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ASSESSMENT THE OWNER'S AWARENESS TOWARDS LIVESTOCK DISEASES AT RURAL OF IRAQ

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ABSTRACT

Livestock production is a source of food for many people in rural and urban areas in Iraq and all the world. This study was conducted to evaluate the knowledge of 200 owners about the health problems of their animals in the countryside surrounding the city of Baghdad also to document the health status of 400 heads of livestock (cows, sheep, goats and buffalo) brought with the owners to the veterinary clinics. The questionnaire contained 19 questions about different aspects of suitable veterinary practices. It appears that the negative attitudes observed among herd owners are that only 30% give periodic vaccinations on a regular basis , 40% of owners make an immediate visit to the veterinary clinic when a critical condition occurs, such as dystocia, retained placenta, 20% of them breed sheep or goats in their herds separately . The study indicated that positive attitudes are limited, critical and not at a satisfactory level. The main health problems faced by the herds were. 40%parasitic infections, 20% diarrhea and mastitis each one, 10%bloat and acidosis. Therefore, it is necessary to provide owners the newest knowledge by cooperation with governmental agricultural extension institutions to develop their herds. The livestock breeding profession has good financial returns and provides self-sufficiency for the individual and society if it is used properly.

Keywords: Knowledge, owners, Livestock, Diseases

Introduction

Animal products provide a wide range of foodstuffs, rich in nutrients such as proteins, minerals, sugars and vitamins found in eggs, milk, meat, and honey. These products contribute to diversifying diets and generate income for individuals. Also the wealth of livestock could be a source of leather, fur, and fibers such as wool, mohair, and cashmere. Up to the dung have been used as a fertilizer for agricultural lands of crops or as fuel for cooking (Neima and Hassan, 2020). To increase livestock wealth while maintaining environmental balance, it is necessary to develop animal health care, from small herds of breeders to the large herds in the country. Incorrect management of the herd causes real losses in production. Many studies have been conducted about controlling diseases that can terminate herds and cause many financial losses and reflect at the economic level of the country (Mahmud, 2021)). The owner in the farm is constantly educated on how to maintain and develop his flock and adheres to an annual preventive program that guarantees him the elimination of endemic or emerging diseases. As example, immunizing livestock (one month old and older) with vaccines against *clostridium spp*. twice yearly with a booster dose after 30 days, lead to healthy cattle and sheep as an aid in preventing black leg caused by *Clostridium chauvoei*; malignant edema caused by *Cl. septicum*; bacillary hemoglobinuria caused by *CI. haemolyticum*; black disease caused by *Cl. novyi*; gas-gangrene caused by *Cl. sordellii*; and enterotoxemia and enteritis caused by *Cl. perfringens* Types B, C and D (Pérez *et al*., 2020).
Also preventive programs like periodic therapy against internal parasites like blood parasite and gastro-intestinal, lung, and liver flukes, or dipping and spraying against external parasites make a healthy herd with abundant production of meat, lambs, milk and dairy products. All these products improve the financial return of the individual as well as the country. Livestock is generally considered less likely to have disease if they are provided with the care and attention necessary throughout the year, but the

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problem is that the owners rarely resort to following a preventive program for their herds, and thus resort only to vaccination or treatment when diseases actually appear in herds, which reduces livestock response to treatment on the one hand and death of large numbers of it on the other hand (Zeedan *et al.*, 2023).

The study aimed to evaluate the knowledge of Iraqi owners about the animal diseases, control, prevention and the daily health practice of the herd with documentation of common diseases that livestock may be exposed to during the study season.

Materials and methods

Ethical approval: No ethical approval was needed as it is a survey-based study; however, after obtaining consent from all study participants, data were collected. The study sites are a group of veterinary clinics in Abu Ghraib, Taji, and Mahmoudiyah affiliated with the city of Baghdad. 200 owners visit the clinics to treat 400 heads of animals (sheep, goats, cattle and Buffalo), take advice, buy some medicines and vaccines, etc. Data was collected from 1st of May to 30th of October 2023.

