

Original Article

Transportation scenario of Black Bengal goats in Gabtoli and Sirajganj markets of Bangladesh

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• Received: February 2016 • Revised: February 2016 • Accepted: February 2016 • Published Online: February 2016



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ABSTRACT

Objectives: This study was designed to reveal out the present transportation scenario of Black Bengal goats to and from some selected markets in Bangladesh.

Materials and methods: A questionnaire survey to know the behavioral parameters and management provisions provided by the farmers was designed to collect necessary information from Sirajganj and Gabtoli markets. The survey was conducted by direct interview with the stakeholders who were directly involved with the transportation of Black Bengal goats from Sirajganj to Dhaka city.

Results: The present study showed that 58% adult respondents were involved in goat transportation program, among them 95% were male. Most of the farmers in the markets lacked institutional education (24%) or just completed primary education (41%). Only 27% of the respondents had earlier experience in transporting animals. Transport durations were <6 h (51%), 6 h (39%), and >6 h (10%). The goats were usually transported on foot or by using vehicles. All the respondents were known about planning of animal transportation. About 2, 5, 7 and 5% of animals were suffering from head swinging, stretching, stamping of feet and paralyzed condition during transportation, respectively. During transportation, the animals exhibited idleness (25%), panting (17%), foaming (14%), vocalization (13%) and moving forward (12%). Most of the farmers provided feed (41%), rest (33%) and shelter (24%) during the transportation of the goats. Only 5% farmers hired trained drivers for transportation purpose. About 27% animals were untied and 7% animals ramped during transportation. Besides, there were high percentage of pressure to animals (23%), hitting or kicking animals (19%) and abuse to animals (15%) during transportation.

Conclusion: From this study it is concluded that Black Bengal goats became physically unfit during long time transportation although majority of the farmers took proper management practices. Therefore, changes in behavioral responses might be alleviated through creating awareness to animal raiser as well transporter.

KEYWORDS

Behavioral responses, Black Bengal goat, Management provisions, Probable suggestions, Transportation scenario

How to cite: Sakib MN, Hashem MA, Rabbani MK, Islam MS, Azad MAK (2016). Transportation scenario of Black Bengal goats in Gabtoli and Sirajganj markets of Bangladesh. *Journal of Advanced Veterinary and Animal Research*, 3(1): 38-44.

INTRODUCTION

Goats have already taken prime attention to the animal genetic personnel due to having potentialities in numerical and economic returns in the developing countries. There are about 59.70% of goats found in Asia (FAO, 2010). Goats are the most widely distributed and adaptable ungulate species. Goat usually as domestic livestock species keeps in Bangladesh and other developing countries which provides meat, milk, and skin and popularly acknowledge as the poor man's cow. Goats play an important role in the rural economy for its multi-functionalities (meat, milk, income, manure source and festivals). Millions of marginal, small farmers and agricultural laborers are getting food and nutrition from goats. About 21.6 million goat heads are distributed throughout the country (FAO, 2010; BER, 2012) where more than 90% of them are Black Bengal goat that has wider variation in coat color, mature size and weight. Black Bengal goats are able to eat wide range of poor quality forages and browses, capable of walking long distance and easily managed compared to other small ruminants than having shorter generation interval, higher adaptability, fertility, fecundity, delicacy of meat and superior skin quality (Hussain, 1993).

The marketing process in Bangladesh commonly practiced either road transportation or by on foot, which inherently imposes stress to goats. Therefore, the issue needs to be scientifically clarified and ensure the best care and management guidelines to the farmers as well as associated stakeholders. Transportation is one of the important parts in livestock management that is addressed for marketing of animals in large numbers, transporting to the slaughter house, providing breeding stock to other areas, relocating animals from dry to green areas and also for changing ownership purposes (Grandin, 2004; Averós et al., 2008). Transport process can lead to a condition of stress for animals. Stress is a condition that originates from one or more sources and affects the body system of the animals. The stressors can either rise from inside of the body or come from surrounding (Christiansen et al., 2007). Animals expose in transportation stress may lead to show in physical and psychological abnormalities. Stress condition in particular heat stress can affect the health and welfare of the animals. Therefore, heat stress induces severe stressors to the farm animals especially road transportation to the slaughter house or to the new farm (Zulkifli et al., 2010).

