

Knowledge, Attitudes and Practices of Poultry Farms' Workers about Occupational Health Hazards at Assiut District

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Abstract

Background: The atmosphere in poultry houses, particularly where ventilation is limited, can adversely affect human health. Aim of study: Assess knowledge, attitude and practice of participants at poultry farms regarding occupational health hazards Methods: cross sectional study was used in this study concluded 400 participants from Assuit district One tool used; Interview questionnaire developed to collect data. It consist of five parts first part to assess socio-demographic characteristics, second part to assess medical history, third part to assess workers' knowledge, fourth part to assess practice of workers and fifth part is likert rating scale to assess workers' attitude. **Results:** Shows that 53.8% were 20- 40 years, 40.2 % had secondary school, 71.7% had poor knowledge about occupational health hazards at poultry farms, and 34.8 % had positive attitude towards occupational health hazards at poultry farms. **Conclusion:** There was poor knowledge among poultry workers in Assuit distract while more than one third had positive attitude towards their work. **Recommendations:.** Workers must wear appropriate personal protective equipment such as gloves, mask and aprons.

Key words: *Workers, Hazards, Knowledge, Attitudes & Practices.*

Introduction

The poultry industry is one of the most important animal production industries and contributes to approximately 10% of the all meat and eggs produced in the world each year (Wei et al., 2006).

The commercial poultry sector in Egypt was estimated to be 850 million birds in 2006, where the majority of farms are small-scale units (5000 – 20000 birds) with poor or no biosecurity and usually used for broiler and layer poultry production. Conversely, the breeders and grandparent farms have strict biosecurity measures with all-in all-out production systems (Abdelwhab and Hafez, 2011).

Poultry processing is an occupation, like farm work, that poses substantial risk for injury and illness to its largely racial and ethnic minority workforce. In 2006, the Bureau of Labor Statistics (BLS) estimates indicated that more than 15,000 poultry workers nationwide reported occupational injuries or illnesses for a rate of 6.6 per 100 full-time workers, more than 10,000 of which were severe enough to miss work or require restricted activity . The nonfatal injury rate among poultry-processing workers was 5.3 per 100 full-time workers , and the illness rate was 1.3/100 (Bureau of Labor Statistics, 2007).

Poultry workers who spend the most time in poultry farms and therefore experience the greatest amount of exposure are at greatest risk. These include poultry caretakers, farm managers and flock supervisors. Another category of workers at risk include poultry

catchers, who harvest the birds for transportation to processing plants. The atmosphere in poultry farms usually contains significant levels of agricultural dust and toxic gases, which put the workers at a health risk (OSHA, 2007).

Ventilation in the houses accommodating poultry is generally intended to maintain a comfortable atmosphere for the birds. The dust generated during tasks such as spreading clean litter or removing manure may be slightly reduced by the operation of shed ventilation systems. Some reports suggested that farm managers were reluctant to operate ventilation for the benefit of contractors, probably because of energy costs. Where exposure is recognised as potentially harmful, reliance is usually placed on respiratory protection of one sort or another (Liebers, 2007).

Occupational hazards which can be classified into accident, physical chemical, biological, psychosocial, economic hazards. Accident Hazards include Sprains and stains from slips, trips and falls when carrying heavy loads (bags of feed), working in congested and slippery areas soiled. Eye and skin irritation from contamination of broken skin or from splashing of irritants, allergens, other hazardous fluids (disinfectants) during vaccination/medicating (in feed / water) , mixing of feed transporting feed/medicines, or spraying vaccines, disinfectants and fumigating

agents and burns from exposure to hot surfaces (e.g. incubators, debarking tools) (Odunsi et al, 2005).

The occupational health nurse is skilled in primary prevention of injury or disease. The nurse may identify the need for, assess and plan interventions for example modify working environments, systems of work or change working practices in order to reduce the risk of hazardous exposure.

Occupational health nurses can play an essential role in health assessment for fitness to work, pre employment or pre placement examinations, periodic health examinations and individual health assessments for lifestyle risk factors (Mary, 2011).

