



Factors Influencing Tuberculosis Case Detection in Wenchi Municipality, Brong Ahafo Region, Ghana

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Abstract

Objective: This study aimed to assess factors influencing Tuberculosis case detection in the Wenchi municipality of Brong Ahafo Region of Ghana.

Study design/Method: Cross-Sectional descriptive study design was used for the study. A structured and unstructured questionnaire was administered to three different groups of respondents; 350 community members, thirty (30) health workers and 20 registered TB patients for the last three months prior to this study. Quantitative data was analyzed using Statistical Package for Social Science (SPSS) software 20.0.

Results: Over 50% of all the three groups studied have some knowledge on how TB disease can be transmitted however most of the TB patients (55%) were unaware of TB before they were diagnosed. Moreover, financial challenges, inadequate and centralized diagnostic centers were barrier to TB case detection.

Conclusion: The overall knowledge level of the community's respondents regarding TB was low (60.3%). Gender and education were the only important predictor for respondents' knowledge ($\chi^2 = 14.692, P < 0.000, \alpha = 0.05$) and ($\chi^2 = 62.004, P < 0.000, \alpha = 0.05$) respectively. Stigma against TB clients and their relatives, inadequate diagnostic facility are some of the factors that influence TB case detection. Therefore, the need for community sensitization on TB and also expand laboratory facilities to other periphery facilities could not be overemphasized as this greatly affects TB case detection.

Keywords: Tuberculosis; Tuberculosis Detection; Community Sensitization; Human Immune Virus

Introduction

Tuberculosis is one of the top 10 causes of death and a leading cause from a single infectious agent [1]. According to WHO, African Region has the highest rates of TB cases and deaths per capital [2]. Sub-Saharan Africa accounts for approximately 80% of the world's TB/HIV co-infection cases [3]. Ghana is ranked 38th high burden

TB country among 145 countries in the world and 19th in Africa [4]. It is estimated that about 7% of all deaths in the country are attributed to TB and HIV, the second after malaria [5]. The world health organization (WHO) estimates that Ghana is detecting only 26% of all forms of TB and 36% of smear-positive TB cases. This is well below the African regional average rate of 47% and the WHO

target of 70% [6]. The goals of the tuberculosis alleviation strategy were to detect at least 70% of expected TB cases, successfully treat 85% of these cases by 2005. The WHO target is for 85% of TB to be successfully treated in Ghana by 2005 [7]. The notification data show a decline of the number of cases notified over the years, for instance, 14,632 cases (all forms) were detected in 2015. Brong Ahafo annual regional TB report (2018) indicates that detection rate of Tuberculosis (TB) for the region has gone down. The region recorded a detection rates of 51% in 2014 and a stagnant 34% rate for three consecutive years [8].

Methods

Design

Community and health facility-based descriptive cross-sectional study were carried out in Wenchi municipality in the Brong Ahafo region of Ghana. The study aims at describing the relationship between diseases (or other health-related states) or condition, and potentially related factors influencing TB case detection. It is also used to assess prevalence of acute or chronic conditions or the result of medical intervention. The community level data collection focused on members in the community using a semi-structured questionnaire.

Study material

The study comprises of 350 community members, health workers and TB patients registered in the last three months. Training was given to all the team members to help them understand the nature, purpose, and procedures for the study. The questions were interpreted in the Twi language to the respondents who don't understand the English language. Their responses were translated into English to complete the questionnaire for analysis. The items were pretested at Ampenkro-a nearby village because they have similar characteristics to the target population.

Data analysis

The data was cross-checked before entry into Statistical Package for the Social Sciences, (SPSS) version 20.0. Core indicators and prevalence were expressed in percentages. The entered data were validated (pre-analyzed) to ensure quality before the actual analysis was done. Descriptive statistics such as proportions, mean, standard deviation, frequencies were used to analyze the data and findings summarized.

Results

Community-related factors

Socio-demographic characteristic of respondents

A total of 350 community members were enrolled in the study consisting of 185 (52.9%) females and 168 (47.1%) males. Most of the respondents 168(48.0%) were married, 142 (40.6%) were single. Majority of them 246(70.3%) were Christians, 89(25.4%) were Muslims while 15(4.3%) were traditionalist.