The owners: Demographic information of owners was collected such as age, gender and education status as in table 1. Also animal information was collected such as species, herd size, sex, methods of raising, style of nutrition and the main problem of the animal had to visit the clinic as in table 2. Participants were interviewed using a questionnaire containing 19 questions about different aspects of correct veterinary care to assess the level of knowledge as in tables 3&4. The size of the herd was classified as small, medium, and large based on the number of sheep and goats, between 1-50 heads as small, while 50-100 as medium, and more than 100 heads as large. Information was entered and analyzed statistically using SPSS software version 22. Respondents of owners were classified into categories (excellent, very good, good, medium, and weak) based on the percentage to assess and estimate the extent of the owners' knowledge in applying healthy habits in daily practice with the herd as: 90s is excellent, 80s is very good, 70s is good, 60s is medium and 50s is acceptable which were considered positive behavior while below 50s is weak they were considered negative behavior (Ravid, 2015).

The animals: Regarding medical cases, the study included 400 cases from cattle, sheep goats and buffalo of all ages, and both sexes. The case history, clinical signs, and diagnosis were confirmed as in table 2, then the treatment program was presented.

Results

The study revealed that most owners were men78% and 42% were in their 40's, 31% were in their 50th of age. 50% of them had a primary study, while 27% had secondary school study, 46% were in high financial level while 19% in low financial level … table 1.

Table 1: Demographic characteristics of the owners

Variables	No.	%	**Variables**	**No.**	**%**
Gender			**Academic achievement**		
Male	146	73	illiterate	4	**2**
Female	54	27	literate	6	**3**
Total	200	100	Primary	100	**50**
Age (years) Mean: 35 SD ±12, Average (17-61)			Secondary	54	**27**
Age			Diploma & BSc.	30	**15**
≤20	32	16	PhD.& M	6	**3**
30	56	28	Total	200	**100**

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40	72	36	**Financial level**		
50	36	18	Good	92	**46**
≥60	4	2	Medium	70	**35**
Total	200	100	Weak	6	**3**
			Total	**200**	**100**

Table 2: Characteristics of the animals

Characteristics	**No.**	**%**	**Characteristics**	**No.**	**%**
Gender			**Resident area**		
Male	120	30	Taji	176	44
Female	280	70	Abou-Gareeb	116	29
Total	400	100	Mahmoudiyah	108	27
Age	**Mean 6, SD ±2, 3 months-8 yrs.**		Total	400	100
Types			**The main health disorder**		
Cattle	80	20	Parasite infestations	**160**	40
Buffalo	28	7	Diarrhea	80	20
Sheep	240	60	Mammary gland Pregnancy problems	80	20
Goats	52	13	Blot and acidosis	40	10
Total	400	100	Skin issues	20	5
Herd size			Eye infections	12	3
1-50	248	62	Emaciations & nutrition's issues	8	2
			Total	400	100
50-100	132	33	**Methods of breeding livestock**		
			Opened	332	83
More than100	20	5	Closed	68	17
Total	400	100	Total	400	100

Table 2 shows the information of animals, 70% were females while 30% were males, the majority of livestock were 60% sheep, followed by 20% cattle then 13% goats, and the least were buffalo with 7%. The cases were 44% fomTaji followed by 29% from Abu Ghraib and 27% from Mahmodiyah. The size of the herds 62% were small, 33% medium and 5% large. About breeding methods 83% were open and 17% close. The main health problems of herds were suffering from, parasitic infections 40%, diarrhea, mastitis and injuries 20% of each, bloating and acidosis 10%, while skin issues were 5%, which were lesions represented as nodules, ulcers, wounds, boils, abscesses, warts and other lesions, eye injuries were 3%,, , and malnutrition and emaciation accounted 2%.

