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Community Knowledge, Attitude and Practices towards Tuberculosis among Household Heads in Mogadishu, Somalia

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ABSTRACT

Tuberculosis (TB) is a disease that reappears after they have been on a significant decline occurring worldwide and a source of multi-billion- dollar loss and human fatality yearly. The situation is worse in developing countries like Somalia, where lower knowledge, attitude, and practice (KAP) of the people is impending. A cross sectional survey was conducted between January 2022 and June 2022 to assess the knowledge, attitude and practices towards tuberculosis among 171 household heads in Wadajir district Mogadishu, Somalia. A structured questionnaire was designed, pretested and self-administered to household heads. Human TB was recognized by 157(91.8 %) of household heads, while only 34(19.9%) had heard of animal TB. In the present study, 121(70.8%) of household heads had not considered bovine Tb as zoonosis. Majorities of respondents indicated that they have acquired the awareness about TB from Family/neighbors that accounts for about 80(46.8%), and only 38(22.2%) of them got information from radio/TV. Knowledge on the infectious cause of human and animal TB was known by 4.7%. However, misperceptions such as weather and toxins were also implicated as causes of human TB. In the present study, a significant proportion (48.5%) of the study population used to consume raw milk that was studied as the sources of infection to TB. Herein, the majority of household heads have indicated inhalation (57.3%) and contacts (23.4%) as means of transmission of human tuberculosis and only (15.7%) of respondents mentioned consuming raw animal products. In conclusion, as the bovine tuberculosis is less aware as well as misperception about cause, ways of transmission and prevention towards human tuberculosis on household heads. Thus, it is highly necessary to convey public health education to assemble public awareness about the transmission, etiology, predisposing factors of infection and its prevention and control in the study area.

Keywords- Bovine tuberculosis, Mogadishu, Tuberculosis, One health, Prevention, Somalia, Zoonoosis.

I. INTRODUCTION

Tuberculosis (TB) is a re-emerging disease occurring worldwide and causing multi-billion-dollar loss and human death annually. The disease affects both humans and animals caused by a group of bacteria called Mycobacterium tuberculosis complex of different species, including Mycobacterium tuberculosis and Mycobacterium bovis [1]. M. tuberculosis (mTB) primarily causes TB in humans, whereas *M. bovis* predominantly affects cattle causing bovine tuberculosis. It is the cause of Zoonotic TB in humans that can spread from infected vertebrate animals to humans [2]

Tuberculosis is recognized as one of the most important threat to human and animal health causing mortality, morbidity and economic losses [3]. Tuberculosis (TB) is one of the major public health threats globally and cause infection among billions of peoples each year and ranks as second leading cause of death from an infectious disease worldwide after HIV/AIDS [4]. It is a reemerging disease and a significant health problem in human and animal caused by a group of bacteria called Mycobacterium tuberculosis complex (MTBC) [2]. It signifies different species including Mycobacterium tuberculosis and Mycobacterium bovis [1]. M. tuberculosis (MTB) primarily causes TB in humans whereas *M. bovis* predominantly affects cattle causing bovine tuberculosis [2]. In Somalia Tuberculosis is endemic and is one of the leading causes of morbidity and mortality. Aside from security TB in Somalia is reported

