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Journal of Veterinary Medicine and Research

Research Article

Assessment on the Welfare Problems of Working Donkeys in Four Purposively Selected Kebeles of Halaba Zone in SNNPR and Adami-Tulu Jido-Kombolicha District of Oromia Regional State

Alemu Kejamo Mossa[1]* and Aweke Yalew Beyene[2]

[1]*Department of Halaba Zone Agricalcure Vice and Livestock and Fishery Head, Halaba, Ethiopia*

[2]*Department of Livestock and Fisheries Office, Wolaita Zone, Ethiopia*

***Corresponding author**

Alemu Kejamo Mossa, Department of Halaba Zone Agricalcure Vice and Livestock and Fishery Head, Halaba, Ethiopia, Email: kejamoalemu@gmail.com

Submitted: 31 July 2022

Accepted: 23 August 2022

Published: 25 August 2022

ISSN: 2379-948X

Keywords

- Animal based
- Donkey
- The hand
- Welfare assessment
- Welfare problem

Abstract

A cross-sectional study was conducted between October 2021 to April, 2022 to assess the welfare problems of working donkeys in four purposively selected kebeles of Halaba zone in SNNPR and Adami-Tulu Jido-kombolicha district of Oromia regional state. During the study welfare status of 384 donkeys were assessed in terms of animal based measures and data were collected by using a format/checklist called The Hand on donkeys. Donkeys were categorized as pack, cart pulling and mixed in terms of their use. Out of the sampled donkeys, the highest proportion of age group were found to be < 5 years, 35.15.% while the lowest proportion being age category above 15 years, 13.02%. The highest percentage of donkeys in the age group 6-10 years were used for cart pulling purpose 38.54% whereas donkeys <5 years were used mainly for pack purpose 42.97%. From the total donkeys sampled 75% were positive for one or multiple wound. Body condition scoring showed that majority of the donkeys used in the area were 2 (moderate) sharing 74.47% of the total donkeys sampled. In terms of behavior, the highest number 83.6% were alert and responsive, while 6.5% were difficult to catch and only 3.60% were depressed. Donkeys examined for hoof problems, hoof overgrowth 67.71% and toe-out conformation 47.92% were the major one. It is only 6.25% of the donkeys were found apparently lame. The major findings about signs of diseases were rough hair coat, alopecia and ocular discharge sharing 39.06%, 19.53% and 13.80% respectively. The result of this study clearly indicated that, donkeys have welfare problems in the study area mainly due to wound and hoof related problems cause suffering. In conclusion, for the sustainable improvement of the welfare of working donkeys in the area it is important to link any intervention approach with donkey owners and relevant stakeholders. Particular attention should be given to increase the awareness and understanding of owners about welfare problems so that they are in a very good position to recognize early welfare problems encountered and identify the measures necessary to prevent and resolve them when happened.

INTRODUCTION

In Ethiopia, about 83% human populations live in rural areas, and are primarily engaged to agricultural activities. Agriculture directly or indirectly forms an important component of livelihood of more than 80% of population in the country. The livestock population includes 65 million cattle, 40 million sheep, 51 million goats, 8 million camels and 49 million chickens in 2020 [1]. Global distribution of donkeys shows 98% of them to be found in developing countries of which 11.6 million are found in Africa out of which 5.2 million are in Ethiopia [2]. The majority of the donkey are founds in the high lands of Ethiopia that are densely populated in three regions Oromia 44%, Amhara 34%, Tigray 19% [3].

In livestock sector, equines plays important role in the economy of the nation. They are the engine that powers the rural as well as urban economic development. The most important feature of animal transport in Ethiopia is use of donkey, mule, and horse as pack animals, for puling carts and riding [2,4]. Donkey is still one of the most important drought animals playing a key role in the agriculture economy [5]. Maintaining activities conducted by women of urban areas using donkeys include transporting water from public tap to home, grain from market to home and from home to grinding mills, and fuel wood, dung [4].

Donkeys appear to be an effective entry point for assisting women not only in domestic responsibilities, but also enabling women to be engaged in income-generating activities which otherwise they may not have had access [6]. Donkeys are considered better than other draft animal because of their inherent tolerant for dehydration, low sweating rate and good thermo-ability [7]. They has spent hundreds of years being used by man but, despite of this little attempt has been made to study any aspect of this animal until recently particularly in countries where they are most important [8].

