Original Article

Knowledge of Tuberculosis: A Survey among Tuberculosis Patients in Omdurman, Sudan

Mohamed A.I[1] M.Pharm, **Yousif M.A**[2] PhD (Pharm), **Ottoa P**[3] FSMSB **and Bayoumi A**[4] MBBS, DPH, FFPHM, FACTM

[1]. Faculty of Pharmacy, University of Gezira, Wad Medani, Sudan, Tel: +249912118814, e-Mail aelbur@hotmail.com
[2]. Faculty of Pharmacy, University of Gezira, Wad Medani, Sudan.
[3]. Faculty of Medicine, Upper Nile University, Khartoum, Sudan
[4]. Medical and Research Centre, Khartoum North, Sudan.

Abstract

A cross-sectional study was conducted in different health settings in Greater Omdurman Province with the objective of measuring the patients' knowledge about tuberculosis and its treatment. One thousand tuberculosis patients were randomly selected. Results revealed general unawareness with the disease and its treatment among the interviewees. Only 36.2% of them had satisfactory knowledge about tuberculosis and its treatment. The level of this knowledge was inversely proportional with respondent's age. Males (38.7%) were more knowledgeable than females (31.4%). The level of satisfactory knowledge increased with increasing educational level. Respondents treated at health facilities implementing the National Tuberculosis Programme guidelines (34.5%) were more knowledgeable compared to those treated at general hospitals and private clinics where there is no commitment to the guidelines (23.1%). Increasing coverage of programme implementation to include general hospitals and private sector, the designing of special health educational programmes and interventions directed toward tuberculosis patients to increase their general awareness about the disease and its treatment were recommended.

***Key wards**: National Tuberculosis Programme, Sudan, Greater Omdurman Province, Knowledge, guidelines.*

Introduction

The ultimate goal of patient education is to influence or change patients' health behaviors by providing them with information that motivates them to follow the treatment plan [(1)]. In case of tuberculosis (TB) different target groups which need to be addressed are patients, their relatives, health care providers and the community members [(2)].

Core knowledge elements of relevance to interruption of disease transmission and adherence to therapy relate to: what is TB, what causes it, how is it transmitted, what measures can be taken to limit its transmission, how is it treated, what is the importance of taking treatment regularly, for what duration, what are the consequences of stopping treatment, what are the possible side effects and complications and is TB considered a curable disease. All these are important educational messages that patients should know [(3)].

Non-adherence to treatment often results from inadequate knowledge or understanding of the disease and its treatment [(4)]. For example, a study in Egypt revealed that the significant risk factors for treatment failure were non-compliance to treatment, due to deficient health education and poor patient knowledge about the disease [(5)]. On the other hand greater knowledge about TB may increase the acceptance to the control measures with the resultant decrease in the spread of the disease [(6)]. For a beneficial outcome of health education, socio-economic factors should be taken into account in the design of information about TB [(7)] and psychological implication of TB must be given

attention [8]. Studies in different parts of the world revealed misconceptions and limited knowledge about the disease and its treatment [9,10]. Provision of intensive health education to the patients in an unsupervised intermittent treatment yielded result as good as those obtain by directly observed treatment [11].

The major objective of this research is to determine to what extent pulmonary and extra-pulmonary TB patients were knowledgeable about TB and its treatment and then correlating this knowledge to certain patient's background characteristics.

Study population and methods

A cross-sectional study was conducted during March 1st 2003 to May 30th 2004, whereby a random sample of thousand TB patients was selected.

Inclusion criteria

Pulmonary and extra –pulmonary patients, whose ages were above 15-years old, diagnosed and treated in different health facilities in Greater Omdurman Province.

Settings

Six potential health facilities in the province were selected from different geographical locations for data collection, namely Tropical Disease Hospital, the health centers of Alrakha, Elhikma, Elmanara, Abusied and Elthwara-54.

Data collection

A questionnaire form was designed which was completed by face to -face interview after obtaining informed consent from the participant. The questionnaire consisted of two sections: Section one, dealing with patient background characteristics (age, sex, residence, educational level, previous history of treatment with anti-TB chemotherapy, type of health facilities attended and type of TB). Section two, probing patients' knowledge through seven basic questions about the disease and its treatment (name of the disease, causative agent, disease infectivity, mode of transmission, curability, preventive measures taken by the patient and duration of treatment). A scoring system was designed to assess the level of satisfactory knowledge and answering five out of the seven questions correctly was taken as a cut –off point between satisfactory and unsatisfactory knowledge [10]. Four filled questionnaires were rejected due to some missing indicators.

