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Study on the Prevalence and Host-Related Risk Factors of Bovine Trypanosomosis in Selected Kebeles of Konta Zone District, South Western Ehiopia

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ABSTRACT

*Trypanosomosis is a disease caused by several species of protozoa parasites called trypanosomes found in the blood and other tissues of vertebrates including livestock, wildlife & people. The objective of this cross sectional study was to determine the prevalence of bovine trypanosomosis, identify species of trypanosomes involved and access associated risk factor in Ameya Zuria Woreda. In this study, over all prevalence of 12.8 % (49/ 384) bovine trypanosomosis was recorded. Prevalence of 9.4 % and 16.9 % was observed in female and male cattle respectively. Bovine trypanosomosis with prevalence of 18.5%, 11.8%, 10.4%, 10.8% & 11.8% was recorded in Chebera, Cheta, Dupa, Serishewa and Yora peasant associations respectively. The prevalence of 5.6%, 14.3 6% and 16.7 were recorded in cattle of young, adult and old respectively. Two species of trypanosomosis T.congulense and Brucei were detected with a prevalence of 11.2% and 1.7 % respectively. In the current study, the prevalence of trypanosomosis based on body condition scores were recorded as good, medium, and poor as 6.8 %, 9.9 % and 21.3 % respectively. Based on coat color, prevalence of 26.4%, 15.8%, 8.5% and 5.8 were recorded in black, grey, red and white color respectively. Based on Hematological finding to PCV <25 and PCV ≥ 25 78.6% were recorded anemic while 21.4 % were normal. In conclusion, this study indicated that trypanosomosis was the major constraint of livestock production in the Ameya Zuria Woreda *20therefore; concerned individuals should strengthen and continue the effort against this parasitic disease.*

Keyword: Ameya Zuria Woreda, Bovine, Prevalence, Protozoa parasites, Trypanosomosis.

1. INTRODUCTION

1.1. Background of the study

Trypanosomosis is a disease caused by several species of protozoa Parasites called *trypanosomes* found in the blood and other tissues of vertebrates including livestock, Wild life and people. African animal trypanosomosis remains one of the most prevalent & biggest constraints to the development of sustainable livestock population in the continents. It is one of the important diseases of Ethiopia. Tsetse Flies ingest in the blood lymph while feeding on an infected host. Thereafter, the *trypanosomes* lose their glycoprotein surface coat, and transmission in which the *trypanosomes* are transferred from one mammalian host to another by the interrupted feeding of biting insects, notabletabanis & stomoxys (Aweke K, 2000).

Tsetse flies occur in some 10 million square km of Africa; affecting a total of 38 countries. Currently about 37% of the 147 million cattle in countries affected by tsetse are exposed to the disease. Trypanosomosis is among the well-known constraints, to livestock production in Africa as it causes a serious and often total disease of livestock mainly in the rural poor community and right fully considered as root cause of poverty in the continent. Most African trypanosomes are transmitted by tsetse flies; inhabit many parts of the continent extended about 15 degree north and 20 degree south of the equator (Nanulya, V. V, 1986).

Trypanosomes are predominantly hemo parasites through they can also exist in other tissues (skin, lymph nodes, central nerves system, etc.) where they can give rise to distinct equal of tryps infection. The most important seriously pathogenic Spps to domestic livestock are trypanosome vivax *T.congulense, Brucei, Evans, and Equiperdum* (Leak, S.G.A, 1999). In Ethiopia, tsetse flies are confined to south western and north western regions b/n longitude $33^0$and 38^0east and latitude 5^0 and 12^0 north an area covers 220,000 km2. Five species of *Glossina morsitance submorsitans, Glossina palidipes, Glossina tachnoides, Glossina fuscipes. Sub fuscipes and Glossina longipennis* have been recorded in Ethiopia. The presence of animal tryps is a major constraint to the introduction of highly productive exotic dairy animals and drought oxen to low land settlement and resettlement areas for

the utilization of large land resources. Since more than 90% of crop production in Ethiopia dependent on animal drought mainly on plaughing oxen, many large field lie follow due to lack of these animals in *tryps* infected area. This worsens the food supply & living conditions in affected areas. Moreover new areas being invaded and settled communities are being continually evicted by the advancing tsetse (Dagnachew, Z. and K. Shafo, 1981).

