

An Exploratory Study to Assess Factors Associated with Adherence to Dots Therapy Among Patients Reporting at Selected Dots Centers in Punjab.

Tarandeep Kaur¹, Deepak Sethi²

¹M.Sc Nursing (Medical Surgical Nursing) Student, Saraswati Nursing Institute, Dhianpura, Roopnagar,

²Punjab, Asst proff. Saraswati Nursing Institute, Dhianpura, Roopnagar, Punjab.

Abstract: Tuberculosis is one of the leading causes of morbidity and mortality around the world. Globally, the DOTS has been recognized as the best cost-effective approach for tuberculosis control and reduction of disease burden. The persons suffering from tuberculosis have difficulty in following a long-term treatment regimen. A non-experimental research approach was adopted for the study and exploratory research design was employed to explore the factors associated with adherence to DOTS therapy among tuberculosis patients. The Convenient Sampling technique was used to select the sample. The results of study showed that majority of the respondents 70% were adhered while 30% were non adhered to DOTS treatment. The findings revealed that area of residence and satisfaction with information received from health care personnel, were associated with adherence to DOTS therapy. Moreover, accessibility of health care facility, convenient TB center opening time, confidentiality issues, health personnel behavior, psychological stress due to continuation of DOTS therapy, relief from symptoms, difficulty in taking DOTS therapy and family support had also significant relationship with adherence to DOTS therapy while waiting time, paying money, language problems, supervision, side effects and social stigma were found to be non significant factors. The patients describes difficulties they were facing as long duration of treatment, quantity of pills, side effects and interference of DOTS therapy in daily routine. Thus, it implies that still, there is need of necessary interventions to reduce and eliminate the factors leading to non adherence as well as promotion of factors leading to adherence to DOTS therapy.

Keywords: Factors, Adherence, DOTS therapy, Tuberculosis Patients

I. Introduction

Tuberculosis is one of the leading causes of morbidity and mortality around the world. It is a disease caused by bacteria called as mycobacterium tuberculi that spreads through air. When a person suffering from pulmonary tuberculosis coughs or sneezes, millions of TB bacilli are spread in air embedded in the form of tiny droplets and droplet nuclei and infect another person.¹

The national tuberculosis program was started in 1962 in India with the aim to detect cases earliest and treat them. This program is operational in most of the districts replaced by DOTS strategy. When used properly, a course of DOTS therapy cures over 80% of patients. DOTS therapy has five elements beginning with political commitment which must be accompanied by sustained improvement for case detection, standardized treatment, reliable drug supply system, periodic evaluation and measurement.²

The qualities of diagnosis and treatment outcome in Tuberculosis had improved significantly with the introduction of DOTS. But still treatment adherence was a problem may be due to social stigma and deficient knowledge of the disease and its treatment.³

II. Research Problem

An Exploratory study to assess factors associated with adherence to DOTS therapy among patients reporting at selected DOTS centers in Punjab.

III. Objectives

1. To explore factors associated with adherence to DOTS therapy among tuberculosis patients.
2. To associate relationship between adherence to DOTS therapy with different socio- demographic variables.

IV. Material and Method

Research approach:

A non experimental approach was used to explore factors associated with adherence to DOTS therapy among patients reporting at selected DOTS centers in Punjab.

Research design:

An Exploratory research design was used to explore factors associated with adherence to DOTS therapy among patients reporting at selected DOTS centers in Punjab.

Research setting:

The present study was conducted in three DOTS centers – Primary Health Center Kurali, Community Health Center Fatehgarh Sahib and Ropar in Punjab.

Population: Tuberculosis patients

V. Target Population:

In present study it refers to all the patients who were suffering from tuberculosis and registered for DOTS therapy in selected DOTS centers in Punjab.

Sample and Sampling Technique

Sample

In this study, the sample of 100 tuberculosis patients who fulfilled the inclusion criteria, were included.

Sampling Technique:

Convenient sampling technique was used to collect the data.

Sampling Criteria

Inclusion Criteria

Patients suffering from tuberculosis who were

- Reporting in selected DOTS centers in Punjab.
- Receiving DOTS therapy.
- Available at the time of data collection.

Exclusion Criteria

The patients who refused to participate in the study.

