

Occupational Health Hazards among Workers in Poultry Farms

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Abstract

Background: Poultry workers are exposed to a variety of occupational health hazards on a daily basis which invariably hamper their production and productivity over time. **Aim of this study:** Was to assess occupational health hazards among workers in poultry farms. **Research design:** A descriptive design was used to carry out this study. **Setting:** Conducted at Poultry Farms in Benha City in two districts (Kafr Mnakar and Manchiet Azez) which included 9 farms. **Sample:** Convenience sample was chosen in the selected settings including 80 workers. **Tools:** Two tools were used to conduct this study, **I):** An interviewing questionnaire was used to assess; A) Socio-demographic characteristics of studied workers. B) Knowledge of studied workers about occupational health hazards. C) Reported practices of studied workers related to safety measures for occupational health hazards related to working in poultry farms. **II):** An observational checklist was used to assess the environment conditions at poultry farms. **Results:** 42.5% of studied workers aged from 30 to less than 40 years old. 17.5% of them had good total knowledge level and 26.3% of them had average total knowledge level, while 56.2% of them had poor total knowledge level regarding occupational health hazards in work environment. Also 41.3% of studied workers had satisfactory to total reported practice level and 58.7% of them had unsatisfactory total reported practice level regarding safety measures. **Conclusion:** There were statistically significant relations between total knowledge level of studied workers, marital status, level of education and monthly income, and there was highly statistically significant relation between total knowledge level of studied workers and their total reported practices level. Also, there were statistically significant correlation between total knowledge level, total reported practices level of studied workers and exposure to health hazards in work environment. **Recommendations:** Applying occupational health programs to increase knowledge and practices of poultry workers in order to ensure positive perception in poultry farms.

Key words: Occupational Health Hazards, Poultry Farms, Workers' Knowledge, and Practices.

Introduction

Occupational Health and Safety (OHS) is a set of activities to prevent injuries and health problems to workers and to provide safe and healthy workplaces for workers. On the other hand, work places that view occupational health and safety as an investment with return are faced with a wide range of benefits, such as the reduction of absenteeism, the motivation of workers, enhancing the working risks, making the

workplaces healthy and safe, increased productivity and the reduction of labour accident costs and establishing a positive safety culture so as to achieve a better occupational health and safety performance (Hughes & Ferrett, 2021).

Occupational health hazards constitute a major source of morbidity and mortality among all workers. Poultry workers are

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exposed to numerous hazardous situations in their daily practice. Close association between the workers and the poultry products, a variety of strenuous and exhaustive work environment puts the poultry workers at risk. Majority of the poultry related activities are full of drudgery and haven't been supported by the mechanical tools and appliances. These activities involve a lot of physical, chemical, biological, mechanical and psychological hazards (**Bello & Oriola, 2020**).

Poultry workers involved in poultry breeding, farming, loading and transport of poultry birds processing facilities face a number of potential health hazards. Physical hazards are basically high level of noise from either birds or operating equipment such as fan, heater, among others, vibration and extreme temperatures. Mechanical hazards, caused by machines or mechanical work tools body positions and working conditions put strain on workers' body (**Aderounmu et al., 2020**).

Chemical hazards due to accumulated exposure from dust, odour and gases from congested environment, especially in a closed system, carbon dioxide due to respiration from the birds, fermentation from animal left-over feeds, dungs. Also, cleaning and disinfecting materials. Biological hazards came up due to zoonotic diseases and infections transmitted between poultry animals and human being in close contact with such animals. Such include, virus, bacteria, fungi, and other microbes. Psychological hazards include overly heavy workloads, associated with uncomfortable working conditions (**Aderounmu et al., 2020**).

Human health risks may be associated with working in poultry farms. Respiratory problems arise from dusts, fumes, vapours and gases causing coughing, sneezing, asthma among others. Musculoskeletal problems,

such as neck pain, back pain, general body pains, waist and thigh pains, leg pains, and wounds and cut among others. Gastrointestinal problems such as stomachache, diarrhea among others. Dermatological problems such as skin problems, rashes, dry skin, among others. Others health related problems that could affects poultry workers are cold, stress, among others. Some of the zoonotic diseases are Salmonellosis, Newcastle disease, Avian influenza, among others. Zoonoses are diseases that can be transmitted from poultry to humans and are public health threats worldwide (**Yasmeen et al., 2020**).