Ethiopia has acknowledged that *tryps* is a major constraint for the reduction of poverty, improved food security and sustainable agriculture and rural technology development with consequence implementation of a joint Ethiopia science and technology commission tsetse and tryps eradication project through the introduction of sterile insect technique (SIT) currently limited in south rift valley of Ethiopia. This area was prioritized because it is believed to the infested with only one *Glossina Spps* (*G.pallidipas*) and its apparent spread from one drainage system to another is prevented by natural barrier such as mountain enabling eradication to the carried out from one drainage system at a time.it is obvious that a feature plan is to extend the eradication project to an tsetse infested areas after connecting all the good results & the experiences of the ongoing eradication project. Bovine trypanosomosis in the southern Ethiopia; as far as the vector is concerned there are as well five Spps of tsetse flies distributed along the lowlands of southern and south western parts of country. These are *Glossina morsitance sub morsitance, Glossina palidipas, G.fuscipes & G.tachinoides* are most important tsetse flies species; while *G.longipennis* has a minor economic importance. Large proportion of the southern part Ethiopia is infested by tsetse flies and all livestock in here are victims of this disease. Epidemiology of bovine *trypanosomosis* is selected sites of the southern rift valley of Ethiopia. Konta zone one of the tsetse infested site by *Glossina Spps* and the disease *trypanosomosis.* In Ameya Zuria woreda under Konta Zone the research workers on bovine tryps were largely non-existent even though the disease is the challenging problem of livestock production and productivity. Hence, disease prevention & control methods should be under taken to improve livestock production and agricultural development in the area (Abebe and Jobber, 1996).

1.2. Statement of the problem

Trypanosomosis is serious vector born disease of cattle caused by tsetse flies which affect the performance of the livestock so as to signify poor body condition. Economic contribution if this sector towards the country development where decreased. Therefore, the effect should be considered, studied and it helps to give appropriate innervations, so the following basic questions must rises in order to investigate problem of the disease at the selected site in Ameya district area.

- To determine the prevalence of trypanosomosis of cattle in the Ameya Zuria Woreda district.
- To identify and asses the associated risk factors with respect to age, sex, breed, body condition status and coat color to the disease prevalence.

1.2 Objectives of the Study

1.3.1 General Objective

- To evaluate the occurrence of trypanosome prevalence in a cattle and asses its risk factors in the study area

1.3.2. Specific Objectives

- To estimate the prevalence of trypanosomiasis in cattle
- To assess the risk factors associated with the prevalence.

1.3. The significance of the study

The importance of this study will be to find out ways for better development and improvement of farmers living situations through identifying and analyzing the core causes of low level of livestock production. This study gives direction for better controlling activities and also creates different opportunities for the farmers and investors which participate in livestock farming.

2. LITERATURE REVIEW

2.1. Prevalence of bovine trypanosomes

Trypanosomes is a parasitic disease caused by the species of the flagellated protozoa belonging to the genus trypanosome which inhabits the blood of plasma, various tissues and fluid of vertebrate hosts (Dinkal and Abebe, 2005). The disease is one of the major constraints of animal production in areas of Africa, which have the greatest potential for a significant increase in domestic livestock productivity and Bovine trypanosomes is a huge constraint to agricultural production in large parts of sub Saharan

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African (Chernet *et al.*, 2006). It is one of the major impediments to the livestock development and agricultural production in Ethiopia contributing negatively to the overall development in general and land to food self-reliance efforts the nation in particular (Langidge, 1979). The direct lose from mortality, morbidity, infertility of infected animals and cost of control of the disease, but the indirect loses including exclusive of the livestock and animal power based on crop production from huge fertile tsetse infected areas (Awoke, 2000).

Trypanosomosis of cattle locally known as "Gendi" can be found in many provinces of Ethiopia where it greatly hinders livestock development (Langidge, 1979) in Ethiopia. It is a major livestock disease in both high land and low lands over 6 million heads of cattle and equivalent number of either livestock are at the risk of contracting the disease. More than 20,000 heads die per annual and annual lose contributes to the disease rise to over us 236 million, where loss due to reduced meat, milk and draft powder are still unquantifiable (OAU, 2001).

