



Relationship between Health Care System Setup and Adherence To Tuberculosis Treatment In Western Kenya

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ABSTRACT : *Despite the concerted effort to detect and treat TB, there are still poor treatment outcomes in a significant number of the patients. These poor treatment outcomes have been significantly linked to poor adherence to TB treatment. Therefore, a cross sectional descriptive study was conducted in Kisumu East District to establish the relationship between health care system factors and TB treatment adherence among patients aged above 18 years attending TB clinics in Kisumu East District, in Western Kenya. A total sample of 250 respondents was surveyed. An interviewer administered structured questionnaire was used to collect data from the respondents on the social, demographic aspects of the patients and structural aspects of TB care. The data was analyzed using descriptive statistics for socio-demographic variables and bivariate analysis to determine the health care system factors that significantly predicted treatment adherence. P values, Odds Ratios with 95% confidence interval (CI) were used to demonstrate significance of association between the health system related predictors and adherence. Significance was assumed at P value ≤ 0.05 . Behaviour of the health care workers (OR: 3.6; 95% CI: 1.1-12.1; P=0.031) and waiting time (OR: 7; 95%CI: 3-18; P<0.001) were the significant determinants of adherence related to health care set up. Health care system setup has a number of immediate modifiable predictors of adherence like waiting time and staff behaviour. It is important to establish the key predictors of adherence that are linked to health care system for quality TB treatment and care services in every TB care setting.*

Keywords: Tuberculosis, Treatment adherence, Health Care system set up

I. INTRODUCTION

TB continues to be the leading single infectious cause of morbidity and mortality in Kenya with the death from this disease seen to be on the rise from 2010 to 2012. The cases of retreatment in the country were 35% putting a high burden on the health care system in Kenya. Drug resistance has also been on the rise with up to 68% of all retreatments being cases of MDR-TB (1). Adherence to TB treatment is a strong determinant of treatment outcomes. A survey conducted among pediatric patients attending KNH revealed that self reported adherence was 44.9% (2). This is a very low level of adherence considering the requirement of over 90% for better treatment outcomes (3).

Kisumu East, which is in Nyanza North, had the highest number (23%) of TB cases (4). The region continues to report the highest (64%) cases of HIV/TB co-infections nationally (35.6%) (5). These high co-morbidity cases are probable antecedent for regimen non adherence due to aspects of pill burden. This region also continues to record some of the highest adverse outcomes of TB treatment that can be linked to poor treatment adherence.

II. RESULTS

2.1. Demographic Distribution of the respondents

The mean age of the respondents was 32.5±10.9 with over 90% being below the age of 50. About 60% were males. Only 13.2% were from rural areas with the remaining being from urban, periurban and informal settlements. Over 60% of the sampled population was married and those with basic education and above being more than 90%. Twenty four percent of these respondents were unemployed and about 60% of the population either earned less than 5000Ksh per month or didn't know how much their monthly income was. Adherence was estimated to be 226 (90.4%) of the respondents.

2.2. Health Facility and Adherence

There was no significant relationship between health facilities sampled and adherence: JOOTRH (45.8%, $P=0.580$); KDH (20.8%, $P=0.497$) and Railway Health Center (12.5% $P=0.09$) as represented in Table 1 below.

Characteristic		Drug Adherence		Bivariate Analysis		
		Yes n(%)	No n(%)	OR	95% CI	P Value
JOOTRH	Yes	117 (91.4)	11 (8.6)	1.3	0.5 – 3.0	0.58
	No	109 (89.3)	13 (10.7)			
Kisumu DH	Yes	35 (87.5)	5 (12.5)	0.7	0.2 – 2.0	0.497
	No	191 (91)	19 (9)			
Lumumba HC	Yes	30 (93.8)	2 (6.2)	1.7	0.4 – 7.5	0.491
	No	196 (89.9)	22 (10.1)			
Migosi HC	Yes	10 (83.3)	2 (16.7)	0.5	0.1 – 2.5	0.394
	No	216 (90.8)	22 (9.2)			
Nyalenda HC	Yes	13 (92.9)	1 (7.1)	1.4	0.2 – 11.2	0.748
	No	213 (90.3)	23 (9.7)			
Rabuur HC	Yes	11 (100)	0 (0)	0.9	0.8 – 0.9	0.269
	No	215 (90)	24 (10)			
Railways HC	Yes	10 (4.4)	3 (12.5)	0.3	0.1 – 1.3	0.09
	No	216 (91.1)	21 (8.9)			

Table 1: Health Facilities Numbers in brackets are proportions. Significance was estimated by Pearson Chi-square analysis. Values in bold are statistically significant at $P \leq 0.05$. All the P values are 2 sided.

2.3. Distribution of Non-Adherence Per Sampled Facility

The fig. 1 below represents a distribution of non-adherence per participating facility.

