Retrosepective Study On Major Animal Disease And Mortality Rate In Selected Woredas, Benishagul - Gumuz Regional State, Western Ethioipia

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Abstract: Retrosepective study was conducted in seven woredas of 36 kebeles in the region in 2016; Benishangul Gumuz regional state, western Ethiopia. Survey were conducted on major animal disease, mortality rate, questionnaire survey, economic impact, vaccination and treatment status. In this study, 180 farmers and 43 experts were interviewed / participated in the survey. In this study, CBPP, FMD, PPR, CCPP, Sheep and Goat pox, Bovine Pasteurellosis, LSD; Black leg; NCD and Anthrax were reported as major animal disease occured as outbreak form. Among this, CBPP, FMD, Sheep and goat pox, NCD and PPR were investigated as transboundary animal disease. Trypanosomosis, internal parasites, ectoparasites and Babesia were surveyed as endemic disease in the study sites. In surveyed sites, 276,778 (42.26%) cattle, sheep and goats were vaccinated. During study period, crude animal mortality rate were 21.46 % for cattle; 22.1 % for sheep; 22.52 % for goat; 6.75 % for equines and 75.1 % poultry and so mortality rate excluding poultry were 18.20 %. High mortality rate were recorded in Dangur and kurmuk woreda, and low in wombera and Yaso. Similarly, high poultry mortality rate were reported in kurmurk, and low in wombera. And also LSD=2.32%, CBPP=2.91%, Anthrax=0.87%, PPR=21.97%, Sheep and goat pox=7.20%, CCPP=10.92%, NCD=52.32%, Rabies=1.46% proportional mortality rate and Trypanosomosis= 28.72%, internal parasites=26.39% and ectoparasites =13.46% proportional morbidity rate were studied. Farmers expense due to treatment cost were 16,310,44 birr. In addition, because of animal death, economic impact recorded were 78,830,840 birr and also, death and treatement cost were 80,461, 884 birr. Because of animal disease, shortage of pasture, illegal trade and animal movement, and poor management, mortality rate were increased. In studied area, un strategic treatment and vaccination service, less monitoring and evaluation system, less surveillance and assessment were main gap identified. Therefore, strategic prevention and control policy would be implemented properly in study area so as to prevent problems ecountered.

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Key words: woredas, mortality rate, outbreak, endemic and transboundary animal disease

1. Intruduction

Mortality among dairy cows constitutes a problem both in terms of financial losses (value of dead cow, decreased production and extra labour) and compromised animal welfare (suffering before death or euthanasia). A rise in the mortality among a group of cows may indicate sub-optimal health and inadequate welfare. Mortality among dairy cows may therefore be a relevant measure of animal welfare. In many countries, animal welfare is becoming an increasing concern for producers, policy makers and the general public. Nevertheless, surprisingly few studies focussing on cow mortality exist (P.T. Thomsen and H. Hone, 2006).

The success of livestock industry depends on the health of the livestock. Good health increases the productivity and any compromise on health ground shatter the hope of livestock sector. It also plays important role in the rural economy of a country as supplementing family incomes and generating gainful employment in the rural sector, particularly among the landless laborers, small and marginal farmers and women (BAHS, 2012). Contribution of livestock in total GDP is 3.37%, Livestock in agricultural GDP is 27.28 % and agriculture in total GDP is 12.34 % (BAHS, 2012).

Dairy cattle mortality is a severe problem for the dairy industry. Mortality has been steadily increasing during the last two decades all over the world (Maia, R.P, 2014). The mortality rate increased from 2.6 to 5.7% in the United States from 1996 to 2007 (Garry, F. (2009) and in Ireland from 3.3 to 4.4% between 2002 and 2006 (Maher, P., 2008). Shaikh, S.R. (2009) conducted a study on morbidity and mortality in cattle covering four regions of Maharashtra and reported that the overall morbidity and mortality rate in cattle was 19.22% & 12.48%, respectively. Mortality among dairy cattle results in financial loss, including the value of the lost cattle, cost of replacement, loss of milk production, and extra labor (Thomsen, P.T., 2006). Therefore, it constitutes a problem of animal welfare and farm economy. Several herd-level risk

factors for mortality have been identified, such as herd size, herd management, SCC (somatic cell count) and milk yield (Thomsen, P.T *et al*., 2006; Thomsen, P.T. and Sørensen, J. T. (2009); Alvåsen, K *et al*., 2012).

Mortality patterns in organized dairy herds serve as a useful indicator for assessing the status of herd health and the efficacy of management programs (Prasad, S, *et al*., 2004). Arise in mortality among a group of cattle can indicate suboptimal health and welfare (Thomsen, P.T *et al*., 2004).

Studies in Ethiopia indicate a perinatal lamb mortality of 18% (Njau *et al*, 1988). Early sheep losses have been attributed to infertility and embryonic mortality and to neonatal mortality including starvation/exposure to cold stress, abortion/stillbirth, infectious diseases, accidental death or loss, predators and congenital defects (Eales *et al.*, 1983). Wilson *et al*. (1985) gave a mortality rate of 12.6% of all lambs born, with 48% of the deaths occurring due to liver fluke, pneumonia, diarrhea and the starvation-mismothering exposure (SME) complex, while the causes of 42% of the deaths were undetermined. Lamb mortality is one of the most obvious constraints to profitability of sheep producers in the Amhara Regional State sheep flocks. Organized works on mortality of lambs especially under extensive system of management in Amhara Regional State have not been well documented (CSA, 2008).