Description of Tool

TOOL I:- It includes items related to demographic variables includes age in years, gender, educational status, religion, income per month, area of residence etc. and clinical profile of an individual.

TOOL II:- Standardized Drug Attitude Inventory rating scale is used to assess patient’s adherence level to DOTS therapy.

Score interpretation-To calculate the score from a set of answers, each correct answer is given a score of plus one and each incorrect answer is given a score of minus one. The total score for each patient was calculated as the sum of the positive scores minus the negative scores. A positive total score indicates a positive subjective response (adherent) and a negative total scores indicates a negative subjective response (non adherent).

TOOL III:- A semi-structured interview schedule is used to explore factors associated with adherence to DOTS therapy among patients.

TABLE 1:- Frequency distribution of Adherent and Non adherent subjects according to Socio-demographic Variables.

(N=100)

Sr.No	DEMOGRAPHIC VARIABLE	ADHERENT		NON ADHERENT		TOTAL	
		f	(%)	f	(%)	f	(%)
1.	Age (in years)						
	≤ 20	07	(10%)	02	(07%)	09	(09%)
	21-40	42	(60%)	19	(63%)	61	(61%)
	41-59	18	(26%)	08	(27%)	26	(26%)
	≥60	03	(04%)	01	(03%)	04	(04%)
2.	Gender						
	Male	25	(36%)	10	(33%)	35	(35%)
	Female	45	(64%)	20	(67%)	65	(65%)
3.	Education						
	No formal education	04	(06%)	01	(03%)	05	(05%)
	Primary education	19	(27%)	10	(33%)	29	(29%)
	High school education	27	(39%)	05	(17%)	32	(32%)
	Graduation or above	20	(28%)	14	(47%)	34	(34%)
4.	Employment status						
	Employed	36	(51%)	12	(40%)	48	(48%)
	Unemployed	25	(36%)	16	(53%)	41	(41%)
	Retired	03	(04%)	00	(00%)	03	(03%)
	Student	06	(09%)	02	(07%)	08	(08%)
5.	Marital Status						
	Married	47	(67%)	21	(70%)	68	(68%)
	Unmarried	23	(33%)	09	(30%)	32	(32%)

6.	Income per month (in rs.) ≤5000 5001-10,000/- 10,001-20,000/- ≥21,000	34 (48%) 17 (25%) 10 (14%) 09 (13%)	16 (53%) 07 (24%) 01 (03%) 06 (20%)	50 (50%) 24 (24%) 11 (11%) 15 (15%)
Sr.No	DEMOGRAPHIC VARIABLE	ADHERENT	NON ADHERENT	TOTAL
		f (%)	f (%)	f (%)
7.	Religion Hindu Muslim Sikh Christian	32 (46%) 17 (24%) 12 (17%) 09 (13%)	10 (33%) 05 (17%) 08 (27%) 07 (23%)	42 (42%) 22 (22%) 20 (20%) 16 (16%)
8.	Area of residence Rural Urban	21 (30%) 49 (70%)	19 (63%) 11 (37%)	40 (40%) 60 (60%)
9.	Type of Family Joint family Nuclear family	20 (29%) 50 (71%)	13 (43%) 17 (57%)	33 (33%) 67 (67%)
10.	Source of information ASHA worker Television/Radio Newspaper Health professional Any other	02 (03%) 10 (14%) 32 (46%) 15 (21%) 11 (16%)	02 (07%) 08 (27%) 09 (30%) 05 (16%) 06 (20%)	04 (04%) 18 (18%) 41 (41%) 20 (20%) 17 (17%)
11.	Satisfaction with information received from health care personnel regarding DOTS therapy Excellent Good Unsatisfactory	19 (27%) 46 (66%) 05 (07%)	06 (20%) 14 (47%) 10 (33%)	25 (25%) 60 (60%) 15 (15%)
12.	History of Associated diseases Hypertension Diabetes Mellitus Any other None	10 (14%) 07 (10%) 04 (06%) 49 (70%)	04 (13%) 03 (10%) 07 (24%) 16 (53%)	14 (14%) 10 (10%) 11 (11%) 65 (65%)

TABLE 2:- Frequency distribution of subjects regarding adherence to treatment regimen for the management of tuberculosis.