Significant of the study

Poultry processing workers have some of the highest occupational health risks. A study conducted in Sharkia Governorate, 2011 reported that complaints among poultry farm workers were ocular complaints (55.4%), followed by gastrointestinal (48.2%), respiratory (41.8%), and dermatological (38.1%) complaints. Also, 46.3% of the exposed group had more than one complaint (El-Saadawy et al., 2011).

Subjects and methods:

Research design

A cross-sectional research design was used in this study

Study Setting

The present study was conducted at all licensed poultry farms located in Assiut district, Assiut Governorate from the first of May to end of July, 2013. The researcher had obtained a list of licensed farms located in Assiut district from the Agriculture Directorate of Assiut Governorate. The researcher had access only to 87 farms with response rate 74.4% out of the total licensed farms (117 farms), the remaining 30 farms were out of reached because they were either closed or their owners refused to participate in the study.

The study was conducted at Assiut University poultry farms and 13 villages of Assiut district (i.e., Manqabad, Elwan, El-Bora, Bani Ghaleb, Bani Hussein, Awlad Rayek, Masra'a, Nagoa Bani Hussein, Nagae Sabae, Nagae Abd El-Rasool, El-Esaweya Reefa, and Elzawya)

Study subjects

All people who take care the poultry farms located in Assiut district of Assiut Governorate were eligible to be included in the study and composed what is known as sample frame (400 persons).

Sampling technique

The researcher recruited all concerned persons were accessible during field visits for data collection from the study settings.

Study tools

Is a interview questionnaire was developed by the researcher under the supervision of the supervisors and which was used as an instrument for data collection. Direct interviews were undertaken at the poultry farms of the study participants. The language of the questionnaire was Arabic. The questionnaire sheets was included multiple choice questions (MCQ), open and closed ended questions. It consisted of the following:

1- The tool Interview questionnaire sheet: it included five parts

1-The first part was designed to assess socio-demographic characteristics

Such as name, age, sex, educational level, marital status, current jobs, nature of work, years of work and hours of work.

2-The second part was designed to assess medical history:-

This part included questions about the presence of disease in all workers such as respiratory disease, skin disease, musculoskeletal disease, digestive system disease presence of other disease.

3-The third part designed to assess workers' knowledge about:-

Occupational health hazards, zoonotic diseases transmitted from chickens to human, signs and symptoms of sick birds, modes of transmission to human, hazards of poultry dust and noise and how protected human from these disease.

4- The fourth part was designed to assess practice of workers by asking like:-

Wearing special clothes during work, use protective tools, hand washing, vaccination of birds, eating during work inside poultry disinfected clothes of work, dealing with sick birds, dealing with poultry refuses.

5-The fifth part is Likert rating scale:

It was used to assess workers' attitude towards occupational health hazards at poultry farms. It consists of 23 statements expression point of view. The responses were on a three – point psychometric scale (agree, neutral, and disagree) instead of (very strong agreement, neither disagree nor agree, and very strong disagreement). The scoring was reversed for negative statements. The total score was calculated by summing up scores and converting them into a percent score. Workers' attitude was considered positive if the score 60%

and more and negative attitude if the score was less than 60% (Caracciolo et al, 2011).

Statistical analysis and scoring system

Analysis of the result was done by a computer program .Excel 2003 program is used for data entry. The statistical analysis was done by using Software Package for Social Science (SPSS), version 16.0. Descriptive statistics were calculated i.e frequency, percentage, mean, and standard deviation. Variables were compared using chi-square test. Statistical significance was considered at p. value<0.05. scoring system for Knowledge was as follow The researcher in collaboration with supervisors designed and adopted a scoring system for estimation of the correct answers of Knowledge questions of the present study. According to this system, a scoring system was designed for the assessment of knowledge. One grade was given for each correct answer and grade of zero was given for an incorrect answer. The scores of each item were summed and then converted into a percent score. Poor knowledge: score of less than 50%), Satisfactory knowledge: if score is 50-70% and Good knowledge: if score is more than 70%.