The future of any dairy production depends, among other things, on the successful raising of calves and heifers for replacement. Under modern dairy production in the developed world, the average length of time a cow stays in a milking herd is about four years and, therefore, 25% of the milking herd must be replaced each year (Bath *et al*. 1985). Generally calf diseases result from complex interaction of the environment, infectious agents and the calf itself, and are the major constraints for raising replacement stock. The impacts of calf diseases could be direct (causing calf deaths) and indirect through increased treatment expenses and decreased lifetime productivity and survivorship (Waltner-Toews *et al*. 1986a).

Calf mortality shows wide variations worldwide ranging from 1 to 30 % (Heinrichs and Radostits, 2001). The few studies on calf mortality conducted in Ethiopia show mortality that range from 7 to 25 % (ILRI, 1996; Hussien, 1998; Amoki, 2001; Shiferaw *et al*., 2002). Calf health problems cause loss of genetic material for herd improvement and decrease the number of dairy heifers available for herd replacement and/or expansion. Environmental and managerial factors are considered major determinants influencing the occurrence of calf morbidity and/or mortality (Lance *et al*., 1992; Bruning-Fann and Kaneene, 1992).

In Ethiopia, a substantial amount of the national resource is spent annually for control of trypanosomosis through purchase of trypanocidal drugs. An annual loss attributed to the disease exceeds US $236 million, while loses from reduced milk, meat production, from animal draught power and manure are unquantifiable (FAO, 1998).

Benishagul - Gumuz regional state is situated in western part of Ethiopia between 09^0.17'-12^0.06' N latitude and 34^0.10'-37^0.4' East longitude. The Region share border with Sudan Republic in the west; Amhara in the north and north-east; in the south with Gambella region, Oromia region in the South and south - east. Average annual temperature is 16^0c - 39^0c; its average annual rain fall is 650 - 1,900 mm. The region covers a total area of 5,033,592 hacter / 50380 km^2 or 4.4 % total of the country. Out of the country's total, 1,128,176 sq. km, it covers 4.44% of land area, with the altitude ranges from 580 – 3300 m.a.s.l with 75 % lowland /kola/ (below 1500 m.a.s.l), 24% mid land /weina dega/ 1500 – 2500 m.a.s.l), and 1% high land / dega/ (over 2500 m.a.s.l) with 5 indigenous and other ethic groups (FITCA, 2003).

The region has three administrative zones namely Asossa, Metekel and Kameshi and consisting 20 districts of one is special woreda. The region as whole has about 485 peasant associations with an estimated human population of 784,345; from this 86.49% was found in rural and 13.51% found in urban and with an average public settlement within Sq. km were 14 inhabitants (CSA, 2007 & 2015). The region is one of the most scarcely populated. These populations are mainly dependent on agriculture and related activities for their livelihood (CSA, 2015). The livelihood of the society in the region mainly depends on mixed livestock and crop production. The region has an estimated animal population of 411,998 cattle, 84,418 sheep, 321,603 goats, 49,476 equines, 774,112 poultry and 199,817 honeybees family, being found in the region (CSA, 2016; BGAB; AFRA, 2016).

The main constraints of livestock production include animal health problems, inadequate, nutrition, unimproved management, poor genetic make up and lack of animal welfare. Health problems which are of diverse in origin have been repeatedly incriminated as the main impediments for production and productivity of the sector as well as agricultural development. Diseases may be caused by environmental, nutritional, congenital, hereditary and immunological factors and also be resulted from pathogenic organisms including viruses, bacteria, fungi, parasites (Radostitis *et al*., 2000).

There were no study conducted, concerning mortality rate, economic impact of major animal disease, vaccination and treatment status in the study area. Therefore, the objectives of the present study in

selected seven woredas were to asses morbidity, mortality rate, and socio economic impact/ burden/ of major animal disease; survey major animal disease/ outbreak, endemic and transboundary animal disease/, treatment and vaccination status and to provide recommendation or forward effective control and prevention strategy in the study area.

2. Methodology

2.1 Study Area

The study was conducted in seven woredas /36 kebeles/. Seven woredas hereafter called sites namely: Dangur; Mandura, Bullen; Wombera; Yaso; Agalo meti and Kurmuk woredas.

Metekel zone has 7 woreda and 167 kebeles, and has 343, 048 human population. From this 15 % urban and 85% rural. It shares border with Amahara in north, Kameshi in east, Asossa zone in south, south and north Sudan in west. Its land area is 85083.687 sq. km. It has 530-3300 m.a.s.l. Annual temperature is 16^0c-36^0c. Annual rainfall is 900-1700mm and 85% kola, 10% weina dega and 5 % dega climatic condition. Its economy were based on mixed farming system which is animal rearing and crop production. Metekel zone animal population were, 425,957 cattle, 134,743 sheep, 354,573 goat, 67,477 equines and 768,856 poultry (Bureau of agriculture, 2016); And also it has 7 veterinary clinics, 111 veterinary health posts. From 31 microscope present in zones at veterinary clinic/ health posts, 5 of them were using practical laboratory examination. Animal rearing system was, extensive and rarely fattening service. Its animal movement was from neighbouring country and region and from districts to districts, the main cause of animal movement were in search of water and pasture, trade and agriculture purpose (Agriculture bureau, 2016).

