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Rockey Koul
Research Scholar, Department of Zoology, Rabindranath Tagore University, Bhopal, Madhya Pradesh, India

Pragya Shrivastava
Assistant Professor, Department of Zoology, Rabindranath Tagore University, Bhopal, Madhya Pradesh, India

An empirical study on prevalence of Fasciola hepatica among slaughtered sheep and goats

Rockey Koul and Pragya Shrivastava

Abstract
Present study was intended to explore the prevalence of Fasciola hepatica among slaughtered sheep and goats. In addition to this, the study was intended to investigate the impact of Fasciola hepatics on the anthropometric profile of sheep and goats. The study was carried in context of descriptive research. The total sample for the present study consists of 800 Sheep and goats. The uninfected were selected with the help of Random Sampling Technique (RST) and fro gaining the descriptive analysis of the composite respondents, the sample was selected with the help of random sampling. The collected data was put to suitable statistical treatment by using descriptive as well as comparative statistics. The results of the study indicate that out of 400 sheep 110 (27.5) were found infected and among 400 goats 90 (22.5%) were found infected, 200 (25%) were found infected. Thus, 25% respondents (sheep and goats) were found infected for liver fluke and 200 male sheep 59 (29.5%) were found infected for liver fluke whereas, 41 20.5% female sheep were found infected. In addition to this, the impact of liver fluke was reported significant on the weight and size of the respondents.

Keywords: Fasciola hepatica, slaughtered sheep, slaughtered goats

1.1 Introduction

Liver fluke (Fasciola Hepatica) are grey or brown, flat, leaf-shaped parasites that live in the bile ducts of sheep livers. Adult flukes are about 2cm long and 1cm wide. *Fasciola gigantica* is by far the pre-dominant species of outstanding importance. The pathogenic effect of this parasite is extended over a large number of domestic ruminants; cattle, sheep, goats and buffaloes are mostly affected and drain a substantial economic loss to the country annually. Infection with *Fasciola gigantica* is regarded as one of the most common single helminthic infection of ruminants in Asia and Africa. This disease causes enormous economic losses all over the world and these losses are due to reduction in milk and meat production, condemnation of liver, loss of draught power, reproductive failure and mortality. The overall prevalence of *Fasciola gigantica* in goats with gross and histopathological changes in the liver and also its relationship with age, sex and seasons has been described in this paper. So, for controlling the disease in this area, appropriate preventive control strategies have to be designed to reduce the impact of the disease on goat production in Kashmir. Production losses can be economically significant even in relatively light fluke infections as the fluke suck blood and affect sheep's ability to utilise feed on offer. In the abattoir, carcasses of affected animals are condemned if they show emaciation and oedema (watery accumulation in tissues of thin animals). Affected livers are condemned. The liver fluke parasites have a complex life cycle, subsequently, the disease is of paramount importance due to its broad distribution and definite hosts. It causes acute and chronic infections. It Kashmir valley, it has been observed that it occurs chiefly in cattle, sheep, goats, buffalos and may affect man and other species (Bhat, *et al*. 2010) [4]. The parasites pass through different stages in sheep and goats before attaching themselves in the form of cysts to the ground vegetation. Thereon, it is taken up by the host during grazing. Large number of the research studies has been reported; however, multiple variations in the results have been reported. The notable research studies are; Bryman, A. (2001) [5], Denscombe, M. (1998) [7] Emiru B, Ahmed Y, Tigre W, Feyera T, Deressa B. (2013) [8] and Ferre I, Bursal CM, Manzanerat E, Rojo-Yazque FA, Buratovichr OF, Manteconr A.R. (1995) [9]. In context to same, the investigator considers it vital to explore the study which reads as:

Corresponding Author:
Rockey Koul
Research Scholar, Department of Zoology, Rabindranath Tagore University, Bhopal, Madhya Pradesh, India

1.2 Statement of the research problem
The statement of research problem is as under:
An Empirical Study on Prevalence of Fasciola Hepatica among Slaughtered Sheep and Goats.

1.3 Objectives of the study
The objectives of the study are as under:
1) To explore the prevalence of Fasciola hepatica among slaughtered sheep and goats.
2) To explore the impact of Fasciola hepatica on the anthropometric profile of slaughtered sheep and goats.

