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Exploring The Interconnectedness Of Humans And Animals Health And Comparing The Latest Research On Zoonotic Diseases Transmitted Between Pets And Humans

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Abstract

Introduction: The relationship between human and animal health is deeply interconnected, with both populations influencing each other in various ways.

Objectives: The main objective of the study is to find the interconnectedness of humans and animals health and comparing the latest research on zoonotic diseases transmitted between pets and humans.

Methodology of the study: This cross-sectional observational study was conducted at University of Veterinary and Animal Sciences, Lahore from March 2023 to March 2024. A total of 200 participants were recruited for this study, comprising individuals from diverse demographics, including pet owners, healthcare professionals, veterinarians, and public health experts. Recruitment efforts targeted both urban and rural populations to ensure a representative sample. Data collection involved a combination of surveys, interviews, and literature reviews.

Results: Data were collected from 200 participants with 60% being pet owners. Females constituted 65% of the sample, and 70% resided in urban areas. The mean age of participants was 35 years, with a standard deviation of 10. Among pet owners, 65% owned dogs, 25% owned cats, and 10% owned other pets. The study found that 80% of participants were

aware of zoonotic diseases, with 90% recognizing rabies, 75% recognizing toxoplasmosis, and 60% recognizing Lyme disease. However, only 70% reported washing hands after handling pets, and 40% were aware of the importance of veterinary check-ups and vaccinations.
Conclusion: It is concluded that a comprehensive understanding of the interconnectedness of human and animal health is important for effectively addressing zoonotic diseases.

Keywords: Humans, Animals, Pets, Zoonotic, Transmission, Diseases

Introduction

The relationship between human and animal health is deeply interconnected, with both populations influencing each other in various ways. Zoonotic diseases, which are infections transmitted between animals and humans, highlight this intricate relationship and pose significant public health challenges worldwide (Yasmeen et al., 2021). Understanding the dynamics of zoonotic diseases is crucial for effective disease prevention, management, and control. Recent research has shed light on the transmission of zoonotic diseases between pets and humans, emphasizing the need for comprehensive investigations and interventions. Pets, including dogs, cats, and other domestic animals, play essential roles in human society, providing companionship, emotional support, and assistance. However, they can also serve as reservoirs for various pathogens that have the potential to cause illness in humans (Ahmed et al., 2020).

Any infectious disease possibly contagious from animals, both wild and domestic, to people is characterized as a zoonotic disease. The diseases that contaminate people from animals are caused by bacterial, viral, parasitic, or contagious microbes and spread to people through chomps, scratches, vectors, or ingestion (Chandio et al., 2020). Zoonotic diseases are classified by their course of transmission, in particular vector-borne like Break Valley fever or food-borne like Campylobacter, Salmonella, E. coli, and Listeria; microbe types, for example, microparasites, viruses, microorganisms, protozoa, worms, ticks, or bugs; or level of person-to-person transmissibility, for example, coronaviruses (CoV) and Ebola virus. People live in warm relationships with domesticated animals (El et al., 2020). These animals might have microorganisms that are contagious to people and can be unsafe to wellbeing. Zoonotic diseases present issues for worldwide wellbeing; they represent an expected 60% of known infectious diseases and 75% of arising infectious diseases that are accounted for universally (George et al., 2020). Endemic zoonotic diseases are predominant in creating districts around the world, especially in regions where people and animals dwell in closeness. Endemic zoonotic diseases perseveringly force a significant disease trouble, especially across tropical districts. They influence human wellbeing and prosperity straightforwardly as normal reasons for human disease and by implication through influences on livelihoods and food security due to livestock creation misfortunes (Ilyas et al., 2019). Notwithstanding these numerous effects, endemic zoonoses are still seldom perceived and are inadequately grasped. These diseases present wellbeing loads as well as meaningfully affecting networks (Akbar et al., 2019). The contaminated individual becomes inefficient, and direct relations burn through cash giving consideration and treatment. Time and cash spent looking for a fix might put an extreme channel on family assets. Zoonotic diseases in individuals and animals happen with regards to a large number of co-endemic microbes in a rustic local area in western Kenya. The shifting general wellbeing trouble and financial effect of zoonotic diseases across time and geological settings make focusing on their avoidance and control significant (Als et al., 2020).

