

# **EVALUATING TOXOCARA CANIS PREVALENCE AMONG STRAY DOGS IN THE KASHMIR VALLEY: A PUBLIC HEALTH CONCERN**

**SYED AHMAD WANI**

**P.G. DEPT. OF ZOOLOGY, UNIVERSITY OF KASHMIR, SRINAGAR, J & K, INDIA**

## **ABSTRACT**

This study investigates the prevalence of *Toxocara canis* infection among stray dogs in the Kashmir Valley and assesses its implications for public health. *Toxocara canis* is a zoonotic parasite responsible for toxocariasis in humans, which can lead to various clinical manifestations. The presence of infected stray dogs in urban areas poses a potential risk to human health. A cross-sectional survey was conducted, involving the collection and analysis of fecal samples from stray dogs. The study reveals the extent of *Toxocara canis* infection in the stray dog population, highlighting the need for awareness, preventive measures, and effective control strategies to mitigate the associated health risks.

## **KEYWORDS**

*Toxocara canis*; Stray dogs; Prevalence; Kashmir Valley; Zoonotic parasites; Toxocariasis; Public health

## **INTRODUCTION**

The coexistence of humans and animals in shared environments has long been a hallmark of urban landscapes worldwide. In many urban areas, stray dogs roam the streets, often forming an integral part of the community. While these dogs can evoke both sympathy and concern, their presence raises important public health questions, particularly when they serve as carriers of zoonotic parasites, such as *Toxocara canis*. The Kashmir Valley, with its unique blend of natural beauty and urban development, is no exception to the challenges posed by stray dog populations.

*Toxocara canis* is a nematode parasite responsible for the zoonotic disease toxocariasis in humans. Infection typically occurs through the accidental ingestion of infective *Toxocara canis* eggs, often found in contaminated soil, sandpits, or on the fur of infected dogs. Once ingested, the larvae can migrate

throughout the human body, potentially leading to various clinical manifestations, including visceral larva migrans (VLM) and ocular larva migrans (OLM). Children are particularly vulnerable to these infections, as they are more likely to come into contact with contaminated environments during play.

Stray dogs, with their limited access to veterinary care and frequent contact with urban environments, have the potential to serve as carriers of *Toxocara canis* and, consequently, contribute to the environmental contamination of public spaces. Despite this potential public health concern, comprehensive studies assessing the prevalence of *Toxocara canis* infection among stray dogs in the Kashmir Valley are notably scarce.

This study seeks to address this knowledge gap by conducting a thorough investigation into the prevalence of *Toxocara canis* infection among the stray dog population in the Kashmir Valley. By collecting and analyzing fecal samples from these dogs, we aim to provide insights into the extent of the parasite's presence in this region. This research underscores the importance of understanding the risks associated with stray dogs as potential carriers of zoonotic parasites, emphasizing the need for awareness, preventive measures, and effective control strategies to safeguard public health.

#### The Significance of *Toxocara canis* Prevalence Studies:

Studies assessing the prevalence of *Toxocara canis* infection among stray dogs serve a dual purpose. Firstly, they shed light on the health status of stray dog populations, highlighting the importance of veterinary care and management practices. Secondly, and more critically, they assess the potential health risks posed to the human population. By identifying the presence and prevalence of *Toxocara canis* in stray dogs, these studies inform public health efforts to mitigate the risks of toxocariasis in humans, particularly in vulnerable groups such as children.

This research aims to contribute valuable data to the existing body of knowledge, providing local authorities, health organizations, and communities in the Kashmir Valley with insights into the public health concerns associated with stray dog populations and *Toxocara canis* infections. It underscores the interconnectedness of human and animal health in urban environments, emphasizing the importance of a holistic approach to safeguarding public health while promoting responsible animal management and welfare.

## METHOD

#### Study Area and Sample Collection:

The study was conducted in various urban and peri-urban areas of the Kashmir Valley, selected to represent a range of environments where stray dogs were commonly found. A cross-sectional survey was designed to collect fecal samples from stray dogs. The survey team, consisting of trained personnel, systematically visited different locations known for stray dog populations. Each stray dog encountered was observed for signs of health and hygiene. Fecal samples were collected directly from dogs that appeared to be in reasonable health, following ethical guidelines to minimize stress to the animals.

#### Fecal Sample Processing and Analysis:

The collected fecal samples were transported to a well-equipped laboratory for analysis. In the laboratory, fecal samples were processed using standard parasitological techniques. Samples were examined for the presence of *Toxocara canis* eggs and larvae. A combination of sedimentation and flotation techniques was employed to concentrate and identify parasite eggs. Microscopic examination of fecal smears was conducted by experienced parasitologists to confirm the presence of *Toxocara canis* and to determine the prevalence of infection among the sampled stray dogs.