Variables	Frequency	Percent
	N = 350	
Age group		
> 30yrs	166	47.4
30-39yrs	81	23.1
40-49yrs	51	14.6
50-59yrs	22	6.3
60yrs +	30	8.6
Total	350	100
Sex		
Female	185	52.9
Male	165	47.1
Total	350	100
Marital		
cohabitation	5	1.4
divorced	25	7.1
married	168	48.0
single	142	40.6
widowed	10	2.9
Total	350	100
Education		
JHS	76	21.7
none	64	18.3
primary	51	14.6
SHS/TEC/VOC	79	22.6
Tertiary	80	22.9
Total	350	100

Variables	Frequency	Percent
Ethnicity		
Banda	44	12.6
Bator	10	2.9
Bono	172	49.1
Other northern tribes	124	35.4
Total	350	100
Occupation		
Artisan	15	4.3
Farmer	126	36.0
government worker	47	13.4
housewife	2	.6
Other (watchman)	1	.3
Pensioner	3	.9
Student	66	18.9
Trader/ self employed	74	21.1
unemployed	16	4.6
Total	350	100
Religion		
Christian	246	70.3
Muslim	89	25.4
Traditionalist	15	4.3
Total	350	100

Table 1: Socio-demographic characteristics of the community’s respondents.

Community respondent’s knowledge about tuberculosis

Out of the 350 respondents, 182 (52.0%) knew TB is caused by a germ, 69(19.7%) said TB was as a result of bad air. A majority (290; 82.9%) of the respondents knew that TB is transmitted from one person to the other through coughing. Most, 275 (78.65%) knew cough to be a symptoms/sign of TB.

Figure 1, presents the overall level of knowledge of the community members responds on Tuberculosis. Majority of the respondents 211 (60.3%) had low knowledge on Tuberculosis, while 139 (39.7%) respondents have high knowledge on TB.

Variable	Frequency	Percent
	N = 350	
Heard of TB (information on TB)		
No	43	12.3
Yes	307	87.7
Total	350	100
Causes		
Bad air	69	19.7
Curse	27	7.7
Don’t know	49	14.0
Germs	182	52.0
Rain	2	.6
Sunshine	4	1.1
Witches	17	4.9
Total	350	100
Transmission mode		
No	14	4.0
No Idea	54	15.4
Yes	282	80.6
Total	350	100
Mode of transmission		
Cough/ sneezes from an infected person	290	82.9
Eating with an infected person	24	6.9
Variable	Frequency	Percent
Other	7	2.0
Sharing cups and with an infected person	12	3.4
Staying with an infected person	11	3.1
Talking with an infected person	6	1.7
Total	350	100
Signs		
Chest pains	32	9.1
Cough	275	78.6
Don’t know	42	12.0
Other	1	.3
Total	350	100
Outcome		
Not curable	90	25.7

Curable	260	74.3
Total	350	100
Source of Treatment		
Health facility	282	80.6
Pharmacy	7	2.0
Prayer camps	13	3.7
Traditional healers	48	13.7
Total	350	100

Table 2: Community’s knowledge on tuberculosis.

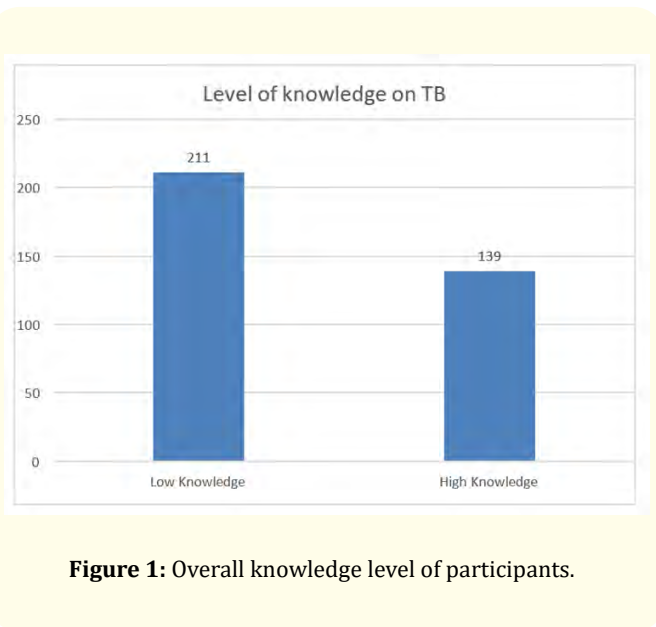


Figure 1: Overall knowledge level of participants.

