ECRONICON OPEN ACCESS

EC PULMONOLOGY AND RESPIRATORY MEDICINE

Research Article

Treatment Outcomes of Tuberculosis in Halaba Kulito Hospital, Halaba Zone, SNNPR, Ethiopia, 2019

Tiwabwork Tekalign*

Department of Nursing, College of Health Science and Medicine, Wolaita Sodo University, Ethiopia

***Corresponding Author:** Tiwabwork Tekalign, Department of Nursing, College of Health Science and Medicine, Wolaita Sodo University, Ethiopia.

Received: September 05, 2020; **Published:** December 31, 2020

Abstract

Background: Tuberculosis is an infectious disease caused by bacillus mycobacterium tuberculosis which mainly affects lung. Tuberculosis treatment outcome is one of the performance indicators of the program set by world health organizations. Therefore, this study aimed to assess treatment outcomes of tuberculosis in Halaba Kulito hospital, Halaba zone, SNNPR, Ethiopia, 2019.

Methods: Institutional based retrospective cross-sectional studies were conducted from May 1 - 21, 2019 G.C in Halaba kulito Primary Hospital among 175 patients by using systematic random sampling technique. Descriptive statics were used to summarize the findings.

Results: The overall success rate of tuberculosis treatment among the patients was 70.9%. Among all TB patients enrolled in this study 96 (54.9%) cured, 28 (16.0) patients completed treatment, 30 (17.1%) treatment failure, 17 (9.7%) defaulter and 4 (2.3%) of patients were died during the study period.

Conclusion: The overall success rate is good compared to other study. The hospital should strongly continue supportive supervision and health education program.

Keywords: *Tuberculosis; Outcome; Treatment; Halaba; Hospital; Retrospective*

Abbreviations

EPTB: Extra Pulmonary Tuberculosis; HIV: Human Immune Virus; SPSS: Statistical Package for Social Science; TB: Tuberculosis

Background

Tuberculosis (TB) is a communicable disease caused by Mycobacterium tuberculosis which attacks the lungs, but TB bacteria can attack any part of the body such as the kidney, spine and brain [1]. Mainly TB disease shows symptoms such as a bad cough that lasts 3 weeks or longer, pain in the chest, coughing up blood or sputum [2].

TB is spread from person to person through the air and people infected with TB bacteria have a lifetime risk of falling ill with TB of 10%. However, persons with compromised immune systems, have a much higher risk of falling ill [3,4].

TB remains one of the top 10 causes of death worldwide but, relatively small proportion (5 - 10%) of the estimated 1.7 billion people infected with Mycobacterium tuberculosis will develop TB disease during their lifetime [5,6].

Every year, 10.0 million people develop TB and 1.6 million people die from the disease; in Ethiopia an estimated 165,000 people suffered from TB. Ethiopia is among the 22 TB-high burden countries (HBCs) in the world that account for over 80% of the world's new TB cases each year. But most deaths from TB could be prevented with early diagnosis and appropriate treatment [6-8].

Still numbers are showing that, the incidence of tuberculosis was increasing both globally and in Ethiopia [9,10], showing the need to have effective means of controlling the rise of the incidence.

Despite the efforts with patient centered approach which allows home based treatment supervised by a treatment supporter of their own choice, and health facility-based treatment observed by a health professional, non-compliance to treatment still pose a great challenge to TB control programs and controlling the tuberculosis epidemic thus represents an urgent global public health priority [11,12].

Even though vaccine is available and an effective anti-TB therapy, it still remains a major global health problem [13]. So, this study is aimed to assess the treatment outcome of TB patients in the last four years (2016 - 2019) in Halaba Kulito Hospital, Halaba Zone, Ethiopia.

Materials and Methods

Study area and period

The study was conducted in SNNPR, Halaba zone, Halaba Kulito town 87 km away from regional city Hawasa and 218 km far from capital city Addis Ababa. Halaba is a zone is located in Great Rift Valley is bordered on the south by Hadiya zone. The study was conducted from May 1 - 21 2019 G.C.

