

# Knowledge, attitude, and practice of livestock farmers in Ilam province towards parasitic diseases and their drug control strategies

Alireza Saberinejad<sup>1</sup>, Mahdi Pourmahdi Borujeni<sup>2\*</sup>, Javad Jamshidian<sup>3</sup>  
and Mohammad Rahim Haji Hajikolaie<sup>4</sup>

<sup>1</sup> DVM Graduated from Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

<sup>2</sup> Professor, Department of Food Hygiene, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran

<sup>3</sup> Assistant Professor, Department of Basic Sciences, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran.

<sup>4</sup> Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran.

Received: 08.06.2024

Accepted: 13.11.2024

## Abstract

Insufficient knowledge of livestock farmers about the epidemiology of parasitic diseases and inappropriate use of antiparasitic drugs is one of the main obstacles in the control and prevention of these diseases. Therefore, this study investigates the knowledge, attitude, and practice of farmers in Ilam province regarding parasitic diseases and drug control. For this purpose, the current cross-sectional study was conducted on 300 farmers and the relationship between knowledge, attitude, and practice about parasitic diseases and different independent variables was performed using the Chi-square test and logistic regression. The results of the study showed that the relative frequency of awareness of the livestock farmers about the resistance of parasites to drugs is 75.7%, good knowledge is 52%, positive attitude is 50.7% and good practice is 50.3%. Factors related to farmers' awareness of parasites' resistance to drugs were farming location, gender, farmer's education, and farmer's occupation, while farming location, duration of farming, and level of satisfaction had a significant relationship with knowledge. In addition to these farmers' knowledge, farming location and herd size had a significant effect on attitude. Also, the farmer's attitude, the level of satisfaction, occupation, and herd composition had a significant effect on practice. The current survey showed that the knowledge level of farmers about the resistance of parasites to drugs in Ilam province is high, but in the context of rotating use of anti-parasitic drugs, consulting a veterinarian for treatment, reading the drug brochure and observing the withdrawal time to remove them from animal products after use. They do not have acceptable practice. Also, this study showed that the level of knowledge, attitude, and practice of farmers in this province is acceptable in terms of parasitic diseases so that a significant percentage of farmers are aware of the commonality of several parasitic diseases between humans and animals. They also knew about the introduction and symptoms of parasitic diseases, but they did not have adequate knowledge about the quarantine of new animals entering the herd, entering of some parasitic agents through the skin, the importance of spraying the area and anti-mite bath in preventing them. It is recommended according that farmers to receive training through veterinarians, retraining classes on new findings about parasitic diseases and ways of their prevention, control and treatment for veterinarians of the province conducted by the veterinary organization or training centers and their appropriate transfer to farmers.

**Key words:** Attitude, Drug resistance, Knowledge, Parasitic diseases, Practice

---

\* **Corresponding Author:** Mahdi Pourmahdi Borujeni, Professor, Department of Food Hygiene, Faculty of Veterinary Medicine, Shahid Chamran University of Ahvaz, Ahvaz, Iran  
E-mail: pourmahdim@scu.ac.ir



© 2020 by the authors. Licensee SCU, Ahvaz, Iran. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0 license) (<http://creativecommons.org/licenses/by-nc/4.0/>).