Despite their remarkable contributions, donkeys in Ethiopia

are the most neglected animals accorded low social status [9]. This can be due to age-old erroneous concept that when donkeys do get sick they are quick to die and probably because they are no provider of meat and milk [10]. In countries like Ethiopia, they are subjected to a variety of health disorder including multi-parasitism, back sore and other wounds due to different causes, hoof problems, colic, various infectious diseases such as strangles, tetanus, and others [11]. Probably one of the most important limitations is the general lack of information on the proper management and welfare problems of donkeys, which leads them to receive minimum care [12].

The Donkey Sanctuary an international animal charity with its objectives of getting baseline data to reduce the welfare problems of donkeys in the study area and also to use the information for practical training of students, has assigned a preliminary welfare assessment study in two districts of Southern Nation and Nationalities of Peoples Regional State (SNNPRS) at Halaba zone and in Oromia regional state at Adami Tullu Jido kombolcha. Therefore the objectives of this study are**:**

- To assess welfare problems of working donkeys in the study area in relation to their use
- To forward recommendations to reduce suffering of donkeys due to identified welfare problems in the area.

MATERIALS AND METHODS

Study area

The study was conducted from October 2021 to March, 2022 in four selected Peasant Associations (PAs) namely Negalewodesha and Halakegero in Halaba zone, SNNPRS and Barahobicho and Naka in the Adami-Tulu Jido-kombolicha district of Oromia regional state, Ethiopia. These four PAs were purposely selected from the study districts taking in to consideration the donkey sanctuary Alage partnership project's intervention sites, diversified uses and accessibility of donkeys in these sites and the relative lack of information about animal welfare in the area.

Halaba zone is one of the districts found in SNNP regional state. It is located at 310 Kilometers south of Addis Ababa and 85 Kilometers northwest of Hawassa. It is situated within an altitude range of 1554 to 2149 meters above sea level; 38° 7' 0" E longitude and 7° 18' 0" N latitude. The climatic zone of Halaba district consists mainly of mid-land ('**Weinadega**') and low-land ('**Kola**), which accounts for 86% and 14%, respectively. The annual rainfall is estimated to be in the range of 857-1085 mm, while the mean annual temperature varies from 17 to 20°C with a mean value of 18°C [13].

Adami-Tulu Jido-kombolicha is located in central rift valley of Ethiopia 205 kms away from Addis Ababa. The district lies at 7.58ºN latitude and 38.43ºE longitude. Its agro-ecological zone is semi-arid and sub-humid in which 90% of the area is lowland while the remaining 10% is intermediate with altitude ranges from 1500 –2000 meter above sea level. The mean annual rainfall ranges from 750-1000 mm and the distribution is highly variable between and within years. The mean annual temperature ranges from 22-28^{0}C. Mixed crop-livestock farming system characterizes the agriculture of the district [14].

Study animals

The study animals for direct assessment of welfare problems were 384 donkeys randomly selected from four PAs of the two districts regardless of age, sex and work type. The number of donkeys sampled for this study was taken equally from each PA because there is no reliable recorded data about donkey population in their respective PAs. Since no studies have been done on the health and welfare of donkeys in the study areas, 50% was taken as approximate expected prevalence. Therefore, the sample size is determined according to Thrusfield [15] using 95% confidence level, 5% absolute precision and 50% expected prevalence. To this effect a total of 384 animals were sampled.

$n= 1.96^2 P_{ex} (1-P_{ex})$ Where n= required sample size

d^2 P_{ex}= expected prevalence d= absolute precision

Study Design and Sampling

The study design was a cross-sectional where random sampling method was used for direct welfare assessment to collect animal based measures. A tool developed by the DS for working donkeys and mules called "The Hand on the donkey" was used for the assessment format/checklist by expanding it. The hand is composed of the palm and fingers where the palm represents the life of a working donkey and fingers are represented by behavior/demeanor, body condition score, wound, lameness, and other signs of injury/diseases as animal based measures.

Beside the animal based measures the tool links the findings to community partnership to address management and working practices, cultures, traditions, beliefs and attitudes. These randomly selected donkeys were systematically observed for the condition of their welfare status in terms of their behavior, body condition score (BCS), wounds, lameness and other signs of illness/diseases in respective of their age, sex and work type.