(N=100)

Score	Adherence category	f (%)	Mean	Standard Deviation
Positive scores	Adherent	70 (70%)	17.90	4.081
Negative scores	Non adherent	30 (30%)	12.08	4.057

Table depicts that majority of the subjects i.e. 70 (70%) were adherent to DOTS therapy where as 30 (30%) subjects were non adherent to the treatment regimen for the management of tuberculosis.

TABLE 3:- Frequency and Percentage distribution of all subjects regarding Health care facility related factors. (N=100)

FACTORS	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Accessibility of health care facility /TB Center							
Yes	45 (64%)	11 (37%)	56 (56%)	06.501	*0.011	1	Significant
No	25 (36%)	19 (63%)	44 (44%)				
Distance (in Km)				08.243	*0.041	3	Significant
0-5	28 (40%)	04 (13%)	32 (32%)				
6-20	17 (24%)	08 (27%)	25 (25%)				
21-40	14 (20%)	08 (27%)	22 (22%)				
≥40	11 (16%)	10 (33%)	21 (21%)				
Spend money to travel per day (in rs.)				05.946	*0.050	2	Significant
0-20	44 (63%)	17 (57%)	61 (61%)				
21-40	14 (20%)	02 (06%)	16 (16%)				
≥40	12 (17%)	11 (37%)	23 (23%)				
Frequency of travel in a week				06.689	*0.035	2	Significant
1 time	34 (49%)	18 (60%)	52 (52%)				
2 time	00 (00%)	02 (07%)	02 (02%)				
3 time	36 (51%)	10 (33%)	46 (46%)				

Time taken to travel to TB Center							
0-15 minutes	39 (56%)	05 (17%)	44 (44%)	17.176	*0.001	3	Significant
16-30 minutes	11 (16%)	05 (17%)	16 (16%)				
31-45 minutes	08 (11%)	04 (13%)	12 (12%)				
>45	12 (17%)	16 (53%)	28 (28%)				

*(Significant Level ≤ 0.05)

TABLE 4:- Frequency and percentage distribution of all subjects according to Health care facility related factors.

(N=100)

FACTORS	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Diagnostic Evaluation before initiation of DOTS therapy							
Yes	70 (100%)	30 (100%)	100(100%)	-	-	-	-
Waiting time at DOTS Center							
Yes	19 (27%)	10 (33%)	29 (29%)	0.391	0.532	1	Non significant
a) ≤30 minutes	14 (74%)	07 (70%)	21 (72%)				
b) >30 minutes	05 (26%)	03 (30%)	08 (28%)				
No	51 (73%)	20 (67%)	71 (71%)				
Pay money for DOTS therapy							
No	70 (100%)	30 (100%)	100(100%)	-	-	-	-
Convenient TB Centre opening time							
Morning	37 (53%)	10 (33%)	47 (47%)	6.426	*0.040	2	Significant
Afternoon	17 (24%)	15 (50%)	32 (32%)				
Evening	16 (23%)	05 (17%)	21 (21%)				
Availability of medicines at DOTS Center							
Always available	70 (100%)	30 (100%)	100(100%)	-	-	-	-

*(Significant Level ≤ 0.05)

TABLE 5:- Frequency and percentage distribution of Adherent and Non-adherent subjects regarding Health care team related factors.

(N=100)

FACTORS	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	p value	df	Level of significance
Confidentiality Issues							
Yes	21 (30%)	18 (60%)	39 (39%)	07.945	*0.005	1	Significant
No	49 (70%)	12 (40%)	61 (61%)				
Language Problems							
Yes	07 (10%)	05 (17%)	12 (12%)	00.884	0.347	1	Non significant
No	63 (90%)	25 (83%)	88 (88%)				
Supervision while taking DOTS doses							
Yes	54 (77%)	26 (87%)	80 (80%)	01.190	0.275	1	Non significant
No	16 (23%)	04 (13%)	20 (20%)				
Health Personnel Behaviour							
Very friendly	11 (16%)	15 (50%)	26 (26%)	13.039	*0.001	2	Significant
Friendly	35 (50%)	10 (33%)	45 (45%)				
Unfriendly	24 (34%)	05 (17%)	29 (29%)				

