



## EPIDEMIOLOGICAL STUDY ON AVIAN INFLUENZA AMONG OCCUPATIONAL PEOPLE IN QALUBEYA GOVERNORATE

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### ABSTRACT

A cross-sectional analytical study collected data from 200 people at high risk of infection (occupational people) with avian influenza virus through interviewing questionnaire to evaluate knowledge, practice, and attitude about and toward avian influenza disease. The main source of information was television (99.5%) The majority of the studied group had knowledge score of moderate level and demonstrated bad practice (52 %) and (75.5%) respectively, while (54%) had negative attitude. Only (19.5%) follow the preventive measures when dealing with birds. Level of education has a significant effect on improving the information and change the behavior of the studied group.

**KEY WORDS:** Avian influenza, Epidemiological, Occupation, Survey.

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### 1. INTRODUCTION

In Egypt, the first death case occurred on 17th February, 2006, the government of Egypt announced the incidence of highly Pathogenic Avian Influenza (H5N1) in domestic poultry. One month later, the virus has been reported in 19 governorates in Egypt. As of April 2007, 34 human cases had been confirmed, including 14 deaths [5]. Qalubeya Governorate was selected because it is considered one of the most common Egyptian governorates in the production of chicken and eggs (the number of domestic and farm chickens represents about 11.1% and 11.05 % of the total number of chickens on the level of the republic respectively) [4]. Also high transmission of avian influenza virus and the top in the provinces of infection with avian influenza virus among poultry besides most of Qalubeya population dealing with live or dead poultry was reported [9]. Occupational people are

persons who have contact with poultry in poultry farms, live bird markets, poultry industry, laboratories, and veterinarians. To control avian influenza it is important to assess Knowledge, attitude and practice related to avian influenza of the occupational people and create a communication plan to keep these people adequately informed on how reduce the risk of exposure [7].

### 2. MATERIAL AND METHODS

The present study was carried out during the period between (2009 -2012) in the department of zoonoses, Faculty of Veterinary Medicine, Benha University. Across-sectional analytical study collected data from 200 persons in close contact with poultry including people working in poultry farms (n=76), live bird markets (n=63), poultry industry (n=17), laboratories (n=6) and veterinarians (38)

using structured interviewing questionnaire modified by the researcher based on information from (n=6) to evaluate the participants knowledge, practice and attitude toward avian influenza disease. The main parts of the questionnaire were education level, information source, knowledge, practice, and attitude about and toward the avian influenza disease.

#### 2.1. *Education level:*

Include level of education (illiterate, read and write, moderate and high).

#### 2.2. *Knowledge data:*

Contain four questions about clinical signs of the disease in birds, clinical signs of the disease in human, disease transmission, and preventive measures. The participant's responses ranged from complete answer, incomplete answer and don't know. The scoring system estimated as three for complete answer, two for incomplete answer and one for don't know. The total score was 24 and the levels of knowledge were categorized as Poor: 1-8, fair: 9-17 and good: 18-24.

#### 2.3. *Information source:*

A multiple choice question about the different sources of information related to avian influenza disease such as television, newspapers health units, or posters and fliers.

#### 2.4. *Practice data:*

Refer to the general behavior of the participants including seven questions about follow preventive measures when dealing with birds, dealing with sick and dead birds, dealing with the rest of birds, breeding birds, separate between different species, leave birds outdoor and keep birds away from living area. The questions scored with two for healthy practice and one for unhealthy practice. The total score was 21 and the levels of practice were categorized as bad: 1-11 and good: 12-21.

#### 2.5. *Attitude data:*

Consists of five questions, fear from eating poultry meat, fear from eating poultry eggs, stop birds breeding, knowing preventive measures and notification about infected human cases. The questions scored with two for positive attitude and one for negative attitude. The total score was 15 and the levels of attitude were categorized as negative: 1-7 and positive: 8-15.

#### 2.6. *Pilot study:*

Pilot study was conducted on 10% of the study sample to ensure the questionnaire validity, clarity, and applicability.