Methods used to assess welfare status of donkeys in the study area

Assessment was carried out at field level and around homestead. Donkeys were made to stand and get examined for a maximum of 5-10 minutes using welfare friendly approached and restraining. Initially general descriptions were recorded for each donkey including work type (from owner), sex and age using DS standard charts. Following this, using the format different animal based measures were recorded such as body condition score, behavior, abnormalities on the hooves, lameness, dermatological problems, lesions on the body with their anatomical location using body mapping and signs of injury/diseases of the study animals were recorded. The scoring of body condition of the selected donkey was done by using DS 1-5 standard scaling looking the animal from distance in all direction and by palpating prominent bones like hip, spinal cord and ribs and checking for amount of flesh cover.

Data management and analysis

The collected data was transferred into Microsoft excel spreadsheet. The statistical analysis was performed by SPSS Ver-

sion 15.0 software. Descriptive statistics was used to determine the frequency and percentages of animal based measures [16].

RESULT

During the study period, 384 donkeys were subjected to assess animal based measures using a data collection format/ checklist developed by expanding 'The Hand'. Results of the direct animal based assessments are presented below using [Table 1-6] and [Figure 1].

Sex versus work type in the study area

Among 384 donkeys assessed, female donkeys share a bit higher proportion, 50.78% (n=195), than male donkeys sharing 49.22% (n=189). Donkeys were categorized as pack, cart pulling and mixed in terms of their use in the area. Nearly 90% of the female donkeys were used for pack purpose while 47.61% (n=90) of the male donkeys used for similar purpose. In the study area donkeys are the common means of transportation as cart pulling animals either alone, paired or triple with other equines to transport people, goods and other agricultural products.

Age groups versus work type of donkeys in the study area

Out of the sampled donkeys, the highest proportion of age group were found to be < 5 years 35.15.% (n=135) while the lowest proportion being age category above 15 years 13.02% (n=50). The highest percentage of donkeys in the age group 6-10 years were used for cart pulling purpose 38.54% (n=37) whereas donkeys <5 years were used mainly for pack purpose 42.97% (n=113) (Table 2).

Body condition versus work type of donkeys

Body condition scoring using 1-5 scale, which is DS standard, showed that majority of the donkeys used in the area were 2 (moderate) sharing 74.47% n=286 of the total donkeys sampled. There is no donkey with body condition 4 (fat) or 5 (obese) during the assessment. In terms of work related to body condition, donkeys having moderate were used for pack purpose and cart pulling donkeys share the proportion of 71.86% (n=189) and 80.20% (n=77) respectively.

Behavior status of working donkeys in the area

Out of 384 donkeys sampled while they were freely grazing, working, hobbled or tethered the highest number n=321 (83.60%) were alert and responsive, while 6.51% (n=25) were difficult to catch and only 3.65% (n=14) were found depressed during assessment (Table 4).

Distribution of wound on different body map

Among three hundred eighty four donkeys observed for the presence or absence of wound on their different body parts, the majority of wounds were hobble sore 102 (38.78%), back sore 75 (28.52%) and girth sores 68 (25.85%) in pack donkeys while bit sore 31(32.29%), breast sore 8 (8.33%) and hobble sore 49 (51.00%) were common in cart pulling donkeys (Table 5).

Hoof and hoof related problems (Lameness)

Donkeys examined for hoof problems related to lameness showed different hoof problems mainly hoof overgrowth (67.71%), toe-out conformation (47.92%), and hoof crack (21.09%). It is only 6.25% of the donkes were apparently lame