During the study period, there was a viral disease that was diagnosed visually and laboratory-based in cooperation with the Iraqi animal health laboratories affiliated with the Ministry of Agriculture, which caused numerous losses in cows in recent years. It is a lumpy skin disease in cattle. It explains in some

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detail how the owner dealt with this disease, which led to huge losses.

Lumpy skin disease in cattle

A viral disease, genetic composition is similar to sheep and goat pox. It is transmitted by mosquitoes or eating food and drink contaminated with the saliva of sick animals. The source of infection is crusts, saliva, tears, nasal secretions, milk, semen, infected tissues, lungs and spleens of infected animals. The infection rate ranges from 5-45%, and the mortality rate reaches 10%. Disinfectants used to eliminate the virus: 1% formalin - 2% phenol.

The reason for the appearance of cases of lumpy skin disease in cows is the spread of insect vectors, including mosquitoes, and this is due to the spread of ponds, water swamps, and garbage, and the reluctance of many breeders to vaccinate because it is for money, the failure of breeders to immediately report the appearance of disease cases, and the incorrect disposal of dead animals. Symptoms of the disease appeared as sinusitis, conjunctivitis, lacrimation, salivation and may be blindness in the animals in advanced cases. Decrease in milk production and the appearance of skin nodules in the groin area and on the skin of the neck and udder. The infection spreads in large numbers throughout the body, with a diameter ranging 1-7 cm. It is painful for the animal when touched and can appear in the mucous membranes lining the nose and digestive tract and edematous the pulp area in the lower abdomen.

Preventive measures by Reporting, isolating, and treating, Immunization within the area of the infection focus, Control the markets in coordination with governors and local councils, Control the movement of animals and their movement during the period of the spread of the disease, Educating breeders not to buy calves from live animal markets, especially from unknown sources, Do not enter the herds until they have been isolated separately for 21 days.

A: Case of Caw with Lumpy skin disease showed fever, depression. Clinical signs include:
Firm raised skin nodules up to 50 mm in diameter develop around the head, neck, genitals and limbs. Swelling of limbs, brisket and genitals may occur, Reluctance to move and eat, Nasal and ocular discharges, Enlarged superficial lymph nodes, Drop in milk production, Abortion.

B: Case of ewe with Mastitis (inflammation of the mammary gland observe signs of inflammation, such as: pain, redness, swelling of the gland, asymmetry the both udder glands (infection the left half) and changes in milk characteristics, which may show lumps, pinkish/reddish coloration or even absence of

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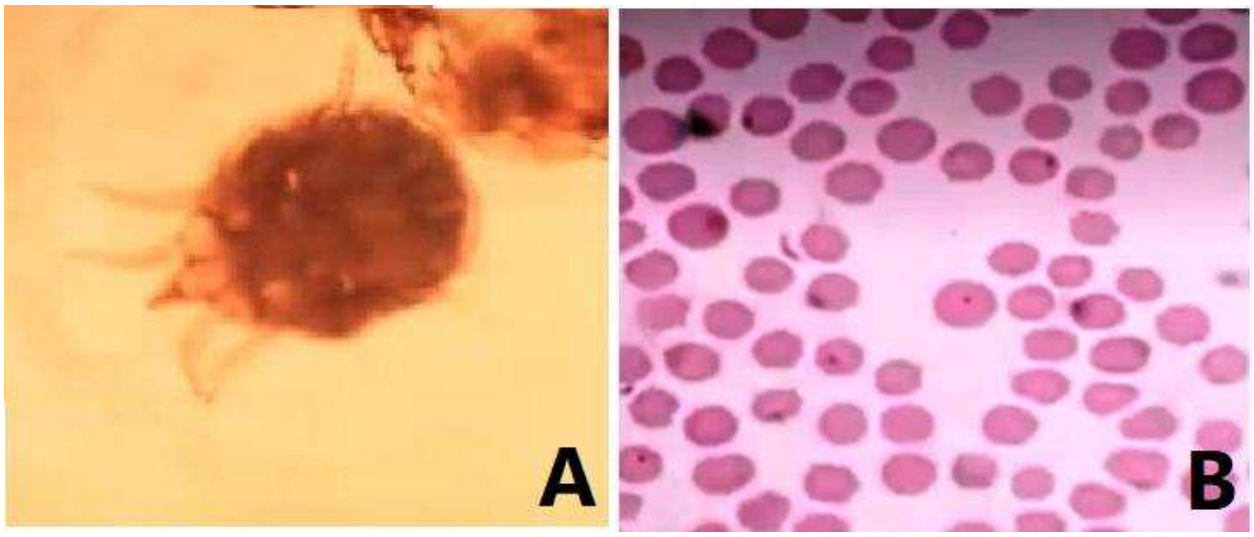
secretion.