## References

- Borji, H. (2018). Anthelmintics resistance in nematodes of veterinary importance: a status report and how to overcome it? The First National Congress of Parasitic Diseases and Zoonotic Parasites. *Iranian Journal of Veterinary Medicine*, 12(Supplementary Issue), 1-131. (In Persian).
- Campbell, W., & Rew, R (1986). Chemotherapy of parasitic diseases (1st ed.). Plenum Press, New York, USA, pp. 145-146.
- Domke, A. V., Chartier, C., Gjerde, B., Höglund, J., Leine, N., Vatn, S., & Stuen, S. (2012). Prevalence of anthelmintic resistance in gastrointestinal nematodes of sheep and goats in Norway. *Parasitology Research*, 111(1), 185–193.
- Ebrahimi, R., Yakhchali, M., & Malekinejad, H. (2020). Anthelmintic resistance to Albendazole and Fenbendazole in gastrointestinal nematodes of sheep in Saghez municipality, Iran. *Journal of Veterinary Research*, 75(1), 1-7. (In Persian).
- Ebrahimi R, Yakhchali M, & Malekinejad H. (2021). In-vitro assessment of resistance to albendazole and fenbendazole in gastrointestinal nematodes. *Studies in Medical Sciences*, 31(12), 921-926. (In Persian).
- Eslami, A., Meshgi, B., & Hosseini, S. H. (2009). Helminth infections of animal and diagnostic methods. Part I: Parasitological methods. *Journal of Veterinary Laboratory Research*, 1(2), 85-93. (In Persian).
- Eslami, a., Rahbari, S., Nadalian, M.GH., Meshkat, M., Tajbakhsh, H., Mokhayer, B., & Zeinali, M. (2012). Investigation on the importance of parasitic diseases of ruminants of Iran and their zoototics and foresight their control. *Journal of Veterinary Microbiology*, 7(2 (23)), 1-10. (In Persian).
- Falzon, L.C., O’neill, T., Menzies, P., Peregrine, A., Jones-Bitton, A., & Mederos, A. (2014). A systematic review and meta-analysis of factors associated with anthelmintic resistance in sheep. *Preventive Veterinary Medicine*, 117, 388–402.
- Fleming, S. A., Craig, T., Kaplan, R. M., Miller, J. E., Navarre, C., & Rings, M. (2006). Anthelmintic resistance of gastrointestinal parasites in small ruminants. *Journal of Veterinary Internal Medicine*, 20(2), 435–444.
- Gholamian, A., Eslami, A., Nabavi, L., & Rasekh, A. (2006). A Field Survey on Resistance of Gastrointestinal Nematodes to Levamisole in Sheep in Khuzestan Province of Iran. *Journal of Veterinary Research*, 61(1), 7-13.
- Gholamian, A., Eslami, A., Nabavi, L., Rasekh, A. R., & Galedari, H. (2007). A field survey on resistance to albendazole in gastrointestinal nematodes of sheep in Khozestan province of Iran. *Journal of Veterinary Research*, 62(1), 45-51.
- Hosseini, S., Ahmadpour, M., Shirabadi, R., Arzamani, K., & Rajabzadeh, R. (2016). The knowledge, attitude and practice of “Health-Go betweenes” Esfarayen country about cutaneous leishmaniasis disease in 2013. *North Khorasan University of Medical Sciences*, 7(4), 735-743. (In Persian).
- Hosseini, S.H., Meshgi, B., Fattahpur, S., Mahdavi, A., & Nazar Alipour, R. (2010). Evaluation of triclabendazole and albendazole drug resistance against *Fasciola* species in Gilan province. *Iranian Veterinary Journal*, 6(4), 29-37. (In Persian).
- Hoste, H., Chartier, C., Etter, E., Goudeau, C., Soubirac, F., & Lefrileux, Y. (2000). A questionnaire survey on the practices adopted to control gastrointestinal nematode parasitism in dairy goat farms in France. *Veterinary Research Communications*, 24(7), 459-469.
- Jacobs, D., Fox, M., Gibbons, L., & Hermosilla, C. (2016). Diagnostic Principles of Veterinary Parasitology: Non bursate Nematodes and Anthelmintics (1st ed.). Chichester, John Wiley & Sons, West Sussex, USA, pp. 387-399.
- Jafari-Gh, A., Laven, R.A., Eila, N., Yadi, J., Hatami, Z., Soleimani, P., Jafari-Gh, S., Moazez Lesko, M., Sinafar, M., & Heidari, E. (2020). Transboundary and infectious diseases of small ruminants: Knowledge, attitude, and practice of nomadic and semi-nomadic pastoralists in northern Iran. *Small Ruminant Research*, 183.
- Kainga, H., Mponela, J., Basikolo, L., Phonera, M. C., Mpundu, P., Munyeme, M., Simulundu, E., & Saasa, N. (2022). Assessment of Knowledge, Attitudes, and Practices towards Rift Valley Fever among Livestock Farmers in Selected Districts of Malawi. *Tropical medicine and infectious disease*, 7(8), 167.
- Kaplan, RM. (2004). Drug resistance in nematodes of veterinary importance: a status report. *Trends in Parasitology*, 20(10), 477-481.