Statistical tests and statistical analysis

The Chi-square test was used to compare different proportions and the association between knowledge and different variables. The 5% level of significance was used as the cut-off for statistical significance.

The statistical package SPSS version 11.0 was used for data analysis.

Results

Background characteristics of respondents: Table 1 shows the distribution of respondents by background characteristics. The majority (60.8%) of respondents fell in age group 20-39 years old. Males constituted the majority (67.7%) of the interviewed patients, 67% were permanent residents of Omdurman and 76.6% had education below secondary school. Patients previously treated with anti-TB drugs were 23.7%. Most patients (62.1%) were diagnosed at health facilities implementing the National Tuberculosis Programme guidelines (NTBP). The predominant majority were pulmonary cases (85.2%).

Respondents' general knowledge about TB and its treatment: Table 2 shows respondents' general knowledge about TB. Out of the total number of respondents only 547 (54.9%) knew that they were infected with TB. The microbial cause of infection was only known by 19 (1.9%) of the respondents. Out of the total number of interviewees, 576 (57.8%) knew that TB is an infectious disease, 402 (40.4%) knew that TB is an airborne and 584

(58.7%) declared that they practice different preventive measures at the level of their household and or/workplace. The duration of TB treatment was known by 480 (48.2%) and regarding the fact that the disease is curable 800 (80.3%) of the respondents knew that the disease is curable.

Age: The younger respondents (less than 30 years old) knew more than others that they were infected with TB (62.3%). Those who were above 50 years old showed the lowest rate of knowledge (42.0%). Thus level of awareness significantly decreased with increasing age (X^2=24.2, $p < 0.05$). Elderly patients showed lowest rate of knowledge of the cause of TB disease (0.6%). About 67.3% of younger respondents (20-29 year) knew that TB is contagious compared to 42.9% of elderly ones (above 50 year). On correlating knowledge of the duration of treatment to the respondent's age, younger respondents showed the highest rate of awareness (52.2%).

Gender: Knowledge of current infection by gender type showed significantly higher proportion of males (58.0%) who knew compared to females (48.4%), (X^2=5411.9, $P < 0.05$). Significantly, males also knew that the disease is infectious (60.2%) compared to females (52.8%), (X^2= 593.6, $P < 0.05$). Males (43.6%) believed that TB is an airborne disease significantly more than females (33.5%), (X^2=9.19, $P < 0.05$). The proportion of males who used to practice preventive measures was 60.2% compared to females (55.3%) and males who knew the actual treatment period (49.3%) were more than females (46.0%).

Residence: Residents of Omdurman (56.7%) knew the name of the disease better than non residents (51.4%), (X^2=2.75, $P < 0.05$). The knowledge of disease infectivity, among Omdurman residents was higher (60.2%) compared to non residents (52.9%), (X^2=4.92, $P < 0.05$). On evaluating the knowledge of respondents about the fact that TB is an airborne disease, Omdurmanian (43.3%) showed better knowledge compared to non Omdurmanians (34.3%), (X^2=7.38, $P < 0.05$). The knowledge of the duration of treatment among respondents residing in Omdurman (50.4%) was better compared to those who came from other towns (43.8%), (X^2=3.85, $p < 0.05$).

Table (1) Distribution of respondents by background characteristics

Background characteristic	No of patient	% of patient
Age (years):		
- < 20	115	11.5
- 20-29	361	36.2
- 30-39	245	24.6
- 40-49	114	11.5
- 50+	161	16.2
Sex:		
- Male	674	67.7
- Female	322	32.3
Residence:		
- Omdurman	667	67.0
- Other	329	33.0
Education:		
- Illiterate	433	43.5
- Primary	330	33.1
-Secondary	149	15.0
- University & above	84	8.4
Previous history of TB :		
-Contracted	236	23.7
-Not contracted	760	76.3
Source of current anti-TB prescription:		
- Facilities implement NTBP guidelines	619	62.1
- Facilities not implement NTBP guidelines	377	37.9
Type of TB		
-Pulmonary	849	85.2
-Extra-pulmonary	147	14.8

Total number of respondents= 996

Table (2) General knowledge of respondents about TB

Variable	Number of respondents	Percentage of respondents
Disease name	547	54.9%
Disease cause	19	1.9%
Disease infectivity	576	57.8%
Transmission through air	402	40.4%
Preventive measures	584	58.6%
Duration of treatment	480	48.2%
Curability	800	80.3%

Total number of respondents= 996

Educational level: Generally, the knowledge about TB and its treatment significantly increased with educational level.

