

Research Article

Avian Influenza Risk Perception Among Egyptian Poultry Handlers

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Abstract

Introduction

In Egypt, Since Mid-November 2014, avian influenza confirmed human cases have surged into unexpected levels in Egypt compared to the same time of previous years. During the period from 15 November 2014 till 12 February 2015, 84 laboratory-confirmed human cases of H5N1 were reported, 36.9% (31/84) have died (Egyptian ministry of health and population). The ministry of health is doing an effort to raise the public awareness about the disease through radio and television. Despite that, knowledge about risk perception of avian influenza among poultry handlers is scarce. That is reflected on the use of personal protective tools and hygiene and on the medical seeking behaviour on suffering the disease symptoms, leading to increased disease morbidity and mortality.

Aim

To assess poultry handlers' risk perception of Avian Influenza in Suez Canal Area, Egypt.

Methods

Structured interview of 62 poultry handlers from Suez Canal Area. The sample represented those who are working in poultry shops, farmers, those who breed domestic poultry, and those who slaughter poultry on their own. Additional to socio-demographic data, the questionnaire inquired on knowledge and possible use of personal protective equipments, and hygiene, and the medical seeking behaviour regarding possible Avian influenza disease.

Results

More than 90% of the sample population have heard about Avian influenza disease. but more than 90% of them do not use the personal protective measures. On suffering symptoms of influenza, all of sample population either neglect the symptoms or get flu medicine from over the counter without medical consultation.

Conclusion

Avian Influenza risk perception is poor among Egyptian poultry handlers on how serious is the avian influenza disease and how vulnerable they are. They also are in need to use personal protective measures and to seek medical help once they get the disease symptoms.

Outcome

1 intensify media education programs on risk of Avian Influenza among poultry handlers. 2 update health authorities on the need to motivate poultry handlers on use of personal protective equipments.

Introduction

Avian influenza (AI) is an infectious viral disease of birds, including domestic poultry (as chickens, ducks and geese) [1], waterfowl and shorebirds [2]. The A(H5N1) virus subtype, a highly pathogenic AI virus, first infected humans in 1997 during a poultry outbreak in Hong Kong SAR, China. Since its widespread re-emergence in 2003 and 2004, this avian virus has spread from Asia to Europe and Africa, resulting in millions of poultry infections, several hundred human cases, and many human deaths [3].

The primary risk factor for human infection appears to be the direct contact with infected poultry as holding live or dead poultry, slaughtering, or defeathering them [4]. Also, indirect contact with contaminated environments, as live bird markets is likely to be a risk factor [5].

The global situation of avian influenza H5N1 showed that a total number of 844 laboratory-confirmed human cases have been officially reported to the WHO from 2003 through 17 July 2015 from 16 countries. Of these cases, 449 have died (CFR, 53.2%) [6].

In Egypt, avian influenza confirmed human cases have surged into unexpected levels since mid-November 2014, compared to the same time of previous years. During the period from 15 November 2014 till 12 February 2015, 84 laboratory-confirmed human cases of H5N1 were reported, 36.9% (31/84) have died. 70% of the confirmed cases gave history of exposure to backyard poultry, 22 (26.2%) breed domestic birds, 12 (14.3%) slaughter poultry on their own and 3 (3.6%) were exposed to dead birds [7].

Understanding risk and how it is perceived is a crucial step toward creating programs and campaigns to raise awareness and make communities and workplaces safer. Risk is the likelihood of an incident is to occur, and given its occurrence, how severe the consequences would be [8]. Risk perception is the ability of an individual to discern a certain amount of risk, and risk tolerance refers to a person's capacity to accept a certain

amount of risk. the inability to accurately perceive risk may lead to higher risk tolerance levels, which can encourage high-risk behavior [9].

By the end of 2006, Egypt suspended sales of live birds and started a wave of birds culling in many H5N1 infected poultry farms and in houses' backyards. But in 2011, selling and slaughtering live birds resumed and people started to raise birds in the houses' backyards. Also, many farms started to not follow the biosafety rules.

We carried out this study to determine poultry workers' knowledge of AI disease, their perception of risk to get infected throughout their work close to poultry, and their personal protective practices.

Methodology

To determine the risk perception of exposure to avian influenza H5N1 virus, from December 2014 to March 2015, we surveyed -in Ismailia governorate- a sample of 62 poultry workers, who are at high risk of getting infected with AI (H5N1) virus by having direct or indirect contact with poultry or their waste/secretions (i.e. rear, sell or slaughter/defeather live poultry).