Objectives

The main objective of the study is to find the interconnectedness of humans and animals health and comparing the latest research on zoonotic diseases transmitted between pets and humans.

Methodology of the study

This cross-sectional observational study was conducted at University of Veterinary and Animal Sciences, Lahore from March 2023 to March 2024. A total of 200 participants were recruited for this study, comprising individuals from diverse demographics, including pet owners, healthcare professionals, veterinarians, and public health experts. Recruitment efforts targeted both urban and rural populations to ensure a representative sample. Data collection involved a combination of surveys, interviews, and literature reviews. Participants

completed structured questionnaires designed to gather information on pet ownership, interactions with animals, knowledge of zoonotic diseases, and preventive practices. Additionally, in-depth interviews were conducted with key stakeholders to explore nuanced perspectives on the topic. Furthermore, a comprehensive review of recent literature was conducted to synthesize existing research findings and identify trends in zoonotic disease transmission. Data were collected and analyzed using SPSS v29.0. Quantitative data obtained from surveys were analyzed using descriptive statistics to characterize participant demographics, pet ownership patterns, and knowledge levels regarding zoonotic diseases.

Results

Data were collected from 200 participants with 60% being pet owners. Females constituted 65% of the sample, and 70% resided in urban areas. The mean age of participants was 35 years, with a standard deviation of 10. Among pet owners, 65% owned dogs, 25% owned cats, and 10% owned other pets.

Table 01: Demographic characteristics of the participants

Characteristic	**Value**
Participants (n)	200
Pet Owners (%)	120 (60%)
Gender (Female %)	130 (65%)
Residence (Urban %)	140 (70%)
Mean Age (years)	35 (SD = 10)
Pet Ownership	
- Dogs (%)	78 (65%)
- Cats (%)	30 (25%)
- Other Pets (%)	12 (10%)

The study found that 80% of participants were aware of zoonotic diseases, with 90% recognizing rabies, 75% recognizing toxoplasmosis, and 60% recognizing Lyme disease. However, only 70% reported washing hands after handling pets, and 40% were aware of the importance of veterinary check-ups and vaccinations. A smaller proportion, 30%, admitted to sharing food with their pets.

Table 02: Knowledge and practice regarding zoonotic disease

Variable	**Percentage**
Awareness of Zoonotic Diseases	80%
Recognize Rabies	90%
Recognize Toxoplasmosis	75%
Recognize Lyme Disease	60%
Wash Hands after Handling Pets	70%
Aware of Importance of Vet Check-ups & Vaccinations	40%
Share Food with Pets	30%

Rabies, despite widespread vaccination efforts, persists in certain regions, underscoring the continued importance of vaccination programs and public awareness campaigns. Meanwhile, studies have uncovered a potential link between toxoplasmosis and psychiatric disorders in humans, emphasizing the need for better understanding and management of this parasitic infection. In urban areas, Lyme disease is experiencing an uptick in incidence, attributed to climate change and the expanding habitats of disease-carrying ticks. Additionally, the COVID-19 pandemic has drawn attention to the zoonotic origins of diseases, emphasizing the imperative for One Health approaches.

Table 03: Comparison of recent research on zoonotic disease

Zoonotic Disease	**Recent Findings**
Rabies	Continued prevalence in certain regions, highlighting the importance of vaccination programs
Toxoplasmosis	Emerging evidence linking toxoplasmosis with psychiatric disorders in humans
Lyme Disease	Increasing incidence in urban areas due to climate change and expanding tick habitats
COVID-19	Zoonotic origins from wildlife, emphasizing the need for One Health approaches in disease surveillance

Zoonotic diseases pose significant public health concerns due to their ability to spread between animals and humans. Understanding their main transmission routes and implementing effective preventive measures is crucial for disease control and prevention. Rabies primarily spreads through the bite of infected animals, especially dogs, highlighting the importance of pet vaccination and avoiding contact with stray animals. Toxoplasmosis transmission occurs through the ingestion of contaminated food or water, emphasizing the need for proper cooking of meat and thorough washing of fruits and vegetables. Lyme disease is primarily transmitted through the bite of infected ticks, such as deer ticks, underscoring the importance of using insect repellents and wearing protective clothing in endemic areas. COVID-19, caused by the novel coronavirus, primarily spreads through respiratory droplets and close contact, necessitating practices like hand hygiene, mask-wearing, and social distancing to mitigate transmission risks.

