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Socio-Cultural Factors Associated with Non-Adherence to Tuberculosis Treatment and Medical Education Interventionsin Selected Counties of Kenya

[1]Richard K.A. Sang,[1]Ronald Omenge Obwoge, [2]Simon Kangethe,
[3]L.P. Ayiro, [4]J. M. Changeiywo
[1]Community Health Department, Faculty of Health Sciences, Egerton University, Nakuru, Kenya[2]Medical Education, Moi University, Eldoret, Kenya
[3]Moi University, Quality Assurance,Eldoret, Kenya
[4]Curriculum, Instruction and Educational Management Department, Egerton University, Nakuru, Kenya
Corresponding author:Richard K.A. Sang

Abstract
Background: *Tuberculosis (TB) continues to be a major cause of high morbidity and mortality in Kenya. Adherence to TB treatment is one of the interventions that lead to increase in cure rate thus reducing mortality and emergence of Multi drug resistant tuberculosis (MDR) and high cost of treatment. This study focused on TB patients in urban and rural areas of Kericho and Nakuru Counties of Kenya.*
Objectives: *The study set out to identify the socio-cultural factors associated with non-adherence to TB treatment.*
Methods:*A purposive sampling method was used to carry out a cross sectional descriptive survey with retrospective cohort of non-adherent TB patients. Target population was traced non-adherent smear positive TB patients (defaulters) and health care workers within the past six months (June-December 2015) at the commencement date of the study. Interview schedules and questionnaires were used to collect data. Data analysis was done with aid of SPSS platform that generated graphs and tables.*
Results:*Some of the factors which contributed to non-adherence to TB treatment were socio-demographic factors and ignorance on need for treatment adherence.Socio-cultural/economic factors which included stigma, alcoholism, poverty, low income, living alone,and poorly prepared healthcare workers on Tb treatment also contributed to non-adherence to treatment.*
Conclusion:*Socio-demographicand socio-cultural/economic factors associated with non-adherence to treatment included ignorance on need for treatment adherence,stigma, alcoholism,poverty, low income, living alone. Inadequately prepared healthcare workers seem to have also contributed to non-adherence to medication.*
Recommendations: *A deliberate and sustained plan on patients' health education regarding adherence to medication and stigma reduction must be emphasized. Staffs' updates on Tb treatment must be regularly enhanced through continuing medical education forums.*

Keywords: *Non-Adherence, TB Treatment, Defaulter, Patient Factor, Tuberculosis*

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I. Introduction

1.1Background

Tuberculosis (TB) is one of the world's deadliest communicable diseases and remains a global public health problem with significant morbidity and mortality.[1, 2]In 2013, an estimated 9.0 million people developed TB and 1.5 million died from the disease, 360 000 of whom were HIV-positive. Globally, the tuberculosis (TB) mortality rate has fallen by 41 % since 1990, and the world is on track to reach the global target of a 50 % reduction during 2015.[3]However, global TB control has faced many challenges, with an estimated 8.7 million incident cases in 2011 and 1.4 million deaths from TB since 2011.

It is well known that non adherence to TB treatment leads to high increase in morbidity and mortality, prolonged TB infectiousness, multi-drug resistance, relapse and death and high cost of TB treatment which translates to increased burden not only to the nation but to the community TB control interventions. Non-compliance to

prescribed drug regimens is a major challenge to attainment of TB treatment goal which is *to cure patients once they start treatment*. Progress in responding to multidrug-resistant TB (MDR-TB) remains slow,[3] particularly in high-burden countries where the incidence of MDR-TB is unacceptably high.[3, 4] In addition, global economic crises and reduced investments in health services threaten national tuberculosis control programs.[3, 5, 6]

Given that most deaths from TB are preventable, the death toll from the disease is still unacceptably high and efforts to combat it must be accelerated if the 2015 global targets, set within the context of the Millennium Development Goals (MDGs), are to be met. *The MDG 6, Target 6.c: was to halt and begin to reverse the incidence of TB by 2015 and reduce prevalence of TB and deaths due to TB by 50% compared with a baseline of 1990* (WHO Global Tuberculosis Report 2014).