2.2. Etiology

Trypanosomosis brucei, *Trypanosomosis congolense* (the most common species) and *Trypanosomosis vivax*. Probably the most important Trypanosomosis simlae which is primarily a parasite of pigs and camels and morphologically resembles Trypanosomosis congolense. There are economically important animals Trypanosomiasis in Ethiopia, *Trypanosomiasis brucei*, *Trypanosomiasis congruence*, *Trypanosomiasis vivax and T.evancei* (Langidge, 1976) and *T.equiperdium* (Dagnachew and Shafo, 1981). The most prevalent Trypanosomosis species in tsetse flies infected areas of Ethiopia are *T. congruence and T. vivax* (Abebe and Jobber, 1996) reported an infection rate of 58.5%of *T. congruence*, 31.2% *T. vivax* and 3.5 % for *T. brucei* in West Ethiopia. Bovine trypanosomes have been reported in different part of the country in north Omo zone and Gibe valley (Rowland's *et al.*, 1995) in southern rift valley.

2.3. Life cycles

Tsetse flies ingest trypanosomes in the blood or lymph while feeding on an infected host. Then after the trypanosomes lose their glycoprotein surface coat and in the case of *trypanosomosis brucei and T.congulense* become elongated and multiply in the mid gut before migrating forward to the salivary glands. *T. brucei* and the proboscis *T.congulense* after further multiplication of they are infective for the next host.

2.4. Transmission

With the single exception of trypanosomosis equiperdum of equines which is a venereal disease all have arthropods vectors in which transmission is either cyclical or non-cyclical. In cyclical transmission the arthropod is a necessary intermediate host in which the trypanosomes multiply undergoing a series of morphological transformation before forms infective for the next mammalian host are produced. Apart from cyclical transmission of trypanosomosis by glossina species it is highly consider that mechanical trypanosomosis is potential treat to livestock productivity in some part of Ethiopia. Trypanosomes vivax infection can be transmitted mechanically several tabanide ranges of biting flies (Abebe and Jobber, 1996).

2.5. Prevalence

The distribution of Bovine trypanosomosis is found to be widespread covering most part of the western and south western part of country. This area is long known to be the major tsetse and trypanosomes best in Ethiopia. The area is one of the wettest and agriculturally productive parts of the country, estimates made decades so go reported that 180,000-220,000km^2 lands in the western and south western parts of the country to be suitable for tsetse the biological control of trypanosomes. A recent estimate made by reported that 140,000km^2 of fertile agricultural land which is roughly 12% of the country's land mass is found to be a suitable habitat for tsetse. However, it is important to note that the comparison between previous and recent estimates should be done very carefully since different methodology had been applied. So the difference in estimates observed may or may not reflect the decreasing risk of trypanosomosis in Ethiopia (Leak, S.G, 1999).

2.6. Clinical signs

The course of disease may run from a chronic long lasting to an acute and rapidly fatal depending on the vector parasite host interaction. Trypanosomes a major threat to ruminants include *T. vivax* and *T.congulense* (Bourn, 2001). In ruminants the major signs are anemia, generalized enlargement of the superficial lymph glands, lethargy and progressive loss of bodily condition. Fever and loss of appetite occur intermittently during parasitemic peak.

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2.7. Diagnosis

Picture fever, anemia, enlargement of lymph glands, rough coat hair, weakness, emaciation and mucosal membrane is pale should arouse suspicion of trypanosomosis. Confirmatory diagnosis can only be made by laboratory examination under the microscope of the blood smears from the affected animals either directly or after proper staining with Giemsa or other similar strain. Various serological techniques and animal inoculation could also be used in diagnosing trypanosomes if the required equipment is available.

2.8. Drug treatment

Therapeutic drugs are widely used to control animal trypanosomes. Most of these drugs may lead to the appearance of drug resistant trypanosome strain for which there is as yet no solution. Suramin, ethidium Novidium, Diminazene aceturate, veridium, trypamidium samory compounds used quite intensively in veterinary medicine.