Table 04: Comparison of diseases roots

Zoonotic Disease	Main Transmission Route(s)	Preventive Measures
Rabies	Bite of infected animals (e.g., dogs)	Vaccination of pets, avoidance of stray animals
Toxoplasmosis	Ingestion of contaminated food or water	Proper cooking of meat, washing fruits and vegetables
Lyme Disease	Bite of infected ticks (e.g., deer ticks)	Use of insect repellents, wearing protective clothing
COVID-19	Respiratory droplets, close contact	Hand hygiene, wearing masks, social distancing

Discussion

The interconnectedness of human and animal wellbeing, especially with regards to zoonotic diseases, highlights the basic requirement for cooperative endeavors among veterinary and clinical experts (Braam et al., 2021). Zoonotic diseases, which are communicated among animals and people, present significant general wellbeing dangers around the world. Investigating the most recent examination on zoonotic diseases communicated among pets and people gives important bits of knowledge into understanding, forestalling, and dealing with these diseases (Sharma et al., 2023). By analyzing the transmission elements, the study of disease transmission, and preventive proportions of zoonotic diseases, specialists can foster compelling systems to relieve their effect on human and animal populaces. This interdisciplinary methodology includes reconnaissance, early discovery, and quick reaction instruments to control flare-ups and forestall future transmissions (Borham et al., 2022).

Human exercises, like urbanization, deforestation, wildlife abuse, and the travel industry, as well as the worldwide environment changes that have happened from humanity's inhabitation of the planet, change the landscapes of nature as well as act as main thrusts of zoonotic disease rises, accordingly expanding the pervasiveness of definitely known zoonoses (Khan et al., 2022). Different animals and arthropod supplies have been connected to the association between human-related factors and the rise of diseases, including rodents, birds, pigs, cows, bats, primates, camels, mosquitoes, ticks, and insects. It means a lot to concentrate on the different reasons for arising zoonoses, as these diseases represent over 60% of infectious diseases experienced by people and can make overall demolition as seen during the Coronavirus pandemic (Sun et al., 2023). As humanity turns out to be more mindful of the dangers of pandemics, like the plague, Spanish influenza, and SARS-CoV-2, it is of extraordinary interest to all the more likely describe ways of limiting exercises that increment repositories or human-animal contact. While it is apparently difficult to totally prevent new contaminations from spreading from animals to people, it could be feasible to lessen the seriousness of dangers to the human populace through speedier or more productive strategies for identification, early advance notice systems, and appropriate control or anticipation approaches assuming we better understand the exercises that impact or drive these zoonotic transmissions (Zhou et al., 2021). Furthermore, understanding the factors contributing to zoonotic disease transmission, such as changes in land use, climate change, wildlife trade, and human behavior, is essential for implementing targeted interventions. By addressing these underlying factors and promoting One Health initiatives, which recognize the interconnectedness of human, animal, and environmental health, we can better protect both human and animal populations from zoonotic diseases.

Conclusion

It is concluded that a comprehensive understanding of the interconnectedness of human and animal health is important for effectively addressing zoonotic diseases. By integrating veterinary and medical research, surveillance, and preventive measures, we can better mitigate the risks posed by zoonotic diseases transmitted between pets and humans.

Authors Contribution

Hammad Ahmed Hashmi, Khoullah Fayyaz and Hamza Manzoor conceptualized the study. The methodology was designed by Haris Ali Ramzan, Muhammad Tariq, Hammad Ahmed Hashmi and Wuhib Ayele. Formal analysis was carried out by Maaz Ullah, Haris Ali Ramzan, Hafiz Aamir Ali Kharl and Atta Ullah. Writing of the original draft was done by Kalsoom Asghar, Shahzada Khurram Adrian Shah, Hafiz Aamir Ali Kharl and Muhammad Tariq while Khoullah Fayyaz, Hamza Manzoor, Atta Ullah and Maaz Ullah edited the draft. Hammad Ahmed Hashmi supervised the project.

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