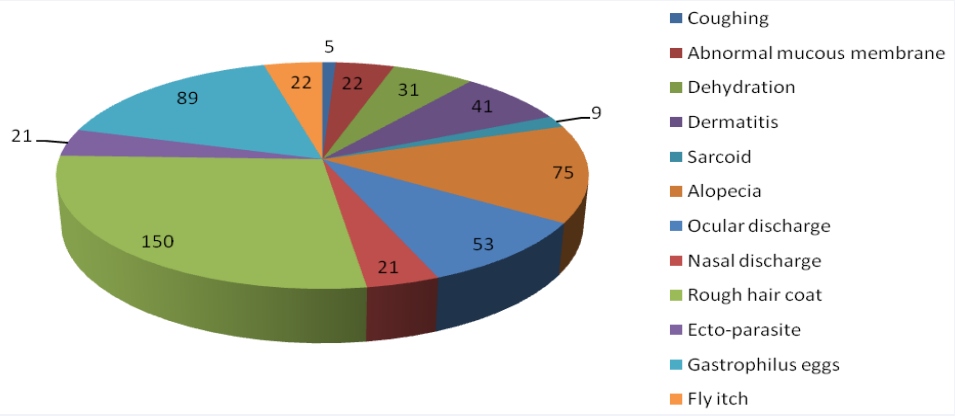

Figure 1 Frequency of other signs of disease.

Table 1: Proportion of sex and work type in the study area.

Sex	Work Type			Total
	Pack	Cart pulling	Mixed use	
Male	90 (47.61%)	83 (42.56%)	16 (8.46%)	189 (49.22%)
Female	173 (88.71%)	13 (6.66%)	9 (4.61%)	195 (50.78%)
Total	263 (68.49%)	96 (25.00%)	25 (6.51%)	(100%)

Table 2: Proportion of age group and work type of donkeys in the study area.

Age groups (in years)	Work type (N=384)			Total
	Pack (n=263)	Cart (n=96)	Mixed (n=25)	
≤ 5	113 (42.97%)	17 (17.71%)	5 (20%)	135 (35.15%)
6- 10	56 (21.29%)	37 (38.54%)	2 (8%)	95 (24.73%)
11-15	61 (23.19%)	30 (31.25%)	13 (52%)	104 (27.08%)
>15	33 (12.55%)	12 (12.50%)	5 (20%)	50 (13.02%)
Total	263 (68.5%)	96 (25%)	25 (6.5%)	384 (100%)

Table 3: Status of body condition and work type.

Work type	Body condition score (N=384)			Total (N=384)
	1 (Poor)	2 (Moderate)	3 (Ideal)	
Pack	55(20.91%)	189(71.86%)	19(7.22%)	263(68.5%)
Cart	14(14.58%)	77(80.20%)	5(5.20%)	96(25.0%)
Mixed use	3(12.0%)	20(80.0%)	2(8.0%)	25(6.50%)
Total	72(18.75%)	286(74.47%)	26(6.77%)	384(100%)

Table 4: Proportion of behavior status with sex and work types.

Work type	Behavioral status	Sex category		Total
		Male	Female	
Pack	Alert	80 (88.89%)	142 (82.08%)	222 (84.41%)
	Depressed (ear dropped)	4 (4.44%)	10 (5.78%)	14 (5.32%)
	Tail tuck	3 (3.33%)	8 (4.62%)	11 (4.18%)
	Difficult to catch	3 (3.33%)	13 (7.51%)	16 (6.08%)
	Total	90 (100%)	173 (100%)	263 (100%)
Cart	Alert	69 (83.13%)	11 (84.62%)	80 (83.33%)
	Tail tuck	9 (10.84%)	0 (0%)	9 (9.38%)
	Difficult to catch	5 (6.02%)	2 (15.38%)	7 (7.29%)
	Total	83 (100%)	13 (100%)	96 (100%)
Mixed Use	Alert	12 (75%)	7 (77.78%)	19 (76%)
	Tail tuck	2 (12.50%)	2 (22.22%)	4 (16%)
	Difficult to catch	2 (12.50%)	0 (0%)	2 (8%)
	Total	16 (100%)	9 (100%)	25 (100%)
Total	Alert	161 (85.19%)	160 (82.05%)	321 (83.60%)
	Depressed (ear dropped)	4 (2.12%)	10 (5.13%)	14 (3.65%)
	Tail tuck	14 (7.41%)	10 (5.13%)	24 (6.25%)
	Difficult to catch	10 (5.29%)	15 (7.69%)	25 (6.51%)
	Total	189 (100%)	195 (100%)	384 (100%)

during assessment mainly due to one of the problems mentioned in Table 6.

Other signs of diseases observed during study

As indicated in the following Figure 1 among 384 donkeys observed for the presence of signs of diseases the major findings were rough hair coat, alopecia and ocular discharge sharing 39.06%, 19.53% and 13.80% respectively. And also fly itch, ectoparasite and gastrophilus eggs shares 5.73%, 5.47% and 23.18% accordingly.