Methodology:

I- Administrative phase:

A request from the Dean of the Faculty of Nursing, Assiut University had been submitted to all concerned bodies to obtain an approval to facilitate carrying out this study. The Head of Assiut Agriculture Directorate offered a list of licensed poultry farms located in Assiut district, and issued an approval letters especially to managers of the governmental farms to cooperate with the researcher.

II- Pilot Study

A pilot study was carried out before starting data collection and it was carried out on 40 workers who were included in the study. To estimate the time required for filling up the forms and make any modification .

III-Data collection Phase:

Ethical Consideration

All persons at the study settings were eligible to participate in the study. The researcher invited them to participate in the study after explanation of the study aims. Those who agreed to participate and gave a verbal consent included in the study. Confidentiality of obtained information was assured.

Field work

Data were collected by the researcher , my husband and my brother during the period from the beginning of May to the end of July, 2013. Suitable time in the day was selected to ensure that large number of participants were acceptable. The interviews were

held through poultry visits every day except Friday per weeks. The length of time required to complete each sheet depending on the response of the participants was about 20 – 30 minutes. Every weeks about 33 sheets were finished. The researcher started data collection by introducing self to the workers then, the purpose of the study was explained to them to obtain their informed consent to participate in the study and to gain their cooperation.

Results

Table (1): personal characteristics of the study participants at poultry farms, Assiut district, 2013.

Socio-demographic characteristics of the study participants:	No. (n= 400)	%
Age (years)		
< 20	72	18.0
20 -	148	37.0
30 -	113	28.2
40 and above	67	16.8
Marital status:		
Married	231	57.8
Single	164	41.0
Widow	5	1.2
Level of education:		
Illiterate	93	23.2
Read & write	62	15.5
Primary	26	6.5
Preparatory	53	13.2
Secondary	161	40.2
University	5	1.2
Type of work on poultry:		
Chickens feed	179	44.8
Clean farm	171	42.8
Supervision of the farm	167	41.8
Collect eggs	117	29.2
Poultry transport to places of sale	123	30.8
Manufacture of feed	107	26.8
Connecting to the poultry cage	101	25.2
Collect poultry transport	100	25.0
Other*	23	5.8
Number of working hours:		
> 10 hours	254	63.5
5 - 10 hours	146	36.5
Years of experience:(years)		
< 5	195	48.8
5 -	70	17.5
10 – and above	135	33.8

Others : Security, Veterinarian, Driver

Table (2): History of medical diseases among study participants at poultry farms, Assiut district, 2013.

History of medical diseases	No. (n= 400)	%
I-Respiratory diseases:	69	17.2
*Type of respiratory diseases(n= 69)		
Bronchial asthma	40	57.9
Bronchitis	13	18.8
Hypersensitivity on the chest	10	14.4
Tuberculosis	5	7.2
Nasal sinusitis	17	24.6
Lung fibrosis	1	1.4
Duration of disease		
≥ 5 years	37	53.6
< 5 years	32	46.4
II-Skin disease	23	5.8
*Type of diseases (n=23)		
Tinea pedis	13	56.5
Dermatitis	8	34.8
Vitiligo	7	30.4
Duration of disease:		
< 5 years	14	60.9
≥ 5 years	9	39.1
III-Musculoskeletal systems diseases:	55	13.8
*Type of muscular diseases: (n=55)		
Arthritis	38	69.1
Orthoroartherosis	6	10.9
Muscle strain	25	45.4
The difficulty movement of the feet	2	3.6
Roughness in the vertebrae	2	3.6
Cruciform ligament	1	1.8
Disc prolapsed	3	5.4
Duration of disease:		
< 5 years	41	74.5
≥ 5 years	14	25.5
VI-Ophthalmic diseases:	44	11.0
*Type of ophthalmic diseases: (n=44)		
Eye inflammation	27	61.3
Impairment of vision	13	29.5
Sensitivity of the eye	5	11.3
Corneal ulcer	2	4.5
Cataract	1	2.3
Duration of disease:		
< 5 years	29	7.2
≥ 5 years	15	3.8
X- Gastrointestinal diseases:		
Yes	25	6.2
*Type of gastrointestinal diseases: (n=25)		
Diarrhea-gastroenteritis	13	52.0
pepetic ulcer	8	32.0
Inflammation of the esophagus	5	20.0
Constipation	2	8.0
Duration of disease:		
< 5 years	21	84.0
≥ 5 years	4	16.0

*More than one answers

Table (3): Distribute of the study participants correct knowledge about occupational health hazards at poultry farms, Assiut district, , 2013.