#### 2.7. *Data collection and Statistical analysis:*

The interviewing questionnaire was filled in by the researcher. The researcher start data collection by introducing herself to the participants and informed the participants about the purpose and benefits of the study and their participation is voluntary and they have the right to refuse without giving any reason and asked them the questionnaire . The data will be organized, categorized, tabulated, and computerized using computer software package using the statistical package for social science (SPSS). Data was presented using frequencies, percentage and correlation .Statistical significance was considered at P value for analyzing data and obtaining result [10].

### 3. RESULTS AND DISCUSSION

This study evaluate knowledge, attitude and practice of occupationally exposed population who commonly have direct contact with live, sick or dead poultry which make them at high risk of exposure to avian influenza virus if present during poultry handling, selling and slaughtering. The results in Table (1) explained the education levels of the studied group, (36%) of them were illiterate, especially in live bird markets, farms, and poultry industry, and (31.5%) of them highly

educated. Television play an important role in dissemination of information as illustrated in Table (2), the main source of information was television (99.5%) followed by health units (33.5%), newspapers (33%) and (31.5%) from posters and fliers. These finding agree with (1) who pointed that (91.8%) of poultry workers gathered their knowledge through the mass media and (47.5%) from health professionals, also (3) reported that (92.9%) of poultry workers reporting mass media as the main source of information, therefore ministry of health and ministry of agriculture must work together with the ministry of information in order to

increase heath education through television.

Despite the occupational people work with poultry, their knowledge about avian influenza disease still incomplete as described in Table (3), the most of the studied group give incomplete answers about: symptoms of avian influenza in birds (58.5%), disease transmission (63%) and (55%) preventive measures, this may be due to dimensioned the role of media and health units in heath education about avian influenza disease. While (56%) of them give complete answer about clinical symptoms of the disease in human.

Table 1 Education level of the studied group.

Education level	Farms (n=76)		laboratories (n=6)		Live bird Markets (n=63)		Poultry industry (n=17)		Veterinarians (n=38)		Total (n=200)	
	No	%	No	%	No	%	No	%	No	%	No	%
Illiterate	33	43.4	1	16.7	32	50.8	6	35.3	0	0	72	36
Read and write	20	26.3	0	0	19	30.2	1	5.9	0	0	40	13
Intermediate	12	15.8	0	0	6	9.5	7	41.2	0	0	25	12.5
High	11	14.5	5	83.3	6	9.5	3	17.6	38	100	63	31.5

Table 2 Information source of the studied group.

Information source*	Number (200)	%
Television	199	99.5
News papers	63	31.5
Health unit	66	33
Posters and fliers	67	33.5

Participants can choose more than one answer

Table 3 Knowledge about avian influenza (AI) of the studied group.

Variable	Number (200)	%
1- Clinical signs in birds		
Complete answer	79	39.5
In Complete answer	117	58.5
No answer	4	2
2- Clinical signs in Human		
Complete answer	31	15.5
In Complete answer	57	28.5
No answer	112	56
3- Disease transmission		
Complete answer	43	21.5
In Complete answer	126	63
No answer	31	15.5
4- Preventive measures		
Complete answer	53	26.5
In Complete answer	110	55
No answer	13	18.5

Concerning utilizing of preventive measures that protect the studied group from exposure to avian influenza, correct responses ranged from (19.5%) for all preventive measures to (3.5%) for wearing gloves, (6%) for mouth and nose protector, (67.5%) for changing shoes and clothes, (90.5%) for washing hands and (43.2 %) using disinfectants as described in Table (4) and Figure (1). These results higher than the results reported by (3) who reported that (2.4%) of poultry workers follow preventive measures, and lower than (1) who said that (39.2%) of poultry workers follow preventive measures. Wearing of personal protecting equipment was not a routine practice among the group studied this may be after some years on the job without being infected.

They felt that they were immune to the risk of infection and not have appreciated the need to comply, believed that the avian influenza was not a serious disease (1).

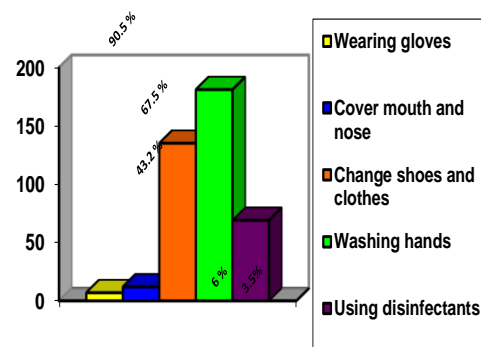


Fig. 1 Follow preventive measures when dealing with birds

Table 4 Avian influenza (AI) practice of the studied group.