Fast laboratory examination of blood and skin samples to diagnosis the parasite infestation:
Three blood films from each animal were prepared, let to dry, fixed by methanol (99.5%) for 1 min and stained thin smears for 30 min by diluted commercial Giemsa solution then examined under oil immersion lens of light microscope to confirm *Theileria annulata* infection.



Bovine blood film infected with Theileria annulata , demonstrating intracellular trophozoite "signet ring" (×100)(arro) Scale bar= 20 µm, the intra and extra erythrocyte piroplasms of Theileria annulata.

Table 3: A positive knowledge of owners

	The attitudes	No.	%
1	The knowledge of the zoonosis disease (rabies), its risks, prevention and control	190	95
2	Keeping the animal exposed to sunlight with a dry barn	186	95
3	Providing feed by specific feeder not on the ground	154	77
4	Completing the treatment course of health problems	146	73
5	cleaning the barn daily and keeping free of waste and spoiled food	144	72
6	Dosage animals with antihelmenths periodically and as recommended.	124	62
7	Use insecticides periodically to combat external parasites on animals and the farm	122	61
8	Placing sheep, goats and cows in separate bars	120	60
9	Mostly providing concentrated feed with green feed for animals	112	56
Total No. of Owners		200	

Table 3 shows the positive attitudes of the owners towards their animals, 95% of owners know the zoonosis disease (rabies), its risks, prevention and control, also 93% of them keep the animal exposed to sunlight and housing in a dry barn, While 77% provide feed by specific feeder and containers not in the ground, 73% complete the treatment course of health problems, 72% clean the barn daily and keeping free of waste and spoiled food, 62% gave animals antihelminthic periodically and as recommended, 61% use pesticides periodically to combat external parasites on animals and the farm. 60% place small animals (sheep, goats) and large animals (cows and buffalo) in separate bans, while 56% provide for animals' concentrated feed with green feed.

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	The Attitudes	No.	%
1	provided feed to their flock different species or ages or postpartum period Separately	92	46
2	Immediate visit the veterinary when a critical condition occurs, such as dystocia, retained placenta, bloating, and accidents	80	40
3	Always go to the veterinarian when a health problem occurs for the animal	90	45
4	Giving periodic vaccinations on a regular basis	80	40
5	The knowledge of zoonosis diseases ,the prevention and control like hemorrhagic fever brucellosis, tuberculosis, anthrax and echinococcosis	60	30
6	Knowledge of zoonosis diseases such as brucellosis, tuberculosis, anthrax, hydatid cysts, etc. that affect animals and can infect humans	58	29
7	Disposing of dead fetuses and placentas by burial or cremation	50	25
8	The herd is one type, sheep or goats	40	20
9	Have some medicines for emergency situations	30	15
10	Own a quality veterinary pharmacy that follows the instructions	10	5
Total No. of Owners		200	

Table 4: A negative knowledge of the owners

Table 4 shows negative attitudes of owners towards their animals. Note that 46% of the owners provided feed to their flock of different ages or postpartum period separately, 40% of owners always made an immediate visit to the veterinary clinics when a critical condition occurred, such as dystocia, retained placenta, flatulence, and accidents. It also appears that 30% of animal owners give periodic vaccinations on a regular basis. It is also noted that 20% of the owners raise sheep and goats separately from each other. Also, 31% of owners have a random veterinary first aid kit in their home to provide emergency care, but only 5% of them indicated that they have a typical first aid kit on the farm. Also, 25% of them get rid of the aborted fetus and placenta or the dead animal by burial or cremation.

