

The Impact of Knowledge on Adherence to Tuberculosis Treatment: A Case-Control Study from a Rural Setting

Elnazeer Abd Almonem Hashim¹, Elsadig Yousif Mohamed^{2*}, Sawsan Mustaffa Abdalla², Ghazali Abdel Gadir Saleem³, Waqas Sami⁴, Tayseer Elsadig Elbadawi⁵, Khaled Altohami Medani⁶ and Syed Meraj Ahmed²

¹Assistant Professor of Public Health, College of Medicine, West Kordofan University, Sudan

²Associate Professor of Community Medicine, College of Medicine, Majmaah University, Saudi Arabia

³Assistant Professor of Internal Medicine, College of Medicine, Majmaah University, Saudi Arabia

⁴Biostatistics, College of Medicine, Majmaah University, Saudi Arabia

⁵Pharmacist, Faculty of Graduate Studies, National University, Sudan

⁶Assistant Professor of Community Medicine, College of Medicine, Majmaah University, Saudi Arabia

***Corresponding Author:** Elsadig Yousif Mohamed, Associate Professor of Community Medicine, College of Medicine, Majmaah University, Saudi Arabia.

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Abstract

Background: Tuberculosis remains a public health problem globally. Despite advances in tuberculosis medications in the last few decades, knowledge of patients about tuberculosis remains a corner stone for a successful treatment outcome. The purpose of this study was to determine the difference in basic Tuberculosis knowledge between defaulters and patients completed treatment in Al-Muglad hospital in West Kordofan State, Sudan.

Methods: The research design was unmatched Case-Control study. Cases were patients who defaulted from tuberculosis treatment while patients completed treatment course formulated the controls. Twenty-six default TB treatment patients were selected to enter the study as cases and 126 patients who completed a full course of TB treatment were selected as controls, A pre-tested questionnaire was used to collect data. SPSS version 21 was used for data analysis.

Results: The mean age for the cases (defaulters) was 29.6 years and for the controls (completed a full TB course) was 32.5 years. Most cases and controls were married (35.3% and 58%) respectively. Employed cases and controls were 41.2% and 27% respectively. Cases and controls with low income were 64.7% and 48.4% respectively. Seven (20.6%) and 52 (41.3%) of the cases and controls agreed that there is a possibility of TB recurrence after cure (odds ratio = 0.375, $p = 0.025$). Five (14.7%) and 61 (48.4%) of the cases and controls admitted that there is a possibility of TB cure (odds ratio = 0.1885, $p < 0.001$). Eighteen (52.9%) and 69 (54.8%) for the cases and controls agreed that side effects can occur during TB treatment cure (odds ratio = 0.8506, $p = 0.025$).

Seven (20.6%) and 34 (27%) of cases and controls admitted that recurrence of TB can take place when treatment is not completed cure (odds ratio 0.703, $p = 0.4653$). Mean TB knowledge of patients completed treatment is significantly higher than patients defaulted treatment ($p = 0.02$).

Conclusion: The study concluded that there is statistical significant difference in Tuberculosis treatment knowledge between defaulters and patients completed a full course of treatment in a rural setting.

Keywords: Knowledge; Adherence; Tuberculosis

Introduction

Pulmonary tuberculosis (PTB) is a contagious disease, caused by mycobacterium tuberculosis and it is second to HIV/AIDS as the greatest killer due to a single infectious agent worldwide [1]. The disease is a major contributor to the global burden of disease and has received considerable attention in recent years, particularly in low- and middle-income countries [2].

The most important recent changes in the natural history of the disease is the impact of HIV epidemic and the emergence of resistance to anti-TB drugs which has an increasing importance due to long treatment duration, high toxicity, costly treatment and poor treatment outcome [3]. Poor adherence to treatment is common despite various interventions aimed at improving treatment completion, one factor of which is the poor patients’ knowledge of tuberculosis [4,5].

In the Eastern Mediterranean Region, EMRO, Sudan carries 15% of the TB burden in the region [6]. Interruption of TB treatment remains a main barrier for successful treatment and challenge for TB control programs especially in developing countries. Patients who fail to complete the treatment course remain a source of infection, treatment failure and resistant to chemotherapy [7]. Adherence to TB treatment is very complex and affected by awareness of patients and their behaviour towards the disease [8-11].

Purpose of the Study

The purpose of this study was to determine the difference in basic Tuberculosis knowledge between TB defaulters and patients completed treatment in Al-Muglad hospital, West Kordofan State, Sudan.

Research Methods

The study design was unmatched case-control study conducted at Al-Muglad Rural Hospital in West Kordofan state of Sudan. This area was recovering from a civil war that hit the area for several decades. Draught also affected the area which complicated the difficult socio-economic status of the population. Al-Muglad Rural Hospital provides health services to population in the area which affected by high prevalence of Tuberculosis. All TB registered patients in Al-Muglad Rural Hospital (319) for one year were considered in this study. Forty-two patients were defaulted from TB treatment but only thirty-four could be reached and entered the study as cases. For the controls the registered patients were 277, we selected 126 patients randomly as controls. A pre-coded and pre-tested questionnaire was used for data collection after obtaining ethics approval. SPSS, version 21 software was employed for data analysis. An odds ratio was used to compare difference of quantitative variables between cases and controls