*(Significant Level ≤ 0.05)

TABLE 6:- Frequency and percentage distribution of all subjects according to Treatment related factors (N=100)

FACTORS	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Classification of TB							
New sputum positive case	58 (82%)	17 (57%)	75 (75%)	13.905	*0.001	2	Significant
Treatment after default	10 (15%)	05 (17%)	15 (15%)				
Failure	02 (03%)	08 (26%)	10 (10%)				
Phase of DOTS treatment							
Intensive phase	13 (19%)	02 (07%)	15 (15%)	2.334	0.127	1	Non significant
Continuation phase	57 (81%)	28 (93%)	85 (85%)				
Category of DOTS therapy							
Category 1	58 (83%)	18 (60%)	76 (76%)	11.306	*0.004	2	Significant
Category 2	10 (14%)	05 (17%)	15 (15%)				
Category 4	02 (03%)	07 (23%)	09 (09%)				
Full information about DOTS is provided by health personnel							
Yes	50 (71%)	10 (33%)	60 (60%)	12.698	*0.000	1	Significant
No	20 (29%)	20 (67%)	40 (40%)				
DOTS interfering in daily activities							
Yes	38 (54%)	27 (90%)	65 (65%)	11.774	*0.001	1	Significant
No	32 (46%)	03 (10%)	35 (35%)				

*(Significant Level ≤ 0.05)

TABLE 8:- Frequency and percentage distribution of Adherent and Non-adherent subjects according to Treatment related factors.

(N=100)

FACTORS	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Lifestyle factors							
Smoking				00.298	0.585	1	Non significant
Yes	13 (19%)	07 (23%)	20 (20%)				
No	57 (81%)	23 (77%)	80 (80%)				
Alcohol				00.391	0.532	1	Non significant
Yes	19 (27%)	10 (33%)	29 (29%)				
No	51 (73%)	20 (67%)	71 (71%)				
Psychological stress due to continuation of DOTS Therapy							
Yes	14 (20%)	16 (53%)	30 (30%)	11.111	*0.001	1	Significant
No	56 (80%)	14 (47%)	70 (70%)				
Relief from symptoms after started DOTS therapy							
Yes	54 (77%)	17 (57%)	71 (71%)	04.276	*0.039	1	Significant
No	16 (23%)	13 (43%)	29 (29%)				
Side effects while taking DOTS therapy							
Yes	63 (90%)	24 (80%)	87 (87%)	01.857	0.173	1	Non significant
No	07 (10%)	06 (20%)	13 (13%)				

*(Significant Level ≤ 0.05)

TABLE 9:- Frequency and percentage distribution of Adherent and Non-adherent groups according to community related factors.

(N=100)

FACTORS	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Length of stay at current place							
< 6 months	07 (10%)	03 (10%)	10 (10%)	00.632	0.729	2	Non significant
6-12 months	18 (26%)	10 (33%)	28 (28%)				
>12 months	45 (64%)	17 (57%)	62 (62%)				

Disclosed TB status to friends/relatives							
Yes	27 (39%)	09 (30%)	36 (36%)	00.670	0.413	1	Non significant
No	43 (61%)	21 (70%)	64 (64%)				
Facing social stigma due to TB							
Yes	23 (33%)	11 (37%)	34 (34%)	00.136	0.712	1	Non significant
No	47 (67%)	19 (63%)	66 (66%)				
Changes in behavior of family and friends							
Yes	24 (34%)	11 (37%)	35 (35%)	00.052	0.819	1	Non significant
No	46 (66%)	19 (63%)	65 (65%)				
Family Support							
Yes	54 (77%)	09 30%)	63 (63%)	20.022	*0.00	1	Significant
No	16 (23%)	21 (70%)	37 (37%)		0		

*(Significant Level ≤ 0.05)

TABLE 10 :- Association between socio- demographic variables and adherence to DOTS therapy among patients suffering from tuberculosis.