The Kenya National Tuberculosis, Leprosy and Lung Disease Program (NTLD-P) has been implementing initiatives towards achieving internationally agreed TB control targets whose immediate short-term goal was to achieve 70/85 targets – that is, to detect 70 % of infectious TB and cure 85% of the detected cases and then sustain this effort over a long time. The TB MDG to have halted and begin to reverse the incidence and mortality due to TB by 2015 has been met in Kenya and the NTLD-P has begun to implement the post 2015 Global TB Strategy that consists of 3 major areas, namely: **integrated, patient-centred care and prevention;bold policies and supportive systems** and **intensified research and innovation** (National Tuberculosis, Leprosy and Lung Disease Program – 2016). To affirm this goal during the commemoration of the World TB day on March 24, 2016, the Principal Secretary, Ministry of Health, Dr Nicholas Muraguri, recounted that,

"Over the last 10 years, a total of 1.2 million Kenyans have been diagnosed with TB and one million TB patients treated successfully, averting an estimated half a million TB deaths. Moreover, free TB services have been accessible to Kenyans across 4,500 health facilities and 1,800 testing sites, and that Kenya remains the first country in sub-Saharan Africa to reach World Health Organisation targets for TB case detection and treatment success."

TB continues to be a major cause of high morbidity and mortality in Kenya and as noted earlier, Kenya is among the 22 countries contributing 80% of global TB burden. Though the country has improved from number 13th to 15th among the 22 countries with a high burden of TB in the world, and the 5th highest country with TB burden in Africa (WHO Tuberculosis Report 2013) TB still remains a major cause of morbidity and mortality in Kenya which affects all age groups with its greatest toll in the most productive age group of 15 to 44 years. The Kenya TB treatment defaulter rate is 15% (Global Tuberculosis Report 2013 www.who.int/tb/data).

Adherence to TB treatment is one of the factors that lead to increase in cure rate and reduction in morbidity and mortality and also decreased emergence of multi drug resistant tuberculosis (MDR TB). Emergence of MDR TB results in high cost of treatment. Previous research studies in different contexts (Munro et al.2007) has shown that there exist many factors that influence non-compliance to TB treatment ranging from individual patient, health care provider, health care delivery patterns and socio-economic related factors. These underlying factors that lead to patient non-compliance are key areas of concern that are normally not emphasized during the healthcare workers' (**HCW**) training. The HCW training curriculum does not emphasize capacity building up of required competencies in Tb patients' management becausehealthcare workers always focus on hard skills, or skills directly related to job duties like acquiring a certificate and getting employed at the expense of "soft skills". Soft skills, which do not depend on acquired knowledge such as common sense, the ability to deal with people (effective communication), and a positive flexible attitude when dealing with patients are never taught as they are not in the curriculum and so receive no attention. The HCWs are thus poorly prepared on Tb treatment. This calls for re-evaluation of the training curricula with the aim of incorporating these skills as knowledge components to be acquired by the HCWs.

1.2 Objective of the Study

The objective of the study was to identify socio-cultural factors associated with non-adherence to TB treatment.

1.3 Research Question

What are the socio-cultural factors that influence non-adherence to TB treatment?

II. Methods

2.1. Research Design

A mixed method research design was used which combined both quantitative and qualitative methods in this study in which closed-ended (quantitative) and open-ended (qualitative) questions were addressed. The study utilized a retrospective cohort (Tb defaulters) with a mixed method approach comprising both interviews and focus group discussions. Interviews were done to all traced Tb defaulters, health workers from health facilities where defaulters were traced and focus group discussions

with the County Tuberculosis and Leprosy Coordinators (CTLCs) and sub County Tuberculosis and Leprosy Coordinators (sCTLCs) of the two counties of Kericho and Nakuru.

2.2. Location of the Study

The study was conducted in urban and rural areas of Kericho and Nakuru Counties in Rift Valley Region. Rift Valley Region is one of Kenya's 8 regions, covering an area of 182,505.1 square kilometres and according to the 2009 Census had a population of 10,006,805. Kericho County is one of the 47 counties in Kenya with a population of 752,396 and an area of 2,111 km². Nakuru County is one of the largest counties in Kenya with a population of around 1.6 million, living on some 7,495 square kilometres in the central part of the country.