Correct knowledge	No. (n= 400)	%
Know	160	40.0
*Occupational hazards:		
1- Biological hazards		
Exposure to diseases	144	90.0
2-Chemical hazards		
Exposure to dust	84	52.5
Exposure to detergents and disinfectants	76	47.5
3 –Accidents		
Exposure to fracture	53	33.1
4-Physical hazards		
Exposure to high levels of noise	41	25.6
Exposure to burns	46	28.8
* knowledge about risks from exposure to noise:		
Hearing defect	10	2.5
Psychotic disease	8	2.0
Hypertensions	7	0.8
Epilepsy	2	0.2
Don't know	378	94.5
Knowledge about risks from exposure to dust:		
Yes	56	14.0
Types of risks:		
Respiratory disease	38	67.9
Eye Disease	18	32.1

**More than one answer*

Table (4): Distribute of the study participants correct knowledge about signs of sick birds at poultry farms Assiut district ,2013.

Correct knowledge	No. (n= 400)	%
know	217	54.2
*Signs of sick birds: (n=217)		
Diarrhea	156	71.9
Difficulty of movement	117	53.9
Loss of appetite	112	51.6
Feathered loss	97	44.7
Lack of production of eggs	97	44.7
Change the shape of feathers	98	45.2
Secretions from the mouth	96	44.2
Swelling of the head	93	42.9
Inconsistency movements	86	39.6

**More than one answer according the response of the study participants*

Table (5): Distribute of the study participants correct knowledge about zoonotic diseases transmitted from birds to human and modes of transmission at poultry farms Assiut district, 2013.

Correct knowledge	No. (n= 400)	%
Know	139	34.8
*Type of disease: (n= 139)		
Avian Influenza	122	87.8
Newcastle	74	53.2
Tuberculosis birds	58	41.7
Salmonella	38	27.3
Chlamydophilosis	0	0.0
Tuberculosis	0	0.0
Campylobacteriosis	0	0.0
Knowledge about the modes of transmission: (n= 128)		
Know	128	32.0
*Modes of transmission:		
Touching the bird secretion	76	59.4
Direct contact with sick birds irregularities	73	57.0
Direct contact with sick birds	71	55.5
Eat sick birds	45	35.2

**more than one answer*

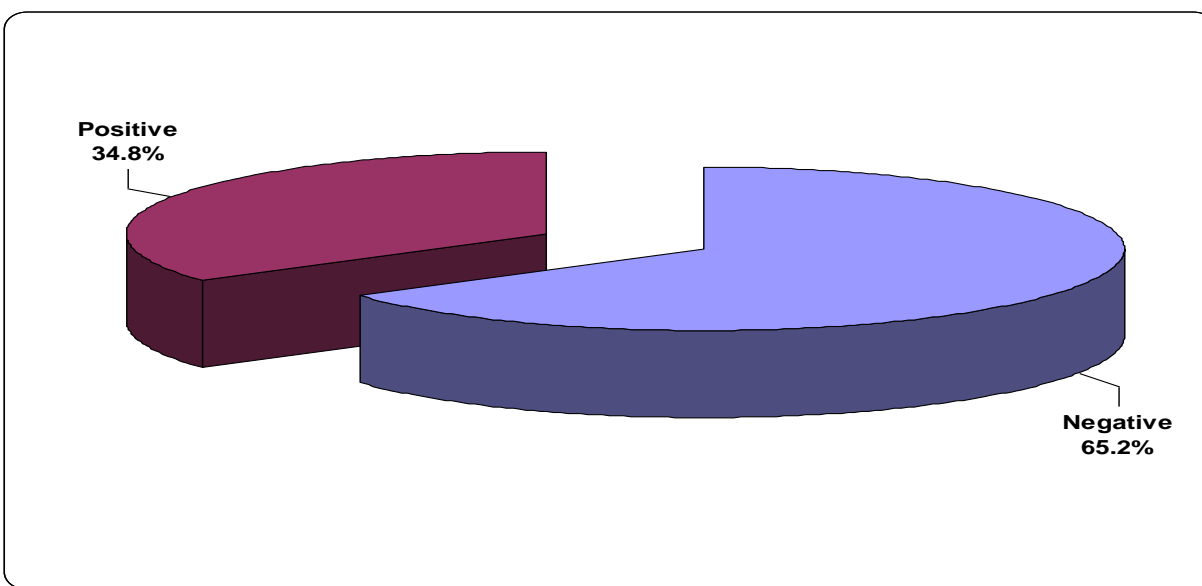
Table (6): Practices of the study participants to avoid occupational health hazards at poultry farms , Assiut district, 2013.

