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ASSESSMENT OF KNOWLEDGE AND ATTITUDES, PREVALENCE OF HARD TICKS AMONG GOAT AND CATTLE IN KECH DISTRICT, BALOCHISTAN

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Abstract

Ticks are hematophagous ectoparasites that transfer numerous pathogens. The knowledge, attitudes, and practices (KAP) of people in the Kech Balochistan prefecture on tick-borne illnesses (TBDs) and preventive measures served as the foundation for this study. Total 450 goats and 50 cattle were examined. 960 ticks were collected from hosts. Hyalomma anatolicum, Hyalomma dromedarri, Rhipcephalus microplus and Rhipcephalus sanguineus were collected. The results discovered that H. anatolicum (60%) was the main tick species followed by H. dromedarri (15.6%), R. sanguineus (11.4%) and R. microplus (12.5%). Even though the majority of respondents said ticks did not constitute a hazard to human health, the questionnaires showed that people rarely take preventive steps, such checking for ticks on the body. The people should be well educated about the chance of receiving bitten by infected ticks in order to decrease the spreading of tick-borne diseases in the area.

Keywords: Ticks, Goats, Cattle, Prevalence and Tick-Borne and Diseases.

INTRODUCTION

Ticks are the associates with Arachnida and separated from class Insecta (Keirans & Durden, 2005). Globally more than 900 species of ticks have been reported (Barker & Murrell, 2004; Guglielmone *et al*., 2010). Four families of ticks have been identified i.e., Ixodidae (hard ticks), Argasidae (soft ticks), Laelapidae and Nuttalliellidae (Anderson & Magnarelli, 2008). Ixodidae contain five genera of hard ticks *Amblyomma*, *Dermacentor*, *Haemaphysalis*, *Ixodes* and *Rhipicephalus* (Audouin, 1826**;** Hoogstraal & Varma, 1962). Ticks and TBD'S are recorded in all over Pakistan, including Sind (Soomro *et al*., 2014), Punjab (Sajid *et al*., 2008; 2009; 2011) Balochistan (Kakar *et al*., 2017), Khyber Pakhtunkwa (KPK) (Ali *et al*., 2019) and Gilgit-Baltistan, among other northern regions of Pakistan (Sajid *et al*., 2017). There are numerous genera and species of ticks in Pakistan because of their humid climatic condition which promotes their presence and flourishing for rapid growth (Durrani *et al*., 2008). Few studies have been reported on tick taxonomy, its associated infections and acaricidal resistance in Pakistan (Ali *et al*., 2016; Sajid *et al*., 2008).

Ticks are not considered seasonal parasites and they can be found in most hot and humid climates around the world (Merino *et al*., 2013). Some tick species can withstand

harsh weather conditions, such as cold temperatures for example *Ixodes uriae* is an ectoparasite of penguin and it is widely dispersed in the Arctic and Antarctic (Dietrich *et al*., 2011).

Ticks are members of arthropods that carry infectious diseases and can transfer them to humans and animals (Dantas-Torres *et al.*, 2012), most dangerous ectoparasites of both domestic and wild animals (Samish & Rehacek, 1999), in the globe, second only to mosquitoes, is one of the most significant carriers of human disease (Goodman *et al*., 2005)

The current study was done to developed knowledge and awareness about Tick and tick-borne diseases in the study area.

MATERIALS AND METHODS

STUDY AREA

Our study area i.e., Kech district is located in southern region of Balochistan province of Pakistan. Kech is one of the hottest areas in South Asia and counted as world's fourth hottest place, having recorded temperature of 53 Celsius in 2017

TICKS COLLECTION

Ticks samples were collected in different area of district Kech, Balochistan from July, 2022 to December, 2022. In present study total 450 goats and 50 cattle were examined. Sampling were done on all the animals from particular farms and herds. Total 960 ticks were collected from hosts. To choose the animals for tick search, a straightforward random sampling procedure was used. It involves the usage of a comb moved over the body of animal and ticks were collected from the ground. Ticks were kept in 100% ethyl alcohol using a 50 ml falcon tubes. Tick samples were collected from males and females of all age group infested animals (Ica *et al.*, 2007). Ticks were identified by using known taxonomic keys (Hoskins 1991; Walker 2014).