Kameshi zone, has 5 woredas and 69 kebeles. It has 112, 159 human population, it shares border with Amhara region in north, Oromia in east, Asossa zone in south, sudan republic in west and metekel zone. It has 10004 sq.km land area, 895-1333m above sea level. Its annual temperature is 16^0c- 38^0c. Annual rainfall is 650-1350 mm and agro ecology is kola. Its economy is mixed farming system. According to 2016 woreda animal inventory, animal population were 37821 cattle, 13498 sheep, 53636 goat, 6345 equines, 190935 poultry and 19045 honeybees. Kameshi zone has 5 veterinary clinics, 39 health posts, 106 animal health expert. woredas were using laboratory based examination in veterinary clinics. There were extensive animal production system and fattening. Zonal, animal movement was from neigbour country and from woreda to woreda, the main cause of animal movement were in search of pasture and water, seasonal ploughing and because of illgal trade (Agriculture bureau, 2016).

Because of poor animal handling and usage problem, inadequate pasture, seasonal disease occurrence, animal owners were not benefiting from livestock sector and result in low production, in both meteke and kameshi zone.

2.2 Study Design

Retrospective study design was conducted, to assess crude mortality rate, and assess major animal disease, treatment and vaccination status, socio economic impact and for related data collected.

2.3 Study population

During district and kebeles selection, potential of animal population of all animals species, age group found in study area were considered. Secondary data were gathered from selected risk areas, as input for study.

2.4 Sampling method

7 woredas, and 36 kebeles, from each kebeles: 5 farmers: 1 kebeles Animal health expert; 1 woreda veterinary officer, questionair survey were done. Generally, 180 farmers, 36 kebeles' animal health officers; 7 woreda animal health officers, totally, 223 were gave data to this papers.

Random sampling method were conducted on 35% /7 woredas / and 8% /36 kebeles/ and in each kebele representative sampling system were done in the study area. Woredas were selected based on monthly outbreak disease reporting data available in the Assosa regional veterinary laboratory so, high risk woredas (Bullen, Dangur, and kurmuk); low risk (Agalo meti, and wombera) and medium risk area (yaso and Mandura) were selected based on monthly outbreak disease reporting information, in regional laboratory Epidemiology unit, which were purposively selected.

Death Rate = Total death from disease in the period/ population at risk in the period× 100

During sampling, questionnaires, casebook GPS and computer was used for study.

2.5 Data organizing and Analysis

All data which were collected from 7 woredas, 36 kebeles, from 180 farmers, 43 expert, questionnaire data were collected, organized, especially retrospective data like animal mortality, outbreak, transboundary, endemic occurrence of disease; vaccination status and treatment coverage were managed in tables, graphs and text after entry to excel.

3. Beneficiary of the Study

From basic feed back given to the study area, properly applying the strategys, animal production and productivity may be increased and farmers benefit from the outcome. For Benishagul _Gumuz region stalk holders, laboratory serve as information center, and hence, basic control and prevention strategy were given in order to keep animal health, timely

vaccinating domestic animals, reduce endemic, outbreak and transboundary animal disease and decline mortality rate. For stalk holders, animal surveillance might be used as information sources. In prevention and control strategy, animal product such as milk, meat, skin and hides productivity increased and then country foreign currency or income increased.

4. Study Result

4.1. Outbreak, endemic & transboundary Animal disease assessment result

Table 1: Outbreak form of animal disease occurrence in selected woredas

no	Disease name	Seasonal Occurrence	Reason for disease occurrence	Disease control & prevention measures	remark
1	FMD	September – november, Feburary	Animal movement	Treatment, animal movement restriction	Yaso, Agalo meti
2	PPR	July; December; March-April; October & January	Animal movement , agro climate variation, less expert monitoring, seasonal vaccination program	Vaccination, Treatment, animal movement restriction	Yaso, kurmuk, Bullen, Dangur, Mandura, wombera (sonkora) & agalo meti
3	Shoat Pox	April- may, June	animal movement, lack of seasonal vaccination offerance	Vaccination& Treatment service	Bullen, Dangur; mandura, Agalo meti/ Atmeti/
4	Rabies	November, April- june	Wild animal relation	Abormal dog eradication; vaccination	Wombera, Yaso, Bullen
5	NCD	April-may, july; November - January	Lack of seasonal offerance of vaccination, Agro climate variation, Animal movement, Handling problem, lack of vaccination, wheather condition variation	Vaccination and Treatment service, buried died; isolation of sick from normal	Bullen, kurmuk; mandura, wombera, Agalo meti, yaso, Dangur
6	Pasteurellosis	March- April, june, entrance of rainy season	Stress factor/ long journey for pasture and water search/	Seasonal offerance of Vaccination and Treatment service	Bullen, Agalo meti, Wombera; Dangur, Yaso
7	Anthrax	November, Januray, Febuarary	Lack of vaccination provision, lack of proper removal of infected, died animals	Seasonal offerance of Vaccination and Treatment service	Bullen/baruda/, yaso/logo boka/
8	LSD	September-November, may, August	Animal movement, lack of vaccination provision, Following rainy season	Seasonal offerance of Vaccination and Treatment service	Agalo meti, Wombera, yaso, Dangur
9	Strangyle	April		Proper Treatment service	Wombera
10	Black leg	March- april, Following rainy season disease occur	Lack of pre vaccination of disease	Vaccination and Treatment service; isolation of sick from healthy	Agalo meti/ Shimela kono, bullen/ mata/, yaso
11	CBPP	September, Octomber	Animal movement	Timely, Vaccination & Treatment service	Agalo meti/ Shimela kono/, yaso/ helo mukerba/
12	CCPP	Octomber, Dry season	Animal movement	Pre vaccination & isolation	Kurmuk

Table 2: Endemic animal disease occurreance in selected woredas'

no	Disease name	Reason for disease occurrence	Measure taken	remark
1	Trypanosomosis	Presence of Tsetse fly; Extensive pasture	Treatment and Tsetse fly control	All woreda
2	Internal parasite	Stagnant area; presence of snail; seasonally un deworming problem	Treatment & education	All woreda
3	Ectoparasites	Un seasonal Tick control; Housing sanitary problem	Treatment/ spray/ and education	All woreda
4	Others	Animal movement; rainy condition	Treatment; vaccination & education	All woreda
5	Babesia/ blood urine/	un control tick; unproper ectoparasite spray	Treatment service	Bullen; wombera and yaso

4.2 Surveillance and assessment on transboundary animal disease

Since the region is found in the border so transboundary animal disease was commonly surveyed. So, CBPP; CCPP; FMD; Sheep and goat pox; NCD and PPR, transboundary animal disease were reported in studied area.