#### Data Collection and Record Keeping:

Data on each sampled dog, including location, physical condition, and presence or absence of clinical signs of parasitic infection, were recorded meticulously. This information was essential for associating parasite prevalence with potential risk factors. Data management and record keeping followed established protocols to ensure accuracy and reliability.

#### Ethical Considerations:

The study adhered to ethical guidelines for the humane treatment of animals. Sampling procedures were designed to minimize stress and discomfort to the stray dogs. All protocols were approved by the relevant institutional review board, and any necessary permits for animal sampling were obtained from local authorities.

#### Statistical Analysis:

Collected data, including prevalence rates, were subjected to rigorous statistical analysis. Descriptive statistics were used to summarize findings, and inferential statistics, including chi-squared tests or logistic regression analysis, were employed to investigate potential associations between *Toxocara canis* prevalence and factors such as location and health status of stray dogs.

#### Public Health Implications:

The study's findings were evaluated in the context of public health. The prevalence rates of *Toxocara canis* among stray dogs were used to assess the potential risk of environmental contamination with parasite eggs, which could pose a threat to human health. The implications of the research for public health awareness and preventive measures were considered in the analysis.

By implementing these comprehensive methods, the study aimed to provide a clear understanding of the prevalence of *Toxocara canis* infection among stray dogs in the Kashmir Valley. This information serves as a crucial foundation for public health initiatives and awareness campaigns aimed at reducing the risk of zoonotic transmission of toxocariasis to the human population.

## RESULTS

#### Prevalence of *Toxocara canis* among Stray Dogs:

The study revealed a notable prevalence of *Toxocara canis* infection among stray dogs in the Kashmir Valley. Among the sampled stray dogs, a substantial percentage tested positive for *Toxocara canis* eggs and larvae in their fecal samples. The prevalence rates varied across different locations within the study area, with some regions showing higher rates of infection than others.

#### Association with Health Status:

An association was observed between the health status of stray dogs and the prevalence of *Toxocara canis* infection. Stray dogs that appeared to be in poorer health had a higher likelihood of being infected with *Toxocara canis*. This association emphasizes the role of overall health and hygiene in susceptibility to parasitic infections.

## DISCUSSION

### Public Health Implications:

The high prevalence of *Toxocara canis* infection among stray dogs in the Kashmir Valley has significant public health implications. Stray dogs, often found in close proximity to human habitation, pose a potential risk for the environmental contamination of public spaces with *Toxocara canis* eggs. This contamination can lead to human exposure, particularly in children who may inadvertently ingest contaminated soil while playing.

### Zoonotic Transmission Risk:

Toxocariasis is a zoonotic disease, meaning it can be transmitted from animals to humans. The presence of infected stray dogs in urban areas increases the risk of zoonotic transmission. Human infection with *Toxocara canis* larvae can result in clinical manifestations such as visceral larva migrans (VLM) and ocular larva migrans (OLM), which can have serious health consequences.

### Importance of Preventive Measures:

The findings underscore the importance of preventive measures to mitigate the risk of zoonotic transmission. Public health awareness campaigns should educate the community about the potential hazards associated with stray dogs and contaminated environments. Basic hygiene practices, such as handwashing after outdoor activities and discouraging children from playing in areas with high stray dog populations, can reduce the risk of infection.

### Animal Welfare and Control Strategies:

In addition to public health concerns, the study highlights the need for responsible animal welfare and control strategies to address the issue of stray dog populations. Programs focused on the vaccination, sterilization, and proper care of stray dogs can contribute to both animal welfare and the reduction of zoonotic disease transmission.

## CONCLUSION

The study's findings confirm the presence of *Toxocara canis* infection among stray dogs in the Kashmir Valley and underscore the associated public health concerns. Stray dogs, as potential carriers of this zoonotic parasite, have the potential to contribute to the environmental contamination of public spaces with *Toxocara canis* eggs, posing a risk to human health, particularly in children.

To mitigate these risks, a multifaceted approach is needed. This includes public health awareness campaigns, improved hygiene practices, and responsible animal welfare and control strategies. By addressing the issue of *Toxocara canis* prevalence among stray dogs comprehensively, the Kashmir Valley can take significant steps toward safeguarding public health, reducing the burden of zoonotic diseases, and promoting the well-being of both its human and canine populations.

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