2.3. Study Population

Target population was identified smear positive non-adherent TB patients registered in the TB registers in the two counties. Study period was within the past six months at the commencement date of the study in January 2016.

Inclusion criteria: All registered smear positive non adherent TB patients within the past six (6) months of the study period were recruited for study.

Exclusion criteria: Transfer-ins and outs and patients with other disease conditions were not included in the study.

2.4. Sample Size

A total of 112 smear positive non-adherent TB patients from 34 health facilities (24 in Kericho County and 10 in Nakuru county) were purposively identified (62from Kericho County and 50 from Nakuru County).

2.5. Sampling Frame

This involved non-adherent smear positive TB patients within the past six months at the commencement date of the study as per the TB registers. Key informant interviews involvinga total of 46 health care workers (11 from Nakuru County and 35 from Kericho County) were carried out.

2.6. Instrumentation/Tools

Structured questionnaires and semi-structured interview schedules were used.

2.7. Reliability and Validity

For the reliability and validity of this study's tools, piloting was done at Emining location of Baringo County, a neighbouring county North – East of Nakuru County. The study tools were prepared in English.

2.8. Procedures for Data Collection

Data were collected using interview guides and questionnaires. Interviews were conducted by a trained research assistant, who was well versed and fluent in the local language.

2.9. Data Analysis

Data were analysed using SPSS v20. Results werepresented in tables andgraphical summaries.

2.10. Ethical Approval and Ethical Considerations

IREC, Moi University approved the protocol, consent form and interview schedule. An official permission was given by CTLCs and sCTLC of the two counties of Nakuru and Kericho, prior to the interviews. During data collection, oral informed consent was obtained from all participants. Informed oral consent was also obtained from parents or guardians for subjects under 18 years old.

III. Results

3.1. Socio-demographic factors

From the study, more than 50% of the respondents were males and not married and that more than 65% of them were in the age group 21-39years which is also the most economically active age group generally.

More than 60% of the respondents in Nakuru were unemployed, compared with more than 50% who included students in Kericho which also revealed that 98% of respondents in Nakuru earned less than 5,000/= per month compared with 81% in Kericho county. In fact more than 80% of the respondents in the two counties admitted that they defaulted because of their financial challenges.

3.2. Healthcare workers' views on patients' default from treatment.

Some of the views from healthcare workers as to why patients default included: Feeling well soon after treatment initiation (57% in Nakuru and 60% in Kericho), Alcoholism (36% Nakuru and 69% Kericho), Stigma (29% Nakuru and 51% Kericho), Poverty (29% and 23% in Nakuru and Kericho respectively), Drug side effects (36% Nakuru and 9% Kericho), Cross border transfer- and travelling out of station (14% in Nakuru and 6% in Kericho), Social problems like unstable family setup and disputes (11%) in Kericho, Denial due to possible association with HIV (17% Kericho), Migrant population, no fixed abode (7% Nakuru and 11% Kericho).

The healthcare workers (43% in Nakuru and 46% in Kericho) also felt they were inadequately prepared on Tb treatment and indeed suggested that because of this feeling of inadequacy, efforts should be put in place by the Ministry of Healthto intensify adherence counseling competencies in Tb treatment centres. The staff felt that this shortcoming may have contributed to patients' non-adherence to treatment since there may have been poor emphasis on consistency in medication intake.

3.3. Socio-cultural Factors

Information was sought from the defaulters on whom they lived with at home, whether they felt there was any social stigma associated with TB medication, whether they smoked cigarettes or drank alcohol. Theirresponses are presented in tables **1** to **4**.

3.3.1. Living Environment

When the respondents were asked to state whom they lived with at home, their responses are as shown in **Table 1** and **Figure 1**.