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as the greatest barrier to stability and economic development. The civil war caused an unprecedented collapse of the national TB Control Programme. Somalia is estimated to have one of the highest incidence rates of TB in the world. It is estimated that each year, around 12,000 sputum positive cases occur, out of which only 3 are detected and receive treatment in a supervised DOTS Programme. TB can be considered a major public health problem in Somalia, affecting the most productive age groups of the community **[5]**. TB is among major health burdens and major cause of morbidity and mortality in Somalia [6]. TB deaths in Somalia reached 6,458 or 5.03% of total deaths [51]. The age adjusted death rate is 123.01 per 100,000 of population; which ranks number four in the world making TB one of the leading causes of morbidity and mortality among the adult population, contributing to significant loss in work productivity and increased household expenses in support of affected member of the household during its long treatment [7]. The epidemiology of TB in Somalia is similar to other developing countries where the disease is related with widespread poverty, poor living conditions and reduced immune state especially those living with HIV and AIDS [7]. The 15-49 years age group is largely affected [6]. Estimated TB incidence and prevalence was 274 per 100,000 and 513 per 100,000 populations respectively [6]. The incidence of sputum smear positive cases was 160 per 100 000 population [4]. The estimated prevalence of MDR-TB is 5.2% among new cases and 40.8% among retreatment cases [8]. Despite the availability of free TB treatment in TB centers in Somalia, the prevalence rates of TB and MDR-TB still remain high. Previous studies have shown lower cure rates and higher mortality and re infection rate in HIV/TB co infected patients [9]. The levels of MDR-TB in Somalia are among the highest in the Eastern Mediterranean and African region [10]. Treatment of MRD-TB usually requires prolonged chemotherapy with highly toxic second-line drugs [11]. Although MDR-TB treatment was started in some regions of Somalia, Banadir and other regions are still suffering from lack of anti MDR TB drugs [10].

The main factors associated with TB acquiring and development of disease and its epidemiological burden includes poverty, poor nutritional status, smoking, poor access to health facilities, lack of financial source, lack of awareness and knowledge about the cause, mode of transmission, and symptoms TB, demographic characteristics, lack health education, socio economic status and traditional beliefs. These are thought to have an essential impact on the health seeking behavior of patients, delay in diagnosis, treatment compliance and treatment success rate [12], [13], [15].

Reports conducted so far on human and bovine TB in Somalia there is still a gap in KAP towards the TB disease. Therefore, this study reveals valuable information to increase prevention strategies of TB on a national level in Somalia.

II. METHODOLOGY

1. Study Design

The study was conducted through descriptive study. The researcher was used this approach in order to describe knowledge, attitude and practices towards tuberculosis among household heads in Mogadishu Somalia. The study was a cross sectional in design. In this type of research the researcher was collected research data at one point in time. This type of design was selected due to time constraint. The study was also quantitative in deign which means to determine a particular problem numerically. Using information gained from the questionnaire.

2. Research population and Sample size

The target population for this study was 300 from household heads.

The sample size of this study was determined by using Slovene's formula for sample size determination.

$$\mathbf{n = \frac{N}{1 + N\,(e)^2}}$$

$$\mathbf{n = \frac{300}{1 + 300\,(0.0025)} = 171}$$

Were,

N= total population, n= sample size, e= error 5% (0.005). Therefore, the sample size was **171** household heads.

3. Sampling Procedure

Sampling procedure used in this study was a non-probability sampling procedure, particularly purposive sampling. Purposive sampling is based on the assumption that the researchers are able to select elements of responses from a 'typical sample' from the suitable target population. The researcher was selected because able to make judgments and choose population members who are good predictions for accurate information.

4. Research instrument

Questionnaire was suitable instrument to obtain information needed can easily described in writing, since the sample size is fairly large and there is limited type, questionnaire considered ideal for closing such data. Self-developed questionnaire and close end questions were be used in the study. It is suitable tool for clothing information over short period of time.

5. Data collection procedure

This study was used for primary data and collected from respondents in the area of study. Data was collected using a pre-code structured questionnaire for the survey. The close-end questions are questions in which all possible so as to pre-specify answers and the respondents make the choice from the answers provide.

Data collection was done by a face-to-face personal interview method. An informed interviewer visits each respondent. This is important because it is helping the respondent to understand the questions by

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interpreting them to fit the respondent's understanding. This was done to ensure that the respondent answers the questions in the appropriate sequence.

6. Data analysis

After the researcher collect the questionnaire from the respondents, the researchers use the quantitative method for analyzing and interpreting data, the data was be analysed through descriptive analyze to describe the knowledge, attitude and practice towards human and bovine TB, by using statistical package for Social Science technique (SPSS 20.0). The statistical package analyzed variables by computing relative frequencies, percentages and was represented tables to produce valid and reliable data.

III. LITERATURE REVIEW

3.0. Introduction

Tuberculosis (TB) is a re-emerging disease occurring worldwide and causing multi-billion-dollar loss and human death annually. The situation is worse in developing countries like Somalia, where lower knowledge, attitude, and practice (KAP) of the people is impending.

