IMPACT OF PATIENTS' COMPLIANCE TO TREATMENT COURSE UPON TUBERCULOSIS DISEASE COMPLICATIONS AT RESPIRATORY AND CHEST DISEASE OUT-PATIENTS CLINIC IN AMARA CITY

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Background: tuberculosis is a communicable disease that is spread through the air, caused by bacteria called (mycobacterium tuberculosis). Mostly affect the lung but also affect any part of the body.

Objective: to determine the impact of patients' compliance to treatment course upon tuberculosis disease complications.

Methodology: A time dimension design (follow-up) was conducted to achieve the objective. The study was carried out at Misan Health Directorate/ Public Health Department/ Respiratory and Chest Diseases out Patients' Clinic. A non-probability (purposive) sample of (94) patients with tuberculosis. The data were collected through the utilization of the developed questionnaire, by interview technique with subjects, and patients' files. Every participant the researcher makes interview three times every two months as a follow up in the same questionnaire. The study tools consist of four parts, (1) socio-demographic characteristics; (2) Types and pattern of disease; (3) Tuberculosis disease complications; (4) Patients' compliance to treatment course. The SPSS version 24.0 application is used to analyze the study results.

Results: the study results show that was found statistically significant impact and reverse correlation between patients' compliance to treatment course and tuberculosis disease complications, at a (p-value ≤ 0.05) when analyze by regression, F-test, and spearman correlation.

Conclusions: The study concluded that the impact was reversed, which means a decrease in complications when increases in compliance to treatment.

Recommendations: use of mass media by the health authorities is essential for health education initiatives to enhance health awareness among people especially patients with tuberculosis and their families.

INTRODUCTION

Tuberculosis (TB), is an infectious disease, although it can infect any area of the body, TB primarily affects the lungs. TB, one of the most prevalent illnesses worldwide, continues to be a serious issue in many nations, especially in developing countries [1].

The diseases caused by the mycobacteria were known by a variety of names before Robert Koch identified the pathogen in 1882, including consumption, phtisis (from the Greek phtinein" to waste away), scrofula (swelling of lymph nodes, particularly in the neck), Pott's disease (tuberculous spondylitis, named after a British orthopedic surgeon Percivall Pott

in the 18th century but found in Egyptian mummies and art (Hindu: swelling). The 17th-century pandemic in European was referred to as "the white plague [2].

Other implications involve declines in TB preventative therapy (-21 %, from 3.6 million to 2.8 million) and treatment for drug-resistant TB (from 2.8 million to 2.4 million) (-15 % , from 177 100 to 150 359, about 1 in 3 of those in need), as well as a drop in global spending on TB diagnostic, treatment, and prevention services (from US\$ 5.8 billion to US\$ 5.3 billion, less than half of what is needed). There is an immediate need for actions to reduce and counteract these effects. Restoring access to and providing necessary TB services

is of the utmost importance so treating and detecting TB cases can at least return to 2019 levels, particularly in its most seriously impacted nations [3].

Immunocompromised patients are more likely to have hematogenously disseminated illness known as "miliary tuberculosis," which manifests as multiorgan involvement and miliary lung nodules [4].

TB is treatable and preventable. More than 85% of patients who get tuberculosis can be successfully treated with a six-month treatment regimen, and one- to six-month regimens can also be used to treat the infection. All persons suffering from disease or infection must have access to these therapies, which necessitates Universal Health Coverage (UHC). Tuberculosis is an infectious disease, which is treated through drugs that are categorized into first-line, second-line, and third-line drugs according to susceptibility or resistance to anti-tuberculosis drugs [3]. Despite excellent TB treatment, pulmonary TB damages the airways and lung tissue and may lead to long-lasting problems. Chronic damage can range in severity from little scarring to significant bronchiectasis and remarkable fibro cavitary destruction. Chronic restrictive or obstructive pulmonary dysfunction can result from TB illness. With every TB episode in circumstances where patients are often reinfected, pulmonary damage gets increasingly worse. When parenchymal damage is severe, a lung lobe or the entire lung can be destroyed [5]. Inadequate TB therapy can raise the risk of tuberculosis illness complications, prolong TB transmission, and increase mortality. The WHO DOTS approach has highlighted and stressed the importance of effective TB treatment adherence [6].