DISCUSSION

In the current study, the majority of donkeys observed were used for transportation purpose as pack, cart pulling and mixed mainly for transporting goods and people. This observation was in agreement with Blackeway [17], Pritchard et al. [18], and Dinka et al. [19] that equines were kept mainly for transportation than meat or milk production. Out of 384 donkeys observed about n=263 (68.5%) were used for pack; mainly for transporting goods from household to market places and vice versa, fetching water, and grains to grain mills etc, while the rest n=96 (25%) were cart pulling donkeys and n=25 (6.5%) were donkeys used for mixed purposes. This observation differs from Makuria and Abebe [20] who reported 48.6% of the donkeys used for pack and 51.4% used for cart pulling in Meskan district of Guraghe zone. This difference could be because of topographical differences which can be noted by a relatively increased use of donkeys for cart pulling purpose in Adami Tulu Jido Kombolcha district

Table 5: Distribution of wounds observed with related to work type.

Anatomical sites	Work type			Total
	Pack (n=263)	Cart (n=96)	Mixed (n=25)	
Bit Sore	6 (2.28%)	31 (32.29%)	11 (44%)	48 (12.5%)
Back Sore	75 (28.52%)	53 (55.2%)	3 (2%)	131 (34.11%)
Brest/Chest Sore	9 (3.42%)	8 (8.33%)	9 (36%)	26 (6.77%)
Girth Sore	68 (25.86%)	16 (16.67%)	5 (205)	89 (23.18%)
Tail base Sore	109 (41.44%)	29 (30.2%)	9 (36%0	147 (38.28%)
Rib Sore	26 (9.89%)	22 (22.9%)	2 (8%)	50 (13.02%)
Point of the hip	45 (17.11%)	33 (34.37%)	6 (24%)	84 (21.88%)
Hobble Sore	102 (38.78%)	49 (51%)	14 (56%)	165 (42.97%)
Ear Chopping	36 (13.69%)	8 (8.335)	4 (16%)	48 (12.5%)
Hyena bite fresh	18 (6.84%)	5 (5.2%)	3 (12%)	26 (6.77%)
Hyena bite Scar	7 (2.66)	0 (0%)	1 (4%)	8 (2.08%)

Table 6: Common hoof problem and lameness observed during study.

Hoof problems	Frequency	Percentage
Hoof overgrowth	260	67.71
Toe –in	42	10.94
Toe –out	184	47.92
Hoof crack	81	21.09
Joint swelling	9	2.34
Joint dislocation	10	2.60
Contracted tendon (Broken forward and backward)	52	13.54
Apparently lame	24	6.25

which is characterized by a flat topography unlike Halaba district in which some areas of the studied kebeles are inappropriate for cart pulling. The extensive use of donkeys in the study area indicates that donkey is highly preferred by most rural and urban people for transportation of goods by pack and cart. This is most likely due to their sturdy nature and manageable behavior.

Four age catagories were observed during the study period of which the highest number of donkeys comprising 135 (35.15.%) were found under <5 years followed by 11-15 years age category with 104 (27.08%) and the lowest number of donkeys comprising 50 (13.02%) were found above 15 years. The highest percentage of donkeys under 6-10 years were used for cart pulling whereas the highest percentage of donkeys under <5 years were used for pack with 37 (38.54%) and 113 (42.97%) respectively. This might be due to the study area, which was conducted in rural area where donkeys mainly used for pack purpose due to the rugged topography of the land.

Assessment of body condition of the donkeys in the study area showed that only poor, moderate and ideal body condition were observed where they share 72 (18.75%), 286 (74.47%) and 26 (6.77%) respectively. Absence of fatty, obese and being majority were moderate body condition suggests heavy work burden in the area coupled with nutritional deficiencies because of weather condition and internal parasites. Among donkeys used for pack purpose, 20.91% and 71.86% donkeys had poor and moderate body condition score respectively while 14.58% and 80.20% of the donkeys used for cart had poor and moderate respectively. This result agrees with the findings of Makuria and Abebe [20] they report that the body condition of the animals showed that 26.2%, 70.2% and 3.6% were under thin, medium and ideal body condition category respectively. This indicates that the majority of donkeys used for cart purpose were with moderate and poor body condition. This could be an indicator of management shortcomings associated with poor nutrition, overworking to generate more money, inhumane beating and less attention to donkeys than other species for health care and burden of internal parasites was reported by another work in Ethiopia [21].