The association between respondents’ educational level and sex were found to be statistically significant with their level of knowledge on tuberculosis ($\chi^2 = 62.004, P < 0.000, \alpha = 0.05$) and ($\chi^2 = 14.692, P < 0.000, \alpha = 0.05$) respectively. However, there were no significant association between respondents’ age group, religion and ethnicity ($\chi^2 = 8.780, P > 0.067, \alpha = 0.05$), ($\chi^2 = 1.697, P > 0.428, \alpha = 0.05$) and ($\chi^2 = 3.774, P > 0.287, \alpha = 0.05$) respectively.

Attitude and perception of community members

Out of 350 respondents, 244(69.7%) did not see it as an embarrassment to have a relative diagnose of TB. One hundred and

Variable	Level of knowledge	Chi-square (χ^2)	P-value	
Age group	Low knowledge	High knowledge	8.78	0.067
> 30yrs	90(25.71)	76(21.71)		
30-39yrs	47(13.43)	34(9.71)		
40-49yrs	36(10.28)	15(4.29)		
50-59yrs	16(4.57)	6(1.71)		
60yrs +	22(6.29)	8(2.29)		
Total	211(60.29)	139(39.71)		
Sex			14.692	<0.001
Female	129(36.86)	56(16.00)		
Male	82(23.43)	83(23.71)		
Total	211(60.29)	139(39.71)		
Ethnicity			3.774	0.287
Banda	25(7.14)	19(5.43)		
Bator	5(1.23)	5(1.43)		
Bono	98(28.00)	74(21.14)		
Northern tribe	83(23.71)	41(11.71)		
Total	211(60.29)	139(39.71)		
Variable	Level of knowledge	Chi-square	P value	
Education		62.004	<0.001	
JHS	50(14.29)	26(7.42)		
non	57(16.29)	7(2.00)		
primary	40(11.43)	11(3.14)		
SHS/TEC/VOC	35(10.00)	44(12.57)		
Tertiary	29(8.29)	51(14.57)		
Total	211(60.29)	139(39.71)		
Religion		1.697	0.428	
Christianity	144(41.14)	102(29.14)		
Muslim	56(16.00)	33(9.43)		
Traditionalist	11(3.14)	4(1.14)		
Total	211(60.29)	139(39.71)		

Table 3: Association between the demographic characteristics and the knowledge of respondents.

ninety- three (55.1%) said they would not eat or share utensils with relatives of TB patients.

Variable	Frequency	Percent
TB causes embarrassment		
Don't know	18	5.1
No	244	69.7
Yes	88	25.1
Total	350	100
Stigma		
No	269	76.9
Yes	81	23.1
Total	350	100
Eat with a relative of TB patient?		
No	193	55.1
Yes	157	44.9
Total	350	100
Travel time/walking time		
1hr -2hr	54	15.4
less 1 hr	276	78.9
more than 2hrs	20	5.7
Total	350	100
What experience at the facility		
Good	165	47.1
Not good	66	18.9
Variable	Frequency	Percent
Very good	119	34.0
Total	350	100
Cost of transportation		
< 10cdis	240	68.6
10-19 cedis	88	25.1
20-29 cedis	9	2.6
30-39 cedis	7	2.0
> 40cedis	6	1.7
Total	350	100

Table 4: Attitude and perception of community members.

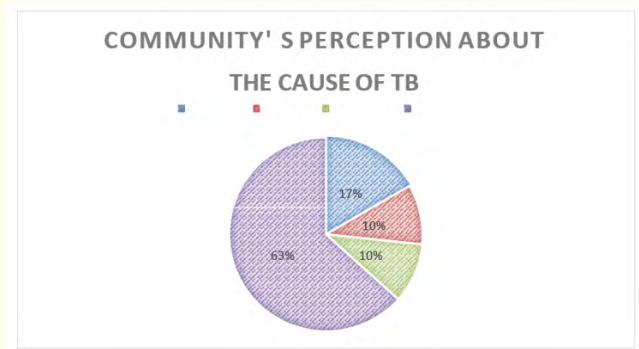


Figure 2: Perception of community members about the cause of Tuberculosis.

In figure 2, Majority 63.0% of the community's respondents identify superstition as the cause of tuberculosis, seventeen (17.0%) said TB is caused by bad air and 10.0% each for bacteria and hereditary.

Patient-related factors

Out of the 20 patients interviewed, 6(30.0%) were below the age of 30years, six (30.0%) were between 30-39years while 8 (40.0%) were above.