***Table 1*:** Household.

Whom do you live with at home?		**Nakuru**	**Kericho**
		%	**%**
	Alone	12 (24)	11 (18)
	Parents	9 (18)	18 (29)
	Friends	9 (18)	6 (9)
	Family	20 (40)	27 (44)
	Total	50 (100)	62 (100)

The result in ***Table 1***and ***Figure 1***shows that 24% and 18% of the respondents in Nakuru and Kericho counties respectively live alone, 18% and 29% live with parents, 18% and 9% live with friends and 40% and 44% live with family respectively. These findings indicate that more than 40% of the defaulters in both counties of Nakuru and Kericho lived with family while the lowest percentage (9%) lived with friends and were in Kericho County. The next lowest percentage (18%) lived with parents and friends in Nakuru County and alone in Kericho County.

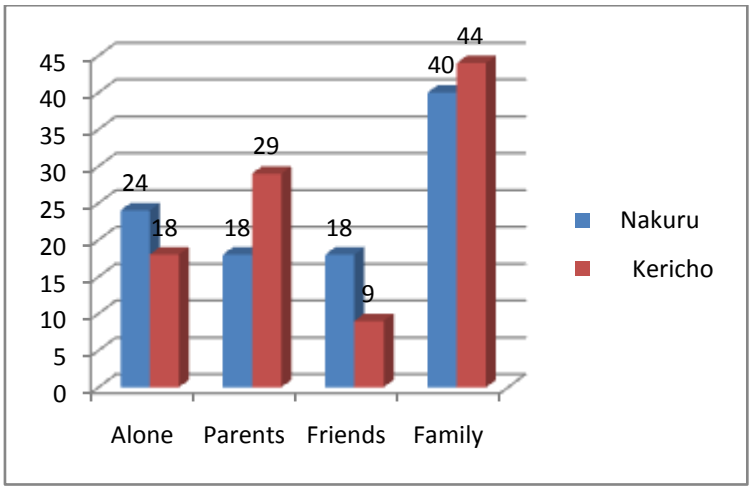

Figure 1: Living Environment

3.3.2. Stigma

When the respondents were asked whether they felt there was any social stigma associated with TB medication,their responses are as shown in ***Table 2*** and ***Figure 2***.

***Table 2*:** Stigma associated with the TB medication

Is there any social stigma associated with the TB medication?		**Nakuru**	**Kericho**
		%	**%**
	Yes	13 (27)	4 (6)
	No	36 (73)	58 (94)
	Total	49 (100)	62 (100)

The result in ***Table 2***and ***Figure 2*** indicates that 27% and 6% of the respondents in Nakuru and Kericho counties respectively associated stigma with Tb medication, while 73% and 94% respectively did not feel there was any stigma associated with Tb medication. From the findings in table 24 more than 90% 0f the defaulters in Kericho County did not associate stigma with Tb medication compared to 73% in Nakuru County. However for those who associated their defaulting with stigma, some had anxieties as summed up by the following:

……*"I don't want neighbours to see me here [at the TB clinic]. One day, I saw this girl from my neighbourhood here (at a health facility in Kericho County); I was sitting outside and waiting. I wished the earth would open and swallow me. I know she would spread the gossip. I tried to hide behind the man sitting next to me. I don't think she saw me." (36 years old male defaulter).*

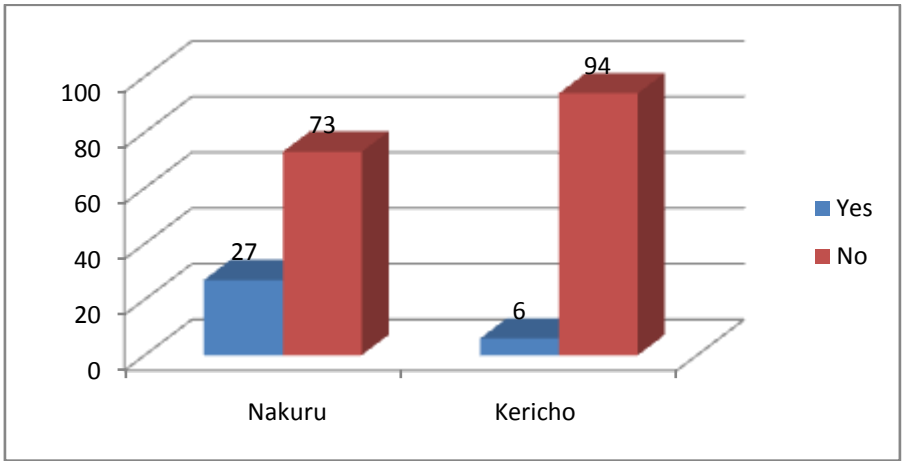

***Figure 2*:** Stigma associated with the TB medication

3.3.3. Smoking Cigarettes

When the respondents were asked whether they smoked cigarettes, their responses are as shown in ***Table 3*** and ***Figure 3***.

