee and residency were significantly associated ($p<0.001$) with knowledge scores of TB patients.^[9]

CONCLUSION

The study concluded that therapeutic telephonic intervention was effective in enhancing knowledge and improving the practices of tuberculosis patients regarding tuberculosis. There was significant mild positive correlation between post-test knowledge and expressed practices score of tuberculosis patients.

Recommendations

- A similar study can be replicated on large sample to validate and generalization its findings.
- A comparative study can be undertaken to assess knowledge and practice on different age groups and between males and female.
- A longitudinal study can be done with observation of lifestyle of tuberculosis patients as outcome variable.
- An experimental study can be done to assess other variables like attitude, adherence to treatment on tuberculosis patients.
- A similar study can be done on other types of TB patients.

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Conflict of interest

The authors declare no conflict of interest.

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