2.9. Control

There are different means of controlling trypanosomiasis which mainly comprises vector (tsetse) control by either chemical (insecticide) or non-chemical means (trapping, biological and genetic control), parasitic trypanosomiasis controlled using trypanocidal, use trypano tolerant breads of animals.

2.10. Tsetse fly

Tsetse flies belong to the family *Glossinidae*. Members of this family can be distinguished from other similar flies by the presence of a hatched shaped cell in the wing venation and the presence of secondary branches on the hairs arisita on the antennae. Unusually the family *glossinidae* contains only one *genus glossina*. All tsetses belong to the *genus glossina*. There are 31 different types of *Spps of glossina* with three distinct morphological and economic group's i.e. *fusica*, *palidepes* and *morsitance* group. The different groups of tsetse flies exploit different ecological and *G. tachinodes* from the *palpalis* groups'. *Pallidipes* and *G.moristans sub morsitance* from the *morsitance* group and *G. longi pennies* from *fusica* group (Urquhart, 1996).

Tsetse flies transmitted trypanosomiasis is an important constraint to the livestock development with estimated losses due to direct and indirect consequences of the disease running to billions of dollars. Tsetse flies (*Glossina*) inhabit wide range of habitats covering over 10 million km, representing 37% of African continents and affecting 37% countries (Finelle, 1980) including Ethiopia approximately 37% of the total cattle population in African continents and about 50 million people are exposed to the animal trypanosomiasis and human sleeping sickness respectively (WHO, 1963).The tsetse flies are widely distributed in the western lowlands and river valise and about 15% of the land believed to be suitable for livestock production is affected by the following species of tsetse flies *Glossina morsitance sub morsitance*, *G.pallidipes*, *G. tachinoides*, *Fuscipes and G. longipennis*(NTTICC, 1986).

The productive strategy in tsetse where by each egg develops in to fully formed third in star larva within the mother is unusual amongst. Each female produce only a few eggs maximum approximately 16 each of which has a high parental investment or level of nature, and consequently a high probability of survival to adulthood. The environment in which these species live is often extremely dry and hot and even with their water proof cuticle, if exposed to hot dry conditions for too long time, tsetse flies will dry out and die. In order to avoid this, tsetse seeks out cool, damp, microenvironments in which to rest between feeding and other activities. Experiments have shown that host-seeking tsetse respond to both visual stimuli (sight) and olfactory stimuli (smell) from hosts. In addition tsetse also responds to wind born odors or smells. In order to know where we need to implement control measure against the tsetse fly we need to know the distribution of the fly in space and some idea of its abundance. Tsetse population is dynamic both retreating and advancing with time as condition change. Changing condition can be either natural changes such as climatic changes or changes in the availability of hosts or man induced changes such as tsetse control operation. Therefore, in order to obtain an estimate of the distribution and abundance of the tsetse flies at a given point in time. Some sort of survey is required ideally with any tsetse survey; we would like to know the exact number of flies in a given area at a given time. This is what we call the absolute population density or the absolute density. In practice this is technically too difficult and constantly to measure. Instead our survey techniques aim at making estimates of the relative population density and how this changes in the tsetse population overtime, without knowing the actual number of tsetse in the population. The main factor in deciding which tsetse control method to use was be the cost of operation other factors, such as any side effects on the environment or human health caused as a direct result of tsetse control and the availability of equipment and skilled man power will also need to be considered.

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Hunting of game animals to remove the food supply of tsetse and the removal of tsetse habitat either deliberately or in the course of opening up farm land is no longer used from the welfare point of view and they are not environmentally acceptable. Use of sterile insect technique (SIT), tsetse control using insecticide treated targets, use of insecticide treated cattle are commonly applied technique in Ethiopia.