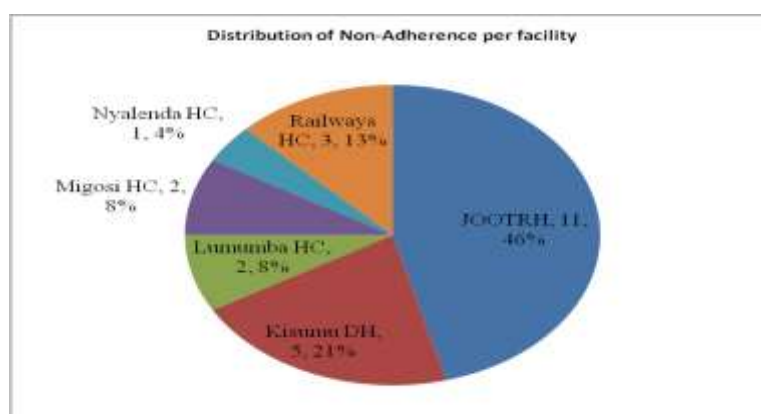


Figure 1: Distribution of non-adherence (n=24) per facility

2.4. Health Care System Related predictors of TB treatment adherence

Table 1 shows the aspects related to the health facility, service providers, services provided and quality of the services. Ninety two percent ($P=0.128$) thought the conditions of the health facility they were receiving care from were in good. However 6.4% ($OR:3.6$; 95% $CI:1.1-12.1$; $P=0.031$) thought the behaviour of health workers within the facilities was not good. Waiting time ($OR:7.7$; 95% $CI:3.1-18.9$; $P<0.001$) also was a significant predictor of adherence. Other aspects of the health care system were not significant in determining adherence; treatment facility being well equipped (79.4%, $P=0.633$), drugs being available at the treatment facility ($P=0.419$), being educated on taking the drugs ($P=0.419$) and time taken to the facility ($P=0.120$). All the respondents were taught on adherence.

Characteristic		Drug Adherence		Bivariate Analysis		
		Yes	No	OR	95% CI	P Value
Treatment Facility	Good	205 (89.5)	24 (10.5)	1.1	1.1 – 1.2	0.128
	Bad	20 (100)	0 (0)			
Behaviour of HCW	Good	214 (91.5)	20 (8.5)	3.6	1.1 – 12.1	0.031
	Bad	12 (75)	4 (25)			
Facility is well equipped	Yes	179 (89.9)	20 (10.1)	0.8	0.2 – 2.3	0.633
	No	47 (90.2)	4 (9.8)			
Meds Reliably Available	Yes	220 (90.2)	24 (9.8)	1.1	1.1 – 1.2	0.419
	No	6 (100)	0 (0)			
Taught how to take	Yes	220 (90.2)	24 (9.8)	1.1	1.1 – 1.2	0.419

meds	No	6 (100)	0 (0)			
Taught on Adherence	Yes	226 (90.4)	24 (9.6)			
Waiting Time (Min)	<30	200 (94.3)	12 (5.7)	7.7	3.1 – 18.9	<0.001
	>30	26 (68.4)	12 (31.6)			
Time to Facility (Hours)	< 1	196 (91.6)	18 (8.4)	2.2	0.8 – 5.9	0.12
	>1	30 (83.3)	6 (16.7)			

Table 1. Health Care System: Numbers in brackets are proportions. Significance was determined by Pearson Chi-square analysis. Values in bold are statistically significant at $P \leq 0.05$. All the P values are 2 sided.

III. DISCUSSION

Many studies have alluded to the several health system factors that influence patient adherence to long term treatments and TB in particular. Some of the factors that have been linked with significant influence on adherence to TB treatment are; health worker-patient relationship (6,7), distance from health facility (8–10), health education and information giving (11), time consuming procedures at the facility (12,13,9), drugs availability (13,14) and equipment status (15). In a study in India, the authors proposed that distrust of health workers in regard to their patients’ behavioural abilities like self-efficacy may serve as a barrier in the relationship between health care providers and patients (16). We speculated that the same mechanism might play a role in the relationship between health care workers and non-adherent patients in the current study. Health care workers’ role in adherence cannot be overemphasized. The person handling TB patients could aid them in exploring the difficulties experienced and thus better solution that could enhance adherence (11,17,9). The present study findings were in concurrence as there was statistically demonstrable significant difference in adherence between those who thought the behaviour of health workers (OR:3.6; 95% CI:1.1-12.1; $P=0.031$) towards them was good and those who thought it was bad. Waiting time (OR:7.1 ; 95% CI:3-18 ; $P<0.001$) was also significantly associated with adherence. This study, however, did not explicate any significant relationship between time taken to the health facility (OR:2.2; 95% CI:0.8-5.9 ; $P=0.12$) and drugs (OR:1.1; 95% CI:1.1-1.2; $P=0.419$) and equipment availability (OR:0.8; 95% CI:0.2-2.3; $P=0.633$) and adherence.

IV. CONCLUSION

Health care system setup provides an important therapeutic environment that should be deliberately modified to meet patient demands. Meeting patient demands is a one of the factors of quality of care. The health care system setup has a number of immediate modifiable predictors of adherence like waiting time and staff behaviour as elucidated in this study. It is important to establish the key predictors of adherence that are linked to health care system for quality TB treatment and care services in every TB care setting.

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