Discussion

The owners in the countryside are the most responsible for managing their herds and carrying out tasks. In this study, most of the owners were male, in their forties or thirties, and most of them enjoyed satisfactory financial returns. Animal financing can improve the living reality of the individual, and this is consistent with many studies that indicate raising productive animals can support the economic situation of the individual and achieve self-sufficiency, but in general it is possible to increase the financial return if the person's skills are developed by educating. It is worth noting that half of the owners have a primary education, and this is often due to the impression of rural families that rarely have the ambition and motivation to develop scientific skills, as they use family members to work in the field such as grazing and farming (Coban *at el*., 2013). The data revealed that education has an impact on the level of knowledge and awareness of owners about animal health care. Applying the correct owner behavior in dealing with the herd is shown below:

Disadvantage knowledge of owners: Some negative practices committed by livestock owners have led to lower revenues and lower seasonal productivity. For example: Some breeders place animals with special conditions, such as newly born females or sick animals, with others., or provide feed to animals with the different species and ages in one feeder. These practices lead to problems of malnutrition,

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which is the main gateway to most diseases. If goats and sheep are raised together, the sheep will be more likely to suffer from internal parasites. This is because sheep tend to eat close to the ground, making them more susceptible to severe worm infestation, goats, on the other hand, will wander freely without showing any signs, each of sheep or goats have specific behaviors and nutritional needs that may create confusion in providing requirements when placed in one herd. .. Both types of feed green and concentrated feed must be provided. The providing concentrated feed Such as corn, oats, soybeans and bran was weak compared to providing green fodder, Knowing that concentrated fodder is one of the necessary foods for nutritional integrity because it contains important nutritional elements such as carbohydrates, vitamins, minerals and salts, thus maintaining the health and production of the animal. Many owners provide green or hay fodder directly on the ground to the animals. They eat part of the fodder and the rest is destroyed as a result of being run over by animals or exposure to animal waste such as urine and dung. This method increases waste and loss of fodder, in addition to being a contributing factor to transmission of infectious diseases and parasites between animals. It is also important to store feed to help the herd stay healthy and productive during the dry season (Martin *et al*., 2020).

Vaccinations can protect livestock from many deadly diseases and financial losses such as pox, clostridium infections and brucellosis. In Spite of the availability of vaccines, but knowledge of owners was weak on a regular basis because they were mostly stingy or ignored the importance of the vaccine, this behavior may have cost a lot of financial losses. Among the endemic disease cases in Iraq in livestock that have been recorded for a long time is the contagious abortion disease or brucellosis which is widespread in livestock and causes large financial losses annually in the herds; females may abort in the third trimester of pregnancy due to brucellosis. Likewise, sheep pox causes abortion in females. Smallpox vaccine gives immunity against smallpox in small ruminants and nodular skin disease that occurs in local cattle during the last few years, these diseases lead to devastating economic losses. Vaccinating females against brucellosis a month before birth prevents abortion and protects newborns. As well as combating external and internal parasites and insects which maintain the cleanliness of the barn leads to raising the animal's immunity and thus taking full advantage of the vaccines provided. It is noted that there is a tendency for the owner to prefer antibiotics more than vaccines. Vaccinations cause immunity per contra antibiotics, antibiotics negatively affect immunization. Animals are vaccinated after 2-3 months and not before, because before the newborn animal takes colostrum, which raises immunity and protects the animal from diseases. Reduce as much as possible the intake of antibiotics or sulfa compounds orally because they affect the digestive process that occurs in the rumen and kill beneficial bacteria in the digestive process. Therefore, it is often preferable to give antibiotics in necessity by injection. Newborn animal losses are due to the lack of awareness of the owners, which leads to more financial losses and wastage of effort and time, and all of this is due to the weak demand for the vaccine by owners and the weak coverage and follow-up of the herds in the countryside by officials (Lewis and Roth, 2021).