4.3 Vaccination status in selected woredas

As above table 3 and graph 1 showed, 64.97% shoat PPR, 25.72% Shoat Pox, 57.92% cattle LSD, 1.95% cattle Anthrax, 10.06% cattle Bovine Pasteurellosis, 123.40% cattle CBPP and 19.78% /3 round / poultry NCD vaccine were given during study period. Out of 654, 903 cattle, sheep and goat to be vaccinated, 276,778 animals were vaccinated. And hence, vaccination coverage excluding poultry were 42.26%.

Animal endemic disease treatment coverage in selected woredas'

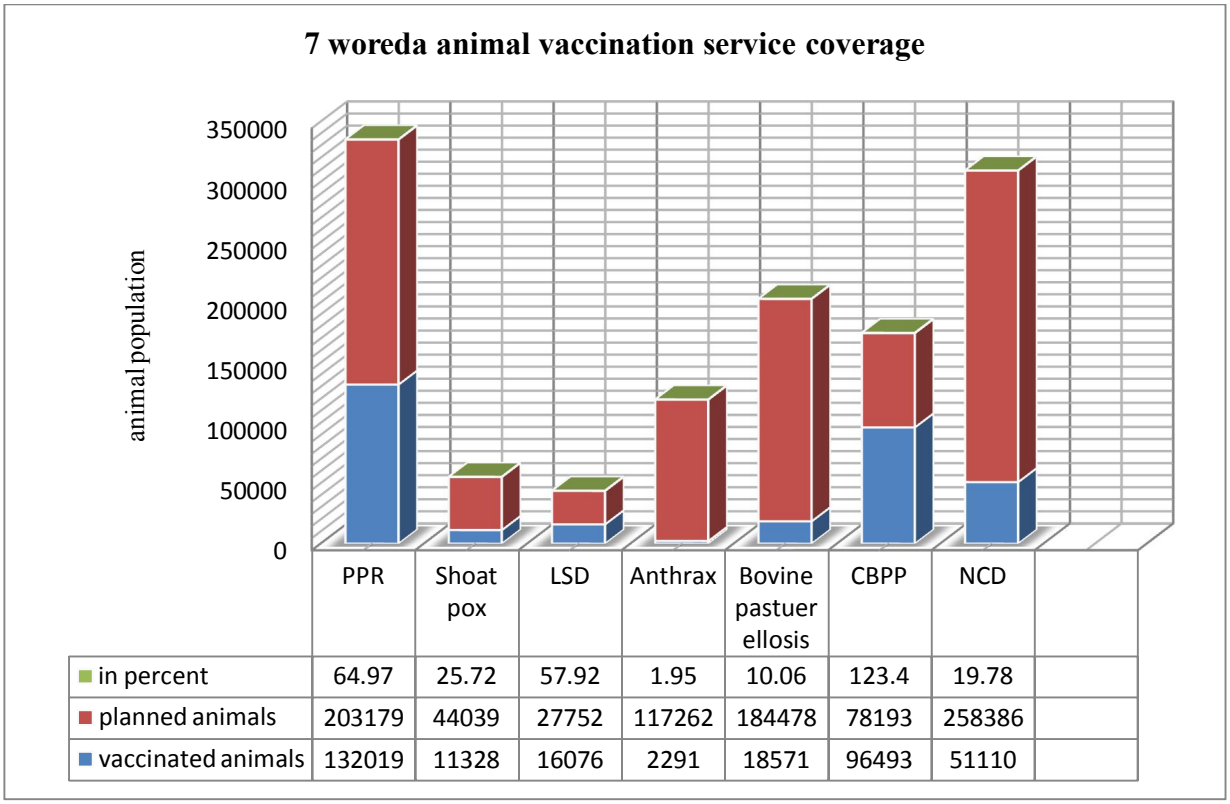
As above table 4 indicated, farmers' house hold socio economic impact/ treatment expense/cost/ because of animal disease were 16,310,44 birr, which were economic losses recorded on animal rearing farmers in study area. Trypanosomosis, internal parasite and ectoparasites, treated animals were cattle 184838, sheep 43204, 71250 goat, equines 48414 and 11127 poultry. So, plan performance were 65.85%

Animal mortality rate, animal population and disease distribution impact

Table 3: Animal vaccination status/ coverage/ in studied area

No	Vaccination type	Plan for vaccination (dose)	vaccinated animal no	Animal no for vaccination	Vaccination Coverage %	Remark
1.	PPR vaccine	132000	132019	203179	64.97	Dangur, mandura, Bullen, Wombera, Agalo meti & Kurmuk
2.	Shoat Pox	11300	11328	44039	25.72	Dangur, yaso, Agalo meti
3.	LSD vaccine	16000	16076	27752	57.92	Agalo meti, yaso, Mandura
4.	Anthrax vaccine	2300	2291	117262	1.95	Yaso, Bullen, Agalo meti, wombera
5.	Bovine Pasteurellosis vaccine	9285	18571	184478	10.06	Agalometi, wombra, Bullen, Dangur, Mandura
6.	CBPP	96500	96493	78193	123.40	Agalometi, Bullen, Dangur, Mandura
7.	NCD		51110	258386	19.78	Dangur, wombera, Agalo meti, Mandura/

