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Full Length Research Paper

Knowledge and Attitude of Beef Consumers about Bovine Tuberculosis Transmission to Man through Consumption of Infected Beef in Ibadan Metropolis

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ABSTRACT: This study examines the knowledge and attitude of beef consumers about bovine tuberculosis transmission to man through the consumption of infected beef in the Ibadan metropolis. Ninety-two respondents were selected from the Ibadan metropolis using a simple random sampling technique. A well-structured questionnaire was used to obtain data from the respondents. Chi-square was used to assess the association between socio-economic characteristics of the respondents and their level of awareness on the transmission of tuberculosis to man through the consumption of infected beef. Results showed that males were predominant in the study area (56.6%) as against the female (42.2%) which implies that there are more males involved in beef activities (sales, buying, and consumption) in the target population. The study also showed that more than half of the respondents were aware of tuberculosis transmission through consumption of infected beef but 59.8% of the respondents were not aware that eating raw and undercooked meat can predispose them to tuberculosis infection. Findings also showed that respondents mostly get information on tuberculosis transmission from the media such as magazines (77.2%) and newspapers (68.5%), also from family (68.5%) as against veterinarians (26.1%), public health officers (13.8%) and extension agents (9.8%) which recorded the least means of information to beef consumers. It is recommended that concerted effort be made by veterinarians, public health personnel, and extension agents by ensuring that more effective methods and means of disseminating important health information to the public are adopted. This will help beef consumers to ensure that all beef bought from markets and abattoirs are subjected to adequate inspection and proper cooking before consumption.

Keywords: Consumers knowledge, beef consumption, bovine tuberculosis, Ibadan metropolis

INTRODUCTION

Bovine tuberculosis is a chronic bacterial disease caused by *Mycobacterium bovis* (*M. bovis*) which can infect and cause disease in both human and animals. It is a major infectious disease among cattle, other domesticated animals, and certain wildlife populations, causing a general state of illness, coughing and eventual death. The name Tuberculosis comes from the nodules, called 'tubercles' which form in the lymph nodes of affected animals (Bilial et al., 2010). The organism is unique due to its wide host range and can infect all warm-blooded vertebrates. It is one of the most common zoonotic diseases with global distribution particularly in developing

countries such as Nigeria (Muller *et al., 2013*; Davies, 2006).

Bovine tuberculosis is re-emerging in Nigeria due to inadequate facilities and established control programs. The disease draws the attention of international community because it posed sustained threat on beef and dairy cattle products as well as serious implications on public health, especially in Nigeria where surveillance and control measures are weak or non-existent. *Mycobacterium bovis* is not the major cause of human tuberculosis, which is caused by *M. tuberculosis*, but humans are susceptible to bovine tuberculosis. Human get exposed to *Mycobacterium bovis* through direct inhalation from animals, consumption of uncooked infected meat or infected unpasteurized milk (Ayele *et al., 2004;* Subbians *et al., 2014).* It is estimated in some countries that up to 10% of human tuberculosis are due to Bovine tuberculosis. The disease is contagious and can be transmitted directly by contact with infected domestic and wild animals or indirectly by ingestion of contaminated material. The usual route of infection is by inhaling infected aerosol which is expelled from the lungs by coughing, but infection through breaks in the skin also occurs. The transmission of *M. bovis* between cattle is dependent on a number of factors, including frequency of excretion, route of infection, the infective dose, the period of communicability, and host susceptibility. It is also possible that a range of highly specific conditions must occur for fine aerosols to be produced and for transmission to take place. FAO, (2012) bovine tuberculosis is either only partially controlled or not controlled at all which makes people working with cattle such as herdsmen, veterinarians and livestock workers to be at high risk of bovine tuberculosis infection (Shitaye *et al.,* 2007). The co-existence of farmers and animals is exemplified by the herdsmen, who live their entire lives with their animals offering several opportunities for zoonotic transmission of tuberculosis (Shitaye, 2007). The general objective of this study was to assess the knowledge and attitude of beef consumers about bovine tuberculosis transmission to man through consumption of infected beef in Ibadan metropolis.

