

The Prevalence of Cigarette and Shisha (water pipe) Smoking among Sudanese Tuberculous Patients

MUTASIM SIDDIG MOHAMMED SALIH

Department of Clinical Pharmacology
Faculty of Medicine and Health Sciences
Alimam Almahdi University, Sudan

BADER ELDIEN HAROUN

Department of Radiology
Faculty of Medicine and Health Sciences
Alimam Almahdi University, Sudan

ELSHARIF AHMED BAZIE¹

Department of Pediatrics
Faculty of Medicine and Health Sciences
Alimam Almahdi University, Sudan

MOATAZ MOHAMED ALHASAN

Department of Pathology
Faculty of Medicine and Health Sciences
Alimam Almahdi University, Sudan

HAMZA BABIKIR HAMZA

Department of Medicine
Faculty of Medicine and Health Sciences
Alimam Almahdi University, Sudan

Abstract:

World Health Organization (WHO), which declared tuberculosis a global health emergency in 1993 and it remains a major cause of mortality in developing countries. In Sudan 1985, prevalence of TB was estimated by 3% among Tigrayan refugees in Eastern Sudan and displaced native population which was two times higher than that found in rural African population.

¹ Corresponding author: elsharifbazie@gmail.com

This Study aimed to determine the prevalence of cigarette and Shisha Smoking among Sudanese Tuberculous Patients.

A descriptive and comparative study were used, (275 patients) were enrolled in the study where 55 % of them were males and 45 % were females. The study revealed that 29 % of the males were cigarette smokers and 7.9 % of them were Shisha (water pipe) smokers.

Most of the patients were illetrate 162 patients (59 %). The study revealed that cigarette smoking was detected among 29% and 7.9% were shisha smokers.

Key words: Cigarette, Shisha (water pipe), tuberculosis, Kosti-Sudan

INTRODUCTION

Global burden of Tuberculosis

World Health Organization (WHO), which declared tuberculosis a global health emergency in 1993 (*de Souza M.V., 2006*) and it remains a major cause of mortality in developing countries (*Stevenson C.R., et al., 2007.*)

In Pakistan, Tuberculosis is one of the major illnesses responsible for increase in the morbidity and mortality. (*Muhan N. and Darak B.*), remains to be one of the most important infectious diseases worldwide (*Greinert U. et al., 2007*) and it becomes a common problem in developing countries (*P .V .K .et al., 2008*). The disease remains a major global public health problem (*Stevenson C.R., et al., 2007*), It is a major health problem In Tanzania according to *Kibiki and coworkers 2007*, and in Timor leste, according to (*Martin and coworkers 2007* and Life-threatening haemoptysis is a frequent and often fatal complication in areas with a high prevalence of tuberculosis (*Van den Heuvel M.M. et al., 2007*).

The epidemiology of Tuberculosis

According to World Health Organization (WHO), Tuberculosis, without a coordinated control effort, will infect an estimated 1

billion people by 2020, killing 70 million (*de Souza M.V., 2006*). Among the communicable diseases, it was considered the second leading cause of death worldwide, killing nearly 2 million people each year, the World Health Organization estimates that 3 million people worldwide who die each year due to TB, in addition to 2 billion people have latent TB, the rate in the United States declined during 1993–2005 (*Manogna Maddineni and Mukta Panda 2008*), in addition to further decrease in the rate in 2006 (*CDC 2007*).

According to the Tuberculosis Coalition for Technical Assistance 2007 (T.B.C.T.A.), Indonesia has the third highest global burden of tuberculosis in the world, with approximately 2.2 million new cases per year, by the end of 2004, Nigeria ranks 4th amongst countries with the greatest burden of tuberculosis, Kenya ranks tenth in the world annual number of tuberculosis cases, the incidence of tuberculosis has significantly increased in the last two decades, Tanzania ranks fourteenth in the world annual number of tuberculosis cases, during the two decades, the incidence increased more than four folds and Mexico had 24255 cases in 2005, with an estimated incidence rate of 23 cases per 100000 people (*Taylor O. et al., 2007*). In 50 poverty countries, the registered new smear positive cases increased year by year (*Liu F.Y., 2007*). In Egypt 20000 people were estimated to be infected in 2006, treatment success rate was 97%, case detection rate was 61%. (*Wada Metal, Moghazy E.E.L., et al.,*).

In South Africa 2002. 215120 Tuberculosis patients were registered (*Van der Walt M. et al., 2007*). In Australia 2005, a total of 810 cases were identified by bacteriological investigations (*Lumb R et al., 2007*). Delay in diagnosis of smear positive results in increasing severity, mortality and transmission (*Sreer Amareddy C.T. and Kishore P.V. 2007*). Various Types of intermittent chemotherapy regimens have

been applied for treatment of the disease worldwide (*Wada M. et al., 2006*).