Goat production in Bangladesh which has been mostly carried out by smallholder farmers is shifting towards commercial production and the goat industry inevitably involves transportation of live animals either for transfer

between farms or for marketing of the animals. However, the animals in transport may be exposed to a variety of physical and physiological stimuli that could be either novel or aversive. Consequently, animal transport is a general consequence of causing stress (Fraser and Broom, 1990). There is substantial work (Rollin, 1995) on effects of handling and transportation of cattle, pigs and poultry, little work has been carried out to assess the extent of stress in transported goats. There is a sharp decreasing trend observed in stress parameters just after 3 h of transportation. However, fasting under a prolonged holding periods may increase stress responses and bring about metabolic changes (Kannan et al., 2000). The highest biological and behavioral changes observe during loading and unloading and shortly after start of the transport. On the other hand, the way the animal responds to physical or physiological stresses and the effects associated with them, can influence carcass and meat quality. There have no straight-cut information regarding stakeholders profile, transportation scenario, and management provisions during transportation of indigenous goats. Such information can help to animal raiser as well respective person who directly engages with animal transportation, animal welfare issues and finally provide wholesome meat for healthy nation. Therefore, the objective of this study was to reveal the present transportation scenario on behavioral parameters and management provisions of Black Bengal goats in some selected markets of Bangladesh.

MATERIALS AND METHODS

Selection of survey area: Two different areas were selected for conducting the survey; the sites were Gabtoli, Dhaka and Sirajganj municipal markets. Study sites were selected due to having higher concentration goat as well distance for those markets.

Selection of stakeholders: Necessary information regarding stakeholders in those markets was collected through District Livestock Office and/or personal communication. Field visits were conducted during the month of October and November 2014. Stakeholders were randomly selected who rear, handle, transport, and slaughter goats, and were able to give information when necessary. Each study site composed of 25 goat farmers, and data were collected from a total of 50 stakeholders to satisfy the objectives.

Ethical issue and data collection: Necessary consent was taken from the owners before data collection. Data were collected through direct interview and making frequent personal visit. Before making interview, the objectives of the study were explained clearly to the

farmers. Then the questions were asked in a simple manner with explanation whenever necessary.

Parameters in interview schedule: The interview schedule (**Annex-1**) contained the following lines of information: Stakeholder's personal profiles, scenario of transportation episode on goats, management provision during transport and probable suggestions for alleviating transportation stress. Moreover, a questionnaire was supplied to 30 people of each station to get to know controlling measures of the impacts of transportation stress.

The questionnaire adopted five-point scale to evaluate controlling measures for transportation stress. The scale was assigned values as follows; none=1; little=2; more=3; substantial=4; and the most=5. A mean score of 3.0 was obtained. Any item with a score of 3.0 and above was regarded as a neutralizing measure while items with mean less than 3.0 were not taken as neutralizer.

Statistical analyses: The survey on different parameters in this study was exploratory descriptive. Therefore, data were compiled, tabulated and analyzed with simple statistical method to fulfill the study objectives. Tabular technique was applied for the analyses of data using simple statistical tools like average, percentages etc. The process was adopted five-point scale to evaluate neutralizing measures for transportation stress in Black Bengal goats. The scale was assigned values as follows; none=1; little=2; more=3; substantial=4; and the most=5. A mean score of 3.0 was obtained. Any item with a score of 3.0 and above was regarded as a neutralizing measure while items with mean less than 3.0 were not taken as neutralizer.

