academicJournals

Vol. 5(4), pp. 202-207, April 2013
DOI: 10.5897/JPHE10.028
ISSN 2006-9723 ©2013 Academic Journals
http://www.academicjournals.org/JPHE

Journal of Public Health and Epidemiology

Full Length Research Paper

Knowledge and preventive practices related to Avian influenza among livestock farmers and poultry traders in Ikorodu, Lagos state, Nigeria

M. D. Dairo*[1] and Nusirat Elelu[2]

[1]Department of Epidemiology, Medical Statistics and Environmental Health, Faculty of Public Health, College of Medicine, University of Ibadan.
[2]Faculty of Veterinary Medicine, University of Ilorin, Ilorin, Kwara State.

Accepted 7 February, 2012

The emergence of H5N1 led to increased global attention as the virus could potentially represent the source of the next human influenza pandemic. The disease has led to the loss of millions of birds which constitute a major source of animal protein. This study was therefore aimed at determining the knowledge and preventive practices related to Avian influenza among livestock keepers and poultry traders in Ikorodu, Lagos state, Nigeria. A descriptive cross sectional survey was conducted using standardized structured questionnaire administered at interview. The mean age of respondent was 34.5 ±10.5 years; only 38.1% of respondent correctly defined Avian influenza as a disease of bird caused by H5N1 virus. Majority (77.5%) of respondents were aware that the virus could be transmitted from bird to bird while 41.8% knew that transmission could be from birds to human. Only 28.7% stated correctly that wild birds are the common vectors of the virus. Preventive practices adopted include hand washing (70.5%) and wearing of overall (61.5%). However only about half (54.1%) modified their work habit by hand washing after touching birds for fear of getting avian influenza. Main source of information on Avian influenza was the mass media (57.9%). Predictors of knowledge of Avian influenza included education (P < 0.001), being a poultry trader (P < 0.001) and older respondents (P < 0.031). Predictors of preventive practice included education (P< 0.001) and being a livestock farmer (P< 0.001). This study suggests that education predicted knowledge and practice of preventive measures among the poultry workers.

Key words: Avian influenza, livestock farmers, poultry traders, knowledge, preventive practice.

INTRODUCTION

Avian influenza (AI) is an infectious disease in birds caused by Influenza, virus (WHO, 2006). Pandemic viruses result from antigenic shift, abrupt and major changes caused by new combinations of the hemagglutinin (HA) and/or neuraminidase (NA) proteins on the surface of the virus (CDC, 2005). There are two types of Avian influenza virus antigen: 16 hemagglutinin (H) and 9 neuraminidase (N) (Anaeto and Chioma, 2007; FAO Animal Production and Health Paper, 2008). High pathogenicity has so far been found in H5 and H7 viruses. Over the centuries some adaptation to other species such as man, horse and pigs have taken place. These species serve as amplifying hosts which increase the risk of human to human spread and hence risk of human pandemic of very high mortality (Public Health Agency of Canada, 2008). The disease has led to the

*Corresponding author. E-mail: drdairo@yahoo.com. Tel: +234 803 566 4708.

loss of millions of birds which constitute a major source of animal protein. However, the human factors which have potential for facilitating the spread of the disease have not been fully explored systematically. Therefore this study aimed at assessing the knowledge and prevention control practices regarding Avian influenza among poultry and livestock traders with a view to provide more data to guide policy and practice of prevention in a local government area (LGA) in Nigeria.

MATERIALS AND METHODS

The research was carried out in Ikorodu LGA, Lagos State, located in the South western part of Nigeria. Ikorodu Local Government Area has one of the largest concentrations of livestock farms and market in Lagos with over 70 farms distributed across the six community development areas. These include: Ikorodu North, Ikorodu Central, Ikorodu West, Imota, Ijede and Igbogbo- Bayeku. There are a total of two farm settlements in Ikorodu Local Government Area. The largest farm settlement is located in Ikorodu North community development area while the second and smaller farm settlement is located at Imota community development area of Ikorodu local government. The only live bird market is Ejina market with over 50 poultry traders. It is located in Ikorodu Central and was also chosen for the study. Three out of the six community development areas were chosen purposively for the study based on the location of the farm settlements and live bird market. Sample size is calculated from the formula for cross sectional survey as given by (Kish 1965).