METHODOLOGY

Study area

The study was carried out in Ibadan metropolis; Ibadan is the capital of Oyo state, situated in the South-western part of Nigeria, 128km inland northeast of Lagos and 530km southwest of Abuja. It is the third largest metropolitan area by population in Nigeria after Lagos and Kano, with a population of 1,338,659 (NPC, 2006). It has boundaries with Ogun in the South, Kwara State in the North, Republic of Benin in the West and Osun State in the east. Ibadan is 228m above sea level and has a rainfall of average distribution of about 1250mm and 1800mm. It is located on the latitude 7° 45" N of the equator and longitude 3° 45" E of the Greenwich meridian. Ibadan is blessed with two seasons; dry season which begins from November to April while rainy season from April to October. It also has a temperature that range between 27°C and 32°C with relative humidity of about 25% to 90% (Alabi and Ibiyemi, 2002).

Sampling procedure

Multistage sampling procedure technique was used for the work. There are eleven (11) Local Government Areas (LGAs) in Ibadan. Five of these local Government areas are core-urban (metropolis) and the remaining five are sub-urban (peri-urban).The first stage– Identification of the five core-urban LGA. In the second stage**,** Random sampling technique was used to select 2 local Government areas. These 2 local Government areas are: Ibadan South West Local Government area, Ibadan North East Local Government area. In the third stage, from each of the selected local Government areas, five wards were randomly selected. And two locations were randomly selected under each ward. The selected wards are shown below. Ibadan South West Local Government Area: Ward 1: Aleshinloye and Born- photo; Ward 2: Bode and oke- bola; Ward 3: Oluyole and Ring road; Ward 4: Osi and isale osi; Ward 5: Awodife and Oke- ado Ibadan North East Local Government Area: Ward 1: Basorun and Iwo road; Ward 2: Labosinde and Jegede; Ward 3: Atipe and Aremo; Ward 4: IMG and Elero meta; Ward 5: Ayekale and Agugu. Lastly, 50 questionnaires were distributed to each Local Government Area to make a total of 100 questionnaires that were administered and 92 questionnaires were retrieved.

Method of data collection

A well-structured questionnaire was used to obtain data. Questionnaire was used because it guarantees anonymity, thereby increasing the chance of obtaining true information. The questionnaire comprises of five sections,

Data analysis

Data collected were subjected to descriptive statistical analysis. Chi square was used to assess association between socio-economic characteristics of the respondents and their level of awareness on the transmission of tuberculosis to man through consumption of infected beef. Pearson Product Moment Correlation was used to examine the relationship between the source of information and level of awareness on TB transmission

Table 1. Socio-economic characteristics of the respondents.

Variables	Frequency	Percentage (%)
Gender		
Male	53	57.6
Female	39	42.4
Total	92	100
Age		
21-30	23	25
31-40	47	51.1
41-50	9	9.8
Above 51	13	14.1
Total	92	100
Marital status		
Single	7	7.6
Married	75	81.5
Divorced	8	8.7
Widower	2	2.2
Total	92	100
Religion		
Christian	59	64.1
Islam	33	35.9
Total	92	100
Education		
Primary	27	29.3
Secondary	41	44.6
Tertiary	24	26.1
Total	92	100
Household		
1-3	20	21.7
4-6	39	42.4
Above 6	26	28.3
None	7	7.6
Total	92	100
Occupation		
Civil servant	21	22.8
Trader	56	60.9
Farmers	15	16.3
Total	92	100
Experience		
1-5years	24	26.1
10-Jun	42	45.7
Above 10	26	28.3
Total	92	100
Income		
5000-15000	16	17.4
16000-300000	44	47.8
31000-40000	18	19.6
Above 41	14	15.2
Total	92	100

Sources: Field survey, 2019

as well as constraints to information and level of awareness on TB.