RESULTS AND DISCUSSION

Stakeholder's Bibliography

Table 1 shows that the result of personal characteristics of stakeholders at Dhaka and Sirajganj municipal market areas in percentage. Age does not have any role in this study. However, young and middle aged (30 and 58%) persons are more active and effective than the aged groups (12%) in this study. [Agwu and Anyanwu \(1996\)](#) found that the majority (58%) of the respondents were aged between 31-40 years and suggested range is suitable for enhanced productivity. [Ani \(2007\)](#) reported that innovators are always in their either young or middle age.

Male (95%) dominates in the market. [Poynter \(2001\)](#) found that male mainly owned cattle, sheep and goats while women usually possessed the backyard poultry. Most of the farmers in the markets are within lack of

formal education (24%) or just finished primary education (41%). Secondary and higher secondary school completed and graduate and/or above are 21, 12 and 2%, respectively. It has recently been reported that most of the livestock keepers are within lack of formal education (28%) or just finished primary education (28%). Secondary and higher secondary school completed, and graduate and/or above are 22, 15 and 7%, respectively. It has been reported that increased farmer education positively influenced adoption of improved practices ([Agwu and Anyanwu, 1996](#)). In case of earlier experience, most of the stakeholders have owner (32%) and transporting (27%) experience whereas handling, marketing and slaughtering experiences are 19, 14 and 8%, respectively. Moreover, a group of personnel such as farmer, transporter, and butcher are directly involved in livestock rearing program. It was reported by [Atkinson \(2000\)](#) and [Fisher et al. \(2009\)](#) that earlier experience is necessary to involve personnel before operating any livestock related activities.

Table 1. Stakeholder's personal profile (n=50)

Variables	%
Age	
25-34 years	30
35-49 years	58
Over 50 years	12
Sex	
Male	95
Female	05
Level of Education	
No formal education	24
Primary school completed	41
Secondary school completed	21
Higher secondary school completed	12
Graduate and/or above	02
Earlier Experience	
Owner	32
Handling	19
Transporting	27
Marketing	14
Slaughtering	08

Scenario of transportation episode on goats

Table 2 shows the transported animal, transport system, duration of transport, source of animal, loading and unloading time, planning for transport, types of planning for transport and transport stress related behavior. In the case of small ruminants transport, there are 87% of Black Bengal goats. Other goat breeds are 13%. It is estimated that 90% of goat population in Bangladesh comprised the Black Bengal goat having variation in color, size and weight. Most of the animals (47%) were transported by different types and shapes of vehicles. Only 34% of animals were walking during transportation to the market. It also found that animals are transported for long distances and durations to the markets. The most

Table 2. Scenario of transportation episode on goats.

Variables	%
Transported Animal	
Black Bengal goat	87
Others	13
Transport System	
Walk	34
Vehicle	47
Others	19
Duration of Transport	
< 6 hours	51
6 hours	39
> 6 hours	10
Source of Animal	
Markets	75
Others	25
Loading and Unloading Time	
Night	34
Day	66
Planning for Transport	
Aware	100
Unaware	00
Types of planning for transport	
Preparation of animals for the journey	03
Choice of road	24
The nature and duration of the journey	41
Vehicle design and maintenance	13
Space allowance	14
Control of disease	02
Emergency response procedure	03
Transport stress related to behavior	
Idling	25
Panting	17
Paralyzed condition	05
Foaming	14
Vocalization	13
Stamping of feet	07
Stretching	05
Head Swinging	02
Moving Forward	12

Table 3. Management provision during transport

Variables	%
Related to Animal	
Rest	33
Shelter	24
Feed	41
Water	02
Related to Transport	
Untie	27
Ramps	07
Trained Driver	05
Abuse to animals	15
Hitting or kicking animals	19
Pressure to animal	23