***Table 3*:** Smoking Cigarettes

Do you Smoke Cigarettes?		Nakuru	Kericho
		%	%
	Yes	19 (38)	2 (3)
	No	31 (62)	60 (97)
	Total	50 (100)	62 (100)

The results in ***Table 3*** and ***Figure 3*** show that 38% and 3% of the respondents who smoke were from Nakuru and Kericho counties respectively, while 62% and 97% respectively did not smoke in the two counties respectively. The findings indicate that a very high percentage (97%) of the respondents did not smoke and were mainly from Kericho County compared to 62% in Nakuru County. The lowest percentage (3%) of those who smoked was from Kericho County.

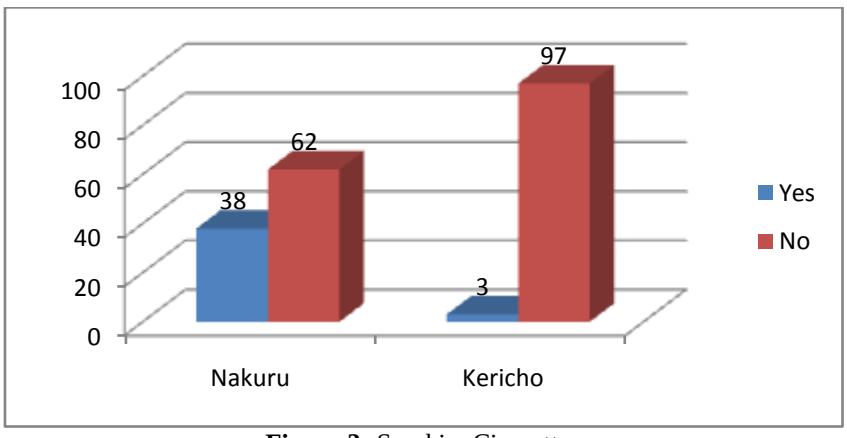

Figure 3: SmokingCigarettes

3.3.4. Drinking Alcohol

The respondents were also asked whether they drank alcohol. Their responses are as shown in ***Table 4*** and

Table 4: Drinking alcohol

Do you drink alcohol?		Nakuru	Kericho
		%	%
	Yes	27 (54)	5 (8)
	No	23 (46)	57 (92)
	Total	50 (100)	62 (100)

The responses in ***Table 4*** and ***Figure 4*** indicate that 54% and 8% of the respondents admitted they drank alcohol in Nakuru and Kericho counties respectively, while 46% and 92% did not. The findings indicate that majority (92%) of the defaulters did not drink alcohol in Kericho County compared to 46% in Nakuru County. More than 50% (54%) of the defaulters drank alcohol in Nakuru County.
Figure 4.