- Kargbo, A., Jawo, E., Amoutchi, A. I., Koua, H., Kuye, R., Dabre, Z., Bojang, A., & Vieira, R. F. C. (2022). Knowledge, attitude, and practice of livestock owners and livestock assistants towards African Trypanosomiasis control in the Gambia. *Journal of Parasitology Research*, 2022, 3379804.
- Keyyu, J., Kyvsgaard, N.C., Kassuku, A., & Willingham, A.L. (2003). Worm control practices and anthelmintic usage in traditional and dairy cattle farms in the southern highlands of Tanzania. *Veterinary Parasitology*, 114, 51–61.
- Mahami-Oskouei, M., Dalimi, A., Forouzandeh-Moghadam, M., & Rokni, M.B. (2012). Prevalence and severity of animal Fasciolosis in six provinces of Iran. *Feyz*, 16(3), 254-260. (In Persian).
- Mahmoodipour, M., hamidinejat, H., & tabandeh, M. (2024). Investigation of Babesia microti parasite by PCR method and determining the sequence of 18S rDNA gene in Ixodidae in Khuzestan province. *Iranian Veterinary Journal*, 19(4), 144-154.
- Morgan, E. R., Hosking, B. C., Burston, S., Carder, K. M., Hyslop, A. C., Pritchard, L. J., Whitmarsh, A. K., & Coles, G. C. (2012). A survey of helminth control practices on sheep farms in Great Britain and Ireland. *Veterinary Journal* (London, England : 1997), 192(3), 390–397.
- Morgan, E. R., Aziz, N. A., Blanchard, A., Charlier, J., Charvet, C., Claerebout, E., Geldhof, P., Greer, A. W., Hertzberg, H., Hodgkinson, J., Höglund, J., Hoste, H., Kaplan, R. M., Martínez-Valladares, M., Mitchell, S., Ploeger, H. W., Rinaldi, L., von Samson-Himmelstjerna, G., Sotiraki, S., Schnyder, M., Skuce, P., Bartley, D., Kenyon, F., Thamsborg, SM., Vineer, HR., de Waal, T., Williams, AR., van Wyk, JA., & Vercruysse, J. (2019). 100 Questions in Livestock Helminthology Research. *Trends in Parasitology*, 35(1), 52–71.
- Moutos, A., Doxani, C., Stefanidis, I., Zintzaras, E., & Rachiotis, G. (2022). Knowledge, attitude and practices (KAP) of ruminant livestock farmers related to zoonotic diseases in Ellassona municipality, Greece. *European Journal of Investigation in Health, Psychology and Education*, 12(3), 269–280.
- Nabavi, R., Shayan, P., Shokrani, H., Eslami, A., & Bokaie, S. (2011). Evaluation of Benzimidazole resistance in *Haemonchus contortus* using comparative PCR-RFLP methods. *Iranian Journal of Parasitology*, 6(2), 45–53.
- Nemati, R., Bahari, A., Mahmoodi, P., & Sazmand, A. (2019). Molecular study of Benzimidazole Resistance in *Teladorsagia circumcincta* isolated from sheep in north of Iran. *Iranian Journal of Parasitology*, 14(4), 646–651.
- Özlü, H., Atasever, M., & Atasever, M. A. (2020). Knowledge, attitude, and practices of cattle farmers regarding zoonotic diseases in Erzurum, Turkey. *Austral Journal of Veterinary Sciences*, 52(3), 79-85.
- Qucuo, N., Wu, G., He, R., Quzhen, D., Zhuoga, C., Deji, S., Zhang, L., Zhao, Z., & Du, Z. (2020). Knowledge, attitudes and practices regarding echinococcosis in Xizang Autonomous Region, China. *BMC Public Health*, 20(1), 483.
- Rose, H., Rinaldi, L., Bosco, A., Mavrot, F., de Waal, T., Skuce, P., Charlier, J., Torgerson, P. R., Hertzberg, H., Hendrickx, G., Vercruysse, J., & Morgan, E. R. (2015). Widespread anthelmintic resistance in European farmed ruminants: a systematic review. *The Veterinary Record*, 176(21), 546.
- Sazmand, A., Alipoor, G., Zafari, S., Zolhavarieh, S.M., Alanazi, A.D., & Sargison, N.D. (2020). Assessment of knowledge, attitudes and practices relating to parasitic diseases and anthelmintic resistance among livestock farmers in Hamedan, Iran. *Frontiers in Veterinary Science*, 7, 584323.
- Shalaby, H.A. (2013). Anthelmintics resistance; how to overcome it?. *Iranian Journal of Parasitology*, 8(1), 18–32.
- Suolaniemi, J., Autio, T., Heikkinen, J., & Räsänen, K. (2023). Knowledge, attitudes, and practices of Finnish dairy farmers on cryptosporidiosis. *Journal of Agromedicine*, 28(2), 288–299.
- Sutherland, I. A., & Leathwick, D. M. (2011). Anthelmintic resistance in nematode parasites of cattle: a global issue?. *Trends in Parasitology*, 27(4), 176–181.
- Thrusfield, M., Christley, R., Brown, H., Diggle, P.J., French, N., Howe, K., Kelly, L., O'Connor, A., Sargeant, J., & Wood, H. (2018). *Veterinary Epidemiology*. 4th ed. John Wiley & Sons Ltd, pp, 276-284.
- Vadlejch, J., Kyriánová, I. A., Várady, M., & Charlier, J. (2021). Resistance of strongylid nematodes to anthelmintic drugs and driving factors at Czech goat farms. *BMC Veterinary Research*, 17(1), 106.
- Vande Velde, F., Charlier, J., & Claerebout, E. (2018). Farmer behavior and gastrointestinal nematodes in ruminant livestock-uptake of sustainable control approaches. *Frontiers in Veterinary Science*, 5, 255.

- Vercruyse, J., Charlier, J., Van Dijk, J., Morgan, E. R., Geary, T., von Samson-Himmelstjerna, G., & Claerebout, E. (2018). Control of helminth ruminant infections by 2030. *Parasitology*, *145*(13), 1655–1664.
- Woods, D. J., & Knauer, C. S. (2010). Discovery of veterinary antiparasitic agents in the 21st century: a view from industry. *International Journal for Parasitology*, *40*(10), 1177–1181.
- Zanzani, S. A., Gazzonis, A. L., Di Cerbo, A., Varady, M., & Manfredi, M. T. (2014). Gastrointestinal nematodes of dairy goats, anthelmintic resistance and practices of parasite control in Northern Italy. *BMC Veterinary Research*, *10*, 114.