Bovine tuberculosis (BTB) is a chronic bacterial disease caused by Mycobacterium bovis, a Gram positive, acid-fast bacterium. This pathogen belongs to the Mycobacterium tuberculosis complex, a group of genetically closely related mycobacteria. Mycobacterium tuberculosis, Mycobacterium bovis, Mycobacterium bovis BCG, Mycobacterium canettii, Mycobacterium africanum, Mycobacterium pinnipedii, Mycobacterium microti, Mycobacterium caprae, the dassie and the oryx bacillus, and the recently discovered Mycobacterium mungi are closely related species that form the M. tuberculosis complex (MTBC). Mycobacterium tuberculosis and *M. bovis* are the most important species in the complex which commonly cause human and animal tuberculosis (TB), with concomitant negative consequences for human and animal health and economic costs [15]. Although cattle are considered to be the main host, *M. bovis* also affects many other livestock and wildlife species. The disease is a significant zoonosis that can spread to humans, typically by the inhalation of aerosols or the ingestion of unpasteurized milk. In developed countries, eradication programs have reduced or eliminated tuberculosis in cattle, and human disease is now rare; however, reservoirs in wildlife can make complete eradication difficult [16]. Because of their close proximity to livestock, pastoralists face high risk of exposure to zoonotic diseases such bovine tuberculosis, many of which are endemic in much of sub-Saharan Africa [17]. On top of its economic impacts, bTB is transmitted to humans, and prior to mandatory pasteurization about one-fourth of TB cases in children was caused by *M. bovis* in developed countries while 15% of human TB up until the end of 1990's was believed to be caused by *M. bovis* in developing countries [18]. A more recent study however, reported a much lower figure of 2.8% of human TB to be attributed to *M. bovis* in Africa [19].

Human tuberculosis (TB), although an ancient disease, has re-emerged with devastating consequences on global public health and is currently one of the most widespread infectious diseases. In addition, it is the leading cause of death due to a single infectious agent among human adults in the world [20]. Tuberculosis is caused by members of the Mycobacterium tuberculosis complex (MTC), which includes Mycobacterium tuberculosis, Mycobacterium bovis, Mycobacterium africanum, Mycobacterium caprae, Mycobacterium microti, Mycobacterium pinnipedii and Mycobacterium canettii [20]. Approximately one third of the world's population is infected with bacteria belonging to the MTC complex, with Sub-Saharan Africa having the highest annual incidence since the advent of HIV and AIDS [21]. The TB bacilli are non-motile, non-sporulating, weakly Gram-positive acid-fast bacilli (AFB) that appear microscopically as straight or slightly curved rods [55].

3.1. Etiology

Mycobacterium tuberculosis complex (MTC) consists of Mycobacterium africanum, Mycobacterium bovis, Mycobacterium Canetti, Mycobacterium microti, myc robacterium BCG, mycrobacteum capraeand Mycobac terium tuberculosis (Quinn et al., 2002). Genus mycobacterium is characterized phenotypically as non-motile, noncapsular, non-spore forming, obligate aerobic, thin rod usually straight or slightly curved having 1 - 10 µm length and 0.2 - 0.6 µm widths, facultative intracellular microbe and has a slow generation time about 15 - 20 hours. Its cell wall is rich in lipids (mycolicacid) that provide it the thick waxy coat which is responsible for acid fastness and hydrophobicity. This waxycoat (mycolic acid) is also greatly contributing for the bacterium resistance to many disinfectants, common laboratory stains, antibiotics and physical injuries. It probably also contributes to the slow growth rate of some species by restricting the uptake of nutrients [22].

Mycobacterium bovis is the main etiological agent of bovine tuberculosis. It is found that *M. bovis* best survive in frozen tissue and there is adverse effects of tissue preservative i.e. sodium tetraborate on viability [23].