Previous history of contracting: TB Respondents who contracted the disease before (61.4%) knew its name significantly more than newly diagnosed patients (52.9%), (X^2=46.69, $p < 0.05$). No significant difference however was observed between the two groups concerning the disease infectivity, transmission through air and curability (58.9% vs.57.5%, 40.7% vs. 40.3%, 80.9% vs.79.3% respectively). Respondents who previously caught the disease knew the duration of therapy better (53.8%) compared to new cases (46.4%), (X^2=3.91, $p < 0.05$).

Table (3) Respondents' knowledge of TB by educational level

Variable	Illiterate (n=433)	Primary (n=330)	Secondary (n=149)	University and above (n=84)	P value
Disease name	38.0	60.0	75.8	84.5	0.01
Disease cause	0.0	0.3	4.7	13.0	0.01
Disease infectivity	42.7	64.2	73.8	82.0	0.01
Air transmission	21.0	47.0	71.7	76.2	0.01
Preventive measures	53.8	57.9	69.1	67.9	0.01
Curability	75.5	79.7	88.6	92.9	0.01
Duration of treatment	40.9	48.2	57.2	69.0	0.01

Source of current prescription: Table 4 showed respondents' knowledge about the disease by source of current prescription (type of health facility where the patient is treated).

Pulmonary smear positive respondents: Out of pulmonary smear positive patients, who are highly contributing to the spreading out of the infection, 61.9% knew that they were infected with TB, but only 1.7% knew the cause. On evaluating their knowledge about the disease infectivity 69.1% knew that it is infectious, while 25.3% did not know and 5.5% believed it is not infectious at all. About 49% pulmonary smear positive patients knew that TB is transmitted through air and 55.1% of them knew the actual duration of treatment.

Table (4) Respondents' knowledge of TB by Type of health facility

Variable	Type of NTBP* (n^1=619)	Health facility Not NTBP (n^2=377)	(X^2), p<0.05
Disease name	60.9	45.1	23.66
Disease cause	2.1	1.6	-
Disease infectivity	65.8	44.8	42.0
Transmission through air	46.7	30.0	27.2
Preventive measures	68.0	43.0	60.53
Curability	80.9	79.3	-
Duration of treatment	59.0	30.5	76.9

*NTBP =National Tuberculosis Programme.
n^1= total number of respondents treated at NTBP settings.
n^2= total number of respondents treated at non NTBP settings.

Respondents' score of satisfactory knowledge (SK): Table 5 showed score of (SK) by respondents' background characteristics. Generally (SK) showed statistical significance when correlated to respondents' age, gender, residence, level of education and source of prescription.

Table (5): Respondents' score of satisfactory knowledge

Background characteristic	No of patients	% of patients	Significance	X^2 P<0.05
Age:				
- 15-39	302	41.9	Significant	34.65
- + 40	60	21.8		
Sex:				
- Male	261	38.7	Significant	4.94
- Female	101	31.4		
Residence:				
- Omdurman	261	39.1	Significant	6.76
- Others	101	30.7		
Education:				
-Below secondary	215	28.2	Significant	94.03
- Above secondary	147	63.1		
History of TB:				
-Contracted before	89	37.7	Insignificant	0.24
-Not contracted before	273	35.9		
Source of current anti-TB prescription:				
- Facilities implementing NTBP guidelines	275	34.5	Significant	46.16
- Facilities not implementing NTBP guidelines	87	23.1		

n= Total number of respondents interviewed.
NTBP= National Tuberculosis Programme.