3. MATERIALS AND METHODS

3.1. Study area

The center town of zone is Ameya which is **465** km away from Addis Ababa. Geographic continent system of Ameya Zuria Woreda, Chebera national park covers area between 5^0 01 to 5^0 73^0 N and 36^0.37^0 07 E. According to information obtained from Konta zone agriculture and rural development office (2022), estimated total population of the Woreda is 101,213 and the total area of this Woreda is about 114,992 hectares, it has three agro - ecological zones with 25% dega, 40% woinadega and 35% kola. The majority of population practiced livestock production and mixed farming as the mainstay of livelihood. The recorded data in the Woreda indicated that daily temperature ranges from 15 c^0 to 25 c^0 and altitude range of 1460-2700 meter above sea level, the area receives annual rain fall 1200mm per year.

The topography of the Woreda is gentle sloping although some undulating and mountainous areas exist that contribute very small fraction of the total area of the Woreda. Ameya Zuria Woreda is one of third woredas of Konta zone. The central town of the Woreda is Ameya which was located 465km away from Addis Abeba and 11 km away from Ameya. Part of the Konta Zone, Ameya Zuria woreda is bordered on the South by Omo river, on the Southwest by Gamo gofa, on the West by Kafa Zone, on the North by the Gojeb river which separates it from the Oromiya Region, and on the South East by Dawro Zone.

The rain pattern is bimodal in which a short rain season runs from October to March and long rainy season runs from June to September. The mean rain fall is 60 mm but again this varies according to ecological zone (lower in local and higher in woyna dega). The mean annual temperature of district will be about 20 degree centigrade being maximum 30 c^0 and minimum in August which is 15^0 .The physical features of the Woreda are 60% plain 30% hilly and 10% of mountain. The land was covered by different vegetation types namely; grass land, forest, and bush lands with major agricultural products like maize, sorghum, teff, wheat, barley, horticulture coffee, ensete, cotton and cabbage. The livestock population of Konta district comprises about 149340 cattle, 9168 sheep, 8624 goats, 209 donkeys, 6420 mules, 51274 poultry. The predominant species in the Woreda was bovine and livestock management system was mixed farming system (AWARDO, 2009).

3.2. Study population

The study population was local breeds (Zebus) of cattle kept in traditional management system and its rearing system was depending on natural grass and crop residues. The cattle in the study area are herded together during the day time and return to their individual owner's farm stead each evening. Age, sex, body condition score and coat color of the studied animals were recorded during sampling. The age was estimated by means of their dentition as described by pasquinade et al, (1982). A total of 384 cattle were selected from local breeds for sample collection.

3.3. Study design

A cross sectional study was conducted to determine the current prevalence of bovine trypanosomosis and its associated risk factors in five peasant associations of the study area. The selected cattle were categorized according to their body condition (good, medium and poor), sex (female and male) and age groups of animals as young (less than or equal to 3 years), adults (4 up to 6 years) and old (greater than 6 years) and coat color (black, red, white and others).

3.4. Sample size determination

Simple random sample technique was employed to select the study animal in the study area. The desired sample size was calculated according to the formula given by Thrusfield (2005). The sample size was determined based on the expected prevalence rate of 50%, confidence interval 95% and described absolute precision 5%.

$$n = 1.962 \frac{p_{exp}(1-p_{exp})}{d^2}$$

Where n=required sample size, P_{exp}= expected prevalence 50% d^2=desired absolute precision 5%. Thus, assuming 50% of expected prevalence total of 384 cattle were sampled from local breeds.

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3.5. Sampling method

Simple randomly sampling technique was conducted to determine the current prevalence of bovine trypanosomosis and associated risk factors in the study area. Blood sample will be obtained from cattle using simple random sampling technique. During sampling peasant association, age, sex and body condition score of animals were recorded.

3.5.1. Parasitological study

3.5.2. Packed cell volume (PCV) determination

Blood sample was collected by puncturing the ear vein with a lancet which was then transferred in to heparinized capillary tubes. Using appropriate procedure in the laboratory, the tubes was scentrifuged at 7500 rpm for 5 minute. The centrifuged capillary blood will be then read with hematocrit reader and the reading was recorded in percentage. Animals with PCV <25 % are considered to be anemic and ≥ 25 are considered to be non-anemic.