Hand washing:	done		Not done	
	No.	%	No.	%
Washing hands before and after egg collection	50	12.5	350	87.5
Washing hands with soap and water with any antiseptic solution	86	21.5	314	78.5
Washing hands with water and soap	158	39.5	242	60.5
Washing hands with water only	174	43.5	226	56.5
Drying hands after washing	189	47.2	211	52.8
Washing hands after doing clean up the farm	313	78.2	87	21.8
Washing hands after handling birds	357	89.2	43	10.8
Wearing protective equipments*:				
Wearing gloves during work	22	5.5	378	94.5
Wearing a mask during work	62	15.5	338	84.5
Wear protective head during you work	80	20.0	320	80.0
Wear special shoes during working	263	65.8	137	34.2
Wear especial clothes during work	366	91.5	34	8.5
Close doors between you and chickens	275	68.8	125	31.2
Clean clothes constantly used in the work	297	74.2	103	25.8
Do eating and drinking inside the farm	312	78.0	88	22.0
Cleaning the farm using detergents or disinfectants	313	78.2	87	21.8

**There is more than one answer*

Table (7) : Relations between attitude score of study participants and personal characteristic at poultry farms, Assiut district, 2013.

	Attitude score				P-value
	Negative (n= 261)		Positive(n= 139)		
	No.	%	No.	%	
Age (years)					
< 20	40	55.6	32	44.4	0.295
20 -	99	66.9	49	33.1	
30 -	46	68.7	21	31.3	
40 and above	76	67.3	37	32.7	
Level of education:					
Secondary	97	58.4	69	41.6	0.022*
Basic education	50	63.3	29	36.7	
Illiterate	65	69.9	28	30.1	
Read & write	49	79.0	13	21.0	
Years of experience:					
< 5	122	62.6	73	37.4	0.300
5 -	88	65.2	47	34.8	
10 and above	51	72.9	19	27.1	

Figure (1) : total scoring attitude of the studied sample about occupational health hazards at poultry farms Assiut district.

Table(1) : shows the personal characteristics of the study participants. Regarding their age, it was noticed that more than one third (37.0%) of the workers aged between 20 years and less than 30 years followed by 28.2% of study sample the workers aged more than 40 years. More than half of the workers were married(57.8%). As regarding level of education, 40.2% had secondary education followed by 23.2% were illiterates.

Table(2) : illustrates history of medical diseases among study participants at poultry farms. It reveals that 17.2% of the studied sample suffered from respiratory diseases. More than half (57.9%) of them complained from asthma. 5.8% of the workers complained from skin disease and more than half (56.5%) of them affected by tinea pedis. More than two thirds of them (69.1%) complained from arthritis and 1.8% complained from cruciform ligament. 11.0% of the studied sample suffered from

ophthalmic diseases, 61.3% of them mentioned that they had eye inflammation while 6.2% suffered from digestive system disorders .

