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Risks of zoonotic diseases from livestock and health literacy in Thiqar/Al rifai

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Abstract

The understanding, beliefs, and behaviors will be determined by this investigation regarding diseases that humans contract from animals. In this , 77 people functioning (reproducers, obese animals, vendors) of cattle .wide open The Region of Al Rifai, ThiQar, Iraq. Those individuals addressed a sociodemographic inquiry notwithstanding one more three sorts of inquiries (information perspectives, methods), the information's grade rating has been determined by emphasizing each question. Participants 72, they were 45 years old on average.. Approximately %87.6% of the participants had already recently contaminated, and %58.6 were unaware of this Just 12.6% of the participants got prepared about creature farming. %37.6 of the members used to have farming training 96% of the people that used to drink unsterilized milk of them will be aware that it can cause infections, and.%65 of aware of this. According to this research, the prevalence rate of attracting a disease from an animal was 5.6%. Gloves were worn by 36.2% of the participants, whereas veils were worn by only 28%. %13 did not use any private defensive hardware. The use of crude dairy was typical those that were unaware that it would be tainted (p =.) 0.02% The participants knew a great deal about the diseases that animals could transmit, but they were less aware that poultry could also be a source of contamination (P <0.001)..) Members don't behave in an apparent defensive manner. the need for safety clothing or help getting ready, particularly when itcomes to using it. ***Keywords: zoonotic diseases, cattle producers, contaminated***

I. Introduction

Zoonoses are infections that can spread spontaneously from animals to people. (Chomel, 2023). Prior to 1959, the term "zoonosis" was used to describe diseases that were only spread from animals to humans. However, the FAO/WHO joint committee decision changed this term to "diseases transmitted from animals to humans and from humans to animals," and it has since been used as such. (Singh *et al*., 2023).

Zoonoses are transmitted by either direct faecal-oral contact, biting or through the inhalatory route and cutaneious contact. Zoonotic; indirect transmission of zoonotic gastrointestinal pathogens such as touch to soiled boots or clothes. animal waste (~61% among all infectious human diseases are caused by microbes originating from animals. (Al-Tayib., 2019). A few years ago, a thorough analysis of all human infections showed that most pathogenic organisms that impact people are zoonotic 868 (a startling 61%) of the 1415 species identified as harmful to humans in 2001 might be classified as zoonotic. (Christou., 2011). Numerous zoonotic illnesses have a wide range of microbes and ways of spreading. 70% of all instances of diarrhea are caused by Campylobacter, the most prevalent and well-reported zoonose in both Europe and the US. Salmonella, yersinia, Escherichia coli, Listeria, Q fever, tularemia, echinococcus, and brucellosis are followed by other bacterial illnesses. (Navarro *et al*., 2016).

rabies, brucellosis, and Crimean-Congo hemorrhagic fever sickness are the most prevalent zoonoses in Iraq. In addition to their detrimental impacts on public health, many zoonotic diseases continue to be a significant public health concern because they result in animal mortality and productivity losses that cost (Shaheen., 2022). three categories of zoonotic infections are distinguished based on whether the hosts are animals or humans. (Chomel., 2014).

Anthropozoonosis refers to diseases that are transmitted from animals to humans, such as Tularemia, Leptospirosis, Rabies, Psittacosis, and Toxoplasmosis. 2.Zooanthroponosis encompasses diseases that can be transmitted from humans to animals, including Diphtheria and Amebiasis. 3.Amphixenosis includes diseases that can be transmitted between both humans and animals, such as Staphylococci, Streptococci, and Mycobacteria. Within the agricultural sectors, animal husbandry presents the most significant potential for value addition. In addition to the meat, dairy, and various animal product

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industries, livestock farming plays a crucial role in the economy by generating new employment opportunities in the pharmaceutical, feed, and livestock equipment sectors that are directly linked to livestock. (Sohail, *et al*., 2023).

in a context that necessitates a heightened focus on animal husbandry, characterized by diverse climatic conditions, the presence of various species and breeds of animals, and a population predominantly residing in rural regions. (Herrero *et al*., 2013). Zoonoses represent an occupational hazard for individuals engaged in professions that require interaction with animals. Among the diverse range of such professions, livestock farmers hold a prominent position. These individuals may face an elevated risk of contracting zoonotic diseases due to their frequent exposure to environments contaminated with animal waste or byproducts (Klous *et al.*, 2016). Additionally, other members working in the farmhouse may be at high risk due to direct and indirect contact with animals, even if they do not work on the farm (Zomer, et al., 2017). However, only those engaged in animal husbandry were included in this study, those who deal with animal husbandry, they were tried to determine the knowledge about zoonoses transmitted from animals to humans, the infection risks that people are exposed to as a result of some common animal exposures, and determine whether they carry out simple infection prevention activities in farms.