Variable	n=200	%
1- Follow preventive measures when dealing with birds		
Yes	39	19.5
No	161	80.5
Dealing with sick and dead birds		
Bury	7	3.5
Burn	14	7
Notify authorities	3	1.5
Basket	42	21
Street	83	41.5
Canal	51	25.5
Dealing with the rest of birds		
Notify authorities	3	1.5
Slaughter and eat	61	30.5
Sell	125	62.5
Canal	11	5.5
Feeding birds		
Yes	138	69
No	62	31
Separate between different species		
Yes	104	75.4
No	34	24.6
Keep birds outdoors		
Yes	88	3.8
No	50	36.2
Keep birds away from living area		
Yes	22	15.9
No	116	84.1

Of the most important tools that must be followed in order to limit the spread of avian influenza disease is safely get rid of any sick and dead birds by placing them into an airtight bags and safely disposed by incineration or bury, then inform local authorities to limit the scope of the disease but the majority of studied group threw the sick and dead birds in the streets (41.5%) as in Figure (2), spreading the virus to the environment, and in Figure (3), (62.5%) of them sell the rest of birds especially in farms and live bird markets where different species of birds are sold increasing

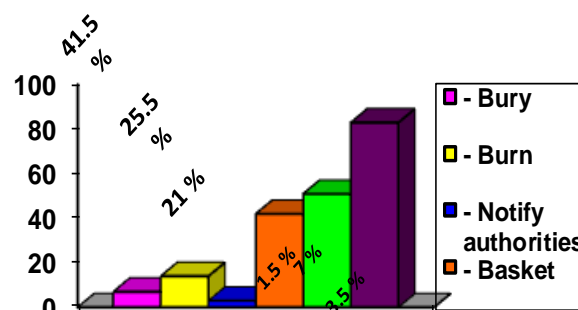


Fig. 2 Dealing with sick or dead birds of the studied group

the chance of disease spread, these serious actions may reflect their fear of huge economic losses ignoring the disease threats to public health considering that avian influenza is not a serious disease,

contrary to some reports [1] that recorded that (69%) of poultry workers believed that avian influenza is a serious disease.

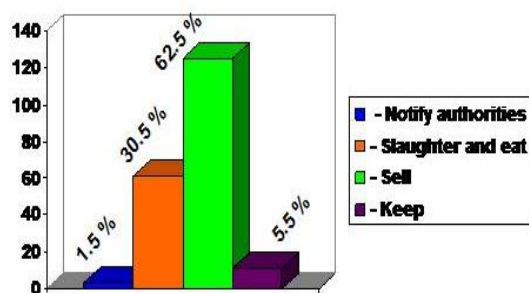


Fig. 3 Dealing with the rest of birds of the studied group.

The attitude of the occupational people explained in Table (5), (16%) of them think that disease is not serious, and (59%) not believe in stop birds breeding, this may be because it is the main source of their income and no human infections in their surroundings area had supported their opinion.

Nearly half of the studied group had knowledge score of moderate level (52 %) and (35%) with poor knowledge, lower than (7) who reported that (75.7%) of the participants had fair knowledge as illustrated in Table (6), level of knowledge was greater in breeders than non-breeders

agree with (2), because of breeders more interested in knowing more information about the disease to help them in early identification of the diseased birds and protect themselves whatever they will follow preventive measures or not. The majority of studied group demonstrated bad practice toward avian influenza (75.5 %) increasing their risk of exposure to the disease. Bird breeders have highly negative attitude (62.3%) than breeders (35.5 %) with total negative attitude (54%) for all respondents may be attributed to their view towards bird breeding as the only source of their income and they were not infected proven their belief. Improving knowledge of transmission and application of preventive measures is a useful public health strategy for reducing the effects of avian influenza in poultry workers [8]. Knowledge about avian influenza disease was greater among highly educated participants as recorded in Table (7), there were statistically highly significant correlation between the knowledge of the studied group and their level of education, this result agrees with earlier reports [2].