3.2. Epidemiology

The disease affects cattle throughout the globe, but some countries have been able to reduce or limit the incidence of the disease through process of 'test and cull' of the cattle stock. Most of Europe and several Caribbean countries are virtually free of *M. bovis*. Bovine tuberculosis is endemic to many developing countries particularly African countries [54]. M.boviscombines one of the widest hosts ranges of all pathogens with a complex epidemiological pattern, which involves interaction of infection among human beings, domestic animals and wild animals [56]. However, only little is done particularly in developing countries on the epidemiology

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of this organism and the epidemiological requirements for its control [56].

Epidemiology of bovine TB is influenced from many risk factors as genetic, behavioral, biological or environmental which have effect on transmission, establishment of infection and expression of disease [24]. Male badgers are more affected as compare to female. Male have higher risk of mortality which promote gender influence while risking transmission of TB to cattle [25]. It is more prevalent in dairy workers exposed to poor control areas of bovine tuberculosis. The pulmonary form of disease is more developed in occupational groups working with animals infected from *M. bovis* on farm or slaughter house, than the alimentary form of disease.

3.3. Source of infection and mode of transmission

Cattle serve as the principal reservoir of *M. bovis*. Humans can be infected with *M. bovis* where cattle are reared for milk production [26]. Tuberculosis is speared from one person to the other through air droplets that is produced during the person affected by pulmonary and laryngeals tuberculosis by coughing, sneeze talk and song. It is determined by three factors those are numbers of organisms expel into air, concentration of organism in the air and length of the time expose to organisms [27]. The bovine tuberculosis transmitted from animals to human by use of raw animal products and un cooked meat that can affect gastro intestine and speared to other organs also in contaminated animal to others by air or contaminated feed and when materials that the animals used was contaminated [10].

3.4. Risk Factors of Human and Bovine Tuberculosis

Tuberculosis has been considered as a disease of poverty so, lack of basic health Services, malnutrition, social disruption, low awareness to diseases and cause of all contribute to the dissemination of TB and its impact in the community [52]. The observed increase in TB incidence in sub-Saharan Africa may have resulted from several of these risk factors [27]. Risk factors contributing to difficulties in controlling bovine tuberculosis in cattle across continents can have their origin at farm-level, e.g. cattle breed, age, behavior and nutrition of animals. However, host independent factors are considered more important in most case include, amongst others, production types, management practices, environmental variables, anthropogenic variables and seasonality. Cattle movement, existence of a wildlife reservoir and possibly strain related differences are of additional significance. Tuberculosis in wildlife can also pose difficulties for bovine tuberculosis eradication [23].

3.5. Pathogenesis

Once bacteria entered through aerosolized droplets or ingestion it is established in a herd of cattle. The incubation period can range from months to years with the severity depending on the immune system of each individual animal. The bacteria usually enter the respiratory system of a cow and settle in the lungs. Macrophages in lungs are then responsible for phagocytizing the organism. The organism replicates intracellularly after it has been taken up by the macrophages. A granuloma or tubercle forms as the body tries to wall off the infected macrophages with fibrous tissue. The granuloma is usually 1 - 3 cm in diameter, yellow or gray, round and firm. On cut section, the core of the granuloma consists of dry yellow, caseous, or necrotic cellular debris. The infection can spread hematogenously to lymph nodes and other areas of the body and cause smaller, 2 - 3 mm in diameter, tubercles. The formation of these smaller tubercles is known as “miliarytuberculosis”. The histological lesions consist of necrotic cells in the center of the tubercle surrounded by epitheloid cells and multinucleated giant cells all encapsulated by collagenous connective tissue. The necrotic core of cells can often become calcified as the tubercle matures [28].

3.6. Clinical Signs

The classic clinical features of pulmonary tuberculosis include chronic cough, sputum production, appetite loss, weight loss, fever, night sweats and hemoptysis (Lawn, 2011). Extra pulmonary tuberculosis occurs in 10 to 42% of patients, depending on race or ethnic background, age, presence or absence of underlying disease, genotype of the M. tuberculosis strain and immune status [29].

Animals infected with *M. bovis* have low-grade fever, chronic intermittent hacking cough and associated pneumonia, breathing difficulties, weakness and loss of appetite, emaciation and swelling of superficial body lymph nodes (adenitis) [30].