$n = Z^2_{1-\alpha/2}\ p\ q/\ d^2$

Where; n- Sample size, Z- Standard deviation at 95% confidence interval that is, 1.96, p – Proportion of respondents that provided correct definition of disease and knew routes of transmission is 22.6% (Abbate et al., 2006),

q = 1- p d = 5% desired level of precision at 95% confidence interval.

Data from questionnaire were entered to SPSS software version 16.0. Data collected presented using descriptive statistics such as frequencies, graphs and percentages. A descriptive cross sectional survey was conducted from June to September 2009 among poultry traders and livestock farmers. A closed-ended questionnaire which included questions on knowledge and preventive measures on Avian influenza was used for data collection. Knowledge was scored on a 25 item scale in which correct knowledge was scored one and incorrect response was scored zero. Good knowledge was then categorized as mean scores above 9.9 while poor knowledge were those with mean score less than 9.9. Preventive practice was score on a 7 item scale in which correct knowledge was scored 1 and incorrect knowledge was scored zero. Practice scores were then categorized as good based on scores above 5.3. Descriptive statistics and multiple linear regression analysis were done to explore associations between demographic characteristics, knowledge and preventive practice scores. All levels of significance were set at $p < 0.05$.

RESULTS

Demographic characteristics

A total of 244 respondents were recruited into the study by a random cluster sampling technique in three community development areas in Ikorodu Local Government Areas, giving a response rate of 91%. 205 were livestock farmers and 39 were poultry traders. The average age of respondent was 34.5 ± 10.5 years; there were more male (57.8%), more livestock farmers (84.0%), Majority (34.4%) of the respondents was at the age group of 20 to 29 years and majority (78.7%) had spent greater than 36 months in their profession.

Knowledge of Avian influenza and prevention

Majority (77.5%) of respondents were aware that the virus could be transmitted from bird to bird while 41.8% knew that transmission could be from birds to human. About 54.5% of the respondents know that avian influenza is transmitted from eating uncooked poultry meat. Only about one third (32.8%) of respondents are aware that avian influenza virus can be transmitted from touching uncooked poultry. The larger percentage of 42.6% do not agree while 24.6% do not know that the virus could be transmitted from touching raw poultry. Only 28.7% stated correctly that wild birds are the common vectors of the virus and from eating uncooked poultry meat (54.5%). Only 38.1% of respondent correctly defined Avian influenza as a disease of bird caused by influenza virus. More than half of the respondents (54.5%) know that swollen eyes are one of the symptoms of Avian influenza in poultry. Also, 45.1% of the respondents know that excessive mucus is a symptom of Avian influenza compared to 18.9% that do not agree or do not know (36.1%). Majority considered Avian influenza as a serious (60.2%) and preventable (74.6%) disease. preventive practice adopted always include mainly hand washing (70.5%), use of outer garment (61.5%) and use of gloves (24.2%). In the study, 54.1% have modified their work habits by adopting necessary preventive measures. Majority of respondents (39.8%) dispose their poultry waste through selling or use as manure on farms. Less than one tenth (7.4%) use burning as a method of waste disposal. Predictors of knowledge of Avian influenza included education ($P < 0.001$), being a poultry trader ($P < 0.001$) and older respondents ($P < 0.031$). Predictors of preventive practice included education ($P < 0.001$) and being a livestock farmer ($P < 0.001$) (Table 1 and 2).

Sources of information

While the main source of information on Avian influenza was the mass media (57.9%), majority (94.1%) agreed to the need for more information on avian influenza.

DISCUSSION

Socio-demographic data of the respondents indicated

Table 1. Predictors of knowledge of Avian influenza among poultry traders and livestock farmers in Lagos state.