Significance of the study

Occupational hazards have been recognized for many years and affect workers in different ways, a result in occupational accidents, work-related diseases and may lead to death. Worldwide, there are around 374 million occupational accidents and 160 million victims of work-related illnesses and more than 2.78 million deaths annually. Diseases related to work cause the most deaths among workers. In Egypt, there are about 15716 case have non-fatal occupational hazard by economic activity, 46 workers of them suffer from fatal injuries. At the same estimation there are found that the numbers of injuries per 100000 worker was 13.8 % for both sex male and female (**International Labour Organization, 2021**).

Aim of the study

This study aimed to assess occupational health hazards among workers in poultry farms.

Research questions:

- What are occupational health hazards among workers in poultry farms?
- What is the worker's knowledge about occupational health hazards related to working in poultry farms?

- What are the worker's reported practices related to safety measures for occupational health hazards related to working in poultry farms?
- Is there a relation between worker's knowledge and their socio- demographic characteristics?
- Is there a relation between the worker's exposure to hazards and their knowledge and reported practices?

Subjects and Method

Research design:

A descriptive research design was utilized in this study (a research method that describes the characteristics of the population or phenomenon that is being studied. This methodology focuses more on the “what” of the research subject rather than the “why” of the research subject was used to conduct this study.

Setting:

The study was conducted at Poultry Farms in Benha City in two districts (Kafr Mnaker and Manhiot Azeq). Which included 9 farms were namely: Abd-Elfatah Hassan Yossef farm (18 workers), Mahmoud Elfangary farm (8 workers), Mohamed Barhoma farm (8 workers), Hamdy Madkor farm (9 workers), Abd-Elbary Khadr farm (5 workers), Abo-Bakr Elkala farm (7 workers), Mahmoud Abd-Elhakem farm (9 workers), Bahagat Abd-Elhakem farm (8 workers) and Abd-Elhady Elshemy farm (8 workers).

Sampling:

Convenience sample was chosen in the study. The total number of studied workers were 80 workers.

Tools of data collection:

It was developed by researcher based on reviewing related literatures, and written in Arabic language, consisted of three parts to assess the following:

Tool I: An interviewing questionnaire: It was consisted of three parts to assess the following:

First part: Socio-demographic characteristics of studied workers. It included five closed ended questions about age, marital status, level of education, monthly income and residence.

Second part: It was concerned with assessment of workers' knowledge toward occupational health hazards. It consisted of (12 closed end questions) about meaning, types, causes of occupational health hazards, diseases transmitted from birds to humans, transmission modes of infection from birds to humans, disposal of farm waste, methods of preventing occupational health hazards and source of information.

Scoring system

The scoring system for workers' knowledge was calculated as follows: (2) for complete and correct answer, while (1) for incomplete and correct answer, and (0) for don't know.

The total knowledge score = 22 points. The total knowledge score was considered good if the score > 75% (>17 point), while considered average if it equals 50-75% (11-17 point), and considered poor if it equals < 50% (<11 point).

Third part: Concerned with studied workers' reported practices regarding safety measures related to occupational health hazards. It (included 6 questions) divided into 58 items; hand washing include (9 steps), personal protective equipment include (6 steps), wearing mask include (5 steps), wearing gloves include (6 steps), wearing work boots include (7 steps), general practices include (25 steps).

Scoring system

The scoring system for workers' reported practices regarding safety measures related to occupational health hazards was calculated as follows (1) for done and (0) for not done. The

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total practices score = 58 steps. The total practices score was considered satisfactory if the score >75% (>44 points) and unsatisfactory if it <75% (< 44 points).

Tool II: An observational checklist to assess poultry farms environmental conditions which obtained from (**Ministry of Agriculture, General Authority for Veterinary Services, Agricultural Administration in Benha City, 2017**) and modified by the researcher to assess the environment conditions at poultry farms (safety site, wards and environment) which included 32 items .