METHODOLOGY

A time dimension design (follow-up) was conducted to determine the impact of Patients' compliance to treatment course upon tuberculosis disease complications. The study period was from October 13th, 2021 to July 26th, 2022. The study was carried out at Misan Health Directorate/ Public Health Department/ Respiratory and Chest Diseases out Patients' Clinic. A non-probability (purposive) sample of (94) patients with tuberculosis, those who visited Respiratory and Chest Diseases /out Patients' Clinic, to receive medications and check health status as a follow–up. The data were collected through the utilization of the developed questionnaire, by interview technique with subjects, and patients' files. The final study tools consist of four parts, (1) socio-demographic characteristics sheet consisted of (7 items), which included residency, gender, age, marital status, level of education, occupational status, and socioeconomic status; (2) Types and pattern of disease consist of (3 items) which included types of tuberculosis, site of the extra-pulmonary tuberculosis, and disease pattern; (3) Tuberculosis disease complications consist of two sub-domain (a) pulmonary TB complications, (b) extrapulmonary TB disease complications; (4) patients' compliance to treatment course consist of (11 items) which includes: Adhere to the deadlines for taking laboratory tests and x-rays, Take a course of treatment regularly during the treatment period, Treatment is taken under direct supervision, Continuing the treatment without interruption, I visit the health center regularly and do not prevent me the economic and social matters, Tell the specialist doctor or nurse in every changes that happens to my health status, I provide information to the concerned health institutions about people who are in contact with me from family and friends, Adhere to the necessary health instructions to maintain my health and the health of others, I receive health instruction by specialist physician and nurses, I urge my family and all contacts to go to the health center to check their health condition and take the necessary health instructions, and Pay attention to the nutritional aspect because it strengthens my body and immunity to resist disease. The SPSS version 24.0 application used to analyze the data.

RESULTS:

Table (1): Distribution of the study samples by their socio-demographic data

Variables	Groups (n=94)	F	%
Age (years)	18 – 24	13	13.8
	25 – 31	18	19.1
	32 – 38	29	30.9
	39 – 45	14	14.9
	46 – 52	9	9.6
	53 – 59	7	7.4
	60 – 65	4	4.3

		$\overline{Mean} \mp SD$	36.50 ± 11.837	
Gender	Male		48	51.1
	Female		46	48.9
Residency	Urban		57	60.6
	Rural		37	39.4
Marital Status	Single		11	11.7
	Married		73	77.7
	Widowed		8	8.5
	Divorced		2	2.1
Level of Education	Illiterate		8	8.5
	Read &write		37	39.3
	Primary school graduate		29	30.9
	Secondary school graduate		16	17.0
	Institute& College graduate		4	4.3
Occupational Status	Government employee		6	6.4
	Housewife		45	47.9
	Free works		40	42.5
	Retired		3	3.2
Socio-Economic Status	Low Scores		52	55.3
	Middle Scores		39	41.5
	High Scores		3	3.2

Table (2): Distribution of types and pattern of disease

Variables	Groups (n=94)	F	%
Types of the Tuberculosis	Pulmonary (TB)	55	58.5
	Extra-pulmonary (TB)	39	41.5
	Total	94	100.0
Site of the Extra-pulmonary Tuberculosis	Pleural	13	33.3
	Lymphoid	10	25.6
	Bone	8	20.5
	CNS	1	2.6
	Eye	2	5.1
	Kidney	1	2.6
	Meninges	1	2.6
	Abdominal	1	2.6
	Skin	2	5.1
	Total	39	100.0
Disease pattern	New Case	81	86.2
	Treating after Interruptions	9	9.6
	Relapsing	2	2.1
	Resistant	2	2.1
	Total	94	100.0