Table(3) : reveals knowledge of the study participants about occupational health hazards. As observed from the table, 40.0% had correct knowledge about occupational health hazards at poultry farms. The vast majority (90.0%) of them mentioned exposure to disease were occupational hazards at poultry farms followed by more than half (52.5%) exposure to dust. The vast majority of them (94.5%) did not know risks of exposure to noise while 2.5% stated that risks were hearing defect.

Table(4) : shows knowledge of the study participants about signs of sick birds at poultry. It reveals that more than half (54.2%) of the studied sample had correct knowledge about a signs and a symptoms of sick birds. 71.9% of them mentioned that diarrhea is a signs and a symptoms of sick bird. more than one third (39.6%) mentioned that lack and inconsistency movements.

Table(5) : illustrates knowledge the study participants about zoonotic diseases transmitted from birds to human and modes of transmission. More than one third (34.8%) of the studied sample had knowledge about the disease transmission from birds to human. The majority (87.8%) of them mention avian influenza can transmitted from birds to human followed by more than half (53.2%) mentioned Newcastle disease. It was found that 32.0% of the studied sample had knowledge about the ways of transmission from birds to human. More than half (59.4%) mentioned that touching the bird secretions also 57.0% mentioned that direct contact with sick bird.

The results in

Table (6) : It reveals that the majority (89.2%) of the studied sample washing hand after handling birds but 43.5% of them washing hand with water only. The vast majority (91.5%) of the studied sample wearing special clothes during work. while about two thirds (65.8%) of them wearing special shoes during work. Also show 78.2% of them cleaning the farm by using detergents or disinfectants.

Table (7) shows relation between workers attitude score and their personal characteristic at poultry farms in Assiut district. It shows there is no statistical significant difference between their attitude and age & years of experience P- value (0.295 & 0.300). Also show there is statistical significant difference between attitude and level of education P- value (0.022)

Figure (1) : total scoring attitude of the studied sample about occupational health hazards at poultry farms Assiut district. It reveals that 34.8% of studied

sample had positive attitude while 65.2% of them had negative attitude.

Discussion

Commercial poultry production is a dusty business. Poultry farm workers are exposed to high concentrations of airborne dust ranging from a single substance, e.g. wood dust, to a complex mixture which might include inorganic and organic material derived from feed, litter, faecal material, dander (skin material), feather and micro-organisms which could cause respiratory diseases including asthma and chronic bronchitis(**Liebers et al, 2007**).

The findings of the present study showed that As regards the personal characteristics of the studied sample, about two thirds (65.2%) of them were aged between 20- 40 years. This finding agrees with the findings of (**Adedeji et al, 2011**) who found that more than half (55%) of the studied sample who worked in poultry farms were aged between 21-40 years. On the other hand, this finding disagrees with (**Yu et al, 2013**) who found that 24.9% were 18–35 years, and 26.9% were more than 45 years. This implies that youths are mostly engaged at poultry farming in the study area more than elderly people.

Concerning their marital status, more than half (57.8%) of the studied sample were married. This finding is nearly similar to the results of (**Ismail and Ahmed, 2010**) who found in their study that 50.6% of the studied sample was married.

The study found that respondents who finished secondary school had the highest percentage (40.2%) while 23.2% of them were illiterates. The current results are consistent with those of (**Adedeji, et al, 2011**) who reported that the 46.1% of the studied sample finished secondary education. On the other hand, 1.2% of them received university education, 15.5% of them could read and write, and only 6.5% of them finished primary school. This implies that people who finished secondary school are mostly engaged at poultry farming in the study area.

Concerning the type of work, (44.8%, 42.8% and 29.2%) of studied sample engaged in chickens feed, cleaning of poultry and collecting eggs. This finding disagrees with(**Fatiregun and Saanipp, 2008**) who found that 82.1%, 65.7% and 62.9% of the studied sample engaged in feeding poultry, sweeping poultry and collecting eggs, respectively. This finding can be accounted for by the fact that most workers in our study area engaged in all types of work at poultry farms rather than specific work.