RESULTS AND DISCUSSION

Table 1 shows the socio-economic characteristics of sampled respondents. It shows that 53 respondents representing 57.6% were male while 39 respondents representing 42.4% were females. This implies that there are more male involved in beef activities (processing, sale, buying and consumption) in the target population. The result also shows that 23 respondents representing 25.0% were in the age bracket of 21-30, 47 respondents were aged between 31-40 (51.1%), 9 respondents were aged between 41-50(9.8%), while 13 respondents were aged between 51 and above (14.1%).This age distribution shows that less than 25% of the target populations are above 40 years. This implies that most of the respondents are of average age and young age. The table also shows the distribution of respondents in terms of marital status: 7.6% were single, 81.5% were married, and 8.7% were divorced, while 2.2% were widowed. This shows that majority of the respondents in the target population were married which means that there is a need for them to cater, provide and be responsible to the need of their household which is in agreement with the finding of Akinbile (2007) and Abubakar (2007) when reported that marriage confess responsibility to people. The table also shows that 35.9% of respondents were Muslims while 64.1% were Christians. This implies that Christianity is major religion of the respondents in the study area. The table also shows that 29.3% had primary education, 44.6% had secondary education while 26.1% had tertiary education. This shows that majority that belongs to the respondents were secondary school leavers. With regards to household size, the table shows that those that belong to household of none were 7.6%, 1-3 were 21.7%, 4-6 were 42.4% and those above 7 were 28.3%. Table 1 also shows that 60.9% were traders while 16.3% were farmers. Trading is dominant in the study area and this could be attributed to the target population that is situated in urban settlement. It also shows the respondents' income. 17.4% of the respondents earn 5000-15000, while 47.8% earn 16000-30000, 19.6%% earn 31000-40000 and 15.2% earn 41000 and above.

Table 2 shows the source of information on bovine tuberculosis transmission in the study area. Magazine was the most common source of information on bovine tuberculosis (77.2%) and then followed by newspaper (68.5%) and family (68.5%). This is implies that magazine, friends and family are the main source of information in the study area. The respondents also acquire some information from mass media which include Radio (63.0%) and Television (40.2%) while the other sources of information are relatively low, they are Posters (26.4 %), Veterinarians (26.1%), Public health workers (13.0%), Extension agent (9.8%), Internet (23.9%) and agricultural institute (18.5%). The roles of Veterinarians and public health workers in sensitizing the public on tuberculosis transmission is low and this may be as a result of the insufficient number of Veterinary officers and public health workers in public service.

Overall, majority of respondents acquired the information about tuberculosis through magazine and

Table 2: Sources of information on tuberculosis transmission.

Variables	Frequency	Percentages (%)
Radio		
Yes	58	63
No	34	37
Total	92	100
Television		
Yes	37	40.2
No	55	59.8
Total	92	100
Newspaper		
Yes	29	68.5
No	63	31.5
Total	92	100
Internet		
Yes	22	23.9
No	70	76.1
Total	92	100
Family		
Yes	63	68.5
No	29	31.5
Total	92	100
Magazine		
Yes	21	77.2
No	71	22.8
Total	92	100
Friends		
Yes	37	40.2
No	55	59.8
Total	92	100
Public health		
Yes	12	13
No	80	87
Total	92	100
Poster		
Yes	24	26.1
No	68	73.9
Total	92	100
Extension		
Yes	9	9.8
No	83	90.2
Total	92	100
Agric. Institute		
Yes	17	18.5
No	75	81.5
Total	92	100
Veterinarian		
Yes	24	26.1
No	68	73.9
Total	92	100

Sources: Field survey, 2019

their neighbours or friends, which was notably higher than those that acquired information through the other sources and this is in accordance with the findings of Zhang *et al.,* (2019) which stated that people mainly acquire knowledge of tuberculosis from the following four sources: neighbours, friends, mass media (TV/radio) and health education-related lectures.