Remark: - A poultry should be vaccinated annually at least three round for to so vaccinated



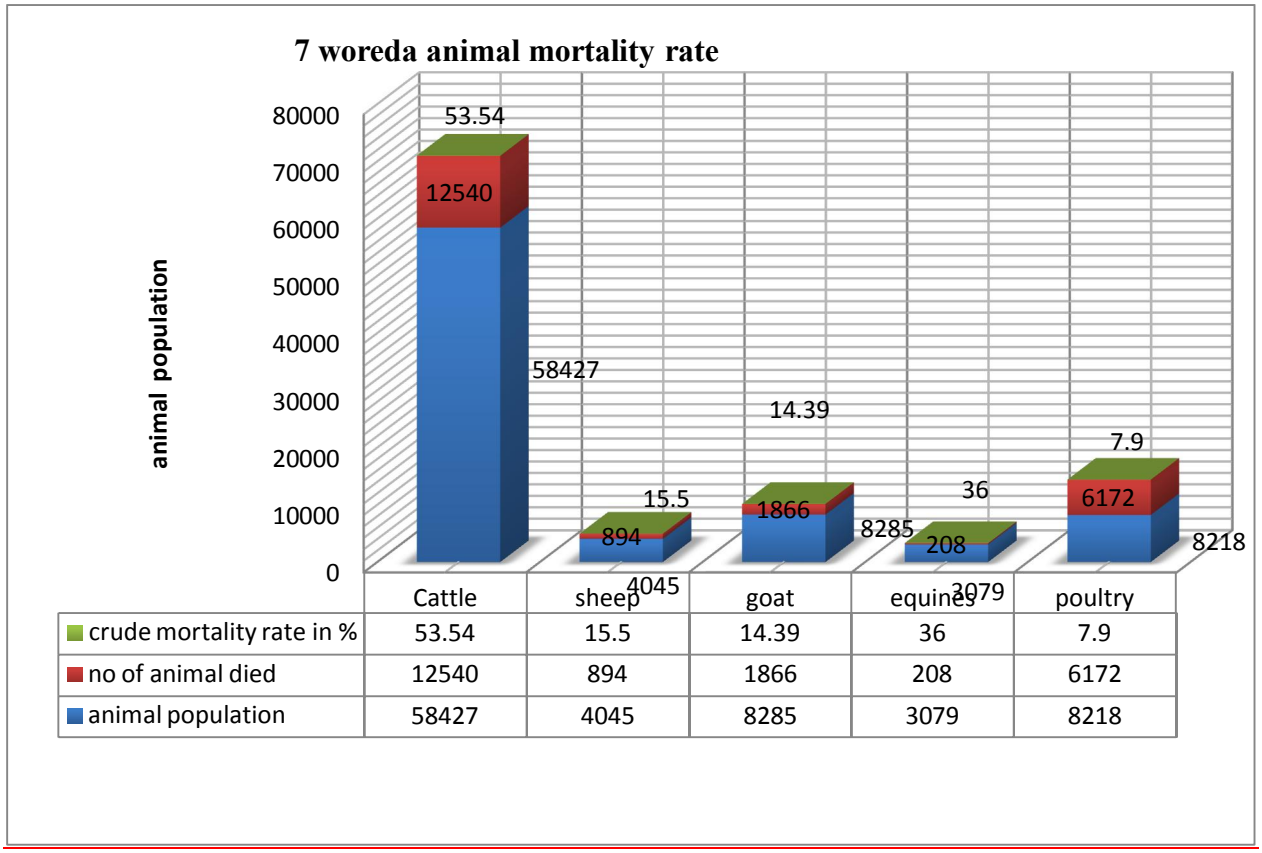
Graph 1. 7 woreda animal vaccination service coverage

Table 4: Animal Treatment performance

no	Endemic disease	To be treated animal no	Treated animal no	one animal Rx cost averagelly	Treatment achieved in%	Treatment cost in birr
1.	Trypanosomosis	166901	103048			537,921
	Cattle	87523	55694	6.75	63.63	375934.5
	Sheep	28915	14138	2.25	48.89	31810.5
	Goat	30819	20896	2.25	67.80	47016
	Equines	19644	12320	6.75	62.71	83160
2.	Internal parasites	151094	94705			247,618.5
	Cattle	85129	40457	2.50	47.52	101142.5
	Sheep	15927	11964	1.50	75.11	17946
	Goat	32030	26008	1.50	81.19	39012
	Equines	18008	16276	5.50	90.38	89518
3.	Ectoparasites	80815	48284			62,866.5
	Cattle	45342	29641	1.50	65.37	44461.5
	Sheep	8078	4229	0.75	9.32	3171.75
	Goat	15850	8517	0.75	53.73	6387.75
	Equines	11545	5897	1.50	51.07	8845.5
4.	Others	146059	112796			782,638
	Cattle	61613	59046	9.00	95.83	531414
	Sheep	18462	12873	4.00	69.72	51492
	Goat	28162	15829	4.00	56.20	63316
	Equines	21075	13921	9.00	66.05	125289
	Poultry	16747	11127	1.00	66.44	11127

Table 5: Animal crude mortality rate in selected woredas

No	Animal type	no of animal population	no of animal died	crude mortality rate %
1	Cattle	58427	12540	21.46
2	Sheep	4045	894	22.1
3	Goat	8285	1866	22.52
4	Equines	3079	208	6.75
5	Poultry	8218	6172	75.1
		Total death 21680		



Graph 2. 7 woreda animal mortality rate

In studied 36 kebeles, in general crude mortality rate, mortality rate with animal type were: cattle 21.46 %, goat 22.1 %, sheep 22.52 %, equines 6.75 % and poultry 75.1 %, therefore,, animal mortality rate excluding poultry was 18.20 % (Table 5).