3.7. Public Health Importance

Tuberculosis continues to be a major public health problem throughout the world, including Ethiopia. The observed increase in human TB incidence in sub-Saharan African countries including Ethiopia may have resulted from several of these risk factors most of societies were highly affected by such difficult factors that lead them to such kinds of problem [27]. *M. bovis* is not the major cause of human tuberculosis, but humans remain susceptible to BTB.

3.8. Diagnoses

The standard method for detection of TB is the tuberculin test, where a small amount of antigen is injected into the skin, and the immune reaction is measured. Single intra dermal tuberculin skin test (SITT) is the test that bovine tuberculin injection can be at the site of hairless area of caudal fold to observe the skin reaction against *M. bovis.* Comparative intradermal tuberculin test (CIDT) is the test that many studies usually used to observe the skin reaction against *M. bovis* and M. avium. Definitive diagnosis is made by culturing the bacteria in the laboratory, a process that takes at least eight weeks [53].

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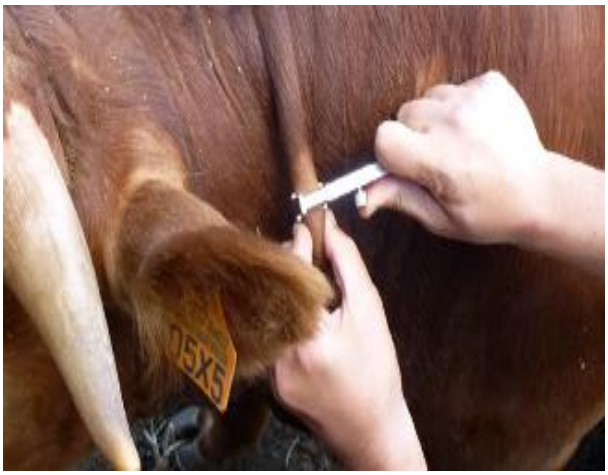

Figure 1: Intradermal tuberculin test measure. VISAVET-UCM.

3.9. Postmortem Lesions

It is characterized by the formation of granulomas (tubercles) where bacteria have localized. These granulomas are usually yellowish and either caseous, or calcified, they are often encapsulated. In some species such as deer, the lesion tends to resemble abscesses rather than typical tubercles. Some tubercles are small enough to be missed by the naked eye unless the tissue is sectioned. In cattle, tubercles are found in the lymph nodes, particularly those of the head and thorax. It is common in the lungs, spleen, liver and the surfaces of body cavities [31].

3.10. Treatment

In human tuberculosis, drugs like isoniazid, combinations of streptomycin and para-aminosalicylic and other acids are commonly used. The treatment of animals with tuberculosis is not a favored option in eradication conscious countries and is not economical. [23].

3.11. Control and Prevention

Tuberculosis needs to be prevented and controlled because it causes loss of productivity in animals infected; there is risk of infection to humans [32] . However, because of financial constraints, scarcity of trained professionals, lack of political will, as well as the underestimation of the importance of zoonotic tuberculosis in both the animal and public health sectors by national governments and donor agencies, control measures are not applied or are applied inadequately in most developing countries [33]. Standard public health measures used to manage patients with contagious M. tuberculosis should be applied to contagious patients with *M. bovis*to stop person-person transmission [1].

The primary tool used for screening of bovine tuberculosis is the tuberculin test [35]. The standard control measure applied to tuberculosis is test and slaughter or abattoir surveillance [36]. Screening of meat at slaughterhouses along with detection of slaughtered animal's herd of origin will be helpful in reducing the disease [37].

IV. RESULTS

4.1. Demographic data

Table 1: Gender of the respondents

	Frequency	Percent	Cumulative Percent
Male	**123**	**71.9**	**71.9**
Female	**48**	**28.1**	**100.0**
Total	**171**	**100.0**	

According to the above table the majority of the respondents were male 123(71.9%) while 48(28.1%) were female. Therefore, the most of household heads were males.