1.4 Hypothesis
The researcher holds richness background of the knowledge in the same domain. Apart from this deep survey was conducted by the investigator in the relevant field. Accordingly, on the basis of the same, the present study consists of below mentioned hypothesis:
1) To exists the significant impact of Fasciola hepatica on the anthropometric profile of slaughtered sheep and goats.

1.5 Delimitation of the problem
The constraint of time budget and other implications were exiting in the entire process. The present study will be delimited to following domains:
a) Present study has been delimited to only two type of parishes' viz. moniezia and fasciolosis parasite.
b) Present study has been delimited to Anantnag district of union territory of Jammu and Kashmir.
c) Presents study has been delimited to two hoists only viz. sheep and goats.

1.6 Methodology
The methodology of the present study has been stated in the following heads-
- **Method of the study:** Keeping the nature of the study under consideration, the descriptive method will be used by the researcher for the present study.
- **Sample:** the total sample for the presents study consists of 800 slaughtered sheep and goats.
- **Method of inclusion and exclusion:** for determine the comparative analysis of sheep and goats on their anthropometric profile, 290 uninfected sheep and goats were selected for making comparative analysis and reaming sample was excluded through the method of inclusion and exclusion.
- **Sampling technique:** The required data of 800 respondents were selected with the help of purposive sampling technique. However, for determining anthropometric profile of the respondents, random sampling was made for selecting of uninfected sample.
- **Statistical treatment:** The collected data was put to suitable statistical treatment by using:

a) Frequency distribution,
b) Percentage
c) Mean
d) Standard deviation
e) Independent 't' test.

1.7 Analysis and interpretation of the data
The data has been analysed with the help of descriptive and comparative analysis. The detailed analysis and interpretation is reported as under:

1.7.1 Caption-I: Descriptive analyses
In this caption-I, the investigator has analysed and discussed the data on the basis of percentage and frequency distribution of the respondents. Accordingly, the analysis and interpretation is reported as under:

Table 1: Showing the prevalence of Liver fluke (Fasciola) among sheep and goats. (N=400 each)

Variable	Sheep		Goats	
Liver Fluke Fasciolosis	Frequency	Percentage	Frequency	Percentage
N= 400 Each	110	27.5	90	22.5

Index
- N= Total Examined=800
- Frequency= Frequency of positive cases
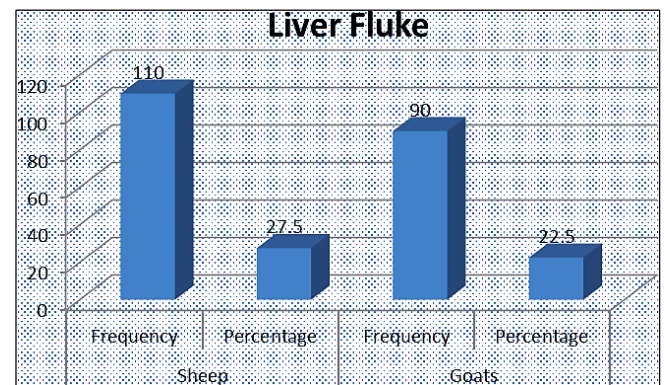- Percentage= Percentage of negative cases

Fig 1: Showing the graphical representation on the basis of prevalence of liver fluke (Fasciola) among sheep and goats

Interpretation
The perusal of the table 1 (Please refer fig. 1) gives information about the frequency and percentage analysis of sheep and goats on liver fluke. The results indicate the 400 sheep and 400 goats were examined for the process of liver fluke. The obtained results indicate that out of 400 sheep 110 (27.5) were found infected. In pursuance to same among 400 goats 90 (22.5%) were found infected. The results reveal that sheep were found more prone towards liver fluke as compared to goats.