(N=100)

DEMOGRAPHIC VARIABLE	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Age (in years)							
≤ 20	07 (10%)	02 (07%)	09 (09%)	0.352	0.950	3	Non significant
21-40	42 (60%)	19 (63%)	61 (61%)				
41-59	18 (26%)	08 (27%)	26 (26%)				
≥60	03 (04%)	01 (03%)	04 (04%)				
Gender				0.052	0.819	1	Non Significant
Male	25 (36%)	10 (33%)	35 (35%)				
Female	45 (64%)	20 (67%)	65 (65%)				
Education				5.687	0.128	3	Non Significant
No formal education	04 (06%)	01 (03%)	05 (05%)				
Primary education	19 (27%)	10 (33%)	29 (29%)				
High school education	27 (39%)	05 (17%)	32 (32%)				
Graduation or above	20 (28%)	14 (47%)	34 (34%)				
Employment status				3.542	0.315	3	Non Significant
Employed	36 (51%)	12 (40%)	48 (48%)				
Unemployed	25 (36%)	16 (53%)	41 (41%)				
Retired	03 (04%)	00 (00%)	03 (03%)				
Student	06 (09%)	02 (07%)	08 (08%)				
Income per month (in rs.)				3.108	0.375	3	Non Significant
≤5000	34 (48%)	16 (53%)	50 (50%)				
5001-10,000/-	17 (25%)	07 (24%)	24 (24%)				
10,001-20,000/-	10 (14%)	01 (03%)	11 (11%)				
≥21,000	09 (13%)	06 (20%)	15 (15%)				
DEMOGRAPHIC VARIABLE	ADHERENT	NON ADHERENT	TOTAL	SIGNIFICANCE			
	f (%)	f (%)	f (%)	Chi Square	P value	df	Level of significance
Marital Status				0.079	0.779	1	Non Significant
Married	47 (67%)	21 (70%)	68 (68%)				
Unmarried	23 (33%)	09 (30%)	32 (32%)				
Religion				3.713	0.294	3	Non Significant
Hindu	32 (46%)	10 (33%)	42 (42%)				
Muslim	17 (24%)	05 (17%)	22 (22%)				
Sikh	12 (17%)	08 (27%)	20 (20%)				
Christian	09 (13%)	07 (23%)	16 (16%)				
Area of residence				9.722	*0.02	1	Significant
Rural	21 (30%)	19 (63%)	40 (40%)				
Urban	49 (70%)	11 (37%)	60 (60%)				
Type of Family				2.070	0.150	1	Non Significant
Joint family	20 (29%)	13 (43%)	33 (33%)				
Nuclear family	50 (71%)	17 (57%)	67 (67%)				

Source of information							
ASHA worker	02 (03%)	02 (07%)	04 (04%)				
Television/Radio	10 (14%)	08 (27%)	18 (18%)				
Newspaper	32 (46%)	09 (30%)	41 (41%)	4.280	0.369	4	Non Significant
Health professional	15 (21%)	05 (16%)	20 (20%)				
Any other	11 (16%)	06 (20%)	17 (17%)				
Satisfaction with information							
Excellent	19 (27%)	06 (20%)	25 (25%)				
Good	46 (66%)	14 (47%)	60 (60%)	11.302	*0.004	2	Significant
Unsatisfactory	05 (07%)	10 (33%)	15 (15%)				
History of Associated diseases							
Hypertension	10 (14%)	04 (13%)	14 (14%)				
Diabetes Mellitus	07 (10%)	03 (10%)	10 (10%)				
Any other	04 (06%)	07 (24%)	11 (11%)	6.837	0.077	3	Non Significant
None	49 (70%)	16 (53%)	65 (65%)				

*(Significant Level ≤ 0.05)

VI. Conclusion

The findings of the study revealed that majority of patients were adhered while more than one fourth of the patients still non adhered. The accessibility of health care facility, convenient TB center opening time, confidentiality issues, health personnel behavior, psychological stress, relief from symptoms, difficulty in taking DOTS therapy and family support had also significant relationship with adherence while waiting time, paying money, language problems, supervision, side effects and social stigma were found to be non significant factors. Hence, there was a need to resolve the difficulties of tuberculosis patients to promote adherence level to DOTS therapy.

VII. Ethical Consideration

- Written permission was taken from the higher authority of the selected DOTS centers of the Punjab.
- Informed consent was taken from each participants of the study.
- Confidentiality and privacy of the study subjects will also be taken care of.

Source of Funding: Self

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