RESULT AND DISCUSSION

Table: 1 Socio-Demographic Details of Participants

Variable	Parameters	Frequency	Total (%)
Age (years)	18 to 30	2	6.1
	31 to 40	8	19.3
	Above 40	30	74.5
Gender	Male	38	94.5
	female	02	4.4
Source of income	Employed	32	79.5
	Not employed	6	14.4
	Not specified	2	5.1
Farm status	Owner	40	100
	worker	0	0

Age group of infected goats/ and cattle	Young Adult Old	40 150 60	16.1 59.4 23.5
Practicing experience in the farm	5 year 10 year more than 10 years	4 6 30	10.1 14.4 74.5

Majority of the participants were above 40 (n = 30, 74.5%) and least were having age above 18. In this survey majority of participants were male (n = 38, 95%). All respondents who take part in survey was farm worker (n = 40) and 79.5% were employed. Adult goats and cattle were highly infected (n = 150, 59.4%) while young goats and cattle were not highly infested. Majority participants rise goats and cattle more than 10 years (n = 30, 74.5%).

Table: 2 Knowledge Based Questions

Parameter	**Response**	**Frequency**	**Total (%)**
Ticks Can affect goats and cattle.	Yes No Don't know	34 16 0	60 40 0
Do ticks transmit zoonotic agents to humans?	Yes No Don't know	04 36 0	20 80 0
Do ticks decrease the meat production in goat and cattle	Yes No Don't know	10 30 0	25 75 0
Do you use skin repellent	Yes No Don't know	5 35 0	12.5 87.5 0
Do you think that climate influences on ticks?	Yes No Don't know	10 30 0	25 75 0

RESPONDENTS RESPONSE

Table B covers data collected about the goats and cattle how to handle by their owners. Participants were asked about ticks can affect goats and cattle health. Majority of respondents said yes effect health condition of goat and cattle (n = 34, 60%). It was unexpected result that the majority of respondents said that (n = 36, 9%) ticks did not transmit disease in human. The majority of those who took part were not aware about weight loss and meat that tick-infested animals than other animals (n = 75, $p > 0.295$). Participants were asked about skin repellent, when go to between herds, 87.5% of respondents (n = 35) said they avoid using of repellents and the majority of participants (n = 30) believed that climate did not influence tick

Table: 3 Prevalence of Tick Species

S.NO	Tick Species	Number of Positive Animals	Prevalence (%)
1	*Hyalomma anatolicum*	580	60
2	*Hyalomma dromedarri*	150	15.6
4	*Rhipcephalus microplus*	120	12.5
5	*Rhipcephalus sanguineus*	110	11.4

In the current study, four species were identified viz *Hyalomma anatolicum*, *Hyalomma dromedarri*, *Rhipcephalus microplus* and *Rhipcephalus sanguineus* from various tehsil of District Kech (Table 5). The results discovered that *Hyalomma anatolicum* (60%) was the main tick species followed by *Hyalomma dromedarri* (15.6%), *Rhipcephalus sanguineus* (11.4%) and *Rhipcephalus microplus* (12.5%).

In this study, farmers stated that the summer was the season with the highest risk of tick infestation (Sajid *et al*., 2008). Due to the variety of ixodid ticks in Pakistan and the paucity of national research concentrating on assessment of economic losses related to tick infestation, economic losses generated by ticks are not fully understood in our study location (Roy *et al*., 2018). Ticks are more frequently found in regions with prolonged extreme temperature swings, copious amounts of rain, and low humidity. Climate change is strongly linked to such an increase in temperatures and changes in rainfall patterns (Ashraf *et al*., 2020)

REFRENCES

Ali, A., Khan, M. A., Zahid, H., Yaseen, P. M., Qayash Khan, M., Nawab, J., Ibrahim, M. (2019). Seasonal dynamics, record of ticks infesting humans, wild and domestic animals and molecular phylogeny of *Rhipicephalus microplus* in Khyber Pakhtunkhwa Pakistan. Frontiers in physiology, *10*, 793. https://doi.org/10.3389/fphys.2019.00793

Anderson, J. F., & Magnarelli, L. A. (2008). Biology of ticks. Infectious disease clinics of North America, 22(2), 195-215. https://doi.org/10.1016/j.idc.2007.12.006

Ashraf, S.; Parveen, A.; Asif, M.; Awais, M.M.; Khan, A.; Aktas, M.; Ozubek, S.; Alanazi, A.D.; Alyousif, M.S.; Iqbal, F. A Report on the Tick Burden, Molecular Detection and Phylogenetic Analysis of Anaplasma Marginale in the Blood Samples of Cattle Collected from District Layyah in Punjab (Pakistan). Curr. Microbiol. 2020, 78, 274–281

Audouin, J. V. (1826). Explication sommaire des planches de polypes de l'Egypte et de la Syrie, publieers par Jules-Cesar Savigny. Descr Égypte Hist Nat, 1, 225-244.