Table 3: Level of awareness on tuberculosis transmission.

Variables	Frequency	Percentage (%)
Taking raw milk directly from udder		
Aware	64	30.4
Not aware	28	69.6
Total	92	100
Taking raw and undercooked meat		
Aware	37	40.2
Not aware	55	59.8
Total	92	100
Animal to man through contact		
Aware	53	57.6
Not aware	39	42.4
Total	52	100
Through air		
Aware	35	38
Not aware	57	62
Total	92	100
Man to man		
Aware	56	60.9
Not aware	36	39.1
Total	92	100
Through injection		
Aware	56	60.9
Not aware	36	39.1
Total	92	100
Animal to animal		
Aware	60	65.2
Not aware	32	34.8
Total	92	100
Animal through mating		
Aware	52	56.5
Not aware	40	43.5
Total	92	100

Sources: Field survey, 2019

Table 3 shows the level of awareness of tuberculosis transmission through consumption of infected beef. The result shows that 57.6% of the respondents were aware that tuberculosis can be transmitted from animal to man through close contact while 30.4% were aware that taking raw milk directly from udder of infected cow can lead to tuberculosis. Also, 40.2% of the respondents were aware that man can contact tuberculosis by eating raw and undercooked beef. The result shows that 38.0% were aware that tuberculosis can be contacted through air. Overall result implies that tuberculosis transmission from animal to man through consumption of raw milk (30.4%) and undercooked meat (40.2%) is low. This might suggest that the people have superficial and inadequate knowledge about tuberculosis. And poor knowledge about tuberculosis is an obstacle for tuberculosis control and elimination

Conclusion

Tuberculosis continues to present significant morbidity and mortality in developing countries like Nigeria in spite of effective and available treatment. Poor knowledge about the cause, mode of transmission and symptoms as

well as appropriate treatment of tuberculosis do not only affect the health-seeking behavior of patients, but also affect the control measures, thereby sustaining the transmission and existence of the disease within the community. This study aimed at gaining an insight into the level of awareness of beef consumers in Ibadan metropolis on the possibility of contacting tuberculosis through eating of infected beef. The result shows that majority of the respondents in the study area had no basic awareness of transmission. There is a gap of knowledge about the etiology and transmission modes from animal to humans. In this regard, the implementation of proper community based health education is essential to raise people knowledge about tuberculosis. The study showed that majority of the people (more than half) are highly aware of tuberculosis transmission through consumption of infected beef. Mass media especially magazine were frequently used and mostly preferred as their source of information on tuberculosis. Insufficient fund for campaign against tuberculosis, illiteracy and inability of government to involved stakeholder were the major constraints to information on bovine tuberculosis transmission to beef consumers. Occupation and source of information showed positive influence on the level of awareness of bovine tuberculosis transmission through beef consumption while constraints constituted a negative effect on the awareness level.

Recommendations

Based on the results of this study, the following recommendations were made:

(i) Health personnel should ensure that other routes of information dissemination aside from the radio and television, examples include the internet, mobile phones, magazine, cooperative society and circular letters should also be encouraged, so as to play a more broaden and active role in the enlightenment campaigns of tuberculosis, hence this will enhance the success of control measures and subsequent eradication of tuberculosis from our society.
(ii) The government and relevant agencies (non governmental organization) should educate and enlighten the public particularly those at risk on bovine tuberculosis preventive measures and enforce the use of protection by all abattoirs workers.
(iii) Public health expert in the state should be encouraged to bridged existing gap between public health on bovine tuberculosis.
(iv) Veterinarians and human health care service organization should focus more on community workers paying more attention to awareness creation programs through various activities aimed at addressing the knowledge about tuberculosis.
(v) Beef consumers should also ensure that all beef bought from the meat market and abattoir is subjected to proper cooking before consumption.

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