We conducted a structured interview (anonymous) using a pre-designed questionnaire and done by two trained interviewers. Interviewers were collecting data from the poultry handlers according to the consistent procedure they were trained on before data collection, to reduce inter-person variability. The questionnaire included demographic data and basic knowledge about Avian influenza disease. To assess risk perception towards AI, we used the theoretical construct of the Health Belief Model (HBM) [10,11] which assumes that risk perceptions such as perceived susceptibility and perceived severity to a health problem are associated with adoption of health related behaviors [12]. HBM Data are about: 1- perception of susceptibility to AI infection and disease; 2-perception of severity/seriousness of AI disease; 3-perceived benefits from using protective measures; 4-perceived barriers to protect against getting AI disease; 5-self-efficacy regarding the ability of self protection from AI; and 6-what can help the poultry worker to change his behaviour and protect him/herself from AI. The response to the questions was binary, in the form of (yes/no).

HBM Items were phrased into questions by a behaviour expert. To assure validity of the developed questionnaire, a pilot study for 10 workers was conducted, and unclear questions were re-phrased to express the meaning thoroughly.

Sample frame was collected from the Public taxation authority, where 360 working poultry shops were identified, a simple random sample calculation using the sample Proportion formula, to achieve 95% Confidence Interval of a width of $\pm 5\%$ $P=60\%$ and sample size.

$n = (1.96/\text{Diff})^2 \times P(1-P)$ we found the sample size of 62 workers to be interviewed.

from these shops was selected randomly 62 shops out of 360, to ensure generalization of results and approached for interview.

All the study subjects were informed about the study and its objectives by the interviewers to get a verbal informed consent before each interview. Data on using personal protective methods were verified by observation of the worker while doing his job, then all data entered the computer to do statistical analysis using SPSS (version 17). Descriptive statistics were done to present the study data.

Results

Socio-demographic data of the 62 participants is shown in Table (1) as follows: the mean age was 36.2 years; most of the study participants were females (92%); also, most of them (75.8%) had primary/elementary education or less; 64.5% of the participants were living in urban areas. Regarding the nature of participants' job that expose them to poultry contact, 56.4% were rearing poultry, 75.8% were selling them, and 82.8% were slaughtering or defeathering poultry.

Two participants did not hear before about Avian Influenza, so these two participants were not able to answer the rest of the questionnaire about AI knowledge and risk perception.

Table (2) shows the perception of participants regarding the risk of exposure to AI virus throughout their contact with poultry. From those who heard about AI, 65% got their knowledge from the media (TV/radio), but 51.7% of them got their knowledge from friends and neighbours, while health care settings has played the least role (10%). 46,7% of subjects do not know that AI virus can be transmitted from poultry to man. There was a deficient knowledge among those who mentioned they know that the virus can be transmitted from poultry to man was deficient, 56.3% said AI is transmitted from dead poultry, 21.8% from poultry waster/feather/secretions, and only 6.2% mentioned that transmission may occur from the poultry environment.

60% of subjects think that they are not susceptible to be infected AI virus through poultry contact and 70% of them think that AI is not a serious disease for man (does not kill man). 91.9% of study subjects do not use any protective measure/close regularly. Regarding the perception of the benefit that they might get from protective measures, 63.4% of participants think that through hand washing can protect them, and 28.4% believe that gloves can protect them, while most of the participants do not support the face mask or coat/boot (91.6% and 80%; respectively).

Table 1. Socio-demographic characteristics of the study group (N=62).

Socio-demographic variable	No.(%)
Age	
< 30	23 (37.2)
30-40	29 (46.7)
> 40	10 (16.1)
Gender	
Female	57 (92)
Male	5 (8.0)
Education	
Primary or less	47 (75.8)
Middle/high school	15 (24.2)
Residence	
Urban	40 (64.5)
Rural	21 (35.5)
Poultry contract/job nature	
Rearing	35 (56.4)
Selling	47 (75.8)
Slaughtering/defeathering	51 (82.2)

About the participants' barriers to use protective measures, financial reason comes on top of barriers (85%), then 53.3% of participants do not feel comfortable on using protective measures as gloves and face mask, while 43.4% do not feel that the protective measures are useful anyway as they leave it to God to protect them.

Table 2. knowledge and risk perception among study subjects, regarding exposure to Avian Influenza virus.

