

Review Article

Bird flu in Nepal

Kajol Thapa^{1*}, Ved Prakash Mishra², Suraj Twanabasu³, Susan Kusma⁴

¹Department of Medical Laboratory Technology, Kathmandu School of Medical Technology, CTEVT, Kathmandu, Nepal

²Department of Microbiology, Kathmandu School of Medical Technology, CTEVT, Kathmandu, Nepal

³Department of Pathology, Vayodha Hospital, Kathmandu, Nepal

⁴Department of Pathology, Lalupate Medical Center Pvt Ltd, Kathmandu, Nepal

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***Correspondence:**

Kajol Thapa,

E-mail: thapakajol2@gmail.com

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ABSTRACT

Avian flu also known as bird flu is caused by deadly virus H5N1 which initially was found in birds and wild animals, however, later it was found in human beings causing severe respiratory related problems. This review article was performed to understand the epidemiology of outbreaks of H5N1 in different districts of Nepal. First outbreak of strain H5N1 was reported in 2009. Consequently, highest number of outbreaks i.e. 201 was noted in the year 2013. Till date only one human case was identified by NPHL which was later confirmed by genetic laboratory in Japan in collaborating with WHO.

Keywords: Bird flu, Contagious virus, Human infection, Outbreaks, Strain

INTRODUCTION

Bird flu also called as avian influenza is caused by the virus influenza A virus sub type H5N1.¹ This strain is also known as HPAI A (H5N1), highly pathogenic avian influenza virus of type A of subtype H5N1. According to WHO, H5N1 is considered as a lethal virus strain which are highly pathogenic and has a 60 percent fatality rate.² This virus is known to occur naturally among wild birds; however, have been found in household poultry.³ It was first detected in 1996 in Geese in china and was first detected in human in 1997 during poultry outbreaks. It has been detected in poultry and wild bird in more than 50 countries in Africa, Asia and Europe. Among which six countries are considered to be endemic i.e. Bangladesh, china, Egypt, India, Indonesia, Vietnam.⁴ Sporadic human infection with severe pneumonia by deadly strain of H5N1 has been reported in 16 countries.³

Certain subtypes of virus such as influenza A (H5), A (H7) and A (H9) are capable of causing human infection resulting in to the clinical outcomes ranging from mild illness to death.³ According to WHO, more than 850 people have contracted with the deadly strain of the virus in between 2003-2016 and among which more than 50% have died.¹

In March 2019, Nepal received the outbreak of highly pathogenic strain of bird flu H5N1. Though Nepal has experienced multiple outbreaks in last decades in poultry and wild birds, first human case was found last year where anonymous boy of 21 years died on March 29 while receiving the treatment for influenza like symptoms in Kathmandu, Nepal. Doctors send the throat swab of the patient to the National Public Health Laboratory (NPHL) which confirmed the influenza; however, were unable to identify the strain of virus due to the lack of

sophisticated laboratory and equipment's. Consequently, sample was sent to the WHO's collaborating centre for influenza in Japan, which confirmed the stain as H5N1 in April 30, 2019. Following the confirmation the epidemiology and disease control division, further collected the sample of 179 individuals who have come in contact with the patient including the hospital staff and patient's family members, nevertheless all samples were found to be negative.⁵ The first human death in the history of Nepal due to the deadly strain of virus has left behind the threat to the under developed nations like Nepal, which lack the essential laboratories and equipment's for the proper diagnosis in time.

REVIEW OF LITERATURE

Epidemiology

Nepal experienced the first ever outbreak of H5N1 in the year of 2009, 16th January in the Mechi zone among backyard poultry. Consequently, in the same year in same zone on the date of 20th of February Nepal experienced its second outbreak. In the year of 2010, Nepal recorded multiple outbreaks of H5N1 in different parts of the country, including Gandaki, Lumbini, Narayani, Rapti, Seti, Chitwan and Narayani zone. The graph decreased significantly in 2011, where only one outbreak was identified on 2nd December in Bagmati zone among backyard poultry. In year 2012, a total of thirteen outbreaks: six in February, five in March, one in October and one on the November were seen. There was startling rise in number of outbreaks of H5N1 in the year 2013, multiple outbreaks were observed in different district of Nepal (Figure 1).