3.5.3. Buffy coat technique

The buffy coat was recovered by centrifugation of the blood collected in heparinized microhaematocrit capillary tubes at 7500 rpm for 5 minute. Since trypanosoma are found in the buffy coat layer, the capillary tube was 1mm below and 3mm above the buffy coat. The buffy coat was then placed on to a glass slide, and covered with cover slip and was examined for movement of a parasite under x40 objective and x10 eye piece. Identification of the Trypanosoma species was done based on morphological description as well as movement in wet film preparations.

4. DATA MANAGEMENT AND ANALYSIS

Data generated from the laboratory investigation was recorded and coded using Microsoft spread sheet (Microsoft Corporation) and the prevalence of bovine trypanosomiasis will be calculated as the number of positive samples divided by the total number of samples tested. To identify association of prevalence with the risk factors (sex, age, and coat color and body condition status) was computed by chi square. All statistical analyses will be done using statistical software for social science (SPSS) version 20.

5. RESULT

5.1. Parasitological Findings

Out of the total 384 cattle, simple randomly selected cattle in selected peasant association (PA) of Ameya zuria district 49(12.8%) were positive of bovine trypanosomiasis. The prevalence of trypanosomosis in Chebera, Cheta, Dupa Serishewa and Yora peasant associations were detected (Table 1).

Table1: Prevalence of trypanomosis in five selected study areas

No	Study areas	Total No of cattle examined	No of positive	Prevalence %
1	Cheber	81	15	18.5
2	Cheta	76	9	11.8
3	Dupa	77	8	10.4
4	SeriShewa	74	8	10.8
5	Yora	76	9	11.8
	Total	384	49	12.8

T. brucei and T. Congolese were the species detected in our study area. Out of 49 positive animals 6(1.7%) and 43(11.2%) were positive for T.brucei and T.congolense respectively (Table1). T. Congolese was highly prevalence as compared to T.brucei in these study areas.

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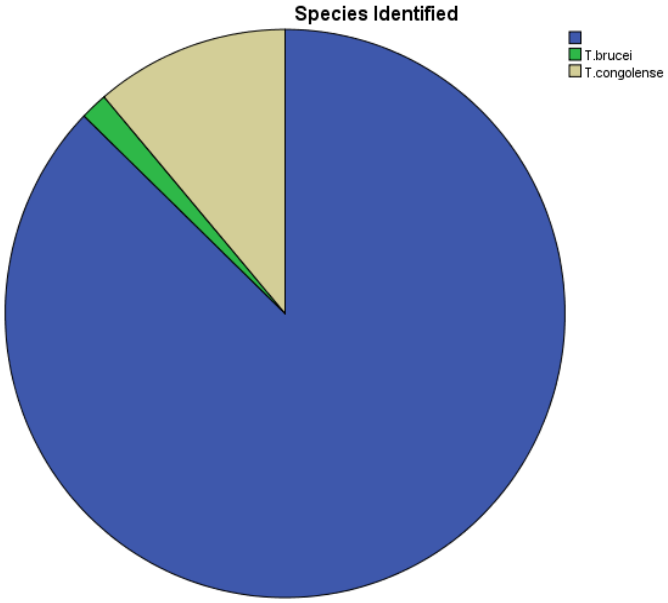

Figure 1: Trypanosomosis species (T.cong and T.brucei) prevalence

Table 2: Prevalence of trypanomosis based on species identified

No	Study areas	No of positive	T.brucei(%)	T.congolense(%)	No of positive	Prevalence %
	Cheber	81	3(3.7%)	12(14.8%)	15	18.5
	Cheta	76	1(1.3%)	8(10.5%)	9	11.8
	Dupa	77	0(0.0%)	8(10.4%)	8	10.4
	SeriShewa	74	2(2.7%)	6(8.1%)	8	10.8
	Yora	76	0(0.0%)	9(11.4%)	9	11.8
	Total	384	6(1.7%)	43(11.2%)	49	12.8

In the current study, the prevalence of trypanosomosis based on body condition scores were recorded for good, medium and poor as 3(6.8%), 23 (9.9 %), & 23(21.3%) respectively (Table2)

Table 3: Prevalence of trypanosomosis based on body condition scores

Body condition scores	Total cattle examined	No of positive	Prevalence %
Good	44	3	6.8
Medium	232	23	9.9
Poor	108	23	21.3
Total	384	49	12.8

The Prevalence of bovine trypanosomosis in sex both was observed and shown to us male is greater than female 29(16.9 %) and 29(9.4%) respectively (Table 4).