common transport system was by foot or by vehicle (Jerlström, 2013). Duration of the transport was 51, 39 and 10% for <6 h, 6 h and >6 h, respectively. However, prolonged holding periods without feed may increase stress responses and bring about metabolic changes (Kannan, 2000). Around 75% of transported animals were collected from direct markets. The loading and unloading times for the most of the animals were during day time which is 66% and the rest were during night which is 34%. All (100%) of the respondents were aware about planning for transport animals. Interestingly, 41, 24 and 14% of the respondents took decision for nature and duration of the journey, choice of road and space allowance, respectively. Note that the preparation of animals for the journey, controlling of disease and emergency response procedure were done less than 5% of the respondents. Only 2, 5 and 7% transported animals were suffering from head swinging, stretching, paralyzed condition and stamping of feet, respectively and note that 25, 17, 13 and 12% animals were suffering from idling, panting, foaming, vocalization and moving forward. Generally, animal transports give poor welfare, altered meat quality, spread infectious diseases and reduce performances (Webster et al., 1983; Kettlewell and Turner, 1985).

Management provision during transport

Table 3 shows the results of management operation during transportation. The table can be described in two ways. Firstly the management condition with animals. Most of the farmers provide feed (41%), rest (33%) and shelter (24%) during transportation. Note that only 2% farmers provide water during transportation. Suggested improvements for the future are education of stakeholders, establishment of animal welfare regulations, and use of appropriate vehicles when transporting animals and lastly to make sure that animals will get feed, water and rest during transportation. Secondly, the management condition with the transportation system itself. Only 5% farmers hired trained drivers for the transportation purpose. About 27% animals were untied and 7% of animals ramps during transportation. Besides, there are high percentage of pressure to animals (23%), hitting or kicking animals (19%) and abuse to animals (15%) during transportation.

Probable suggestions

The suggested measures to be adopted to reduce the transportation stress are- (i) awareness through broadcasting documentary via mass media, (ii) maintained proper space requirement, (iii) improved vehicle design and maintenance, (iv) separate goats of different sizes or ages during transport, (v) separate sexually mature males

from females during transport, (vi) separate animals with horns from without horns during transport, (vii) separate diseased animals from non-diseased animals during transport, (viii) improved the animal welfare, (ix) strengthening rules and policy development for local authority, (x) improved emergency response procedure, and (xi) provision of extension services.

CONCLUSION

It is concluded that Black Bengal goats became physically unfit during long time transportation although majority of the farmers took proper management practices. Changes in behavioral responses can be alleviated through creating awareness to animal raiser as well transporter.

CONFLICT OF INTEREST

The authors declare that they have no competing interest.

ACKNOWLEDGEMENT

The research work was financially supported by Bangladesh Agricultural University Research System (No. 2014/15/AU-GC).