Table 2: Age of the respondents

	Frequency	Percent	Cumulative percent
20-30	14	8.2	9.0
31-40	112	65.5	70.0
41-50	29	16.95	90.0
Over 50 Yrs	16	9.4	100.0
Total	171	100.0	

The table 4.1.2 shows that the respondents were 14(8.2%) were 20-30 of age, 112(65.5%) were 31-40, 29(16.95%), and 16(9.4%) were over 50 years.

Therefore, the majority of respondents were between 31 and 40 years of age this shows the most predominant in household heads were elders.

Table 3: Martial status of the respondents

	Frequency	Percent	Cumulative percent
Single	55	32.2	32.0
Married	116	67.8	100.0
Total	171	100.0	

According to the above table shows that the respondents 32(32.0%) were single, 116(67.8%) were married. The majority of respondents were married.

Table 4: Level of education

	Frequency	Percent	Cumulative percent
Illiterate	120	70.2	70.2
Grade 8	32	18.7	88.9
Secondary level	13	7.6	96.5
Bachelor	6	3.5	100.0
Total	171	100.0	

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According to the above table shows that the respondents 120(70.2%) were illiterate, 32(18.7%) were Grade 8, 13(7.6%) were secondary and 6(3.5%) were bachelor degree. The majority of respondents were illiterate.

Table 5: Occupation of the respondents

	Frequency	Percent	Cumulative percent
Cattle owner	149	87.1	87.1
Cow Milk buyer	14	8.2	95.3
Veterinarian	6	3.5	98.8
Butcher	2	1.2	100.0
Total	171	100.0	

According to the above table shows that the respondents 149(87.1%) were cattle owners, 14(8.2%) were cow milk buyer, 6(3.5%) were veterinarian, 2(1.2%) were butchers. The majority of respondents were cattle owners.

4.2. Knowledge, attitude and practices towards TB.

Table 6: Do you ever Heard of human TB

	Frequency	Percent	Cumulative percent
Yes	157	91.8	91.8
No	14	8.2	100.0
Total	171	100.0	

According to the above table the respondents were 157(91.8%) said yes that they have heard human tuberculosis, 14(8.2%) were said no. Therefore, the majority of the household heads heard the human Tb this is because hospitals report cases of Tb and is common between families and neighbors.

Table 7: Do you ever Heard of bovine TB

	Frequency	Percent	Cumulative percent
Yes	34	19.9	19.9
No	137	80.1	100.0
Total	171	100.0	

According to the above table the respondents were 34(19.9%) said yes and 137(80.1%) were said no that they have not heard Bovine tuberculosis (Tb). Therefore, the majority of the respondents didn't hear the bovine tuberculosis this is due to the limited knowledge of Bovine Tb.

Table 8: Do you consider Bovine TB as zoonosis?

	Frequency	Percent	Cumulative percent
Yes	50	29.2	29.2
No	121	70.8	100.0
Total	171	100.0	

According to the above table the respondents were 50(29.2%) said yes, 121(70.8%) were said no that they have not consider bovine Tb as zoonosis. Therefore, the majority of the respondents didn't consider bovine tuberculosis as zoonosis and this is due to little knowledge of zoonotic diseases.

Table 9: Is TB a disease that affects only people?

	Frequency	Percent	Cumulative percent
Yes	128	74.9	74.9
No	43	25.1	100.0
Total	171	100.0	

According to the above table the respondents were 128(74.9%) said yes that Tb only affects human, 43(25.1%) were said no. Therefore, the majority of the respondents had believed that Tb affects only people.

Table 10: Where do you hear of the disease Source of information?

	Frequency	Percent	Cumulative percent
Radio/TV	38	22.2	22.2
Family/neighbors	80	46.8	69.0
Social Media	29	17.0	86.0
Multiple sources	24	14.0	100.0
Total	171	100.0	

According to the above table the respondents were 38(22.2%) responded radio/Tv, 80(46.8%) were answered family and neighbors, 29(17.0) were got information from social media and 24(14.0%) were get source of information from multiple sources. Therefore the majority of the respondents were get information from family and neighbors and this is due to limited information shared for this community in terms of zoonotic diseases.