Study design

An institutional based retrospective cross sectional study was conducted.

Population

All patients treated at Halaba Kulito Primary Hospital were source of population whereas Selected TB patients who were treated with anti-TB drug from September 2008 E.C to January 2011 EC were study population.

Variables

- Tb treatment outcome
- Socio-demographic Characteristics (Age, Sex, Occupation, Marital status, address)
- HIV test result
- Types of TB (PTB+, PTB-, EPTB and Unknown).

Inclusion criteria and exclusion criteria

The patients who were diagnosed, registered and treated for Tuberculosis in Halaba Kulito Primary Hospital while those patients who had incomplete medical records and those who are transferred-out was excluded from the study.

Sample size determination

The sample size was determined by using a single population proportion formula. The following assumptions were applied: p of treatment success rate among TB patients is 74% [14], d is the expected margin of error (5%), Z, the standard score corresponding to a 95% confidence interval and α, the risk of rejecting the null hypothesis (0.05). Accordingly, the required sample size became 175.

Sampling technique

A total of 424 patients were registered as taking Anti TB treatment from September 2016 E.C to January 2019. From them by using systematic sampling technique in every two interval, a total of 175 patient cards were identified and traced using registration number.

Data collection procedure and instrument

Data were collected by using pretested checklist from May 1 - 21 2019 G.C. All the variables of interest were assessed accordingly and the checklist was prepared in English. Those who have diploma in nursing were participated in the data collection process. Orientation was given to the data collectors.

Data quality control

Orientation and appropriate supervision were done to data collectors by supervision made on daily basis by the principal investigator and completeness and consistency were checked every day during data collection. Pre- test was done on 5% of the total sample size in the same hospital on patient records before the study period. Appropriate modifications were made after analyzing the pre-test result before the actual data collection.

Data management and analysis

After checking for completeness, missed value, unlikely response, coded and entered to Epi data version 3.5.1 then exported to SPSS version 22 and then univariate analysis was done.

Ethics statement

Ethical clearance and approval letter to conduct study was obtained from Wolaita Sodo University ethical review committee and a letter of cooperation was taken from the nursing department. Confidentiality of the information was ensured by coding and anonymity was kept.

Result

Socio-demographic characteristics of study participant

Out of the total participants majority 98 (56%) and 119 (68%) were males and age in between 21 - 40 years old. Most of 113 (64.6%) and 73 (41.7%) of participants were rural residents and students respectively. Respectively 149 (83.1%) and 119 (68%) were new cases and had non -reactive of their HIV status. Around half of the participants were diagnosed as pulmonary positive tuberculosis (See table 1).

Treatment outcome

The overall success rate of tuberculosis treatment among the patients was 70.9%. Among all TB patients enrolled in this study 96 (54.9%) and 28 (16.0) patients were cured and completed treatment respectively. Although 30 (17.1%), 17 (9.7%) and 4 (2.3%) of patients were ended up with the treatment failure, default and death respectively (See figure 1).

