HUMAN & CHIMPANZEE RESPIRATORY TRACT INFECTION ANALYSIS IN KIBALE NATIONAL PARK, UGANDA

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ABSTRACT: The Jane Goodall Institute aims to protect endangered chimpanzee populations by monitoring their health in the wild. The Kibale Chimpanzee Project field assistants record data on chimpanzee health as part of a daily monitoring system. The mobile and stationary health clinics supported by Kibale National Park serve the medical needs of the people in the local area. This retrospective study aimed to determine the presence of a preliminary correlation between respiratory tract infections in a population of habituated chimpanzees and the local people. Despite a small sample size, the results suggest that there is not a significant relationship between the cases of respiratory tract infections in the two groups. However, it is pertinent that further epidemiological analysis is completed to draw true conclusions about zoonotic disease transmission in this area.

INTRODUCTION

The Jane Goodall Institute works with organizations across Uganda to preserve endangered chimpanzee populations. Through the Jane Goodall Institute, CHIMP, the Chimpanzee Health Interventions and Monitoring Program, is working throughout Uganda by partnering with various researchers, non-governmental organizations, and government agencies to determine the health status of the chimpanzees in Uganda and to make veterinary interventions when necessary.

This retrospective study analyzed health data records from the Kibale Chimpanzee Project, the mobile health clinic, and the stationary health clinic in order to determine the presence of a preliminary correlation between cases of respiratory tract infections in the chimpanzees and humans. The data compiled from 2015 to 2017 was graphed and statistical analysis was performed. Although this study found no significant correlation between respiratory tract infections in chimpanzees and humans, there is a great need for further research in this field. As the people in the area around Kibale National Park continue to encroach upon the forest and utilize its resources, the likelihood of zoonotic disease transmission between humans and chimpanzees increases.

MATERIALS AND METHODS

A retrospective study was conducted of the health data for the habituated chimpanzees at the Kanyawara field site in Kibale National Park, the stationary health clinic in Kanyawara, and the mobile health clinic run by the Kibale Chimpanzee Project. Health records were provided with consent from these organizations.

Chimpanzee health data is collected daily by field assistants working for the Kibale Chimpanzee Project on paper forms during observations in the forest. This information is later digitalized by data entrants into Excel documents. The respiratory tract infection case definition for the chimpanzees included coughs and/or sneezes recorded on the health records. If the chimpanzees were coded as having one of these symptoms, it means that the symptom was observed at least once on the day it was recorded. The total number of individuals with cough and/or sneeze for each month provided (i.e. January 2015 through April 2017) was summed and later used for comparison with human health data.

MATERIALS AND METHODS CONTINUED

Data from the stationary health clinic in Kanyawara is compiled by the staff at the clinic from their records. These summary sheets were analyzed for the presence of respiratory tract infections. The respiratory tract infection case definition for the stationary health clinic included severe acute respiratory infections, other emerging infectious respiratory diseases (e.g. influenza-like illness and SARS), non-pneumatic coughs and colds, and pneumonia. The total number of individuals with these diagnoses for each month provided (i.e. January 2011 through May 2017) was summed and later used for comparison with chimpanzee health data and human health data from the mobile clinic.

The Kibale Chimpanzee Project mobile health clinic data is compiled by the staff at the conclusion of each clinic. The mobile health clinic visits remote villages near Kibale National Park approximately twice per week, visiting the same village approximately once every three to four months. The respiratory tract infection case definition for the mobile health clinic included respiratory tract infections (i.e. RTIs), flu, coughs, and pneumonia. The total number of individuals with these diagnoses for each month provided (i.e. April 2017 through June 2017) was summed and later used for comparison with chimpanzee health data and human health data from the stationary clinic. It is important to note that the monthly totals included patients from multiple villages.

Due to the small sample size from the mobile health clinic, this data was added to the data from the stationary health clinic to provide a total number of affected humans per month. Months with data for both chimpanzees and humans were graphed to show the number of individuals with respiratory infections and compared to determine the preliminary presence of a relationship between respiratory tract infections in chimpanzees and humans. The correlation function on Excel was used to determine the correlation coefficient.

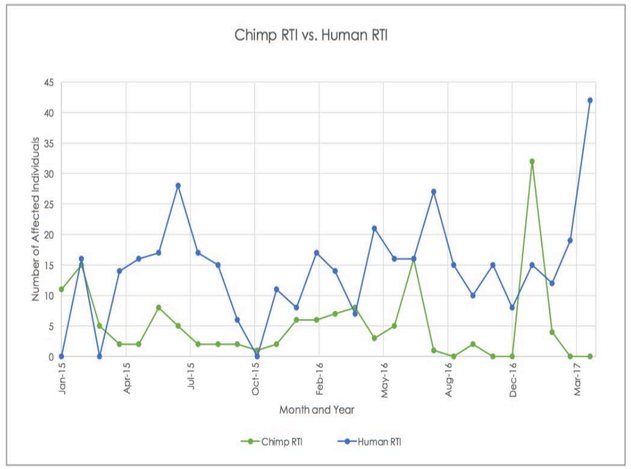

Figure 1. Number of affected individuals with respiratory tract infections per month from January 2015 to April 2017.

RESULTS

Figure 1 is a graphical representation of the data. The number of individual chimpanzees and humans with respiratory tract infections each month was plotted. The correlation function on Excel was used to determine the presence of a relationship between respiratory tract infections in chimpanzees and humans. This function calculates the correlation coefficient. The correlation coefficient was -0.0992 for this data set.

It should be noted that inclusion of severe acute respiratory infections and other emerging infectious respiratory diseases diagnosed at the stationary health clinic did not impact the results of this study because no cases were diagnosed during the time period analyzed.

CONCLUSIONS

The results of this study suggest that there is not a correlation between chimpanzee respiratory tract infections and human respiratory tract infections in the greater Kibale National Park region. However, due to the limitations of the data provided for both the chimpanzees and humans, there is a clear need for further research to be conducted. Respiratory disease has been reported to be transmitted between humans and chimpanzees and has caused many chimpanzee mortalities in the past. Given the local economic reliance on Kibale National Park and its associated programs, many people enter the forest on a regular basis and could pose a potential threat to the endangered chimpanzee population there.

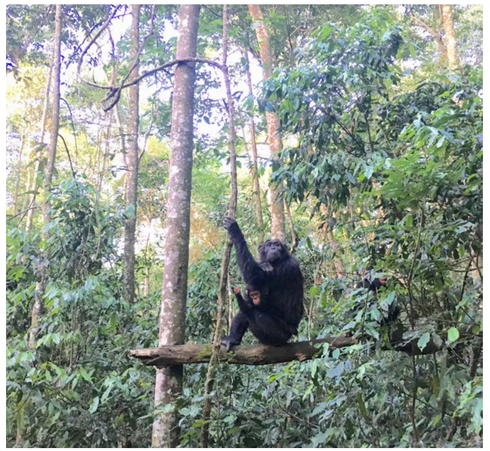

Figure 2. Mother (Special) and daughter (Stella) chimpanzees in Kibale National Park

Cornell University

KIBALE CHIMPANZEE PROJECT

Jane Goodall Institute