II. Methods and Materials

Such an survey falls under the category of cross-sectional research. The District of Rifai, located in the Thi Qar Governorate, boasts extensive and fertile land, with a significant portion of its population involved in agricultural and livestock activities. Livestock farming is prevalent in the rural regions of The Rifai District. The district is situated 80 kilometers from the center of Thi Qar Governorate. According to data from the Iraqi Central Statistical Organization (CSO) in 2019, the population of The Rifai and its surrounding areas is 164662 encompassing a district area of 5,044 square kilometers, where many individuals participate in animal husbandry, agriculture, and various other business ventures. (Abidi, 2024).

Individuals involved in animal husbandry participate in dairy farming, livestock farming, and poultry farming. There exists a susceptibility to zoonotic diseases stemming from animals, their byproducts, and environmental contamination. The extent of their understanding regarding zoonoses, transmission methods, and protective measures is a subject of debate, as is the adherence to recommended practices. Furthermore, there is a lack of comprehensive data on whether these practices correlate positively with the level of knowledge acquired and whether individuals receive adequate non-formal education. (Cardoso, et al., 2019).

Three distinct types of questions were utilized in this study: socio-demographic status, knowledge, and attitudes. Participants were surveyed to gather demographic details, including age, gender, years of experience in animal husbandry, marital status, and number of children, alongside inquiries regarding their knowledge levels, attitudes, and behaviors. Each question contributed one point to the knowledge score. Data collection was conducted through face-to-face interviews, allowing for a comparison of knowledge levels in relation to demographic information, while the relationship between knowledge levels and attitude-behavior data was also examined. The research sample consisted of 77 livestock dealers. However, 5 individuals were excluded from the analysis due to issues with accessibility and incomplete data, resulting in a reach of 93% of the original population. The data were analyzed using SPSS 26.0 software, employing frequency analysis, chi-squared assessments, and Mann-Whitney U tests.

III. Results and discussion

Approximately 44.40% of the participants were female, while 55.60% were male. Among them, 82% were married, and 18% were single. The participants' average age was 14_46 years. (SD = 8.89, minimum = 15, maximum = 71). The average age for men was 44.00 years, whereas for women, it was 46.05 years. A comparison of the average ages between men and women was conducted. No notable difference was observed ($p>0.05$). The educational background of the participants was categorized as follows: 19.40% were illiterate, 22.20% were literate, 41.70% had completed primary education, 15.30% had completed secondary education, and 1.40% had attained higher education. A significant majority, 95.80%, were involved in barn and livestock farming, while a mere 4.20% participated in pasture

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farming. Additionally, 37.50% of the participants were beneficiaries of government assistance. Approximately 15.3% of the participants indicated that Humans could contract diseases from animals however, 84.7% of them were unaware that it is possible to contract a disease from the a non-infected animal without clinical signs. (Table 2).

Table 2: A comparative analysis of the understanding of disease transmission from animals to humans versus the transmission of diseases from a non-infected animal animals to humans.

The knowledge that a disease can be transmitted from a non infected animal	Knowledge that diseases can be transmitted from animals to huma ıs	Total n (B%)	P
36 (%59.1)	9(%81.8)	45 (%62.5)	0.140
25 (%40.9)	2 (%18.1)	27 (%37.5)	
		72 (%100)	
Total 61 (%84.7)	Total 11 (%15.3)		
a: row percentage b: column ıntage perc			

(12.50%) of the participants had undergone training in animal husbandry, while only (%87.5%) of those Non training in animal husbandry. (Table 3).

Table 3:

A comparison between government assistance for training and Non training in animal husbandry

assistance of government	Status of Livestock training.		Total n (%b)	P
	There is n(%a)	None n(%a)		
Yes	6(%66.7)	21 (%33.3)	27 (%37.5)	0.281
No	3 (%33.3)	42 (%66.7)	45 (%62.5)	
Total	9 (%12.5)	63 (%87.5)	72 (%100)	
a: row percentage b: column percentage				

Approximately %35 of the participants did not realize that raw milk could transmit diseases. Approximately% 65 of individuals unaware that raw milk could be a potential source of infection drank raw milk. The intake of raw milk was linked to the understanding that it is not a possible source of infection, (p=0.002), (Table 4).

Table 4: Relationship between the use of raw milk drink and disease trans- mission.

Raw Milk drink	Disease Transmission Information from Raw Milk		Total n(%b	P
	There is n (%a)	None n(%a)		
Yes	31 (%66)	22 (%88)	53 (%76)	0.002
No	16 (%34)	3 (%12)	19 (%24)	
Total	47 (%65)	25 (%35)	72 (%100)	
a: row percentage b: column percentage				

although people say the disease is transmitted **from** animals to humans, they believe poultry is less at risk (P<0.001) (Table 5).