Table 11: Mode of transmission of bovine and human Tb

	Frequency	Percent	Cumulative percent
Inhalation	98	57.3	57.3
From animals	27	15.8	73.1
Contacts	40	23.4	96.5
Don't know	6	3.5	100.0
Total	171	100.0	

According to the above table the respondents were 98(57.3%) responded inhalation, 27(15.7%) were said from animals, 40(23.4%) were said through contacts,

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6(3.7%) were answered don't know mode of transmission of Tb. Therefore, the majority of the respondents were answered that the inhalation is the mode of transmission of Tb.

Table 12: What are the causes of Tb disease?

	Frequency	Percent	Cumulative percent
Bacteria	8	4.7	4.7
Toxin	47	27.5	32.2
Weather	101	59.0	91.2
Don't know cause	15	8.8	100.0
Total	171	100.0	

According to the above table the respondents were 8(4.7%) answered bacteria, 47(27.5%) were said toxin, 101(59.0%) were said weather, 15(8.8%) were answered don't know the cause. Therefore, the majority of the respondents were answered that the cause of Tb was weather.

Table 13: What are Symptoms of human TB?

	Frequency	Percent	Cumulative percent
Coughing >2 weeks	107	62.6	62.6
Chest pain	21	12.3	74.9
Blood tinged sputum	15	8.7	83.6
Weight loss	28	16.4	100.0
Total	171	100.0	

According to the above table the respondents were 107(62.6%) answer coughing 2 weeks, 21(12.3%) were said chest pain, 15(8.7%) were said blood tinged sputum, 28(16.4%) were answer weight loss. Therefore, the majority of the respondents were answered that symptoms of human Tb were coughing more than 2 weeks.

Table 14: What are Prevention methods?

	Frequency	Percent	Cumulative percent
Use cooked/boiled animal product	9	5.3	5.3
Early treatment	82	47.9	53.2
Separating sleeping room	39	22.8	76.0
Avoid sharing of utensils	41	24.0	100.0
Total	171	100.0	

According to the above table the respondents were 9(5.3%) answer Use of cooked/boiled animal product, 82(47.9%) were said early treatment, 39(22.8%) were said Separating sleeping room, 41(24.0%) were answered Avoid sharing of utensils. Therefore, the majority of the respondents were answered that the prevention methods adopted was early treatment of Tb.

Table 15: The habit of milk drinking

	Frequency	Percent	Cumulative percent
Boiled milk	50	29.2	29.2
Raw milk	73	48.5	77.7
Undercooked milk	18	10.5	88.2
All I drink	20	11.7	100.0
Total	171	100.0	

According to the above table the respondents were 50(29.2%) answered that they had drunk boiled milk, 73(48.5%) were drank raw milk, 18(10.5%) were said Undercooked milk, 20(11.7%) were answered that they had drunk any type of milk raw, undercooked and boiled milk. Therefore, the majority of the respondents answered that they had drunk any type of milk whether raw milk, undercooked or boiled milk.

Table 16: Reason for milk boiling

	Frequency	Percent	Cumulative percent
Extend milk life span	70	41.0	41.0
Tradition	76	44.4	85.4
To Kill pathogens	25	14.6	100.0
Total	171	100.0	

According to the above table the respondents were 70(41.0%) answered extend milk life span, 76(44.4%) were tradition, 18(10.5%) were said to kill pathogens. Therefore, the majority of the respondents answered that they had boiled their milk for tradition.

V. DISCUSSION

The study had provided information regarding the knowledge, attitude and practices of household heads towards tuberculosis in Mogadishu, Somalia. The current study revealed that Human TB was highly recognized by (91.8%) of cattle farmers, while only (19.9%) had heard of bovine tuberculosis. Similarly, to this report, very impressive awareness on human TB among was recorded in study done in Addis Ababa city of Ethiopia [2], Mysore city of India [38], and in Vellore of India [39], who found a high awareness on human TB among the community. The low recognition about bovine TB noted in the present

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study closely agrees 29.7 % reported by [40] on TB occurrence in animals across study population in southern part of Ethiopia. In addition, [41] reported as high as 60.4% of respondents not to have heard of bovine tuberculosis from Zambia. The awareness difference seen in the current study between the two types of Tuberculosis might be a throwing back of remarkable educational attempts towards the human tuberculosis through various mass communications.