Scoring system

The scoring system for environmental conditions of poultry farms was calculated as follows (1) for present and (0) for not present. The total practices score = 33 items. The total environmental conditions score was considered sanitary if the score $\geq 80\%$ (≥ 26 score) and unsanitary if it $< 80\%$ (< 26 score).

Validity of tool and reliability:

The tools validity were assessed by 5 members of Faculties staff Nursing experts from the Community Health Nursing Specialists who reviewed the tools for clarity, relevance, comprehensiveness, applicability, and easiness for implementation and according to their opinion minor modification were carried out.

Reliability of tool:

The reliability of the developed tools was estimated by using Chronbach's alpha to measure the internal consistency of the tools. It was found that the reliability of knowledge was 0.751 and reliability of practices was 0.720.

Ethical consideration:

All ethical issues were assured; an oral consent has been obtained from studied workers before conducting the interview and gave them a brief orientation to the purpose of the study. They were also reassured that all

information gathered would be treated confidentially and used only for the purpose of the study. The studied workers had the right to withdraw from the study at any time without giving any reasons. The study had not any physical, social or psychological risks. Ethics, values and cultures were respected.

Pilot study:

The pilot study was carried out on 8 workers who represents 10% of the study subjects from another farm was named Ibrahim Madkor farm at Benha City. The pilot study was made to assess the tools clarity, applicability and time needed to fill each sheet as well as to identify any possible obstacles that may hinder the data collection. The pilot study excluded from the study sample and no modifications were done.

Field work:

The actual field work was carried out over a period of 4 months from the beginning of February 2022 up to the end of May 2022. Workers' consent was obtained before collection of data. The researcher visited the pre-mentioned settings from 9 am to 1.30 pm, two days per week (Sunday and Thursday) to collect the data from the workers. The average time needed to fill the tool was around 30- 45 minutes, the average number of interviewed workers was 2-3 workers each time depending on understanding and response of the interviewers. The researcher met farm supervisor for determining the suitable time to collect the data. The researcher introduced herself to studied workers in the workplace, explained the aim and component of the questionnaires and distributed the questionnaires to studied workers in their work settings at different times and attended during the filling of the questionnaires to clarify any ambiguity and answer any questions. The researcher checked each filled questionnaire to ensure its completion. The researcher distributed brochure to studied

workers involve information about occupational health hazards in work environment, picture for hand washing steps, picture for wearing and dispose personal protective equipments and preventive measures to avoid occupational health hazards in work environment.

Statistical analysis:

All data collected were organized, tabulated and analyzed using appropriate statistical test. The data were analyzed by using the Statistical Package for Social Science (SPSS) Version 21, which was applied to calculate number and percentages for qualitative data and mean \pm S.D for quantitative data as well as test statistical significance and associations by using chi-square test and correlation test (r) to detect the associations between the variables for (p value). The observation differences and association were considered as the following: Highly significant (HS) $P \leq 0.001$, Significant (S) $p \leq 0.05$, Not significant (NS) $P > 0.05$.

Results:-

Table (1): Reveals that 42.5% of studied workers aged from 30 to less than 40 with mean age of 34.00 ± 7.76 years old. 67.5% of them were married. Also 42.5% had secondary education. While 71.3% of them didn't have enough monthly income and 78.8% of them lived in rural area.

Figure (1): Illustrates that 17.5% of studied workers had good total knowledge level and 26.3% of them had average total knowledge level, while 56.2% of them had poor total knowledge level regarding occupational health hazards in poultry farms.

Figure (2): Illustrates that 41.3% of studied workers had satisfactory to total practice regarding safety measures related to occupational health hazards and 58.7% of them had unsatisfactory total practice regarding safety measures related to occupational health hazards in work environment.

Figure (3): Shows that 55.6% of studied poultry farms have sanitary environment, while 44.4% of them have unsanitary environment.

Table (2): Indicates there were statistically significant relations between total knowledge level of studied workers, marital status, level of education and monthly income (p-value < 0.05).

Table (3): Describes that there was highly statistically significant correlation between total knowledge level and total reported practices level. While there was statistically significant correlation between total knowledge level, total reported practices level of studied workers and exposure to health hazards.

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Table (1): Frequency distribution of studied workers regarding their demographic characteristics (n=80).