Table (3) Overall of patients' compliance to treatment course

Observations	Total Mean of Score	Standard Deviation	Evaluation
First Observation After (2 month)	2.63	0.520	Good Adherence
Second Observation After (4 month)	2.59	0.526	Good Adherence
Third Observation After (6 month)	2.81	0.377	Good Adherence
Overall mean of score (MS) and standard division (SD) (2.68∓ 0.474)			Good Adherence

Evaluation levels : (1.00 - 1.66) = Poor; (1. 67 - 2.33) = Moderate; (2. 34 - 3.00) = Good. According to cut-off point =0.66

Table (4): Impact of Patients' compliance to Treatment course Upon Tuberculosis Disease Complications (After 6 Months of start treatment)

Course TB Complications	Treatment	Model Summary			ANOVA		Spearman (Correlation)
		R	R Square	Adjusted R Square	F	Sig.	
Parenchymal lesions	Tuberculoma	0.125	0.016	0.015	16.306	0.000	- 0.133
	Repeated Bloody Sputum	0.150	0.022	0.022	23.709	0.000	- 0.158
	Lung Destruction	0.076	0.006	0.005	6.000	0.014	- 0.085
	Pulmonary Atelectasis	0.062	0.004	0.003	3.944	0.047	- 0.067
	Pneumonia	0.115	0.013	0.012	13.849	0.000	- 0.095
	Fibrosis	0.054	0.003	0.002	2.972	0.085	- 0.042
	Mycetoma	0.160	0.026	0.025	27.160	0.000	- 0.130
	Respiratory failure	0.049	0.002	0.001	2.489	0.115	- 0.050
Airway lesions	Bronchiectasis	0.068	0.005	0.004	4.727	0.030	- 0.039
	Bronchial Stenosis	0.052	0.003	0.002	2.769	0.096	- 0.050
	Bronchial Dilation	0.069	0.005	0.004	4.877	0.027	- 0.069
	Broncho Nodular Fistula	0.170	0.029	0.028	30.584	0.000	- 0.147
Pleural lesions	Pleurisy	0.123	0.015	0.014	15.799	0.000	- 0.127

	Pneumothorax	0.160	0.026	0.025	27.189	0.000	- 0.168
	Pleural Effusion	0.160	0.026	0.025	27.189	0.000	- 0.168
	Empyema	0.061	0.004	0.003	3.915	0.048	- 0.056
Nervous system	Weakness of the nervous system	0.049	0.002	0.001	2.532	0.112	- 0.064
	Epileptic seizures	0.041	0.002	0.001	1.731	0.189	- 0.044
	Numbness of Extremities	0.049	0.002	0.001	2.532	0.112	- 0.064
	Meningitis	0.037	0.001	0.000	1.411	0.235	- 0.040
Bones and joints	Osteitis	0.032	0.001	0.000	1.071	0.301	- 0.044
	Arthritis	0.032	0.001	0.000	1.071	0.301	- 0.044
	Pathological Fractures	0.016	0.000	0.001	0.271	0.603	- 0.014
	Osteoporosis	0.017	0.000	0.001	0.284	0.595	- 0.021
Abdomen Area	Abdominal tuberculous	0.152	0.023	0.022	24.502	0.000	- 0.154
	Peritonitis	0.152	0.023	0.022	24.502	0.000	- 0.154
	Granulomatous Colitis	0.213	0.045	0.044	48.982	0.000	- 0.166
	Pelvic Abscess	0.137	0.019	0.018	19.605	0.000	- 0.110
Urinary system	Hydronephrosis	0.130	0.017	0.016	17.784	0.000	- 0.131
	Urinary Tract Infection	0.130	0.017	0.016	17.784	0.000	- 0.131
Lymph node	Lymphadenitis	0.113	0.013	0.012	13.255	0.000	- 0.121
	Lymph Node Enlargement	0.061	0.004	0.003	3.917	0.048	- 0.057
	Lymph Node Calcification	0.027	0.001	0.000	0.744	0.389	- 0.007
	Cutaneous Lymphatic Fistula	0.083	0.007	0.006	7.209	0.007	- 0.086
Eyes	Uveitis	0.092	0.008	0.007	8.752	0.003	- 0.066
	Optic Neuropathy	0.047	0.002	0.001	2.292	0.130	- 0.038
	Retinitis	0.092	0.008	0.007	8.752	0.003	- 0.066
Skin	Abscess	0.110	0.012	0.011	12.698	0.000	- 0.117
	Skin Ulcers	0.110	0.012	0.011	12.698	0.000	- 0.117