Barker, S. C., & Murrell, A. (2004). Systematics and evolution of ticks with a list of valid genus and species names. Parasitology, 129 Suppl, S15-36. https://doi.org/10.1017/s0031182004005207

Dietrich, M., Gomez-Diaz, E., & McCoy, K. D. (2011). Worldwide distribution and diversity of seabird ticks: implications for the ecology and epidemiology of tick-borne pathogens. Vector-Borne and Zoonotic Diseases, 11(5), 453-470. https://doi.org/10.1089/vbz.2010.0009

Goodman, J. L., Dennis, D. T., & Sonenshine, D. E. (2005). *Tick-borne diseases of humans*. ASM press

Hoogstraal, H., & Varma, M. (1962). Haemaphysalis cornupunctata sp. n. and H. kashmirensis sp. n. from Kashmir, with Notes on H. sundrai Sharif and H. sewelli Sharif of India and Pakistan *(Ixodoidea, Ixodidae*). The Journal of Parasitology, *48*(2), 185-194. https://doi.org/10.2307/3275561

Kakar, M. E., Khan, M. A., Khan, M. S., Ashraf, K., Kakar, M. A., Jan, S., & Razzaq, A. (2017). Prevalence of tick infestation in different breeds of cattle in Balochistan. *JAPS: Journal of Animal & Plant Sciences*, *27*(3).

Keirans, J. E., & Durden, L. A. (2005). Tick systematics and identification. *Tick-borne Diseases of Humans*, 123-140. https://doi.org/10.1128/9781555816490.ch7

Merino, O., Alberdi, P., Perez de la Lastra, J. M., & de la Fuente, J. (2013). Tick vaccines and the control of tick-borne pathogens. Front Cell Infect Microbiol, 3, 30. https://doi.org/10.3389/fcimb.2013.00030

Roy, B.C.; Estrada-Peña, A.; Krücken, J.; Rehman, A.; Nijhof, A.M. Morphological and phylogenetic analyses of Rhipicephalus microplus ticks from Bangladesh, Pakistan and Myanmar. Ticks Tick-Borne Dis. 2018, 9, 1069–1079

Sajid MS. Iqbal Z, Shamim A, Siddique RM, Jawadul Hassan M, Rizwan HM (2017). Distribution and abundance of ticks infesting livestock population along Karakorum highway from Mansehra to Gilgit, Pakistan. J. Hellenic Vet. Med. Sci., 68(1): 051-058. https://doi.org/10.12681/jhvms.15556

Sajid, M. S., Iqbal, Z., Khan, M. N., & Muhammad, G. (2008). Point prevalence of hard ticks (Ixodids) infesting domestic ruminants of lower Punjab, Pakistan. Int J Agric Biol, 10(3), 349-351.

Sajid, M. S., Iqbal, Z., Khan, M. N., & Muhammad, G. (2009). In vitro and in vivo efficacies of Ivermectin and Cypermethrin against the cattle tick Hyalomma anatolicum anatolicum (Acari: Ixodidae). Parasitology Research, 105, 1133-1138.

Sajid, M. S., Iqbal, Z., Khan, M. N., Muhammad, G., Needham, G., & Khan, M. K. (2011). Prevalence, associated determinants, and in vivo chemotherapeutic control of hard ticks (Acari: Ixodidae) infesting domestic goats (Capra hircus) of lower Punjab,

Pakistan. *Parasitology research*, *108*(3), 601-609. DOI 10.1007/s00436-010-2103-8

Soomro, M. H., Soomro, S. P., Bhutto, M. B., Akbar, Z., Yaqoob, M., & Arijo, A. G. (2014). Prevalence of ticks in buffaloes in the upper Sindh Pakistan. *Buffalo Bull*, *33*(3), 323-7.