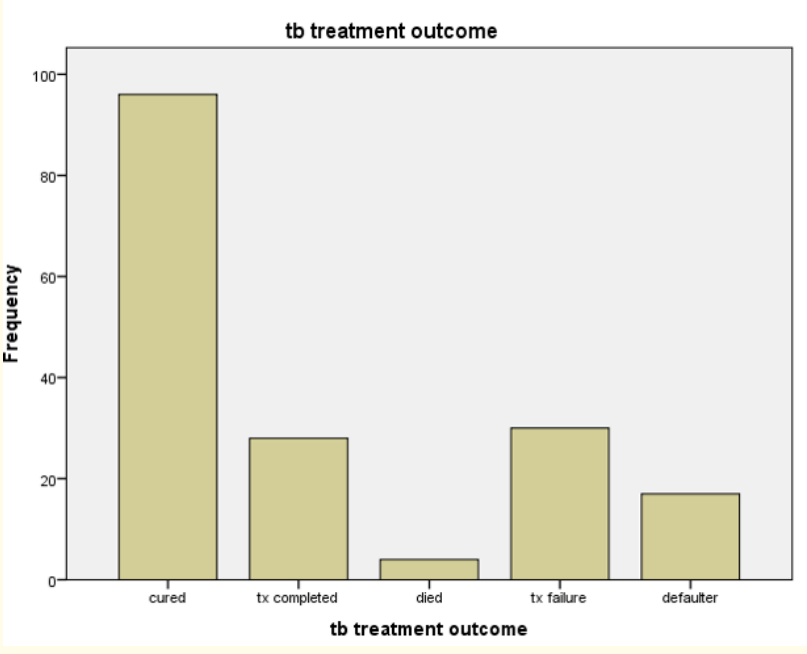

Figure 1: *Tuberculosis treatment outcome of TB patients in Halaba Kulito Primary Hospital from 2016 - 2019, (N = 175).*

Variables	Characteristics	Frequency (%)
Sex	Male	98 (56.0%)
	Female	77 (44%)
Age	< 20 years	23 (13.1%)
	21 - 40 years	119 (68%)
	> 41 years	33 (18.9%)
Address	Urban	62 (35.4%)
	Rural	113 (64.6%)
Occupation	Students	73 (41.7%)
	Farmers	61 (34.9%)
	Other (merchant, health professional and daily laborer)	41 (23.4%)
Tb patient category	New	149 (85.1%)
	Relapse	13 (7.4%)
	Default	15 (8.6%)
HIV test result	Reactive	15 (8.6%)
	No- reactive	121 (69.1%)
	Unknown	39 (22.2%)
Types of Tb	PTB+	89 (50.9%)
	PTB-	23 (13.1%)
	EPTB	63 (36%)

Table 1: *Socio-demographic characteristics of TB patients in Halaba Kulito Primary Hospital from 2016 - 2019, (N = 175).*

Discussion

The success of Tb treatment relies on good compliance and successful completion of treatment regimen soon after initiation of treatment; otherwise the severity of the disease as well as the side effect of the drug costs the patient under treatment. This study provides important information on the status of patient who are under treatment of tuberculosis in the last years in-order to plan for the future on controlling the disease and to join the ending program initiated on tuberculosis.

The overall rate of the treatment success among the patients was 70.9%, which is lower than study conducted in public hospital of Harar, Mekele and Denmark [15-17]. This might be due to variation in population size and the urbanity of the town.

But it was higher than study conducted in Jinka Hospital and Ethiopian University Hospital [14,18]. This might be due to variation in socioeconomic status of the population.

According to this study 96 (54.9%) patients were cured which is higher than study conducted in Debrebirhan prison, this might be due to variation study participants, sample size and sociodemographic characteristics of study participants [19].

One of the indicator of poor compliance of Tuberculosis treatment is treatment failure; according to this study 30 (17.1%) of patients has treatment failure, which is lower than study conducted in brazil [20], this might due to variation in sample size.

One of the indicators of unsuccessful treatment of tuberculosis is defaulting or not taking anti-tuberculosis drugs for at least six months. According to this study 17 (9.7%) defaulted treatment which is lower than study conducted in Hamburg [21], which might be due to the economic burden of tuberculosis sometimes burdens to finish medication in-order to have better outcome

Limitations of the Study

Due the source of information was secondary data incomplete data and we unable to get some variables like infected strain or genotypes of TB bacillus, knowledge about treatment, annual income and distant to travel to get treatment. It will be better if this study conducted prospectively.

Conclusion

The overall success rate is good compared to other study and in line with the WHO targets. The hospital should strongly continue supportive supervision and health education program and also regular follow up of patients with unsuccessful outcome and awareness creation through health education for rural patients in the course of treatment is vital.