Engaging traditional healers in TB control programs and reducing stigma through education could help to reduce patient delays, accelerate diagnosis, improve clinical outcomes and reduce disease transmission in sub-Saharan Africa (*Cambanis A et al., 2007*). The cases were increasing in Zimbabwe, other countries in Africa and world-wide (*Houston S. et al., 1991*).

In the Sudan 1985, prevalence of TB was estimated by 3% among Tigrayan refugees in Eastern Sudan and displaced native population which was two times higher than that found in rural African population (*Zaki 1995*).

The situation of Tuberculosis in Sudan

Till 1998 Sudan was classified as one of the slowly moving countries in implementation of the DOTS strategy and making no progress against TB (*Wise J., 1998*).

Tuberculosis, whose indications are heavy coughing and expectoration, was also rampant in southern Sudan (*Veeken H., 1998*).

In 2002 according to *Sudan National Tuberculosis Programme progress report 2005*, DOTS was declared all over, the activities in 2003 were focused on further strengthen of DOTS and by 2004 -2005 it was planned to fulfill the WHO targets (70% case detection and 85% cure rate) Sudan National Programme .

According to *Sharaf- Eldin G.S., 2002*, In Khartoum state drug resistance was a serious problem and it might complement the efforts of the National Tuberculosis Programme to improve strategies to control this disease.

In Khartoum, Red Sea and Gadaref States, facilities provide care for a higher proportion of women and older age groups of tuberculosis patients, suggesting higher level of

accessibility for these groups. A higher cure rate and a lower default rate were noted in referral hospitals and primary health care (PHC) facilities, possibly reflecting better conditions for directly observed treatment and follow-up (*El-Sony A.I. et al., 2003*).

This Study aimed to determine the prevalence of cigarette and Shisha Smoking among Sudanese Tuberculous Patients.

New smear positive pulmonary Tuberculosis patients who attended to department of chest at Kosti Teaching hospital during March 2006 to March 2008 were enrolled in this study.

MATERIAL AND METHODS

Study design

A prospective descriptive, hospital based study.

Study area

The White Nile State is one of central Sudan states, extended to about 400 Kilometers at the southern part of Khartoum and it is neighbored by six Sudanese States. The predominant climate is poor Savannah. Agriculture and animal breeding are the most common economic activities. The study area includes many development projects e.g. Kenana and Assalaya Sugar factories , Rabak Portland Cement factory.

Kosti province is inhabited by different ethnic groups also it constitutes more than 40% of the population of the state (702000 out of 2000000). This study was conducted in Kosti teaching hospital at a distance of 312 Kilometers south of Khartoum which the major referral hospital of the White Nile State. Other 15 T.B centers were initiated in the state by the Local T.B. control programme.

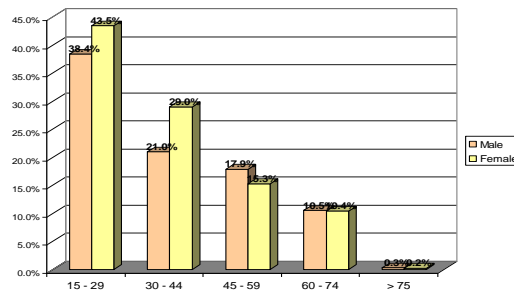
Ethical consideration

A written consent from the local health authority was already taken and each patient was informed and consented individually.

THE RESULTS

Figure (1): Age and sex distribution of the study population (group A and B)

N = 275 patients



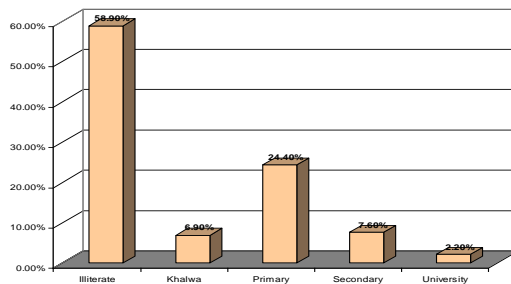
P-value = 0.723

Group (A) the intermittent regimen group EMP\ R\ INH\ PZA for 2 months then R\ INH twice weekly for 4 months.

Group (B) the short course daily regimen group S\ R\ INH\ PZA for 2 months then R\ INH once daily for 4 months.

Figure (2): Education among the study

N = 275 patients



P - Value = 0.053

Group (A) the intermittent regimen group EMP\R\INH\PZA for 2 months then R\ INH twice weekly for 4 months.

Group (B) the short course daily regimen group S\R\INH\PZA for 2 months then R\ INH once daily for 4 months .