DISCUSSION:

The results of table (1) show that about one-third of the age group in the study sample were within (32-38 years) it presented 29 (30.9 %). The above table shows that study subjects 48 (51.1%) were males. In regard to the subjects of residency, the majority of the study sample was living in urban residential areas 57 (60.6 %) of the complete study participants. Also in regards to the subjects' marital status, the majority of the study sample were married 73 (77.7%). In addition, relative to subjects' level of education, the results show that about 37 (39.4%), 29 (30.9%) of participants were read and write, and primary school graduates respectively. Relative to occupational status the majority of the study sample were housewife, and free work 45 (47.9%), and 40 (42.6%), respectively. Finally, regarding the socio-economic status about more than half study participants were low level 52 (55.3%).

Table (2) shows that about 55 (58.5%) of the study sample were pulmonary TB. It also in regards to the extra-pulmonary tuberculosis site, the majority of the study sample was plural, lymph node, and bones and joints tuberculosis 13 (33.3%), 10 (25.6%), and 8 (20.5%) respectively. Finally, regarding to subject of disease pattern, the results show that the major group of the study sample 81 (86.2%) were new cases.

Table (3) shows that the good adherence in all periods of the evaluation. The majority of the participants compliance to treatment course were with in the third observation with arithmetic mean and standard division (2.81 ∓ 0.377). the overall mean of score (MS) and standard division (SD) were (2.68 ∓ 0.474). The results that appeared in table (4), found a statistically significant impact and reverse correlation between Patients' compliance to treatment course (independent variable) and tuberculosis disease complications (dependent variable), when analyzed by simple leaner regression, (F-test), and spearman correlation. That mean decreased in complications when increases in compliance according to spearman correlation value was negative in all items. this impact appears on all items (complications) except (pulmonary fibrosis, Respiratory failure, Bronchial Stenosis, Weakness of the nervous system, Epileptic seizures, Numbness of Extremities, Meningitis, Osteitis, Arthritis, Pathological Fractures, Osteoporosis, Lymph Node Calcification, Optic Neuropathy) at a p-value ≤ 0.05. the above results appears after course of treatment (6 months).

The current study agrees with [7] reported that treatment with DOTS (Directly Observed Treatment, Short-course) strategy has been successful in big and small countries, both rich and poor countries achieving high cure and coverage rates.

Also comes along with [8] study indicates that the health of tuberculosis patients improved significantly and progressively at six months; [9] the study depicts that there are statistically positive significant risk factors for successful treatment outcomes; [10] the study reveals that Poor medication adherence may increase rates of loss to follow-up, disease relapse and drug resistance for individuals with active tuberculosis; and [11] which study the primary informational support variable influences medication compliance with DOTS approach on pulmonary TB patients with P value = 0.009, according to the research findings in the relationship between social support and medication compliance for patients with tuberculosis in Pidie Aceh, Indonesia.

CONCLUSIONS:

The study conclude that statically significant impact of patients' compliance to treatment course upon tuberculosis disease complications, this impact was reversed, which means a decrease in complications when increases in compliance to treatment.

RECOMMENDATIONS:

Emphasis on the patients' compliance to treatment course to prevent mono, multi-drug resistance MDR, and extensive drug resistance XDR and other complications such as parenchymal, airway, vascular, pleural, nervous system, bones and joints, abdomen, urinary system, lymph node, eyes, ear, skin, and heart lesions complications. Establishment of special isolated hospitals for patients to admitted during an infective period (2-4) weeks, who are newly diagnosed with active TB to prevent transmission of disease from person to others.

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