Table 5 Attitude about avian influenza (AI) score of the studied population

Variable	nN=200	%
1-Perception of risk for avian influenza		
Yes	32	16
No	168	84
2-Fear from eating poultry egg and meat		
Yes	3	1.5
No	197	98.5
3- Stop bird breeding		
Yes	119	59.5
No	81	40.5
4-Interested in follow up disease news		
Yes	180	90
No	20	10
5- Notify about infected human cases		
Yes	62	31
No	138	69

In addition knowledge of studied group can affect on their practice and can change their behavior as there is a highly significant correlation between: knowledge and practice also education level of studied group and their practice while there is a significant correlation between their practice and attitude, the behavior of the studied group depends on their belief toward the avian influenza disease. To prevent avian influenza, changing the behavior of the highest risk people such as, touching sick or dead poultry with bare hands, should be attempted through public education, and reinforced through

behavioral counseling. If complete avoidance of sick or dead poultry is impossible, messages should include information on proper hand protection, such wearing disposable gloves, or using a plastic bag, and disposal methods. This study suggests that public campaigns can be effective at educating high risk populations. These results revealed that concerted effort is required to enhance knowledge and change the behavior among those most at risk and the precautions necessary to avoid spreading the virus among poultry and human.

Table 6 Knowledge, attitude and Practice (KAP) score of the studied group.

	Breeders n=138		Non breeder n=62		Total n=200	
	N	%	N	%	N	%
1-Knowledge						
Good	19	13.8	7	11.3	26	13
Fair	93	67.4	11	17.7	104	52
Poor	26	18.8	44	71	70	35
2-Practice						
Good	23	16.7	26	41.9	49	24.5
Bad	115	83.3	36	58.1	151	75.5
3-Attitude						
Positive	52	37.7	40	64.5	92	46
Negative	86	62.3	22	35.5	108	54

Table 7 Correlation between education level, knowledge, attitude and Practice (KAP)

	Knowledge		Practice		Attitude		Education level	
	r	P	r	P	r	P	r	P
Knowledge	-	-	0.505	0.01	0.363	0.204	0.854	0.01
Practice	-	-	-	-	0.174	0.05	0.698	0.01
Attitude	-	-	-	-	-	-	0.388	0.224
Education level	-	-	-	-	-	-	-	-

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## دراسات وبائية عن انفلونزا الطيور على الأشخاص المهنيين في محافظة القليوبية

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### الملخص العربى

يعتبر مرض انفلونزا الطيور من الأمراض الخطرة الواسعة الإنتشار، فهو يصيب أغلب أنواع الطيور مما أدى الى خسائر إقتصادية عالية فى قطاع الإنتاج الداجنى، وزادت خطورة هذا المرض بقدرته على الإنتقال الى الإنسان وظهور عدد من الإصابات والوفيات بين البشر خاصة من المتعاملين مع الطيور. لهذا أجريت هذه الدراسة لمعرفة وبائية مرض انفلونزا الطيور فى محافظة القليوبية باستخدام استمارة استبيان لتجميع بيانات من 200 من الأشخاص المهنيين الأكثر عرضة للإصابة بالمرض وقد اشتملت هذه البيانات على مدى معرفة الأشخاص المهنيين بمرض انفلونزا الطيور وكذلك تقييم الممارسات الصحية والسلوكيات تجاه المرض. وقد أسفرت النتائج عن وجود نقص فى المعلومات تجاه مرض انفلونزا الطيور لمعظم الأشخاص المهنيين وأن التليفزيون هو أهم مصدر للمعلومات. كما تبين أن ( 75.5 %) من الأشخاص المهنيين لا يتبعون الممارسات الصحية السليمة عند التعامل مع الطيور، بينما كان السلوك تجاه مرض انفلونزا الطيور سلبى لدى معظم الأشخاص المهنيين (54 %). وتبين أيضا أن الأشخاص الأعلى تعليما أكثر دراية بالمرض و يتبعون الممارسات الصحية السليمة بالنسبة الى الأشخاص الأقل تعليما و أن السلوكيات تتأثر ايجابيا بحجم المعرفة بالمرض ومستوى التعليم.

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