Results

Table 1 shows the socio-demographic characteristics of the sample. Age group less than 25 years were 13 (38.2%) and 38 (30.2%) for cases and controls respectively. Age group between 25 and 44 years were 18 (53%) for the cases and 69 (54.8%) for the controls. Respondents with age more than 44 years were 3 (8.8%) and 19 (15%) for the cases and controls respectively. Single cases were 7 (20.6%) and single controls were 32 (25.4%). Married cases were 12 (35.3%) and married controls were 73(58%). Divorced cases were 9 (26.5%) and divorced controls were 12 (9.5%). widowed cases and controls were 6 (17.6%) and 9 (7.1%) respectively. Employed cases and controls were 14 (41.2) and 34 (27.0) respectively while unemployed were 20 (58.8%) for the cases and 92 (73%) for the controls. Cases and controls with low income were 22 (64.7%) and 61 (48.4%) respectively while Cases and controls with average income were 12 (51.6%) and 65 (35.3%) respectively.

Variables	Cases (34) No. (%)	Controls (126) No. (%)
Age		
Less than 25	13(38.2)	38 (30.2)
25 - 44	18 (53.0)	69 (54.8)
More than 44	3(8.8)	19 (15.0)
Marital status		
Single	7 (20.6)	32 (25.4)
Married	12(35.3)	73(58.0)
Divorced	9 (26.5)	12 (9.5)
Widow	6 (17.6)	9 (7.1)
Occupation		
Employed	14 (41.2)	34 (27.0)
Unemployed	20 (58.8)	92 (73.0)
Income		
Low (Less than 100 \$)	22 (64.7)	61 (48.4)
Moderate (100 \$ and more)	12 (51.6)	65 (35.3)

Table 1: Socio-demographic characteristics of the sample.
 Mean age for cases = 29.6 years. Mean age for controls = 32.5 years.

Table 2 shows awareness of cases and controls about tuberculosis. Seven (20.6%) and 52 (41.3%) of the cases and controls agreed that there is a possibility of TB recurrence after cure (Odds Ratio 0.375, $p = 0.025$). Five (14.7%) and 61 (48.4%) of the cases and controls admitted that there is a possibility of TB cure (Odds Ratio = 0.1855, $p < 0.001$). Eighteen (52.9%) and 69 (54.8%) for the cases and controls agreed that side effects occurrence during TB treatment (Odds Ratio = 0.9298, $p = 8506$). Seven (20.6%) and 34 (27%) of the cases and controls agreed that recurrence of TB can take place when treatment not completed (Odds Ratio 0.703, $p = 4653$).

Knowledge	Cases No. (%)	Controls No. (%)	Odds Ratio	P	Upper	Lower
Possibility of TB recurrence after cure						
Yes	7(20.6)	52 (41.3)	0.375	0.025*	0.1403	0.8932
No	27 (79.4)	74 (58.7)				
Possibility of TB cure						
Yes	5 (14.7)	61 (48.4)	0.1855	< 0.001*	0.0603	0.4869
No	29 (85.3)	65 (51.6)				
Side effects occurrence during TB treatment						
Yes	18 (52.9)	69 (54.8)	0.9298	0.8506	0.4317	2.013
No	16 (47.1)	57 (45.2)				
Recurrence of TB when treatment not completed						
Yes	7 (20.6)	34 (27)	0.703	0.4653	0.2621	1.725
No	27 (79.4)	92 (73)				

Table 2: Tuberculosis knowledge of defaulters and non-defaulters.

Table 3 shows the comparison of basic TB knowledge between defaulters and patients completed treatment. The mean tuberculosis knowledge of defaulters and completed treatment was 27.2% and 42.9% respectively ($p = 0.02$).

Mean TB knowledge	Cases	Controls	p
Yes	27.2%	42.9	0.02
No	72.8	57.1	
Total	100	100	

Table 3: Mean tuberculosis knowledge score between defaulters and patients completed TB treatment.

Discussion

The data was collected from 34 cases and 126 controls. Poor knowledge on TB especially among patients not-adhered to treatment leads to treatment failure and drug resistance [5]. It was known that improve knowledge of tuberculosis patients prior to start treatment is essential to guard against treatment failure and resistant to chemotherapy [12,13]. This study shows poor level of knowledge about tuberculosis among default TB patients compared to patients successfully completed a full course of TB treatment ($p = 0.02$) [12,14]. When asking cases and controls about the possibility of TB recurrence after cure, the knowledge of patients completed treatment was higher than the defaulters 41.3% versus 20.6% (odds ratio = 0.375, $p = 0.025$). This finding is consistent with other studies [15,16].

Knowledge of cases and controls about the possibility of TB recurrence when treatment is not completed was 20.6% and 27.0% (odds ratio = 0.703, $p = 0.4653$), this finding is inconsistent with other studies [17,18]. Cases and controls believe that TB is curable was 14.7% and 48.4% respectively (Odds Ratio = 0.1855, $p < 0.001$). The fact that the disease is curable gives patients the hope and power to continue the long treatment course. This finding is in line with other studies [5,19]. Side effects occurrence during TB treatment is a factor that leads to treatment default, in our study 26.6% and 27% of the defaulters and patients completed treatment stated that side effects can lead to default TB treatment (odds = 0.9298, $p = 0.8506$). This finding contradicts other studies [20-22].

Conclusion

The study concluded that there is statistical significant difference in Tuberculosis treatment knowledge between defaulters and patients completed a full course of treatment in a rural setting.

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