Funding

The research is not funded.

Consent for Publication

Not applicable.

Availability of Data and Materials

The data that support the findings of this study are available wit out restriction.

Conflict of Interest

The authors declare that they have no conflict of interests.

Acknowledgement

I would like to express our deepest gratitude to the Halaba Kulito hospital staffs and the data collectors.

Bibliography

1. Global tuberculosis report. Geneva: World Health Organization (2019).
2. CDC, center for disease control and prevention, tuberculosis sign and symptom (2016).
3. WHO, World Health Organization What is TB? How is it treated? (2018).
4. WHO, World health organization tuberculosis fact sheet (2020).
5. WHO, Global Tuberculosis Report (2019).
6. Seyoum A and Legesse M. "Knowledge of tuberculosis (TB) and human immunodeficiency virus (HIV) and perception about provider initiated HIV testing and counselling among TB patients attending health facilities in Harar town, Eastern Ethiopia". *BMC Public Health* 13 (2013): 124.
7. KNCV partners with MSH for Eliminate TB from Ethiopia (ETBE) Project (2020).
8. Alene KA., *et al.* "Mapping tuberculosis treatment outcomes in Ethiopia". *BMC Infectious Diseases* 19 (2019): 474.
9. WHO, Global tuberculosis report; World Health Organization (2018).
10. Adam MN and Philippe G. "Global Epidemiology of Tuberculosis and Progress Toward Meeting Global Targets - Worldwide 69.11 (2018): 281-285.
11. Federal minister of health of Ethiopia, Guideline for program and clinical management of drug resistant tuberculosis FMOH, Addis Ababa Ethiopia 6th edition (2016).
12. Schrager LK., *et al.* "WHO preferred product characteristics for new vaccines against tuberculosis". *The Lancet Infectious Diseases* 18.8 (2018): 828-829.
13. EO Arram., *et al.* "Increased frequency of CD4+CD25+FoxP3+ circulating regulatory T cells (Treg) in tuberculous patients EJCDT 63 (2014): 167-172.
14. Biniam W., *et al.* "Retrospective study on tuberculosis treatment outcome at Jinka General Hospital southern Ethiopia". *BMC Research Notes* 10 (2017): 680.
15. Assefa T., *et al.* "Tuberculosis Treatment Outcomes and Associated Factors among TB Patients Attending Public Hospitals in Harar Town, Eastern Ethiopia: A Five-Year Retrospective Study". *Tuberculosis Research and Treatment* (2019).
16. Abdulkader M., *et al.* "Treatment outcomes and their trend among tuberculosis patients treated at peripheral health settings of Northern Ethiopia between 2009 and 2014: a registry-based retrospective analysis". *BMC Research Notes* 12 (2019): 786.
17. Holden IK., *et al.* "Predictors for Pulmonary Tuberculosis Treatment Outcome in Denmark 2009-2014". *Scientific Reports* 9 (2019): 12995.

18. Minaleshewa B., *et al.* "Treatment Outcomes of Tuberculosis and Associated Factors in an Ethiopian University Hospital". *Advances in Public Health* (2016).

19. Berihun YA., *et al.* "Prevalence of Tuberculosis and Treatment Outcomes of Patients with Tuberculosis among Inmates in Debrebirhan Prison, North Shoa Ethiopia". *Ethiopian Journal of Health Sciences* 28.3 (2018): 347-354.

20. Maciel EL and Reis-Santos B. "Determinants of tuberculosis in Brazil: from conceptual framework to practical application". *Revista Panamericana de Salud Pública* 38.1 (2015): 28-34.

21. Diel R and Niemann S. "Outcome of tuberculosis treatment in Harmburg : a survey, 1997-2001". *The International Journal of Tuberculosis and Lung Disease* 7.2 (2015): 124-131.

Volume 10 Issue 1 January 2021