The other negative practice was throwing the fetus or aborted placenta randomly on the roads, which leads to pollution and growth of many organisms like Salmonella, Campylobacter and Clostridium bacteria and insect like flies and mosquitoes that can cause many epidemics and diseases. Therefore, the safe handling of aborted fetuses and placenta is through burning or burying. In this study, behavior of visiting the veterinary institutions was not satisfied, even in critical cases when animals suffer from diarrhea, dystocia or retained placenta. The breeder's communication with veterinary institutions is necessary to get advice and maintain the health of the herd and solve the health problems as soon as possible (Yaremchuk *et al*, 2022).

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Advantage knowledge of the owners

In this study, the complete course of animal treatment was one of the optimistic situations that the owner may apply. This condition can control the disease and prevent antibiotic resistance if a future infection occurs. Currently. Daily exposed the animal to sunlight and housed in a clean, dry barn free of droppings and spoiled food are a healthy practice because these can reduce disease-causing agents, such as foot rot, diarrhea caused by Salmonella, and E. coli, or respiratory diseases caused by Pasteurella and Mycoplasma or mastitis causes and other bacterial and viral causes such as Brucella and Influenza. Ensure good hoof hygiene is practiced by trimming the hooves of livestock as needed (Sargison, 2017). In this study, the practice of owners to control the parasites was medium not at the required level. The preventive program (control of parasites) external parasites such as ticks, scabies, and lice, or internal parasites such as gastrointestinal, liver, and lung worms is one of the most important programs that the breeder must adhere to for the obtaining a healthy and productive herd, internal or external parasites can cause weakness and emaciation of the animal in spite of the good quality of food may be provided. Parasite infestation leads to a decline in the immune system and exposure to more pathogenesis (Bessell et al., 2018). In addition, these parasites (ticks, mosquito, and lice) can be intermediate hosts for many viral, bacterial and protozoal diseases that may be dangerous to animals and humans alike. Such as Hyalomma spp. ticks which transmute babesiosis and theileriosis in cows, as well as Congo hemorrhagic fever in humans, which is a transmissible disease that has been endemic in Iraq for decades, causing loss of human lives, perhaps due to some incorrect practices of livestock owners and butchers. In Iraq, according to the preventive program, often used the pesticide as a topical spray, fumigation or dipping the animals, or, giving systemic therapy an oral dose of deworming, or, Avermectin medication as injection to combat many external and internal parasites (Burke and Miller, 2020).

Animal diseases may be transmitted to humans or other animals through contact with infected animals or through contaminated milk, meat, air or feed, but in this study, these facts are unknown to most farmers. Researchers also reported similar results and one of them concluded that 87% of livestock owners had a low level of knowledge regarding the health and nutritional status of the herd as in this study. This low to moderate level of awareness may be due to failure of government programs and owner interest in the rural community (Patel et al., 2015; Geta and Kibret, 2021).

Conclusion

The study compared positive behavior with negative behavior of livestock owners, concluding that positive behaviors are limited, critical, and not at a satisfactory level. It is essential to provide animal owners with the latest knowledge and training in order to have large, healthy herbs that improve the financial return for rural families by commitment to giving against endemic diseases,
encouraging young people to develop their skills by supporting them financially, improving government awareness programs, such as organizing courses and workshops for farmers to develop their skills in livestock raising, commitment therapeutic and preventive programs, such as giving deworming treatments or combating external parasites, during the birth season, attention should be paid to providing food (for females and newborns) according to a nutritional program that includes concentrated and green fodder, attention to clean of breeding and birth pens and furnishing them with straw, monitoring the herd daily and detecting any problem to be solved, not to take livestock out to graze in rainy or cold weather.

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