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References

Adamna.B (2015) A pilot study to evaluate the experiences of tuberculosis patients when accessing TB services in five health facilities in Kisumu county.KELIN, Reclaiming rights, rebuilding lives.

Christianne.S (2011) An anthropological study of tuberculosis and biomedical; strategies for tuberculosis control. The University of Western Ontario Journal of Anthropology. Vol 11:1-10

Datiko,D.Lindtjorn,B (2010) Cost and Cost-Effectiveness of Treating Smear-Positive Tuberculosis by Health Extension Workers in Ethiopia: An Ancillary Cost-Effectiveness Analysis of Community Randomized Trial. PLoS ONE 5. Desalu.O,Adeoti.A,Fadeyi.A,Salami.A,Fawibe.A,Oyedepo.O (2013) Awareness of the warning signs,risk factors and treatment for tuberculosis among urban Nigerians .Tuberculosis research and treatment.Vol 2013:369717-5.

Enarson .D, Grzybowski. A, Dorken, E (1978) Failure of diagnosis as a factor in tuberculosis mortality. Can Med Assoc J Vol: 118:1520–2.

Liu.X,Liu.Z, Liu.Y,Ji.X (2007) Factors associated with patient delay among tuberculosis patients in Shengli oil-field.Chin health serv Manag.Vol:12:855-6

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Abstract

Background: Tuberculosis is strongly linked to poverty and a range of other socio-economic determinants (Lonnroth *et al.*, 2009). Tuberculosis remains a major public health problem, and rates have not decreased significantly over the last ten years, despite increased funding, better public health evidence about how to manage the disease, and targeted public health intervention designed to decrease the burden of tuberculosis (Viney *et al.*, 2011).

Methodology: This was a descriptive cross-sectional study which collected quantitative data on factors influencing community-based tuberculosis care implementation. A structured questionnaire was used to collect data among 345 respondents in rural Kenya.

Results: A total of 345 patients were recruited to participate in the study. The mean age of the respondents was 37.12, with a median 35.0 and a standard deviation of 12.488. Majority of the respondents had social group support 297(86.1%), out of which was mainly community support groups (147(42.6%)) and self-help groups (119(34.5%)); only 31(9.0%) were part of a youth group.

The majority of the respondents in the study received food support (320(92.8%)). A minority of the respondents (25(7.2%)) received other forms of support, which varied from money, prayers, and accompaniment to the health facility during clinic visits. The main source of income of the study respondents was employment (217(62.9%)). The majority of the respondents were involved in casual jobs (312(90.4%)). Majority of the respondents level of income was less than Kshs. 10,000 (262(75.9%)), and only a minority had an income of Kshs. 10,000 and above (83(24.1%)). Those who had social support group and family support found community-based tuberculosis care more effective compared to those who did not have any social support group and family support. Community-based tuberculosis care showed an association with social support group and family support with p-0.042 and p-0.006, respectively. Association with the Catholic Church (OR-1.0(CI= 0.00, 0.00)- showed that community-based tuberculosis was more effective as compared to those who were affiliated with the Protestants denominations (OR-0.74(CI=0.48,1.15)).

Conclusion: The majority of the community members affected by tuberculosis are people of reproductive age. Social support from family friends and community members is crucial for an effective community-based tuberculosis care program. The main source of income and level of income determines the effectiveness of community-based tuberculosis care program.

Key Words

Tuberculosis; Socio-Economic; Community-Based

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Introduction

Tuberculosis (TB) is an infectious disease, and delay in any part of the process of healthcare seeking by the patient will increase chances of disease spreading. An untreated smear-positive patient may infect more than 10 contacts annually, on average, and more than 20 during the entire natural history of the disease until (WHO, 2013).

Globally, the burden of TB is increasing. Poverty, migration, HIV/AIDS, and population growth are the foremost factors for the unlimited risk of TB in the world. (Mfinanga *et al.*, 2008; Ukwaja *et al.*, 2013). The source of infection is untreated smear-positive Pulmonary Tuberculosis (PTB) patients who are discharging the bacilli (Datiko *et al.*, 2010). TB continues to be under funded as a major health concern in public health policies, campaigns and the mainstream media. The absence of sufficient discourse and successful intervention strategies with respect to the disease has been attributed to the high prevalence of the disease among the poor and vulnerable population in urban and rural population (Christianne, 2011).