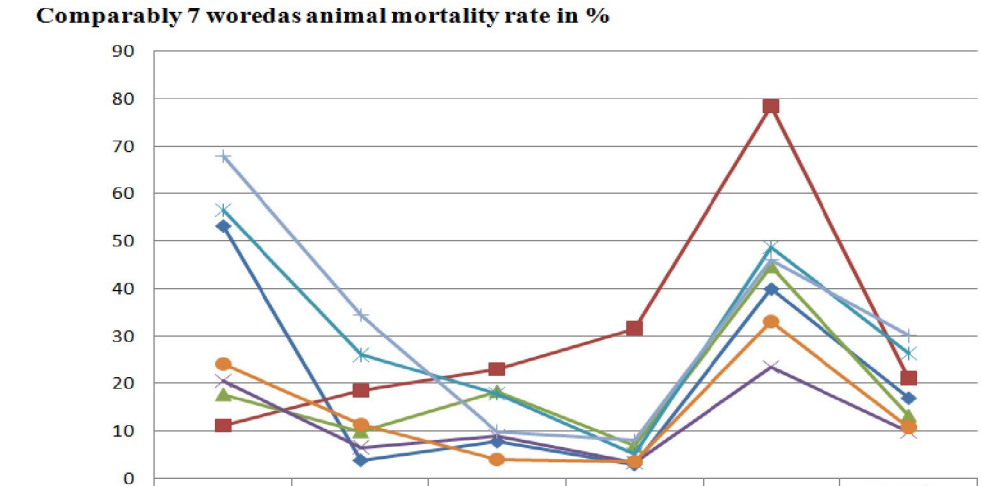
Table 6: Animal mortality, economic impact in selected woredas

no	animal type	No of animal died	average per animal price in birr	Total price	Economic impact due to mortality in birr
1	cattle	12540	6000	75240000	75240000
2	sheep	894	1500	1341000	1341000
3	goat	1866	1400	261200	261200
4	equine	208	6000	1248000	1248000
5	poultry	6172	120	740640	740640
	total				78,830,840 birr

Based on animal mortality studied result, economic losses on to farmers due to death of animal population were estimated as 78,830,840 birr. So, with animal death and treatment cost, economic loses recorded were 80,461, 88 birr (Table 6). Similarly, when farmers animal sick production and productivity

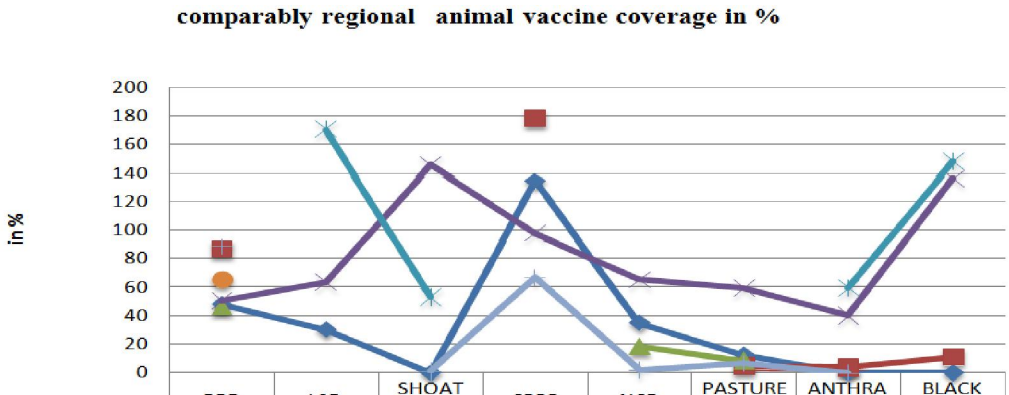
decline, draft animal power reduced, a griculture service reduced, directly or indirectly animal and crop development made impact (Table 6).

As graph 3 indicated, higher animal mortality rate was recoreded in Dangur and Kurmuk woreda, whereas lowest were recorded in wombera and yaso. Similarly, regarding, poultry mortality rate higher was register in kurmuk and lower in wombera woreda.



	cattle	sheep	goat	equines	poultry	mortality rate exclude poultry
Mandura	53.21	3.78	7.7	2.85	39.92	16.88
Dangur	11.28	18.67	23.1	31.64	78.29	21.17
Bullen	17.75	9.93	18.4	6.93	44.7	13.25
Wombera	20.59	6.6	8.85	3.4	23.37	9.86
Agalometi	56.5	26.07	17.93	5.22	48.72	26.43
Yaso	24.13	11.37	4	3.5	32.96	10.75
kurmuk	67.9	34.29	9.89	8	46.08	30.02