Discussion

The guidelines of the NTBP-Sudan put emphasis on health education as an integral part of the overall control process of TB. Health education targets different groups: the patients, health care providers and members of the community. Health education major objective at the level of the patient, is to remove stigmatization [(12)] associated with the disease and to motivate the patient in order to complete the treatment successfully. Health education is a continuous process starting when the patient is confirmed to have TB until he/she is totally cured.

In this study nearly 55% of the total number of respondents interviewed did not know that they were infected with TB. Surprisingly only 2% of them mentioned that microbe causes TB. This result differs from other finding of study conducted in India whereby 51.9% of the respondents knew that germ causes the disease [(13)].

The first educational step towards removal of the stigma associated with TB is to inform the patient about the disease name. This information is of significance as it sensitizes the patient and prepares him to know more information about the disease. Some patients tend not to mention the disease name due to stigma, although they knew other important facts about the disease. The fact that TB is caused by a microbe helps the patient to understand how the disease is transmitted. That the disease is caused by microbe is a highly specialized information not understood by most patients. The health care providers ignore to go in-depth in explaining this fact.

Disease infectivity as important educational information was known by 57.8% of the patients, this finding differ from what was observed in a study in Iraq where 80.2% of the respondents knew that TB is a contagious disease [(14)]. Forty percent of respondents enrolled in this study did not know that TB is an airborne disease, however in study conducted in India it was found that only 29.7% of the patient knew this fact [(15)]. Ignorance of the facts that the disease is an airborne and contagious has the consequence of increasing transmission of the disease. As a result of this ignorance patients will not care of adopting control measures in their households and/or workplace.

It is of great importance for the patients to know that TB is curable with regular treatment, as this will psychologically encourage them to abide by their treatment instructions. Patients' knowledge about the duration of treatment needed to cure the disease is an important educational message. As the bacteria needs 6-8 months for full clearance from host tissues [16], the majority of patients may think that when the initial symptoms subside this marks the end of treatment. The majority (80.3%) of respondents in this study believed that TB is a curable disease This may be explained by the fact that most of the respondents were interviewed after having treatment for a period of time after which they felt free of symptoms. This improvement is a useful indicator that TB is a curable disease. However some of the respondents who previously completed treatment and then relapsing may be in doubt whether the disease is curable or not.

The full duration of treatment was known by 48.2% of the interviewee. This point is serious, as patients who did not know the total duration of treatment might at any stage of treatment stop taking the drugs. This interruption results in emergence of drug resistance to anti-TB drug. This result differs from the finding of a study conducted in India whereby 64% of the respondents knew exactly the total duration of treatment [17]. However, the result is in agreement with the study in Iraq whereby 80.2% answered that the disease is curable [14].

Generally the study showed that the patient's satisfactory knowledge about the disease and its treatment was inversely proportional with the respondent's age. This may be due to the fact that most of the elderly individuals in Sudan were illiterates or had primary level of education. Also younger respondents seem to be keener to know about the disease than older ones. Understanding of the educational messages and communication with younger is easier than with older patients.

Males' level of satisfactory knowledge as observed in the study was better than females; this finding is in agreement with a study done in Vietnam [18].

Respondents diagnosed at health settings where programme guidelines are implemented showed higher level of knowledge (34.5%) compared to those diagnosed at facilities not implementing NTBP guidelines (23.1%). The variation in general knowledge between patients diagnosed at different health facilities reflects the quality of patient care. Decentralization of TB services by the programme and its integration with the existing primary health care services improved the level of patients' knowledge about the disease; although this improvement is not as expected it may be attributed to many factors related to the patients and health system. Lack of motivation and training of health care providers seemed to be one of the important factors that affect the patient knowledge about the disease.

General hospitals are crowded health settings so in most cases the interaction between the health care providers and the patients may be insufficient for the initiation of a complete and satisfactory educational dialogue.

Education level of the respondents seems to be the determining factor in the overall process of health education. Higher educational level, no doubt, helps the patients to understand the educational messages. Moreover, such patients have better chances to come across considerable knowledge about the disease in the media, this finding coincide with the result of two studies in Philippine [7] and Iraq [14].

Recommendations

The following recommendations emanate from our study:

1. Increasing the area of NTBP implementation to include general hospitals and private clinics is essential.

2. Continuous training of the health care providers to upgrade their scientific knowledge is vital for educating patients.
3. The design of health educational programmes to increase patients' general awareness about the disease is crucial to the control of the infection.

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