This study indicated the usefulness of family/neighbor and electronic media in health education. Majority of the cattle owners (46.8%) reported that they have acquired the awareness from Family/neighbors and only (22.2%) of them got from radio/TV. This current study has support for other investigators including Yadav et al., (2006) described that neighbors, friends and family members as major source of information in India. Nevertheless,[42] Hoa reported that health education means such as television (64.6%) can play a pivotal role in disseminating educational messages. Thus, different intervention means and efforts are optional to consider the unusual nature of each setting and target group [42]. On converse, there is lack of attention towards bovine tuberculosis as part of educational activities. Although 8.8% of respondents did not know the actual cause of TB, only 4.7% know that tuberculosis is caused by bacteria, the respondent remained having no knowledge on the cause of TB. Moreover, misperception as weather and toxin was implicated as cause of Tuberculosis. Similarly, [43], [44] and [2] had reported similar misperceptions among the different parts of the country.

The four most commonly recognized symptoms of TB mentioned by respondents were coughing for 2 weeks and above (62.2%), weight loss (16.4%), chest pain (12.3%), and blood tinged sputum (8.7%) which was in agreement with previous studies in a rural community in Southwest Ethiopia [45] in Northeast Ethiopia [46] Iran [48] and in Philippines [49]. The result in basic household heads' knowledge about the symptoms and transmission methods of TB has an important implication for the TB control program in the current study area in particular and also in the country in general in that it might decrease diagnosis and treatment hindrance, as well as the multiply of the disease.

In this study, the possible impact of bovine TB on human was not known by household heads whereby (15.7%) of them responded from animals the transmission of B.TB from animal to human even among those who knew it existed. In closely with this, [40]) and [44] highlighted that only 22.9% and 16.6% of respondents had believed the fact that TB can be acquired from animals, respectively. Apart from the discrepancy due to the difference in the study population with varying cultural practice in the respective study areas, it also implicates the wide knowledge gap among the general community regardless of age group.

Taking into account the bad practice of milk usage and high prevalence in different farming systems [50], the potential risk of acquiring milk borne pathogens such as *M. bovis* to human is high [18]. Very recently,[47]. Yusuf-isleged Reported high herd Bovine mastitis prevalence (45.5%) among farms supplying milk to the capital city. The existing farms will seemingly maintain to supply milk as well as there is risk of milk borne diseases including *M. bovis* to the consumers as there are no control strategies in cattle and hence, suggested Zoonotic control measures fitting in local situation are swiftly needed 47].

Most of the participants responded that TB is curable with early treatment (47.9%), covering their mouth and nose when coughing and sneezing, avoiding to share of utensils and separating sleeping room as important prevention and control approach. The appropriate treatment and prevention measure could play a significant role in reducing the spread of the disease [44].

VI. CONCLUSION

Commonly, majority of household heads in Mogadishu recognized human tuberculosis as compared to bovine tuberculosis. However, they had little information about the cause of TB, as a considerable number of the participants do not know or apparent that cold toxin as the cause of the disease. Moreover, large numbers of household heads were unaware about the cause of TB and the key routes of its transmission from infected organisms to others. Therefore, human Tuberculosis awareness promotion strategy should be operated along with bovine Tuberculosis under a One Health umbrella.

RECOMMENDATIONS

Based on above conclusions the following recommendations are forwarded: -

- It would be better to establish an appropriate control measure such as establishing proper information, education, and a communication pathway that indicate the level of severity of the disease.
- Creating proper awareness about its cause, transmission, prevention, and availability of public service should be in place.
- Human TB awareness creation strategy should be operated along with bovine TB under a One Health concept.
- The government should give attention to bovine tuberculosis as equal with human TB by formulating strategies as well as policy to break the path ways of it.
- The plan should start from grass root level by creating awareness to livestock owners and consumers about the diseases. To achieve this, community health education about transmission, control, and prevention of human and bovine TB should be integrated with the animal health care system.

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