Figure: (3): Percentage of cigarette smoking among the study population (group A and B) N = 151

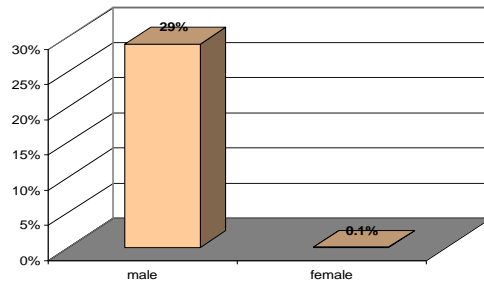
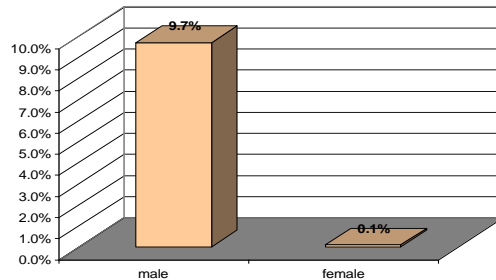


Figure: (4): Percentage of Shisha smoking among the study population (group A and B) N = 151



RESULT AND DISCUSSION

As far as can be ascertained a study To determine the prevalence of cigarette and Shisha Smoking and the prevalence of tuberculosis among age and sex groups_has not been conducted yet in the Sudan*, therefore, such study was justifiable and highly needed, Putting in mind the increasing incidence rate of T.B in the Sudan generally and specially in the White Nile area.

This study was carried out at Kosti teaching hospital, the major referral hospital in the state.

Figures 1, 2, 3,4 give more details about our study although we gave more details below.

A descriptive and comparative study were used, (275 patients) were enrolled in the study where 55 % of them were males and 45 % were females, these results are not much different from other studies stated by *Mohammed and coworker 2007* in South Africa 56 % females, 44% males respectively and nearly similar to the results obtained by *Muhan and coworker 2007* in Pakistan 54 males and 46 females also when the prevalence is compared to previous studies conducted in Sudan using gender as an indicator it is different from the results stated by (*Zaki 1995*) 60% males and 40 % females and (*Elkheir 2005*) 63 % males and 37 % females, in general the Sudan National T B Programme stated that the number of the infected males and females is nearly equal (*Ali L.. et al 2007*).

Most of Tuberculosis patients are young i.e. 63% of males and 72.5% of female were < 45 years age (figure 1) shows sex and age distribution.

Considering the educational level, it was found that about 59 % of the entered patients were illiterate, which is higher than the percentage mentioned by Sudan National T B Programme 27.3 % were illiterate in Khartoum state (*Ali L. et al 2007*) , this alarming situation reflects the problem of TB in the White Nile state and the educational levels between Khartoum as a capital and the White Nile. Generally it is known that the TB infection rate is inversely proportional to the educational level (figure 2).

The study revealed that 29 % of the males were cigarette smokers and 7.9 % of them were Shisha (water pipe) smokers(figure 3 and 4), this type of smoking assists in TB infection transmission due to the use of one pipe by more than

one smoker in the public cafés and clubs, smoking is higher in males and female are usually nonsmokers due cultural reasons, In Karachi University students were unaware of the fact that shisha, or water-pipe smoking, is just as harmful as cigarette smoking (*Faiza Ilyas 2008*).

CONCLUSION

Most of the patients were illetrate 162 patients (59 %). The study revealed that cigarette smoking was detected among 29% and 7.9% were shisha smokers.

RECOMMENDATIONS

1. The risk of TB transmission through Shisha smoking should be clearly explained to the smokers and the worker of the public cafes, clubs and those who smoke in groups.
2. High need of the raising of community and decision makers awareness to attract their attention and efforts to stop the danger of TB.
3. Strategies to strengthening early case finding and diagnosis must be designed and implemented.

REFERENCES

1. Ali L.; Moukhayer M.; Hamouda E.; and Yousif E., evaluation of women's awareness about T.B. in Khartoum state, Sudan , the journal of Tuberculosis and lung disease, 2007, **11(51)**:133.
2. Cambanis A..R; amsay A.; Yassin M.A.; Cuevas L.E., Duration and associated factors of patient delay during tuberculosis screening in rural Cameroon., Trop. Med. Int .Health, 2007, **12(11)**:1309-14