Table 2: Showing the descriptive analysis of the uninfected and infected sheep and goats on the basis of anthropometric profile (Liver fluke)

Statistics			Sheep and goats infected and uninfected on liver fluke				
VAR00001			Frequency		Percent	Valid Percent	Cumulative Percent
N	Valid	400		12.15	1	.3	.3	.3
	Missing	0		13.17	1	.3	.3	.5
Mean		21.0081	Valid	15.10	1	.3	.3	.8
Std. Error of Mean		.14074		15.17	4	1.0	1.0	1.8
Median		22.0000		15.18	4	1.0	1.0	2.8
Mode		22.00		15.22	5	1.3	1.3	4.0

Std. Deviation	2.81490	16.00	2	.5	.5	4.5

Std. Deviation	2.81490				
Variance	7.924				
Skewness	-.516				
Std. Error of Skewness	.122				
Kurtosis	6.250				
Std. Error of Kurtosis	.243				
Range	32.75				
Minimum	12.15				
Maximum	34.90				
Sum	8403.25				
Percentiles	10	17.1200			
	20	19.2200			
	25	20.0000			
	30	20.0000			
	40	20.1240			
	50	22.0000			
	60	22.0000			
	70	22.0000			
	75	22.0000			
	80	23.0000			
	90	25.0000			

| Value	Frequency	Percent	Valid Percent	Cumulative Percent
16.00	2	.5	.5	4.5
17.00	3	.8	.8	5.3
17.10	1	.3	.3	5.5
17.12	20	5.0	5.0	10.5
17.13	4	1.0	1.0	11.5
17.20	1	.3	.3	11.8
17.22	1	.3	.3	12.0
17.30	4	1.0	1.0	13.0
18.00	10	2.5	2.5	15.5
18.20	2	.5	.5	16.0
18.23	1	.3	.3	16.3
19.00	4	1.0	1.0	17.3
19.10	8	2.0	2.0	19.3
19.20	2	.5	.5	19.8
19.22	3	.8	.8	20.5
19.30	4	1.0	1.0	21.5
19.33	1	.3	.3	21.8
20.00	37	9.3	9.3	31.0
20.10	15	3.8	3.8	34.8
20.11	9	2.3	2.3	37.0
20.12	12	3.0	3.0	40.0
20.13	10	2.5	2.5	42.5
20.14	1	.3	.3	42.8
20.15	6	1.5	1.5	44.3
20.16	1	.3	.3	44.5
20.17	2	.5	.5	45.0
20.20	2	.5	.5	45.5
20.22	5	1.3	1.3	46.8
20.25	2	.5	.5	47.3
21.10	2	.5	.5	47.8
21.16	2	.5	.5	48.3
21.17	1	.3	.3	48.5
21.20	1	.3	.3	48.8
22.00	107	26.8	26.8	75.5
22.10	1	.3	.3	75.8
22.20	4	1.0	1.0	76.8
22.90	1	.3	.3	77.0
23.00	34	8.5	8.5	85.5
23.14	4	1.0	1.0	86.5
23.15	1	.3	.3	86.8
23.20	1	.3	.3	87.0
25.00	42	10.5	10.5	97.5
25.10	3	.8	.8	98.3
25.20	1	.3	.3	98.5
25.22	1	.3	.3	98.8
25.23	2	.5	.5	99.3
26.22	1	.3	.3	99.5
33.00	1	.3	.3	99.8
34.90	1	.3	.3	100.0
Total	400	100.0	100.0	
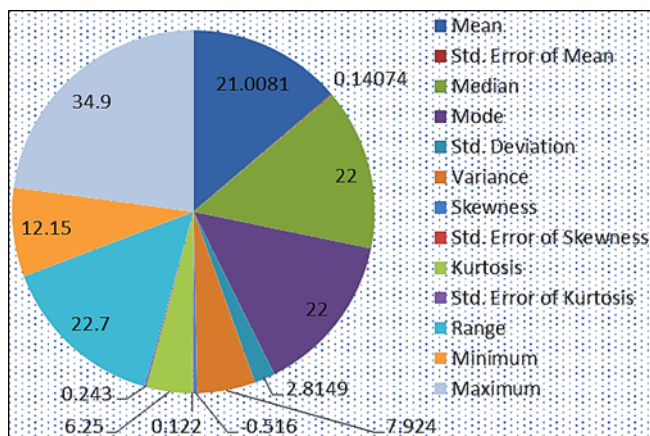
Fig 2: Showing the graphical representation on descriptive analysis of the infected and uninfected sheep and goats on the basis of anthropometric profile (Liver fluke)