Regarding years of work, it was observed that nearly half (48.8%) of the studied sample had job experience of less than 5 years. This finding disagrees with(**Cahyadi , 2010**) who found that

19.0% had job experience of less than 5 years. On the other hand, our study shows that more than one third (33.8%) of them had job experience more than 10 years. This finding is in line with those of (Cahyadi, 2010) who found that 33.0% of the workers had job experience more than 10 years.

Concerning respiratory diseases, (Health Safety and Executive, 2008) reported that respiratory disease is a major occupational health risk for those working in farms, with an incidence of occupational asthma several times the national average. Research suggests that working at poultry housings is associated with higher exposures to organic dusts than for cow or swine housing and the prevalence of symptoms among poultry workers is also higher. The present study showed that 17.2% of the studied sample were suffering from respiratory disease. This finding is nearly similar to the result of (Quandt et al, 2006) who found that 14.5% of their study sample were suffering from respiratory disease. On the other hand, this finding disagrees with (El-Saadawy et al, 2011) who found that 41.8% of their studied sample complained from respiratory symptoms. This finding can be accounted for by the small size of our study sample and the production of chicken feeding outside the poultry.

Concerning skin diseases, 5.8% of the studied sample had skin disease. More than half (56.5%) of them stated that they were suffering from tinea pedis. This finding is nearly similar to the result of (Odunsi et al, 2005) who found that 8.2% of their studied sample stated that they were suffering from skin diseases. On the other hand, this finding disagrees with (Quandt et al, 2006) who found that 21.4% of their studied sample were suffering from skin diseases. It also disagree with (El-Saadawy et al, 2011) who found that 38.1% of the workers had skin diseases. (North Carolie State University, 2002) reported that conditions in poultry plants expose workers to multiple agents affecting the skin. The number of skin ailments was expected to be high. Each worker had at least one dermatological diagnosis.

Regarding musculoskeletal diseases, 13.8% of the studied sample complained from musculoskeletal diseases. 69.1% of them were suffering from arthritis. This may be explained by the musculo-skeletal disorders that could be caused by the activity of pulling birds from cages in the narrow aisles of a battery house, lifting heavy loads and exposure to cold and heat in poultry farms (Donham , 2000).

The findings of present study showed that 11.0% of the studied sample were suffering from ophthalmic disease. less than two thirds (61.3) complained from eye inflammation. This finding disagrees with (El-Saadawy et al, 2011) who found that 22.7% of their

studied sample had eye inflammation. This disagreement is accounted for by our study sample's exposure to sand dust in the mountainous area of poultry farms and to feeding and also by workers not wearing eye protection during work.

Concerning digestive system diseases, 6.2% of the studied sample were suffering from digestive system diseases. The findings of the current study disagree with those of (Quandt, et al, 2006) who reported that 19.8% of their studied sample had digestive system diseases. This disagreement can be accounted for by the fact some workers of our study sample at poultry farms were exposed to contamination because of lack of knowledge about the importance of hand washing after dealing with chickens.

Regarding knowledge about occupational health hazards in poultry farms, 40.0% of the studied sample had correct knowledge. The vast majority (90.0%) reported exposure to disease from occupational health hazards in poultry farms. This finding disagrees with (Adedji et al, 2011) who found that 46.7% of the studied sample reported exposure to disease. On the other hand, the current study showed that 47.5% of the workers under study reported occupational health hazards due to exposure to disinfectants. This finding is in line with (Adedji et al, 2011) who found that 38.3% of the workers mention exposure to disinfectants. Also in our study 28.8% of the workers mention exposure to burns. This finding disagrees (Adedji et al, 2011) who found that 1.7% of the workers mention exposure to burns.

The results of the present study also reveal that the general level of workers' knowledge about the signs and symptoms of disease. More than half (54.2%) of the studied sample had correct knowledge. 71.9 of them stated that diarrhea is one of the signs and symptoms of disease. This result disagrees with (Al shehri, et al, 2006) who found that 20.8% of the workers mentioned that diarrhea is a symptom of disease. On the other hand, in our study 53.9% of the studied sample mentioned that sick birds had difficulty moving. This found is in line with (Ismail and Ahmed, 2010) who found that 66.1% of the workers mentioned that sick birds had difficulty moving, while in our study 44.7% of the workers reported loss of feathers. This finding disagrees with (Ismail and Ahmed, 2010) who found that 19.5% of the workers reported loss of feathers. The results of the present study also show that 44.7% of the workers reported reduced egg production. This finding disagrees with (Ismail and Ahmed, 2010) who found that 27.0% of their study sample reported reduced egg production as a sign of sick birds.