Model	Unstandardized coefficients (Beta)	T	Sig.	95% CI of Beta	
				Lower	Upper
(Constant)	3.508	18.007	.000	3.124	3.892
Highest Level of education of respondent	-.202	-8.378	.000	-.249	-.154
Occupation of respondents	-.534	-7.066	.000	-.683	-.385
Community Development Area	-.137	-3.941	.000	-.206	-.069
Sex of respondent	-.122	-2.293	0.023	-.226	-.017
Age of respondent	-.038	-2.176	0.031	-.073	-.004

Table 2. Predictors of preventive practice towards Avian influenza among poultry traders and livestock farmers in Lagos state.

Variable	Unstandardized coefficients (B)	T	Sig.	95% CI of B	
				Lower	Upper
(Constant)	2.054	8.420	.001	1.574	2.535
Sex of Respondent	.150	2.251	.025	.019	.282
Community Development Area	-.215	-5.363	.001	-.295	-.136
other occupation of respondent	-.416	-4.379	.001	-.604	-.229
Highest level of education of respondent	.098	3.268	.001	.039	.157

that the total respondents had more male and young adults. This finding agreed with that of Fatiregun and Sanni in Ibadan (Fatiregun and Saani, 2008) and Fawole in Lagelu (Fawole, 2006) in Nigeria. This study also corroborates the findings of Abbate (Abbate et al., 2006) and Fatiregun (Fatiregun and Saani, 2008) and Fawole (Fawole, 2006) on the age distribution that majority of workers were young adults and male. This is expected to improve the knowledge of Avian influenza among workers as age and sex were found to be predictors of knowledge of Avian influenza in the study.

The higher knowledge could also be due to the current campaign on Avian influenza by the control programme in Nigeria (AICP, 2009). Also less than one third of the respondents knew the importance of wild bird in the transmission of the disease. This is low, considering the fact that wild birds may be a source of introduction of virus to domestic birds (Bridges et al., 2003). Spread may occur via wild birds which have been responsible for long distance spread and initial introduction of infection in some countries (FAO Animal Production and Health Paper, 2008). Also, among the respondents, awareness of the means of transmission of Avian influenza was low such as from eating uncooked eggs, especially as it concerns the existence of the fact that Avian influenza could be transmitted from uncooked birds or bird products to humans (Bridges et al., 2002). Highly pathogenic Avian influenza virus can be found inside and on the surface of eggs laid by infected birds; however there is no epidemiological evidence that suggests that people have been infected with Avian influenza by consumption of egg or egg product (INFOSAN, 2005). Studies have identified direct exposure to infected poultry as the primary risk factor in transmission of Avian influenza virus to human. Furthermore feaces from infected birds is the second most dangerous source of infection of Avian influenza virus (FAO Animal Production and Health Paper, 2008) and using as manure keeps the virus in areas where humans and other birds can come in contact with these feces. In this study, majority of respondent used other means of waste disposal such as use as manure, thus further increasing the possibility of spread of the infection through this work practice.

Despite the fact that all of the respondents had received information about Avian influenza from various sources such as mass media, employer, health professsional, friends, there is still low knowledge of symptoms of AI in human and animals. However Di Giuseppe had shown through a knowledge, attitude and practice survey that knowledge of Avian influenza symptoms can be improved through information education and communication strategies (Giuseppe et al 2008). This finding although indicating that there is success in the dissemination of information in Nigeria, also reveals that there is persistence of gap in the understanding of the transmission mechanism of the virus among the people, including those at risk. This is so regardless of the fact that the nation has established desk offices (state centers for coordinating surveillance) which are actively engaged in information dissemination of the disease (AICP, 2009).

Results from the survey indicate low compliance with preventive measures; this is in agreement with the findings

of Abbate et al. (2006). This is low adherence of the WHO/FAO recommendations to avoid spread of Avian influenza through handling of poultry and poultry products. In thestudy reported by Fatiregun and Sanni, the most common preventive practice reported was also washing of hand with soap and water (Fatiregun and Saani, 2008). It would assist the campaign for the prevention of Avian influenza if the workers are encouraged to use detergent (which is affordable in low income countries) as disinfectant since the virus is susceptible to detergent.