Questions	Yes No.(%)	No No.(%)
Have you heard about AI disease?	60 (96.7)	2 (3.3)
What is the source of knowledge about AI? -TV/radio -Friends/neighbours -Health care settings	N=60 39 (65) 31 (51.7) 6 (10)	
Do you know that AI can be transmitted from poultry to man?	32 (53.3)	28 (46.7)
For "Yes" answer: How AI can be transmitted to man? -Poultry waste/feather/secretions -Meat (not cooked well) -Dead poultry -Unclean environment	N=32 7 (21.8) 10 (31.3) 18 (56.3) 2 (6.2)	
HBM dimensions (1-6):	24 (40.0)	36 (60.0)
1-Do you think you are susceptible to infection from poultry?		
2-Do you think AI disease is serious (kill people)?	18 (30.0)	42 (70.0)
Do you use personal protective methods regularly?	5 (8.1)	57 (91.9)
3-Do you think/use the following tools might protect you from AI: -Face mask -Gloves -Hand washing after poultry contact -Coat & boot	5 (8.4) 17 (28.4) 38 (63.4) 12 (20.0)	55 (91.6) 43 (71.6) 22 (36.6) 48 (80.0)
4-Why you cannot use protective methods? -Cost -Do not feel comfortable with them -Not useful	51 (85) 28 (46.7) 34 (56.6)	9 (15) 32 (53.3) 26 (43.4)
5-If you know that there are methods will protect you from AI, are you confident you will use them correctly all the time? -Face mask -Gloves -Hand washing after contact -Coat & boot	7 (11.6) 46 (76.6) 60 (100) 13 (21.6)	83 (88.4) 14 (23.4) 0 (0.0) 47 (78.3)
To protect yourself from AI, can you stop working/handling with poultry (do another job)?	21 (35)	39 (65)
6-What might help you use protection from AI? -Reminder from family/friend	43 (71.7)	17 (28.3)
-Periodic checkups from local health office/penalty	60 (100)	0 (0.0)
Where do you go first when you suffer flu symptoms/become sick? -Fever hospital/primary care unit -Private physician -Get medicine from pharmacy	13 (21.7) 5 (8.3) 42 (70.0)	

To show the self confidence to change to healthy behaviour by using protective measures, 76.6% of participants were confident if they got the chance, they might use gloves to protect themselves, while 100% of them would wash their hands thoroughly after poultry contact. 88.4% of participants would not use the face mask and 78.3% of them would not use the coat/boot to protect themselves.

65% of the participants admitted they cannot change their job to stop contact with poultry.

71.7% of the participants find the family/friends are good support/reminders to use protective measure, and 100% of them think that periodic checkups/penalties from health authorities is of great help. Also, 60% of participants believe that media is helpful.

Regarding the first place to go on suffering flu symptoms/become sick, most of the participants admitted they get flu medicine from over the self, and 8.3% go to private physician, while only 21.7% of them go to the fever hospital.

Discussion

The current study subjects were mainly of female gender (92%), which was the same in other studies [13,14]. In addition, most of the AI cases in Egypt since the start of the outbreak in 2006 were females [7]. This point sheds light on gender issue when addressing the working population who are at high risk of exposure to Avian influenza, to be considered in all prevention campaigns and programs.

The mean age of our study was 36.2 years, which is comparable to other studies [15]. Also, most of AI Egyptian cases were around thirties which is an important productive age group.

About 76% of the study subjects had primary education or less, which necessitates health authorities to use simple and clear messages to raise awareness among this group of working population.

Mass media (TV/radio) played the significant role in shaping the subjects knowledge (65%), which directs our attention to the effective tools to be used on giving future messages on AI.

Many of the study subjects (46.7%) had false knowledge that AI do not transmit from poultry to man which is similar to same work done in Nigeria [15]. That false knowledge might increase the risk behaviour of the poultry handlers.

Wearing personal protective clothes was not a routine practice among the study poultry handlers: only 8.1% were using any protective clothes which is much less than other study conducted in China [16] that reported a high rate of wearing personal protective clothes (88.9%). This might reflect the need for raising the awareness among those workers to use

the personal protective clothes to lower their risk of getting infected from poultry contact.

Analysing the Health Belief Model dimensions: 60% of the population believe that they are not susceptible to AI infection. That reflects their shortage of knowledge and the need for urgent awareness program. 70% of them think that AI is not a serious disease for humans, which will make them deal with the poultry recklessly and increase their risk on contact. 63.4% of participants believed that hand washing can protect them from AI while it was higher (88.5%) in Nepal study [17]. That might reflects our need for more health education programs for poultry workers on frequent hand washing after each contact with poultry. 85% of subjects agreed that economic status is an important reason for not using protective clothe, while 43.4% of them see that the protective clothes are not useful for protection from AI. That again raise the issue for a need to education the workers and find a pathway to make protective clothes available for them with low prices, then check upon their use. All of the workers are confident they can wash their hands frequently after each contact to protect themselves, which is the easiest and costless method of protection. All of the study population thought that periodic checkups from local health office and penalties will make them use protective measures which is natural in human beings to be watched.

70% of the subjects go to pharmacy first to get medicine on suffering flu symptoms and only 21% go to fever hospital to get health services. That increases the fatality among cases as they start H5N1 treatment later than recommended and become to effective.

Conclusion and Recommendation

Avian Influenza risk perception is poor among the poultry handlers on the AI disease, how it is transmitted, how serious is the disease and their susceptibility.

Poultry workers are in need to use personal protective measures and to get supported in getting it. They need to learn to seek medical help at fever hospital (where people are well trained) once they get the disease symptoms.

Ministry of Health should intensify media education programs -in a simple and clear way- on risk of Avian Influenza among poultry handlers.

Health authorities need to motivate and check upon poultry handlers on use of personal protective equipments.

Limitations

Poultry shops were distributed over a wide geographic area, and was difficult to reach, some poultry handlers were reluctant to participate (6 poultry handlers refused to participate in the study, and were replaced).

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