Table 4: Prevalence of trypanosomosis based on sex

Sex	Total examined	No of positive	Prevalence %
Female	212	20	9.4
Male	172	29	16.9
Total	384	49	12.8

As indicated in the table 5, it shows that the old cattle were more affected 13(16.7%), than age of adult31 (14.3%) and young 5(5.6%) cattle's).

Table 1: Prevalence of trypanosomosis among the age groups of examined cattle

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Age groups	Total examined	No of positive	Prevalence %
Young	89	5	5.6
Adult	217	31	14.3
Old	78	13	16.7
Total	384	49	12.8

The table 6 describes, the prevalence of trypanosomes species based on coat color it was observed that animals with black coat color were recorded with highest prevalence 24(26.4%) followed by grey 3(15.8%), red 19(8.5%) and white 3(5.8

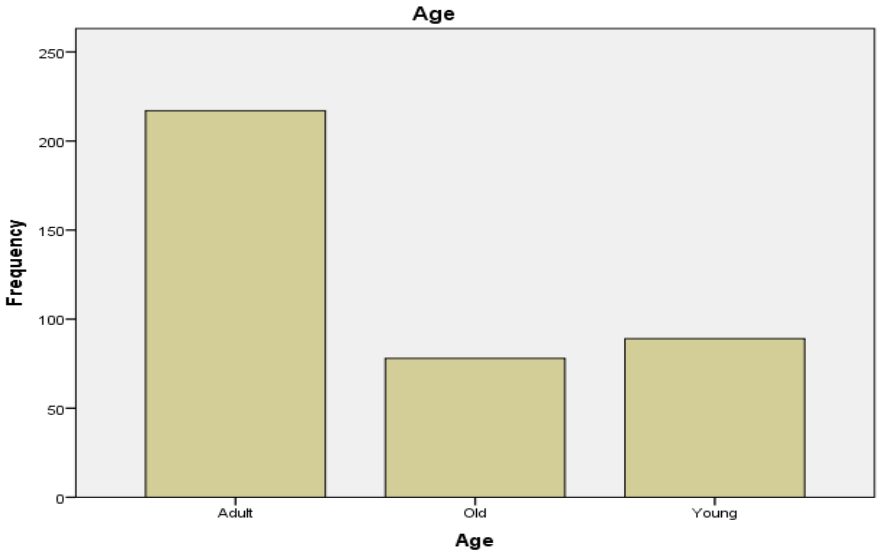

Figure 2: Age categories of cattle during random sample collection

Table 6: Prevalence of trypanosome Species based on coat color

Coat color	Total examined	No of positive	Prevalence (%)
Black	91	24	26.4
Grey	19	3	15.8
Red	2228-----/68*96	19	8.5
White	52	3	5.8
Total	384	49	12.8

4.2. Hematological findings

The prevalence of mean packed cell volume (PCV) value of the aparasitemic animals were lower (8.5%) as compared to mean packed cell volume value of parasitemic animals (1.9%) (Table7).

Table 7: PCV values of aparasitemic and parasitemic cattle in five selected villages

PCV	Total examined	No of positive	Prevalence %
Aparasitemic(≥25)	82	7	8.5
Parasitemic(<25)	302	42	13.9
Total	384	49	12.8

6. DISCUTION

The overall prevalence of bovine *trypanosomosis* in the study area was 12.8%. This is relatively similar with the result of Tewolde (2001) at Keto settlement area of south western part of country which is 15%. The present result is slightly higher than the findings of Habtewold (1995) at of Konta zone (9.3%) and Adiyo district (11.5% respectively. The possible reason to this higher prevalence was for the last two years there was no enough tsetse and trypanosomosis controlling activity on the the behalf of the

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National Institute for Control and Eradication of Tsetse and Trypanosomosis (NICETT).