This study particularly highlights the need to direct efforts towards live bird market traders. These groups of poultry workers are shown in this study as less probable to adopt preventive measures, be knowledgeable about Avian influenza, have poorer attitude and adopt preventive measures inadequately. However, in Nigeria, these persons represent a group at high risk since their activities though unregulated are ubiquitous in many homes and local settings all over Nigeria. If the control of Avian influenza is to be successful, these group handling domesticated local fowls must be included in the campaign.

Therefore Avian influenza preventive efforts should adopt a strong education strategy to achieve desired results. A sustained information education and communication efforts needs to be continued until pockets of ignorance about he disease and its mode of transmission and risks in completely routed. Particular efforts should be directed at the knowledge of symptoms of the disease and adoption of preventive practice and use of personal protective equipments.

This study was limited in scope by its inability to obtain a comprehensive census of farms in Lagos state thus affecting the representativeness of the sample in comparison to other studies by FAO and in a previous study in Oyo state.

ACKNOWLEDGEMENTS

The authors wish to acknowledge both the staff of animal health and communication components of Nigeria Avain Influenza Control Programme (AICP) National and Lagos desk office for their contribution on IEC materials used for the research. The authors also extend their gratitude to the staff of Ikorodu LGA Agric dept for technical assistance during the field visits to farms. They would also like to profoundly appreciate all the respondents for their patience, warmth and willingness to participate in the survey.

REFERENCES

World Health Organisation, WHO (2006a) (Geneva)- Avian Influenza, February 2006. Available at http://www.who.int/mediacenter/factsheet/avian_influenza/en/index.htm/ Retrieved 16 Feb. 2009

Centres for Disease Control, CDC (2005). Influenza Viruses. http://www.cdc.gov/flu/avian/gen-info/flu-viruses.htm

Anaeto M, Chioma G (2007): Avian Influenza in Nigeria- Suggestion for eradication. Int. J. Poult. Sci. 6(5): 67-371.

Public Health Agency of Canada (2008) - available at http://www.phac-aspc.gc.ca/fluwatch/index.html. Retrieved 13 June 2008.

Kish L (1965). Survey Sampling. John Wiley and Sons Inc., New York.

Abbate R, Di Giuseppe G, Marinelli P, Angelillo IF (2006). Knowledge, attitudes and practices of avian influenza, poultry workers, Italy. Emerging Infect. Dis. 12: 1762-5. Available from http://www.cdc.gov/ncidod/EID/vol2no11/06-0671.html.

Fatiregun AA, Saani MM (2008). Knowledge, attitudes and Compliance of poultry workers with preventive measures for avian influenza in Lagelu, Oyo State, Nigeria. J. Infect. Dev. Cntries. 2(2):130-134.

Fawole OP (2006). Poultry Farmers' Utilization of Information in Lagelu Local Government Area, Oyo State of Nigeria. Int. J. Poult. Sci. 5(5):499-501.

Nigeria Avain Iinfluenza Control Programme (AICP) (2009). Bird flu watch. Publication of Nigeria's AI control and pandemic preparedness and response project (AICP), 2009 February Vol.1 (1):7.

Bridges CB, Kuehnert MJ, Hall CB (2003): Transmission of Avian Influenza: Implication for control in healthcare settings. Clin. Infect. Dis. 37:1094-101.

FAO Animal Production and Health Paper (2008) – Biosecurity for Highly Pathogenic Avian Influenza: Issues and Options. Rome. Italy. p 15.

Bridges CB, Lim W, Hu-Primmer J, Sims L, Fukuda K, Mak KH, Rowe T, Thompson WW, Conn L, Lu X, Cox NJ, Katz JM (2002). Risk of influenza A (H5N1) infections among poultry workers, Hong Kong 1997-1998. J. Infect. Dis. 185:1005-10.

International Food Safety Authorities Network (INFOSAN) (2005). Safety Implication- 5 Nov 2005.

Di Giuseppe G, Abbate R, Albano L, Marinelli P, Angelillo I (2008). A Survey of Knowledge, Attitude and Practice towards avian influenza in an adult population of Italy. Bio. Med. Central infect. Dis. 8:36.