Regarding workers' knowledge about zoonitic disease (bird), the current study indicated that more than one third (34.8%) of the studied sample had

correct knowledge about zoonotic diseases. The majority (87.8%) of them mentioned that zoonotic diseases and avian influenza at poultry farms could be transmitted to human while more than half (53.2%) mentioned that Newcastle disease. Also the present study shows that more than one third (41.7%) mentioned tuberculosis.

As regards workers' knowledge of the modes of transmission, the current study showed that less than one third (32.0%) of the respondents had knowledge of the modes of transmission to humans. More than half (59.4%) of the respondents reported that disease could be transmitted to human by touching the bird's secretion, while 57.0% stated that human could be infected through direct contact with sick birds' secretion. This finding does not agree with (Abbate et al, 2006) who found that less than two thirds (65.0%) of the studied sample stated that diseases could be transmitted to human through touching the birds' secretion and 90.3% of them stated that diseases could be transmitted through touching the bird.

As regards the practice of washing hands with water and soap, the present found that more than one third (39.5%) of the studied sample reported using this practice. This finding is consistent with a KAP study conducted in Ain Shams by (Al shehri et al, 2006) where more than one third (36.5%) of the respondents washed their hand with soap and water. On the other hand, in our study the majority (89.2%) of the sample washed hands after dealing with birds. This finding also agrees with a KAP (Knowledge, Attitudes and Practices) study conducted in Ain Shams by (Al shehri et al, 2006) who found that 75.7% of the sample washed hands after dealing with birds.

The current study illustrated that vast majority (91.5%) of the studied sample wore especial clothing during work, which agrees with a KAP study conducted in China by (Yu et al, 2013) which found that 88.9% of the study sample wore special clothing during work. On the other hand, in our study less than two thirds (65.8%) of the studied sample wore boots during work. The present study also agrees with a KAP study conducted in Nigera by (Fatiregun and Saanipp, 2008) who found that more than two thirds (67.9%) of the study sample wore boots during work to decrease exposure to hazards.

As regards practices of wearing a mask during work, the current study found that only 15.5% of the study sample wore masks. This result is consistent with a KAP study conducted in Nigera by (Fatiregun and Saanipp, 2008) who found that 11.4% of their study sample wore masks during work while in our study only 5.5% of the sample wore gloves during work. This finding disagrees with the KAP study conducted

in Nigera by (Fatiregun and Saani, 2008) who reported that 10.7% of their study sample wore gloves during work.

The study reveals that there is no statistically significant difference between workers' attitude and their age. This finding disagrees with (Ismail and Ahmed, 2010) who reported that workers' age affected their attitude and that there is statistically significant difference ($p < 0.05$).

The present study also shows that there is no statistically significant difference between workers' attitude and their level of education and years of experience ($p = 0.0022, 0.300$). This means that age and years of experience did not affect the attitudes of workers.

Conclusion

Based on the results of the present study, 17.2% from study participants suffer from respiratory disease. 40.0% had correct knowledge about occupational hazards. There is statistical a significant difference between level of knowledge and age of workers characteristics A significant difference was found between score of knowledge and attitude.

Recommendations

Based on the results of the present study, it was recommended

- 1-Workers must wear appropriate personal protective equipment such as gloves, mask and aprons.
- 2-Wearing special clean clothes, and disinfecting boots before and after visiting chicken houses.
- 3-Washing hands with soap and warm water before and after leaving the chicken house, and drying hands with disposable towels.
- 4-Training workers on correct bird handling techniques .
- 5-The workers in poultry farms should have a periodical medical follow -up and investigation to maintain health.

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