Knowledge of TB clients on the disease

Nine (45.0%) respondents were aware of TB before they were diagnosed. Three (15.0%) of the respondents think that TB is caused by witches. 16 (80.0%) identified cough/sneezes from an infected person as the mode of spread of TB.

Health seeking behavior of TB clients

Of the 20 respondents, 10(50.0%) were diagnosed after one month of signs and symptoms. Most of the respondents first visited health facility when they notice their signs and symptoms.(Table 5)

Quality of care rendered to TB patients

A majority (15; 75.0%) of the respondents made 2-5 visits to health facility/ies before they were diagnosed with TB. Five were diagnosed during their first visit to the facility. Majority of respondents said their community members first visit health facility when they fall sick.

Variable	Frequency	Percent
Referred		
CBSV	2	10.0
Myself	17	85.0
Other	1	5.0
Total	20	100
Time before diagnosis		
After 1 Month	10	50.0
Others	1	5.0
Within 1 Week	9	45.0
Total	20	100
The first facility visited		
Chemical Shop	5	25.0
Health Facility	10	50.0
Herbalist	2	10.0
Prayer Camp	3	15.0
Total	20	100

Table 5: Health Seeking Behaviour of TB Clients.

Variable	Frequency	Percent
Number of visits to health facility before diagnosis		
1 visit	5	25.0
2 - 5 visits	15	75.0
Total	20	100
Transportation Cost		
<Ghc10	12	60.0
Ghc10-19	6	30.0
Ghc20-29	1	5.0
Ghc30 +	1	5.0
Total	20	100
Where do the community members seek care when ill?		
Drug store	7	35.0
Health facility	13	65.0
Total	20	100
Does your transport means pose a challenge in TB care?		
No	12	60.0
Yes	8	40.0
Total	20	100
Waiting time at the facility		
1hr	4	20.0
30 minutes	16	80.0
Total	20	100

Table 6: Quality of care rendered to TB clients.

Health-related factors

The health-related factors take into account socio-demographic background, staff knowledge on TB, activities of staff towards TB case detection and challenges. This study also tried to explore the opinions of health care providers on the factors that influence TB case detection in the Wenchi district.

Background and work schedule of health service providers

The participants were made up of community health nurses, disease control officers, health promotion officers and nurses. The respondents work experience with the TB control program varied from one year to over Ten years.

Knowledge of health care providers on TB

30(100.0%) reported that TB is caused by Mycobacterium tuberculosis. Majority of respondents knew the cardinal symptoms of TB; cough for more than two weeks. Sixteen (53.3%) said they always refer suspects to the next level, whilst 14(46.7%) always takes the sample to the diagnostic center.

Variable	Frequency	Percent
Training on TB in the last 3 years?		
No	10	33.3
Yes	20	66.7
Total	30	100
What organism causes TB?		
Mycobacterium tuberculosis	30	100.0
Total	30	100
What is the cardinal sign of TB		
Cough of 2wks or more	24	80.0
Night sweat	6	20.0
Total	30	100
How many minutes/hours' drive from here to the diagnostic center.		
<30mins	13	43.3
30mins - 1hr	17	56.7
Total	30	100

Table 7: Knowledge of Health Workers on TB.

Staff activities towards TB Case Detection

Out of the 30 respondents, 21(70.0%) use cough screening tools at the OPD. Sixteen (53.3%) of the respondents said they are motivated whereas 14(46.7%) said they were not motivated.

Variable	Frequency	Percent
Use of Cough screening tool		
No	9	30.0
Yes	21	70.0
Total	30	100
Frequency of TB education		
None	6	20.0
Once in a week	15	50.0
Three in a week	3	10.0
Twice in a week	6	20.0
Total	30	100
Itinerary		
No	12	40.0
Yes	18	60.0
Total	30	100
Staff motivation		
No	14	46.7
Yes	16	53.3
Total	30	100

Table 8: Staff activities towards TB case detection.

2(7.0%) of the health workers refer suspected cases to the disease control unit.

Challenges face/and appraised by health providers in TB Detections

Out of the 30 health workers, 70% of the respondents said that there are inadequate diagnostic centers and 40% of the respondents also identify transportation as a challenge. Moreover, 46.7% of the respondents said that Refusal of referred patients to go to lab is their problem whereas 33.3% said that there are inadequate education materials. Also, 53.3% said that there is inadequate staff. In addition, 53.3% identified lack of motivation to health staff as a challenge and 56.7% of the respondents said that they don't have an itinerary for TB activities for this year. Moreover, 20% said that inadequate knowledge of TB by the community members is their main challenge and 40% mentioned long distance of diagnostic centers as a challenge to them while 16.7% said that lack of sputum containers and other logistics is their main challenge.