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the participants (%87.5) Knowledge that diseases can be transmitted from chicken to humans(%12.5) non Knowledge that diseases can be transmitted from chicken to humans. . (Table 5). Table 5: Comparison of knowledge about disease transmission from animals to humans and knowledge on disease transmission from poultry.

Information about disease transmission from poultry	Knowledge that diseases can be transmitted from chicken to humans		Total n(%b)	P
	Yes n(%a)	No n(%a)		
Yes	46 (%73)	2 (%22.2)	48 (%67)	
No	17 (%27)	7 (%77.8)	24 (%33)	<0.001
Total	63 (%87.5)	9 (%12.5)	72 (%100)	
a: row percentage b: column percentage				

From 1993 to 2012, the US Centers for Disease Control and Prevention (CDC) reported 127 outbreaks associated with raw milk. Those outbreaks resulted in roughly 1,909 cases of illness and 144 hospital admissions. The majority of these outbreaks resulted from: campylobacter, Shiga toxin-producing Escherichia coli, or Salmonella, and the incidents involving raw milk also impact children. (Zhang., 2014).

The use of raw milk is believed to put livestock as well as with there local communities at danger from zoonosis diseases. fresh milk is known to be contaminated by udder or other animal diseases, environmental pollution, animal skin, insects and dirty personal protective equipment. Milk contaminated in this way contains dangerous bacteria like Salmonella, E. Coli, Brucella, Listeria, Campylobacter, or Mycobacterium bovis. (Girma *et al*., 2014).

Brucella is a disease that continues to be significant globally, particularly in developing nations. (Franc *et al*. 2024) According to a research commissioned on residents of a semi-urban region, 34.8% of the individuals had never heard of brucella before, and 45.6% learned about brucellosis from their relatives or neighbors. Only 29.4% of individuals stated that brucellosis was transmitted to humans, 19.1% stated that animal-to-animal transmission could occur, and 13.3% stated that one of their household members was diagnosed with brucellosis by a doctor. It was determined that 38.5% of the individuals participating in the study bought unpasteurized milk and made dairy products themselves (Akinyemi *et al*., 2022).

Iraq is among the nations where brucellosis is prevalent. Although the number of cases rose from 2004 to 2010, it declined in the latter half of 2014. Over half of the cases (52.8%) came from the rural southern region. The reduction in case numbers does not imply that an effective study is in place to manage the disease. It is believed that the reduction in the population involved in agriculture contributes to this decline as well. (Alhamada *et al*, 2017).

The most important infection route for Brucella is thought to be the consumption of milk and dairy products such as raw milk and fresh cheese. In a study conducted in Iraq, the presence of brucella abortus, a brucella-type bacterium, was investigated in 202 cow milk samples collected from 14 central villages; Of 202 raw cow milk samples, 35 (17.32%) were identified as suspicious (Dadar, 2019). In this research, individuals were largely knowing that carrier can be passed from animals to humans (87.5%), but they had lower awareness that poultry could be possible sources of infection (66.7% ($p<0.001$). Despite the growing attention on recent outbreaks of avian virus-related diseases, issues related to poultry-transmitted illnesses like bird flu are not new challenges. The avian influenza virus, commonly known as bird flu, has consistently been a disease transmitted by birds. It surfaced in 1918 with the H1N1 strain known as "Spanish Flu", in 1975 with the H2N2 strain referred to as "Asian Flu", and in 1968 with the H3N2 strain called "Hong Kong Flu"; research indicates that the sources of all three significant epidemics were originally passed from birds. Approximately 40 million individuals passed away during the 1918 epidemic. (Zelnikar, 2015).

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Nonetheless, considering this information, this study indicated that individuals involved in animal husbandry still lack adequate knowledge regarding the potential risks to poultry. it is noted that zoonotic diseases are not properly assessed as occupational diseases for individuals who handle animals In this research, the rate of disease spread from animals was determined to be 5.6%. Based on the literature, research in this area is restricted. Occupational brucellosis instances were identified in 5 individuals employed at a slaughterhouse in Mosul. (Dahl, 2020).

Between 1996 and 2006, Italy reported 36 cases of occupational brucellosis. It has been highlighted that this zoonotic disease has declined due to animal breeding, occupational health practices, regional safeguards, mandatory use of personal protective gear, and particularly the enforced training on its proper use (Brangsch *et al*., 2023). Between 2003 and 2015, Greece identified 2159 cases of brucellosis; it was noted that 77.1% of these cases were linked to the consumption of raw milk and livestock, with 87.7% involving farmers and livestock breeders. This equates to an annual prevalence of 7.1 per 100,000. Nonetheless, other jobs have arisen with comparable or greater risk: butchers and slaughterhouse employees (12.7 per 100,000), as well as lab personnel (3.1 per 100,000), while veterinarians hold the highest risk at (53 per 100,000) have been identified (de Sousa *et al*., 2021).

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