Graph 3. 7 woreda animal mortality comparable in percent



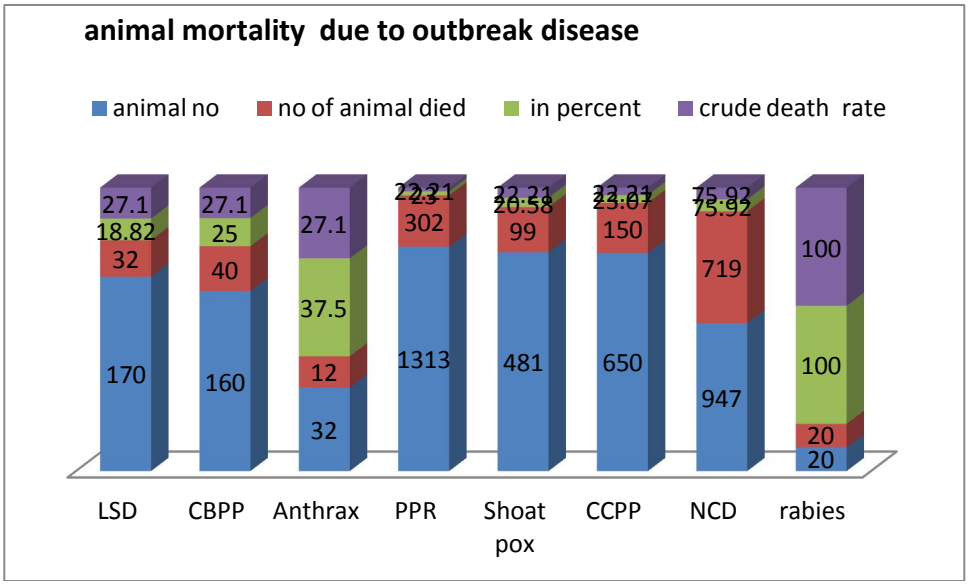
	PPR	LSD	SHOAT POX	CBPP	NCD	PASTURE LLOSIS	ANTHRAX	BLACK LEG
mandura	47.91	30.24	0	134.24	34.99	12.39	0	0
bullen	86.48			177.97		4.37	3.65	10.97
wombera	45.73				18.09	8.22		
agalo meti	50.61	63.39	146	98.03	65.21	59.33	40.03	136.1
yaso		170.3	52.95				59.1	148.1
kurmuk	64.93							
dangur	88.74		1.39	66.74	1.97	6.62	0	

Graph 4. 7 woreda animal vaccine coverage in %

As shown above, Agalometi was vaccinated eight vaccine type where as Dangur, wombera, Bullen, Mandura woreda vaccinated five type of vaccine as compared to others second level performance were achieved. Yaso woreda vaccinated, four type of vaccine, where as kurmuk woreda vaccinated one type of vaccine type, so its performance was recorede as low (graph 4).

Table 7: Mortality rate studied result due to outbreak disease in selected woredas in 2016

no	Disease name	animal no	no of animal died	death rate %	animal type	crude death rate
1	LSD	170	32	18.82	cattle	27.10
	CBPP	160	40	25		
	Anthrax	32	12	37.5		
2	PPR	1313	302	23.00	Shoat	22.21
	Shoat pox	481	99	20.58	Shoat	
	CCPP	650	150	23.07		
3	NCD	947	719	75.92	poultry	75.92
4	Rabies	20	20	100	Dog	100



Graph 4. Mortality rate due to outbreak disease

As above table 7 and graph 4 indicated, the highest mortality rate due outbreak disease were recorded in dog which was 100% of rabies where as the rest in sheep and goats because of PPR, shoat pox, CCPP which were 22.21%, and in cattle because of LSD, CBPP, and Anthrax which were 27.1% recorded in this particular findings.

Table 8: Specific diagnosis of diseases and syndromes responsible for animal mortality in selected woredas (2015/16).

Diseases and syndrome	Species	No. of deaths	Proportional mortality rate (n=1374 dead)
LSD	Cattle	32	2.32
CBPP	Cattle	40	2.91
Anthrax	Cattle	12	0.87
PPR	Shoat	302	21.97
Shoat pox	Shoat	99	7.20
CCPP	Goat	150	10.92
NCD	Poultry	719	52.32
Rabies	Dog	20	1.46

As above table indicated, specific disease and no of death were mentioned, accordingly the highest proportional mortality rate were recoreded in 52.32% in NCD of poultry where as lowest in 0.87% of Anthrax in cattle (Table 8).

Table 9: Specific Diagnosis of diseases and syndromes responsible for animal morbidity in selected woredas (2015/16).

Diseases	Species	No. of sick	Proportional morbidity rate (n= 358,833 sick)
Trypanosomosis	Cattle, shoat	103048	28.72
Internal parasites	Cattle, shoat, equines	94705	26.39
ectoparasites	Cattle, shoat, eqiunes	48284	13.46
Others	Cattle, shoat, eqiunes	112796	31.43

As table 9 indicated, 28.72% trypanosomosis, 26.39% internal parasites, 13.46% ectoparasites and 31.43% other disease complication were addressed in this study.

5. Discussion

The present study were covered, 7 woredas' namely: Dangur, mandura, Bullen, wombera, Kurmuk, Agalometi, and Yaso woredas within 36 kebeles in the study area. Crude animal mortality rate were studied in animal type, like cattle 21.46 %, sheep 22.1 %, goat 22.52 %, equines 6.75 % and poultry 75.1 % and so excluding poultry, crude mortality rate were 18.20 %. Besides this, 2.32% LSD, 2.91% CBPP, 0.87% anthrax, 21.97% PPR, 7.2% Shoat pox, 10.92 % CCPP, 52.32 NCD% and 1.46% Rabies, were reported as proportional mortality rate. And also 28.72% trypanosomosis (cattle, shoats), 26.39% internal parasites (cattle, shoat, equines), 13.46% ectoparasites (cattle, shoat, equines) and 31.43% other disease complications were studied as proportional morbidity rate during the study period. The major causes of mortality were poor management problems followed by viral and bacterial diseases and also morbidity were high in Trypanosomosis, followed by parasitic disease and ectoparasitic disease.