Sub-Saharan Africa carries the greatest proportion of new TB cases per population, with over 225 cases per 100,000 populations in the year 2012. The TB burden increased with the advent of HIV/AIDS in the early 90s. People infected with HIV are 21-34 times likely to be infected with TB (WHO, 2012).

The global tuberculosis report of 2012 states that nine million people develop TB every year, and three million are missed by health systems. The disease is transmitted through inhalation of droplets by coughing or sneezing. Symptoms include coughing, night sweat, fever, chest pain, and loss of appetite. If not treated, each person with active TB infects an average of 10-15 people every year (WHO, 2012).

Kenya, with a population of about 48 million people, continues to shoulder the burden of TB, with approximately 132,000 new TB cases and incidence of 142 new sputum smear positive cases per 100,000 population every year. Kenya is ranked 15th among 22 high TB burden countries that collectively contribute 80% of TB cases (MOH, 2014). TB is treatable, and can be prevented and controlled if the internationally recommended strategy for TB treatment, prevention and control is adhered to (WHO, 2013).

Objective: To consider the socio-economic determinants that influence the effectiveness of community-based TB care in Meru County, Kenya.

Materials and Methods

Research Design

The study was a descriptive cross-sectional study. The study was carried out in Meru County over a period of three months, from March 2018 and May 2018. Ethical approval was sort from Meru University ethical review committee. Permission was also sort from county health managers and individual respondents.

Study Area

The study was conducted in Meru County health facilities implementing community-based TB care. Meru County is located on the Eastern slopes of Mt. Kenya. It shares its border with five other counties which include Isiolo to the North, Nyeri to the South West, Tharaka Nithi to the South West, and Laikipia to the West. It covers an area of 6,936 square kilometres; with a population of 1,365,301 people (KNBS, 2009). The sampled area of the study was Imenti South and Imenti central sub-counties which are high burden and low burden TB control zones, respectively.

Study Population and Sample Size

The target population was TB patients attending health facilities implementing community-based TB care in Meru County, Kenya and had resided in the area for more than six months. The sample size was calculated using Fisher *et al.*, (1998) formula.

$$n = \frac{z^2 pq}{d^2} = \frac{1.96^2 x 0.5 x 0.5}{0.05^2}$$

Where n=sample size.
Z^2 = coefficient of interval, 1.96
q = 0.5.
d = margin of error, 0.05.
P= 0.5
Sample size was 384.
The population of the patients registered under TB program in Meru County was 3,358 (NTLD, 2013)
Since the target population is 3,358 which is less than 10,000 correction formula by Mugenda and Mugenda, 2003)

$$nf = \frac{n}{1 + \frac{n}{N}}$$

Where nf = the desired sample size (when the target population is less than 10,000).

n= the minimal sample size by (fisher *et al*, 1998)

N= the estimated of the population size

$$nf = \frac{384}{1 + \frac{384}{3358}}$$

nf =345

Sampling Method

Multi-stage sampling method was applied. Since the majority of the health facilities involved with community-based TB care were government facilities (60%) in both control zones, 40% were mainly faith based facilities, at least one faith-based facility was included in each control zone in order to cover for the population that did not utilise government facilities (SPA, 2010).

At the control zones level, 12 health facilities were selected using simple random sampling method; a table of random number was used to draw the number of health facilities in both government health facilities and faith-based health facilities respectively. Six health facilities were selected from both high volume tuberculosis control zone and low volume tuberculosis control zone respectively. Proportionate sampling was used to identify the

Table 1: Sample size

Health Facility	Annual Report, 2017	Sample Size
Imenti South		
Kanyakine Hospital	155	65
Consolata Hospital	205	86
Mitunguu Health Centre	120	50
Kirogine Dispensary	20	8
Nkubu G.K Dispensary	35	15
Kieni Kia Ndege Dispensary	15	6
Imenti Central		
Githongo Hospital	50	20
Gatimbi Health Centre	107	44
Kaongo Dispensary	32	13
Mujwa Dispensary	21	9
Cottolengo Hospital	62	25
Kiija Dispensary	10	4

Table 1: Sample size

number of respondents to participate in each facility, as shown in Table 1. At the facility level, respondents were identified using simple random sampling method using the patient register at the facility level as the patients came for re-supply of drugs.

Results

A total of 345 patients were recruited (zone A = 230(66.7%); zone B = (115(33.3%)) to participate in the study. The mean age of the respondents was 37.12, with a median 35.0 and a standard deviation of 12.488. Majority of the respondents had social group support (297(86.1%)), out of which were mainly; community support groups (147(42.6%)), self-help groups (119(34.5%)); only 31(9.0%) belonged to a youth group.