3. De Souza M.V., Promising drugs against tuberculosis , Recent Patents Anti-Infect Drug Disc., 2006, **1**(1):33-44.
4. Elkheir H.K., evaluation of six months regimen of Tuberculosis treatment at Khartoum state , 2005 : 84
5. El-Sony A.I.; Khamis A.H.; Enarson D.A.; Baraka O.; Mustafa S.A.; and Bjune G., Treatment results of DOTS in 1797 Sudanese tuberculosis patients with or without HIV co-infection, *Int J Tuberc. Lung Dis.*, 2002, **6**(12):1058-66.
6. Greinert U.; Hillemann D.; Lange C.; and Richter E., Antibiotic drug-resistant tuberculosis, *Med Klin (Munich)*, 2007, **102**(12):957-66.
7. Houston S.; Pozniak A.; and Ray C.S., Therapeutic review: tuberculosis, *Cent Afr. J. Med.*, 1991, **37**(8):250-9.
8. Kibiki G.S.; Mulder B.; Dolmans W.M.; de Beer J.L.; Boeree M.; Sam N.; van Soolingen D.; Sola C.; van der Zanden A.G., M., tuberculosis genotypic diversity and drug susceptibility pattern in HIV-infected and non-HIV-infected patients in northern Tanzania , *B.M.C. Microbiol.*, 2007 , **7**:51.
9. Liu F.Y., Mid. Term evaluation of World Bank Loan project of Tuberculosis control in Guangxi zhuang autoromous region, the international journal of tuberculosis and lung disease, 2007, **11**(11): 135.
10. Lumb R.; Bastian I.; Gilpin C.; Jelfs P.; Keehner T.; Sievers A., Tuberculosis in Australia: bacteriologically confirmed cases and drug resistance, *Commun Dis. Intell.*, 2007, **31**(1):80-6.
11. Manogna Maddineni and Mukta Panda , Pulmonary Tuberculosis in a Young Pregnant Female: Challenges in Diagnosis and Management , *Infect. Dis. Obstet. Gynecol.*, 2008 , **10** : 1155 .
12. Martins N.; Grace J.; and Kelly P.M., An ethnographic study of the impact of local knowledge and attitudes on

- T.B. control in tiomor leste, the international journal or tuberculosis and lung disease, 2007, **11(5)**:135.
13. Mohamed H.; Hawkrigde A..J.; and Hussey G. D., the epidemiology of TB in adolescents in the Wstern Cape Povince of South Africa, the international Journal of Tuberculosis and lung diseases , 2007, **11(11)**:117.
 14. Muhan M.; and Darak B., ages and sex distribution amongst pulmonary tuberculosis patients in Punjab province, Pakistan, the international journal of tuberculosis and lung disease, 2007, **11(11)**:103.
 15. P.V.K.; Palaian S.; Ojha P.; and P.R.S., Pattern of adverse drug reactions experienced by tuberculosis patients in a tertiary care teaching , Pak. J. Pharm. Sci. 2008 ,**21(1)**:51-6.
 16. Sharaf-Eldin G.S.; Saeed N.S.; Hamid M.E.; Jordaan A.M.; Van der Spuy G.D.; Warren R.M.; Van Helden P.D.; and Victor TC.,Molecular analysis of clinical isolates of Mycobacterium tuberculosis collected from patients with persistent disease in the Khartoum region of Sudan. J Infect., 2002,**44(4)**:244-51.
 17. Sreer amareddy C.T.; and Kishore P.V.,Delay in diagnosis of smear positive Tuberculosis under the DOTS strategy a systemic review, the international journal of Tuberculosis and lung disease 2007;**11(11)**:134.
 18. Stevenson CR.; Critchley J.A.; Frouhi N.G.; Roglic G.; Williams B.G.; Dye C.; Unwin NC.; Diabetes and the risk of tuberculosis: a neglected threat to public health, BMC Public Health, 2007,7-234.
 19. Taylor O.; Wwe A. Kabir M.; Belhocine M.; and soreme R., Run, Assesment of Management of T.B. medicines in DOTS centres in Nigeria, the international journal of Tuber culosis and lung disease, 2007, **11 (11)**: 151

20. van den Heuvel M.M., Els Z., Koegelenberg C.F., Naidu K.M., Bolliger C.T., Diacon A.H., Risk factors for recurrence of haemoptysis following bronchial artery embolisation for life threatening haemoptysis , *Int. J. Tuberc. Lung Dis.*, 2007,**11**(8):909-14.
21. Vander Walt M.; Finlay A.M.; Lancaster J.; Holtz T.; Miranda A.; Laserson K.; Wells C.; and Weyer K., risk factors for Tuberculosis treatment default in South Africa differ between new and retreatment patients, the international journal of Tuberculosis and lung disease, 2007, **11**(11) : 144.
22. Veeken H., *Ned Tijdschr Geneeskd.*, Sudan, through the back door, 1998, 142(31):1781-5.
23. Wada M. Mizoguchi; Okumura Mifarai M.S.; Hostino H.; Ohonori.M.; Uchimura. K.; Yoshieyama T.; Ogata. H., Twice weekly intermittent chemotherapy during the maintenance phase of the short. Course treatment for new patients with pulmonary Tuberculosis, *Ke kkaku*, 2006, **81**(5): 363-9
24. Wise J., WHO identifies 16 countries struggling to control tuberculosis. *B.M.J.*, 1998,**316**(7136):957.
25. Zaki A.M., a community based study on Tuberculosis control at the primary health care level in the Red sea area, Sudan, 1994: 64- 100.