Interpretation

The exploration of the above reported table (Please refer table 2, Fig. 2) give detailed analysis about the descriptive analysis of the respondents on the basis of anthropometric profile. Thus, the average weight of the liver fluke infected and uninfected sheep was found 21.01 kg. In pursuance to same, median was reported 19.12 and mode was found 22.00. The perusal of the same table indicates that the standard deviation of the score was seen 22.00. In context to same, the variance was seen 2.81 kg., which depicts that there is significant impact of moniezia on the anthropometry of the sheep and goats. The perusal of the same table reveals that skewness was measured -0.51. In pursuance to same, it was found that that 0.17 was reported kurtosis. The maximum weight was seen 25.00 and the minimum weight was seen 34.9. Accordingly the range was found 12.85. thus, from the above discussion, it is evident that the impact of liver fluke is significant on the anthropometric profile of the respondents.

1.7.2: Caption-II: Comparative analyses

In this caption-II, the investigator has analysed and discussed the data on the basis of independent 't' test. Accordingly, the analysis and interpretation is reported as under:

Table 3: Showing the impact of liver fluke among sheep and goats on their anthropometric profile. (N=200 each)

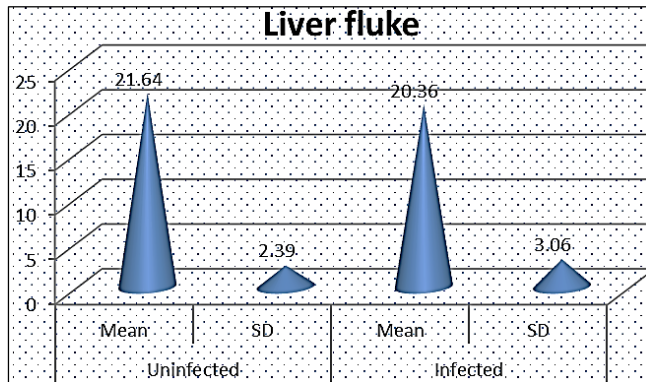| Variable	Uninfected		Infected		't' value
	Mean	SD	Mean	SD	
Liver fluke	21.64	2.39	20.36	3.06	4.65@@

Fig 3: Showing the graphical representation impact of Moniezia among goats on their anthropometric profile. (N=200 each)

Interpretation

The results obtained in above reported table (Please refer table. 3, Fig. 3) gives the significant of mean difference between liver fluke infected and uninfected sheep and goats on their anthropometric profile. The results reveal that the mean score of uninfected sheep and goats was seen higher (M=21.64), than the mean score of liver fluke infected sheep and goats (M=20.36). Besides, when the both group of students were comparatively analysed with the help of independent 't' test, the 't' value came out be 4.65, which is significant at 0.01 level of significance. Thus, the perusal of the above reported results indicate that there exists significant difference between liver fluke infected and uninfected sheep and goats on their anthropometric profile. Non-infected goats and sheep were found high weight achievers as compared to their counterparts (liver fluke infected). Thus from the above discussion the status of the hypothesis is reported as under:

Hypothesis: There exits significant difference between liver fluke infected and uninfected sheep and goats on their anthropometric profile.

The results re supported by the host of the researchers like

Bhat, S.A. (2012) [3], Li, *et al.* [2010] [17] and Lashari (2012) Bhat, S.A. (2012) [3] found that the age, sex, body weight and breed are important factors which influence the prevalence of gastrointestinal parasites. Li, *et al.* [2010] [17] reported the highest gastrointestinal same that ram were more susceptible to gastrointestinal parasitic infection in Suffolk than gulf coast native parasites parasite as compared to ewe. Lashari (2012) found that gastrointestinal parasites hold significant impact on the weight of the sheep and goats.

1.8 Conclusions of the study

The results of the study indicate that out of 400 sheep 110 (27.5) were found infected and among 400 goats 90 (22.5%)

were found infected, 200 (25%) were found infected. Thus, 25% respondents (sheep and goats) were found infected for liver fluke and 200 male sheep 59 (29.5%) were found infected for liver fluke whereas, 41 20.5% female sheep were found infected. In addition to this, the impact of liver fluke was reported significant on the weight and size of the respondents.

- **Competing interest:** The research declared that no potential if interest with respect to authorship, research and publication of this article.

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