APPENDIX

QUESTIONNAIRE

Do you wish to answer a few questions Yes ( ) No ( )

A. Demographic and Personal Information
Assigned ID ----------

A1. Age as at last birth day: ----------
A2. Gender: Male ( ) Female ( )
A3. Marital Status: (a) Married ( ) (b) Single ( ) (c) Divorced ( ) (e) Widow ( )
A4. Occupation: Poultry Trader ( ) Livestock Farmer ( )
A5. Level of Education:
(a) No formal education ( )
(b) Primary education ( )
(c) Secondary education ( )
(d) Tertiary ( )
A6. Community Development Area: ----------
A7. How long have you been in your profession:----------? (a) 6 months ( ) (b) one year ( )
(c) Two years ( ) (d) Three years ( ) (e) Over Three years ( )

B. Knowledge of Disease and Prevention
This section of the interview is designed to explore your knowledge related to AI

B1. How do you define AI ----------
I will read you some statement regarding AI, for each statement please
Give me a Yes, No or do not know answer

B2. Avian influenza is transmitted by

-Animal to Human	Yes ( )	No ( )	Don't Know( )
-Animal to Animal	Yes ( )	No ( )	Don't Know( )
-Human to Human	Yes ( )	No ( )	Don't Know( )
-Eating uncooked poultry	Yes ( )	No ( )	Don't Know( )
-Eating uncooked eggs	Yes ( )	No ( )	Don't Know( )
-Touching uncooked poultry	Yes ( )	No ( )	Don't Know( )
-Touching cooked eggs	Yes ( )	No ( )	Don't Know( )
-Saliva, Feaces & formites of infected birds	Yes ( )	No ( )	Don't Know( )
-Touching Wild birds	Yes ( )	No ( )	Don't Know( )

B3. Symptoms of AI in poultry

-Swollen eyes	Yes ( )	No ( )	Don't Know( )
-Excessive mucus	Yes ( )	No ( )	Don't Know( )
-Massive death	Yes ( )	No ( )	Don't Know( )
-Diarrhoea	Yes ( )	No ( )	Don't Know( )

B4. Individuals at risk of contacting AI are

-Poultry workers	Yes ( )	No ( )	Don't Know( )
-Butchers	Yes ( )	No ( )	Don't Know( )
-Hunters	Yes ( )	No ( )	Don't Know( )
-Veterinarian	Yes ( )	No ( )	Don't Know( )
-Live bird traders	Yes ( )	No ( )	Don't Know( )

B5. Symptoms of AI in human:

-Serious fever	Yes ( )	No ( )	Don't Know( )
-Cough	Yes ( )	No ( )	Don't Know( )
-Sore throat	Yes ( )	No ( )	Don't Know( )
-Joint or Muscle ache	Yes ( )	No ( )	Don't Know( )
-Fatigue	Yes ( )	No ( )	Don't Know( )
-Red and itching eyes	Yes ( )	No ( )	Don't Know( )

C. Practice of preventive measures

I am going to read a list of preventive measure concerning AI and for each of them I would like you to tell me how often you practice the following:

C1. Outer garment: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C2. Gloves: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C3. Face mask: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C4. Boots: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C5. Wash and disinfect utensil and surfaces: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C6. Keep new chicken away from old stock: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C7. Wash hands with water alone: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C8. Wash hands with soap and water: Always ( ) Often ( ) Sometimes ( ) Rarely ( ) Never ( )
C9. In the past one year have you modified your working habits for the fear of getting AI
Yes ( ) No ( )
Specify if yes ----------

C10. How do you dispose of your waste from poultry?
-Burning/ incineration ( )
-Dug pit ( )
-Burial ( )
-Refuse dump ( )
-Others ( ) specify ----------

D. Sources of information

D1. How did you first learn of Avian influenza?
-None ( )
-Mass media ( )
-Family/Friend ( )
-Employer ( )
-Health professional ( )
-Government Agency ( )
-Pamphlet ( )
-Others (specify) ----------

D2. Do you feel you need more information about AI: Yes ( ) No ( )