Family support is very crucial during the process of treatment for most TB patients. Majority of the respondents in the study received food support (320(92.8%)). This was attributed by the occupation of the community where they rely on farming to meet their daily needs. A minority of the respondents (25(7.2%)) received other forms of support which varied from money, prayers, and accompaniment to the health facility during clinic visits, as shown in the table below

Variable	Frequency (n=345)	Percentage (%)
Social group		
Yes	297	86.1
No	48	13.9
Kind of group		
Youth group	31	90
Community group	147	42.6
Self-help group	119	34.5
Family support		
Food support	320	92.8
Other forms of support	25	7.2
Religious affiliation		
Catholic	184	53.3
Protestants	161	46.7
Source of knowledge		
Friends	103	29.8
Health provider	149	43.2
Media	91	26.4
IEC materials	2	0.6

The main source of income was employment (217(62.9%)). This was attributed by the fact that the majority of the respondents were people of reproductive age. Majority of the respondents level of income was less than Kshs. 10,000, that is 262(75.9%), and a significant minority had an income of Kshs. 10,000 and above (83 (24.1%)).

Table 2: Social factors that influence community-based TB care

Variable	Frequency (n=345)	Percentage (%)
Source of income		
Farming	128	37.1
Employed	217	62.9
Form of employment		
Casual jobs	312	90.4
Permanent	33	9.6
Level of income		
<= Kshs. 10,000	262	75.9
>Kshs.10, 000	83	24.1

Those who had social support group and family support found community-based TB care more effective compared to those who did not have any social support group and family support. Community-based TB care showed an association with social support group and family support with p-0.042 and p- 0.006 respectively.

Table 3: Economic determinants' effectiveness that influence community-based TB care

being associated with Catholic Church (OR -1.0(CI =0.00,0.00)) showed that community-based TB was more effective compared to those who were affiliated with the Protestants denominations (OR-0.74(CI=0.48,1.15)) as shown in table below.

Variable	Effectiveness Fred/%		OR	95% CI		P-value
				Lower	Upper	
	Yes	No				
Social Group						
Yes	111(37.4)	186(62.6)	1.00	0.00	0.00	0.000
No	25(50)	25(50)	0.60	0.36	0.98	**0.042**
Family Support						
Yes	104(35)	193(65)	1.00	0.00	0.000	0.000
No	11(22.9)	37(33.3)	0.06	0.01	0.43	**0.006**
Religious Affiliation						
Catholics	78(42.4)	106(57.6)	1.00	0.00	0.00	0.000
Protestants	57(35.4)	104(64.6)	0.74	0.48	1.15	0.185

Table 4: Association between social factors and effectiveness of community-based TB care

Study respondents who relied on farming as a source of income (OR- 1.00(CI= 0.00,0.00)) showed that community-based TB was more effective than among those who were employed (OR-0.86(CI=0.55,1.35)). This was attributed to the fact the catchment population relies mainly on farming.

Those who were employed on a permanent basis and had a monthly income of more than Kshs. 10,000 (OR -1.00(CI=0.00,0.00)) showed that community-based TB was more effective as compared to those who were on a temporary form of employment and a monthly income of less than Kshs.10,000 (OR-1.04(CI=0.62,1.72)), as shown in the table below.

Variable	Effectiveness Fred/%		OR	95% CI		P-value
				Lower	Upper	
	Yes	No				
Source of income						
Farming	53(41.4)	75(58.6)	1.00	0.00	0.00	0.000
Employed	82(37.8)	135(62.2)	0.86	0.55	1.34	0.506
Form of employment						
Casual	120(38.5)	196(61.5)	1.00	0.00	0.00	0.000
Permanent	6(50)	6(50)	1.60	0.50	5.08	0.425
Level of income						
<=Kshs.10, 000	102(38.9)	160(61.1)	1.00	0.00	0.00	0.000
>Kshs.10, 000	33(39.8)	50(60.2)	1.04	0.62	1.72	0.0893

Table 5: Association between economic factors and effectiveness of community-based TB care

Discussion

The mean age group of the respondents was 37.12 years, which corroborates with a study done in Embu County which had the most prevalent age group was 30-39 years (Ndwiga *et al.*, 2015).

Social support was crucial for effectiveness of community-based TB care. These findings corroborate with a study done in Ethiopia which found out that social support was important for patients during the course of treatment (Gebremariam *et al.*, 2010).