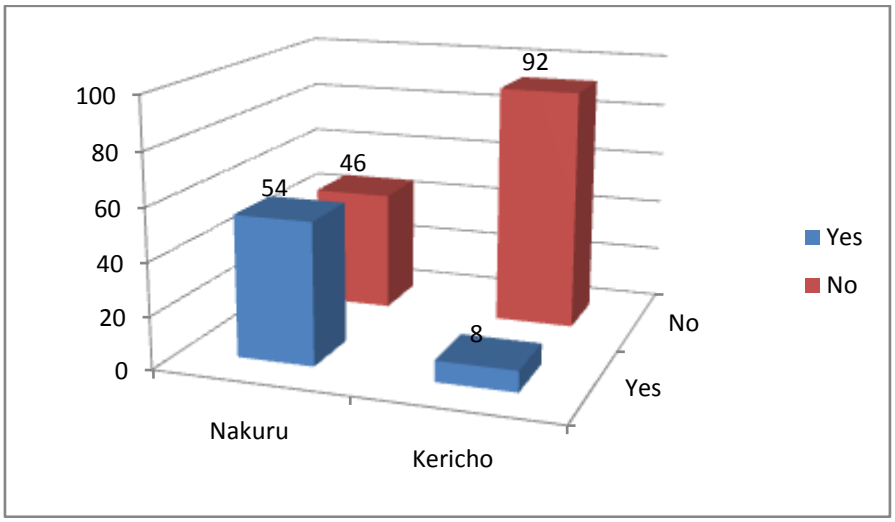

***Figure 4*:** Drinking alcohol

3.2.1 Discussion

The study's objective sought to identify the socio-cultural factors that influence the non-adherence to TB treatment. The study showed that among socio-cultural factors that contribute to non-adherence to TB medication, 40% (Nakuru) and 44% (Kericho) of defaulters lived with their family while 24% and 18% of the respondents in Nakuru and Kericho counties respectively live alone, 18% and 29% live with parents, and 18% and 9% live with friends.

In associating stigma with TB medication, in Nakuru and Kericho 27% and 6% of the respondents in Nakuru and Kericho counties respectively associated stigma with Tb medication while 73% and 94% respectively did not feel there was any stigma associated with Tb medication. This is in agreement with *Obwoge et al (2016)* study on factors associated with defaulting in Baringo which found that social stigma was associated with defaulting among 43% of defaulters. Also in support of these findings, *Tola HH et al (2015)* in a study on Tuberculosis Treatment Non-Adherence and Lost to Follow Up among TB Patients found that fear of stigma was a main behavioural factor that was associated with TB treatment non-adherence and lost to follow up. Stigma related issues frequently confront the programme managers. According to them fear of stigma not only lead patients not disclosing their illnesses but also makes seeking TB treatment in their catchments areas difficult for fear of being identified by neighbours. This fear was confirmed by many of the programme managers from the two counties of Nakuru and Kericho who explained during the focus group discussion that they have faced difficulties with patients who do not want to receive treatment in the health facilities located in their vicinity, for fear of being identified by neighbours.

On smoking cigarettes, 38% and 3% of the defaulters from Nakuru and Kericho counties respectively smoked cigarettes while 62% and 97% respectively did not smoke during period of medication. Nakuru findings (38% of defaulters) are supported by *Muture B.N et al (2011)* study which indicated that the most frequent reasons for default cited by patients who did not complete the treatment course included smoking. The study findings are also supported by *Bagchi S et al (2010)* study on determinants of Poor Adherence to Anti-

Tuberculosis Treatment which found that smoking during treatment were significantly associated with non-adherence to medication in newly-diagnosed patients. *Sathiakumar et al (2010)* study on Accuracy of Self-Reported Adherence to Tuberculosis Therapy among DOTS patients in Mumbai found that other non-adherence issues to medication were smoking.

On alcohol intake, 54% and 8% of the respondents admitted they drank alcohol in Nakuru and Kericho counties respectively, while 46% and 92% did not. Nakuru study results support *Sathiakumar et al. (2010)* study which found that among other non-adherence to medication issues, alcohol consumption featured significantly.

IV. Summary, Conclusion and Recommendations

4.1. Summary ofSocio-cultural/economic factors

1. Poverty – where patients have to struggle for the next meal for self and family.
2. More than 80% of the defaulters in the two counties defaulted because of their financial challenges.
3. Stigma, usually because of association of Tb with HIV and to a small degree, taboos.
4. Social problems like unstable family setup and disputes
5. Living alone - 24% and 18% of the respondents in Nakuru and Kericho counties respectively live alone
6. Migrant population, no fixed abode – like in the case of street families
7. Cross border transfer- and travelling out of station
8.

4.2. Conclusion

Socio-demographicand socio-cultural/economic factors associated with non-adherence to treatment included ignorance on need for treatment adherence, stigma, alcoholism, poverty, low income and living alone.

Inadequately prepared healthcare workers seem to have also contributed to non-adherence to medication.

4.3. Recommendations

A deliberate and sustained plan on patients' health education regarding adherence to medication and stigma reduction must be emphasized.

Staffs' updates on Tb treatment must be regularly enhanced through continuing medical education forums.

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