The present findings were in line with the findings of Chaudhary JK, *et al*. (2013) who reported, an overall bovine morbidity and mortality rate of 31.22% and 9.14% respectively. Besides, it was also slightly inconsistent with mortality rate of 12.17% cattle, sheep 38.06%, goat 68.58% and equines 30.28% and crude mortality rate excluding poultry were 48.63% in Asosa zone woredas' (CSA, 2013). Comparably, it was in accordance with the study conducted by Kelay B *et al*. (2008) who reported incidence of crude morbidity and mortality 61.5% and 18.0% respectively, due to (diarrhea, pneumonia, navel ill, septiceamia and congenital disease), during the study of calf morbidity and mortality in dairy farms in Debre zeit, its environs, Ethiopia and also the most frequent disease of calf diarrhea with incidence of 42.9%, followed by (4.9%) pneumonia.

In addition, this result was in line with the earlier reports by Solomon w. *et al*. (2014) during their studies on major causes of lamb mortality at Ebinat woreda, Amhara National state, north western, Ethiopia, that, 40% of overall lamb mortality, most of mortalities were due to diarrhea (51.0%), pneumonia (38%), and others 10.0%. And also this report is relatively similar with Bangar Y *et al*. (2013) who indicated, 22.24% and 4.42% overall morbidity and mortality rates in cattle respectively. And also, this result was in line with the findings of T. Wudu *et al*. (2007) also reported, the overall incidences of crude morbidity and crude mortality of 62 % and 22%, respectively. The most frequent disease syndrome was calf diarrhea with the incidence of 39% followed by joint ill 6%.

However, the present finding is lower when compared with the previous findings of, Tesfaye D *et al*. (2011) who indicated, 4.4 % overall mortality rate of cattle due to trypanosomosis and 12.1% of overall prevalence of the disease, during his research activity on economic burden of bovine trypanosomosis in three villages of Metekel zone, Northwest Ethiopia. This variation were due to substantial economic losses of cattle mortality, drug purchase, and draft power loss of infected oxen. The farmers in the area were spending a significantly higher amount of money for the treatment of trypanosomosis than all other diseases combined. Many of the farmers prioritized losses of draft power as the most important impact of the disease. The disease burden was significantly higher in the rainy season than at other times of the year, farmers had good knowledge on the signs and seasonality of trypanosomosis.

In addition, it dis agrees with the previous findings of Hossain MM *et al.* (2014) who reported, 5.6% average overall mortality rate, and higher mortality of cattle in rainy season (37.98%) followed by winter (33.03%) and summer (28.99%) and also pneumonia (39.91%), Tuberculosis (20.58%) and enteritis (15.58%) cause of deaths. Other causes of death (malnutrition (5.91%), debility (4.43%), hairball (3.35%), tympanitis (2.56%), babesiosis (2.27%), internal haemorrhage (2.16%), black quarter (1.76%), and foot and mouth disease (1.48%). In improved and strategic way, major animal disease (endemic, outbreak and transboundary), vaccination program implementation, human resource, and animal health clinics or posts were surveyed during study period.

6. Conclusion and Recommendations

CBPP, FMD, PPR, CCPP, Sheep and Goat Pox, Bovine pasteurellosis, LSD, Black leg, NCD and Anthrax were surveyed as outbreak / transboundary animal disease. Endemic disease were Trypanosomosis, internal parasites, ectoparasites, and others like babesia. High mortality rate were recorded in Dangur and kurmuk woreda, and low in wombera and Yaso. Similarly, high poultry mortality rate were reported in kurmurk, low in wombera. And also economic impact/ burden interms of mortality, morbidity, treatment/ control / and vaccination cost were addressed during the study period. The economic burden of bovine, ovine, caprine and equines major animal disease in seven woredas /36 kebeles/ of study area. This variation were due to substantial economic losses of animal mortality, drug purchase, and draft power loss. The farmers in the area were spending a significantly higher amount of money for the treatment of animal disease. Many of the farmers prioritized losses of draft power as the most important impact of the disease. The disease burden were significantly higher in the rainy season than at other times of the year, farmers had good knowledge on the signs and seasonality of disease. In addition, high presence of endemic, outbreak and transboundary animal disease, animal movement in seek of pasture and water, and illgal trade increased and uncontrolled market exit, lack of programmed vaccination, improper management of vaccine in store, mortality rate were increased. Similarly, un strategic treatment service, less monitoring, less evaluation and surveillance system were main gap identified in the study area. As present study indicated, the region priority disease were found as Trypanosomosis, following viral and bacterial disease.

Based on the above findings, the following recommendation were forwarded:

- Endemic; outbreak and transboundary animal disease, prevention and control policy should be implemented in organized way:-
- Organized and strategic seasonal vaccination program should be implemented.
- While using vaccination, it should be cold chain maintaind.
- Legal Animal movement control system could be created.
- Ilegal trade/ animal movement/ should be managed and owner ship would be created.
- Identification and isolation of major animal disease, and seasonal surveillance could be implemented.
- Community based, animal surveillance team should be established.
- Animal drug and equipment, in type and number should be there.

➢ Organized, Tsetse fly control.

- Sterile insect techniques .
- Target and trap attractants.
- Delthamethrin pour on system.

➢ Curative and Prophylactic treatment.

➢ Expertise Skill improvement and farmers awareness.

➢ Improved animal pasture and handling, feeding system.

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