The findings showed that the main source of income for the majority of the respondents was informal jobs. This concurs with a study done in Kisumu, which found that the majority of the respondents were involved in informal jobs which did not have a meaningful engagement. Hence, the nature of employment of an individual is a key determinant of the health of a population (Adamna, 2015).

Religious affliation was a positive predictor to community-based TB care effectives. This corroborates with a study done in Nigeria (Desalu *et al.,* 2013).

Conclusion

The majority of the community members affected by TB are people of reproductive age.

Social support groups targeting TB patients at the community level through family groups and community groups can help improve the effectiveness of community-based TB care programs through group therapy.

Income generating activities for tuberculosis patients on treatment can help during the course of treatment for those who are not on permanent employment.

Religion affiliation had a positive influence on effectiveness of community-based TB.

Recommendations

Increase the number of support groups that sre family groups.
Promote income-generation activities to reduce the level of unemployment.
Encourage faith-based organisations to participate in community-based TB activities.

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Authors contribution

Jane K. Mberia; Robert M. Kei**:** study conception, study implementation.
Jane K.Mberia: data collection, data entry, manuscript drafting.
Jane K. Mberia: data analysis, interpretation and manuscript drafting.
Jane K.Mberia, Robert M. Kei: read and approved the manuscript for publication

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Data availability: The data used to support the findings of this study are available from the corresponding author upon request.

References

1. Adamna.B (2015) A pilot study to evaluate the experiences of tuberculosis patients when accessing TB services in five health facilities in Kisumu county.KELIN, Reclaiming rights, rebuilding lives.
2. Christianne.S (2011) An anthropological study of tuberculosis and biomedical; strategies for tuberculosis control. The University of Western Ontario Journal of Anthropology. Vol 11:1-10
3. Datiko,D.Lindtjorn,B (2010) Cost and Cost-Effectiveness of Treating Smear-Positive Tuberculosis by Health Extension Workers in Ethiopia: An Ancillary Cost-Effectiveness Analysis of Community Randomized Trial. PLoS O N E 5 . Desalu.O,Adeoti.A,Fadeyi.A,Salami.A,Fawibe.A, Oyedepo.O (2013) Awareness of the warning signs,risk factors and treatment for tuberculosis among urban Nigerians .Tuberculosis research and treatment.Vol 2013:369717-5.
4. Enarson .D, Grzybowski. A, Dorken, E (1978) Failure of diagnosis as a factor in tuberculosis mortality. Can Med Assoc J Vol: 118:1520–2.
5. Liu.X,Liu.Z, Liu.Y,Ji.X (2007) Factors associated with patient delay among tuberculosis patients in Shengli oil-field.Chin health serv Manag.Vol:12:855-6
6. Lonnroth.K,Jaramillo.E,Williams.B,Dye.C,Ravigli one.M (2009)Delivers of tuberculosis epidemics , the role of risk factors and social determinats sos sci med vol 68(12): 2240-2246
7. Mfinanga. S, Mutayoba .B, Kahwa. A, Kimaro. G, Mtandu. R (2008) The magnitude and factors associated with delays in management of smear

positive tuberculosis in Dar es Salaam,Tanzania. BMC Health Serv Res 8: 158.

8. Ministry of health (2014) National strategic plan for tuberculosis, leprosy and lung health 2015-2018.
9. Ukwaja .K, Alobu. I, Nweke. C, Onyenwe. E (2013) Healthcare seeking behavior, treatment delays and its determinants among pulmonary tuberculosis patients in rural Nigeria: a cross sectional study. BMC Health Serv Res 13: 25
10. Uwimana.J,Zarowsky.C,hausler.H,Jackson.D (2013) Community-based intervention to enhance provision of intergrated TB-HIV and PMTCT services in South Africa. Int J Tuberc Lung Dis.Vol 17:48-55.
11. Viney.K,O'connor.J,Wiegandl.A (2011) The epidemiology of tuberculosis in pacific Island countries and territories. Asia Pacific journal of public health 2000-2007.
12. World Health Organization (2012) Global tuberculosis report Switzerland. https//apps.int/iris/handle/10665/75938]
13. World Health organization (2013) WHO report, 2012, Geneva Switzerland. https//apps.who.int/iris/handle/10665/91355
14. Yimer.S,Bjune.G,Alene.G(2005) Diagnostic and treatment delay among pulmonary tuberculosis patients in Ethiopia: A cross sectional study.BMC Infect Dis 5:112.

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