Variable	n	%
Lack of diagnostic centre	21	70.0
Tight Schedule	7	23.3
Refusal of referred patients to go to the lab	14	46.7
Lack of educational material	10	33.3
Delay in receiving laboratory results	6	20.0
Inadequate staff	16	53.3
Lack of motivation to staff	16	53.3
Do you have an itinerary for TB activities for this year?	17	56.7
Are you being motivated to do TB activities	16	53.3
Transportation problem	12	40.0
Poor sputum quality	11	36.7
Lack of sputum containers other logistics	5	16.7
Long distance of diagnostic centers	12	40.0
Inadequate knowledge	6	20.0
Lack of cooperation of prayer camp owners	3	10.0

Table 9: Challenges appraised by staff in TB case detection.

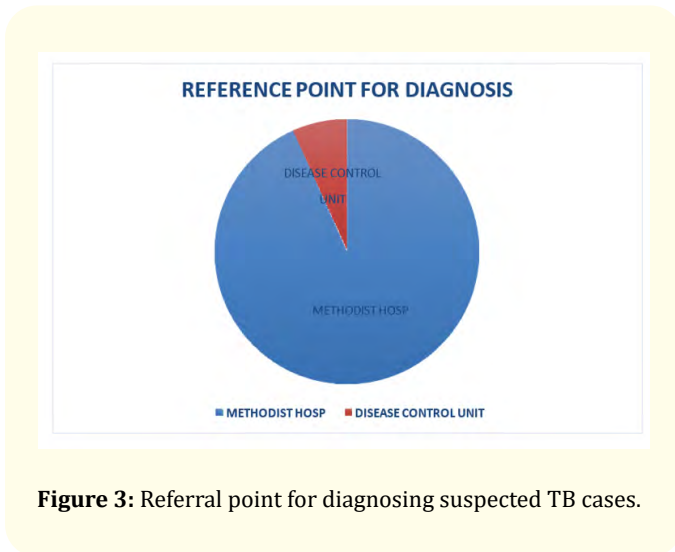


Figure 3: Referral point for diagnosing suspected TB cases.

Majority 28(93.0%) of the health workers refer suspected TB cases to the Methodist Hospital for diagnostic services however

Discussion

Community- related factors affecting tuberculosis detection

Stigmatization at the community level is high because most of the respondents were unwilling to associate with patients. The

community thinks that TB can be transferred by the cough or sneeze from an infected person. In Wenchi, the only diagnostic center is located

Patient-related factors affecting TB case detection

According to Ladipo (2015), knowledge and perception about Tuberculosis influences care-seeking behavior and consequently TB detection and adherence to treatment [9]. A study conducted in the Sissala East district of the northern region reported varied causes of TB. They found out that TB can be transmitted in various ways including sexual intercourse. Drinking fresh milk from infected animals could also cause it.

The results from this study also indicate that most of the TB patients were not aware of TB before they were diagnosed and this might have resulted their delay to seek treatment. There is community stigmatization towards people with TB and their relatives.

Bekana, Sisay and Baye, (2017) identified 'symptoms not severe' (58%) followed by lack of money (32%) and health facility too far (6%) were among the major predictors of patient delay in Ethiopia [10]. The results from the respondents in this research indicate that most of the TB patient had financial challenges especially for transportation to the health care facility.

Health service-related factors affecting Tuberculosis case detection

Most of the health workers (66.7%) have heard of the national TB programme and have received training on tuberculosis activities in the last three years. More than two-thirds of health workers have not been trained on the NTP. In this study, health workers said that they mostly search for TB cases at the chemical sellers. This research identified shortage of health personnel and also health education is done on face to face basis once in every week. This might contribute to poor and lack of knowledge about the disease and also issues pertaining to the stigmatization against people with TB disease.

Conclusion

Inadequate diagnostic center (the only diagnostic center is at the district capital), superstition, stigmatization against TB clients and their relatives are some of the factors that influence TB case detection.

Ethical Approval

Ethical clearance was sort for from the ethical department of University of Health and Allied Sciences.

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None.

Competing Interest

The authors of this paper declare no conflict of interest.

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