This study concerning behavior showed that the prevalence of donkeys showing alert, difficult to catch and depressed 85.19%, 5.29% and 2.12% accordingly. Charlotte et al. [22] made similar observation, where over 13% equides showed apathetic behavior. The previous studies suggested that working equides in poor physical hear show an unresponsive behavioral profile, consistent with sickness behavior, exhaustion, chronic pain, or depression-like states. Wound (lesion) was the most prevalent welfare problem affecting 75% of the study population. Among 384 donkeys observed the pack donkeys (n=263) had higher proportion of tail /tail base lesions (41.44%) than donkeys which use for cart pulling (22.92%) and mixed (36.00%) purpose. These lesions were usually induced by excessive rubbing on this site by crupper (rubber rope) that passes under the tail of donkeys during packing, where there would be frequent movement and rubbing; as the packed animals move forward.

Blackeway [17], Pritchard et al. [18] and Swann [23] reported similar findings, when pack animals move long distance and frequently, the chance of tail/tail base lesion occurrence was very high. From 263 donkeys which used for pack 28.52%, from 96

donkeys used for cart pulling 55.21% and out of 25 donkeys used for mixed use about 2% were suffer from back sore. This result indicates that the majority of donkeys used for cart purpose are affected by wound and other health alteration than donkeys used for packing purposes. This result is comparable with Makuria and Abebe [20] who reported 24% used for cart purpose 52.5%, 20.1%, 33.8% and less than 15% animals had abnormal mucous membranes, lip lesions, ecto-parasites and other different types of skin lesions.

Donkeys used for cart pulling showed higher proportion of lip/bit sore 31 (32.29%) than used for pack 6 (2.28%). This may be associated with the bit used for leading and braking of cart donkeys. Nawaz et al. [24], Pritchard et al. [18] and Makuria and Abebe [20] support this finding, where the presence of lip lesions size of superficial lesion and size of skin broken lesion measurements were found to be clearly related to the bit characteristics. A bit with characteristics of jointed bar, sharp projection, dirty and rusty bar connection and ring, types were found to be significantly related to lip/bit sore. It was appriciate that hoof problems mainly hoof overgrowth (67.71%), toe-out conformation (47.92%), and hoof crack (21.09%). This might be giving less attention to hoof care due to less awerness in the socities/commonity. Despite their remarkable contributions, equines in Ethiopia are the most neglected animals accorded low social status, particularly the male working equine.

CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to assess, identify and prioritize welfare problems of donkeys in the study area. The common problems identified were the occurrence of wound lesions on different parts of the body, lameness due to improper hoof care, other disease occurrence due to giving less attention to veterinary care and poor body conditions for the reason of poor management care. In the area donkeys are commonly used to transport people using cart where single donkey, paired or triple donkeys are combined used but these approach are not welfare friendly. The use of donkeys in combination for cart pulling purpose should be further investigated to reduce suffering during combination. The study has showed also possible solution as the perception of the donkey users which might be potential opportunities to improve the welfare of donkeys in the area by creating awareness to the community. The common nature and practices of the problems may result in donkey owners becoming indifferent or being unaware that anything is wrong. The main reason for the mismanagement, ill-treatment, traditional malpractices of donkeys could be many folds; lack of education and training, the poor economy of the owners, the perception by the people that donkeys do not get ill or can tolerate problems may also play a big role. Therefore, in light of the above remarks in order to reduce the suffering of donkeys in the area the following recommendations are forwarded:-

- Proper veterinary health care and diseases prevention strategies should be designed.
- Better community education, awareness creation and training of both professionals and donkey owners as to donkey related technologies, basic management, health care and welfare problems of donkeys should be made.
- Detail investigation of welfare problems due to bad management practices has to be conducted because the current study only focused on animal based measures to proposed compressive intervention strategy.
- There should be integrated stakeholders participation to improve the welfare of donkeys in the area.
- There should be research to be conducted to assess the knowledge, attitude and practices

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