David and molalegne (2011) reported that higher prevalence (24.7%) in Mao-komo special district of Benshangul Gumuz regional state. This might be attributed to the differences in agro-ecological which favor tsetse flies. The current result revealed that *trypanosome* congolense was the predominant species (88%) in the study area. Closer results were reports by Muturi (1999) at merab Abaya, South Ethiopia (66.1%), David and Molalegne (2011) Mao-komo special district of Benshangul Gumuz regional state (63.2%), Afework *et al.* (2011) at pawe, at North west Ethiopia (60.9%) and Abebe and Jobber (1996) for the tsetse infected area of Ethiopia (58.5%).

Moreover, the results of Woldeyes and Aboset(1997) at Ameya zuria Woreda (85.2%) and Roland's *et al.* (2001) in the Ghibe valley, south west Ethiopia (84%) had shown lower results than the present findings. These suggest the major cyclical vectors of Glossina species are more efficient transmitters of trypanosome congolense than trypanosome brucei in east Africa. According to Getachew Abebe (2005) trypanosome congulese and T. brucei are the most prevalence trypanosomes that infect cattle in tsetse infected and tsetse free areas of the Ethiopia respectively.

The epidemiology of trypanosomosis determined mainly by the ecology of tsetse fly, never, the less the disease due to trypanosomosis brucei is also based on distribution of mechanical vectors like tabanis and stomoxys. The density of tsetse population in the area and the level of their contact with the host will determine the level of infection. The prevalence of trypanosomosis infection was a bit higher in male animals 16.9 % than female 9.4 % it was statistically significant. This is in agreement with the findings of Molalegne *et al.* (2010). The possible explanation for this difference might be associated with physiological variation between both sexes. Age was assumed to be one of the risk factors on current study; accordingly, a higher infection rate was observed in adult animals and animals above six years of age in study area. Similar results were reported by David and Molalegne (2011) and Molalegne *et al*. (2010). This could be associated to the facts that older animal's travel long distance for grazing and drought as well as harvesting crops in the tsetse challenge areas. Rowlands *et al*. (1995) in Ghibe valley indicated that suckling calves do not go out whit their dams but stay at home until they are weaned off. Besides this young animals are also naturally protected to some extent by maternal antibodies. This could be the reason for lower prevalence of *trypanosomosis* that was observed in calves, trypanosome congolense was usually higher in adult animals than the young ones.

The prevalence in those animals with poor body condition was higher (21.3%) than medium (9.9%) & good (6.8%) body condition. This was in agreement with Molalegne *et al.* (2010), and David and Molalegne (2011). Obviously, the disease itself results in progressive emaciation of the infected animals, nevertheless, non-infected animals under good body condition have well developed immune status that can respond to any foreign protein better than those non infected cattle with poor body condition which can be immune compromised due to other disease or mall nutrition, since mall nutrition and concurrent infection depress the immune responsiveness in some disease. In the district, free grazing livestock management and farming system, different species of livestock population, season of out breaks, and type of vectors which are causes of *trypanosomosis;* and in which season the flies are most abundant, most common disease affecting cattle, which livestock species was affected most by *trypanosomosis* and the main clinical signs of bovine *trypanosomosis* were evaluated during questionnaire survey.

7. CONCLUSION AND RECOMMENDATIONS

In general this study was conducted on the prevalence of bovine trypanosomosis in Konta zone Ameya Zuria district of SWPRG is an important disease and potential threat affecting the health and productivity of cattle in tsetse infected areas. Among the species T. condolense was found in most prevalent trypanosomosis species in the study area. The lower pcv values in parasitic animals indicated that the typical pathogenesis is observed in this area. Hence, static control of bovine trypanosomosis including vector control should be strengthened to improve livestock production and agricultural development in the study area.

Based on the above conclusion the following recommendations are forwarded:

- Controlling strategies of trypanosomosis focusing on strong sustainable and community based approach should be designed and implemented.
- Identification of all species of trypanosomosis and their major domestic animals, combine with a comprehensive understanding of the different part of SWPRS where they are found are important to control the disease.
- Awareness creation about the disease and control methods, as well as the risk of trypanocidal drugs resistance is required in the study area.
- The diagnosis and systematic treatment of affected animals should be made to recover the health and productivity of livestock.

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