REFERENCES

- Agwu AE, Anyanwu AC (1996). Socio-cultural and environmental constraints in implementing the NALDA programme in Southern Nigeria: A case study of abia and Enugu state. *Journal of Agricultural Technology and Education*, 1: 68-72.
- Ani AO (2007). *Agricultural Extension: A pathway for sustainable agricultural development*. Apani Publications: Kaduna.
- Atkinson S (2000). Farm animal transport, welfare and meat quality. *Institutionen för husdjurens miljö och hälsa, Sveriges lantbruksuniversitet*; pp 1-137.
- Averós X, Martín S, Riu M, Serratos J, Gosálvez LF (2008). Stress response of extensively reared young bulls being transported to growing finishing farms under Spanish Summer commercial conditions. *Livestock Science*, 119: 174-182.
- BER (Bangladesh Economic Review) 2012: Ministry of planning, Government of the people's Republic of Bangladesh
- Christiansen JJ, Christian B, Djurhuus, Claus H. Gravholt, Per Iversen, Christiansen JS, Schmitz O, Jørgen W, Lunde JO, Jørgensen Møller N (2007). Effects of cortisol on carbohydrate, lipid, and protein metabolism: studies of acute cortisol withdrawal in adrenocortical failure. *The Journal of Clinical Endocrinology & Metabolism*, 92: 3553-3559.
- FAO (2010). *Selected indicators of food and agriculture development in asia pacific region, 1993-2003*. Food and Agriculture Organization of the United Nations, Bangkok, Thailand; pp 119-121
- Fisher AD, Colditz IG, Lee C, Ferguson DM (2009). The influence of land transport on animal welfare in extensive farming systems. *Journal of Veterinary Behavior*, 4: 157-162
- Fraser AF, Broom DM (1990). *Farm Animal Behaviour and Welfare*. 3rd Edn., CAB International, Wallingford, UK.
- Grandin T (2004). Principles of design of handling facilities and transport systems. In: G. J. Benson and BE Rollin (Eds). *The well-being of farm animals, challenges and solutions*. Blackwell Publishing, Ames.
- Hussain SS (1993). A study on the productive performance and genetic potentials of Black Bengal goats. PhD dissertation. Department of Animal Breeding and Genetics. Bangladesh Agricultural University, Mymensingh
- Jerlström J (2013). *Animal welfare in Ethiopia: Transport to and handling of cattle at markets in Addis Abeba and Ambo*. Faculty of Veterinary Medicine and Animal Science. Swedish University of Agricultural Sciences
- Kannan G Terrill TH, Kouakou B, Gazal OS, Gelaye S, Amoah EA, Samake S (2000). Transportation of goats: effects on physiological stress responses and liveweight loss. *Journal of Animal Science*, 78: 1450-1457.
- Kettlewell PJ, Turner MJB (1985). A review of broiler chicken catching and transport systems. *Journal of Agricultural Engineering Research*, 31: 93-114.
- Poynter G (2001). *Findings into a survey of urban livestock in Kumasi Ghana's Thesis*, University of Edinburgh, Edinburgh, UK.
- Rollin BE (1995). *Farm animal welfare*, Iowa state University Press, Ames Iowa, USA
- Webster AJF, Tuddenham A, Saville CA, Scott GB (1993). Thermal stress on chickens in transit. *British Poultry Science*, 34: 267-277.
- Zulkifli I, Norbaidyah B, Cheah YW, Soleimani AF, Sazili AQ, Rajion MA, Goh YM (2010). Physiological Responses in goats subjected to road transportation under the hot, humid tropical Conditions. *International Journal of Agriculture & Biology*, 12: 840-844.

Interview Schedule
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An interview schedule for the study entitled-
“Transportation scenario of Black Bengal goats in Gabtoli and Sirajganj markets of Bangladesh”

Serial No.

Name..... Father/Husband.....

Village..... Union

Stakeholder’s Bibliography

1. Gender

Male

Female

2. Age: How old are you?Years

3. Level of Education: Please tell your level of education

No formal education

Primary school completed

Secondary school completed

Higher secondary school completed

Graduate and/or above

4. Earlier Experience

Owner

Handling

Transporting

Marketing

Slaughtering

Scenario of Transportation Episode on Goats

5. Transported Animals

Black Bengal Goat

Others

6. Transport System

Walk

Vehicle

Others

7. Duration of Transport

Less than 6 Hours Bank loan

6 hours

More than 6 hours Lending

8. Source of Animal

Market

Others

10. Loading and Unloading Time

At Night

At Day

11. Planning for Transport

Aware

Unaware

If, Yes.....

12. Types of Planning for Transport

- Preparation of animals for the journey
- Choice of road
- The nature and duration of the journey
- Vehicle design and maintenance
- Space allowance
- Control of disease
- Emergency response procedure

13. Transport Stress Related to Behavior

- Idling
- Panting
- Paralyzed Condition
- Foaming
- Vocalization
- Stamping of feet
- Stretching
- Head Swinging
- Moving Forward

Managerial Provision during Transport

A. Related to Animals

- Rest
- Shelter
- Feed
- Water

B. Related to Transport

- Untie
- Ramps
- Trained Driver
- Abuse to animals
- Hitting or kicking animals
- Pressure to animal

What are the problems you face during transport?

1.
2.
3.

Suggestions to improve transport system?

1.
2.
3.

Thanks for your kind cooperation.

Interviewee..... Date.....