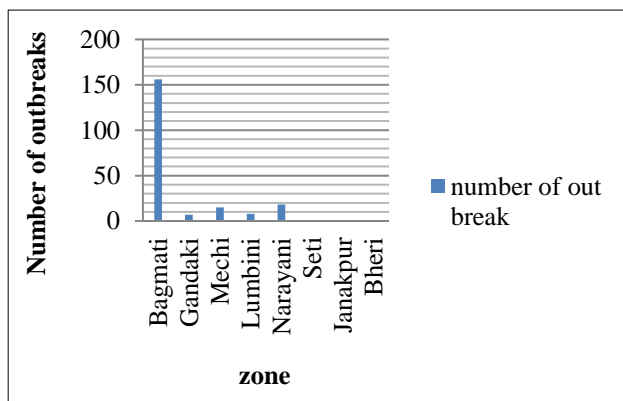


Figure 1: The number of outbreaks among different zone of Nepal in the year of 2013.

Total of 201 outbreaks was noted that year among backyard poultry, commercial broilers, layer farms, parent stock farm and in Wild house crow (*Corvus splendens*).^{6,7} The highest number of outbreak was observed in a month of November (41%) followed by September (31%) and May (16%) (Figure 2). Similarly, Bagmati zone alone received the highest number of outbreaks i.e. 156 outbreaks were identified in that zone.

Likewise in the year of 2017 three outbreaks of H5N1 was confirmed.⁸ There wasn't any human case identified in Nepal between the year 2009-2017, however first human case was identified on March 2019 and later patient was declared dead during the course of treatment.⁵ According to WHO, when it comes to the context of world, the number of human cases and death due to deadly virus has been dwindled in between the year 2003 to 2016 (Table 1). This pattern has perplexed scientist for long and cause of it is unknown.²

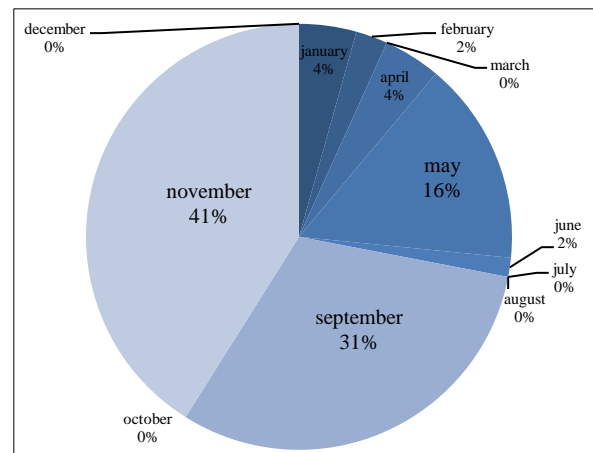


Figure 2: The percentage of outbreaks in different month of the year 2013 in Nepal.

Table 1: Human case of H5N1 worldwide and number of death.²

Year	Human cases	Death
2003-2009	469	282
2012-2014	233	125
2015	145	42
2016	10	3

Preventive measures

According to expert, well-cooked food usually at 70 degree Celsius are depleted of highly pathogenic virus like H5N1. Similarly, washing hands with disinfectants like soaps after touching the poultry can reduce the chance of transfer of deadly virus in human. Likewise, maintaining personal hygiene, sanitation and reducing the contact with poultry and birds can decrease the chance of human infection by H5N1 like bird flu.⁹ Also, effective awareness program by the health professional through mass media such as newspaper, television and other social platform can be proven effective in controlling the outbreaks of virus.¹⁰

DISCUSSION

H5N1 strain is highly pathogenic strains that not only affects birds but also are capable of causing life threatening complication in human, if not identified in time. Multiple factors were associated in impeding the

action of medical team and government to control the contagious disease, among which lack of well-trained medical personnel (doctors, medical laboratory technologist, medical laboratory personnel and nurse) to handle the contagious virus and lack of highly equipped instrument and sophisticated laboratory for the purpose of early diagnosis was the major one. Likewise, these kinds of slow government performance, action and plan to combat with outbreaks can lead to the catastrophic situation in coming days in the developing country like Nepal.

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