Socio-demographic characteristics	No	%
Age years		
20-	27	33.8
30-	34	42.5
40+	19	23.7
Min –Max	21-46	
Mean ±SD	34.00±7.76	
Marital status		
Single	23	28.8
Married	54	67.5
Widow	3	3.7
Level of education		
Can't read and write	8	10.0
Can read and write	4	5.0
Primary	11	13.8
Secondary	34	42.5
Technical institute	12	15.0
University	11	13.7
Income		
Enough	23	28.7
Not enough	57	71.3
Residence		
Rural	63	78.8
Urban	17	21.2

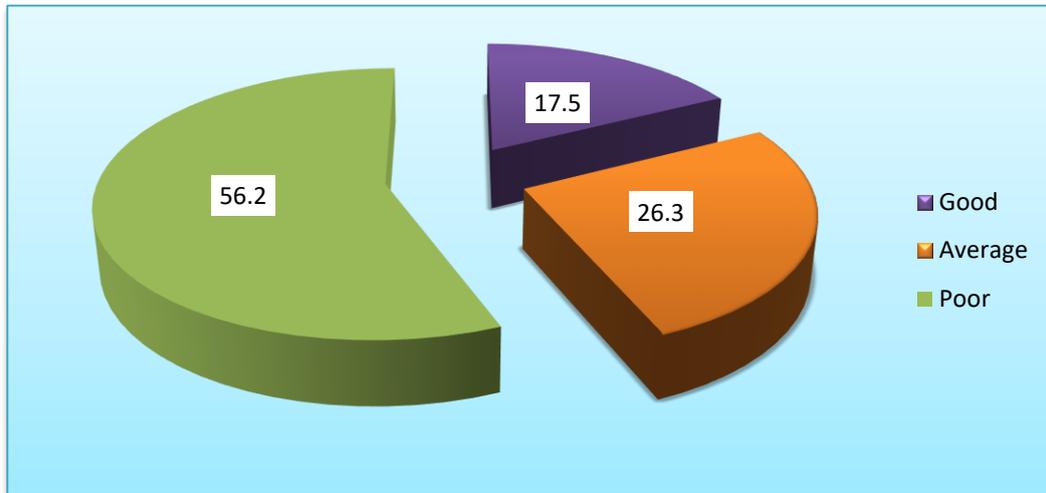


Figure (1): Percentage distribution of studied workers regarding their total knowledge level about occupational health hazards in work environment (n=80).

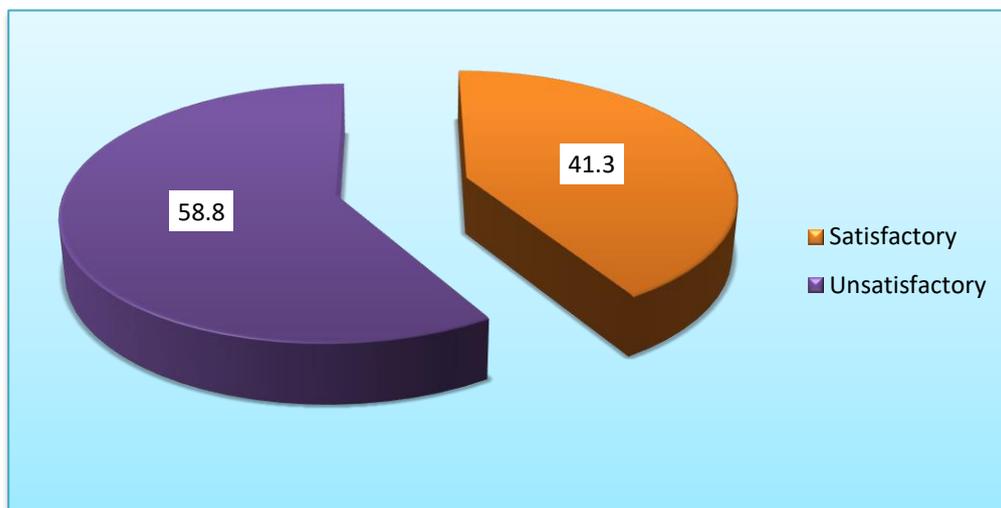


Figure (2): Percentage distribution of studied workers regarding their total reported practices regarding safety measures (n=80).

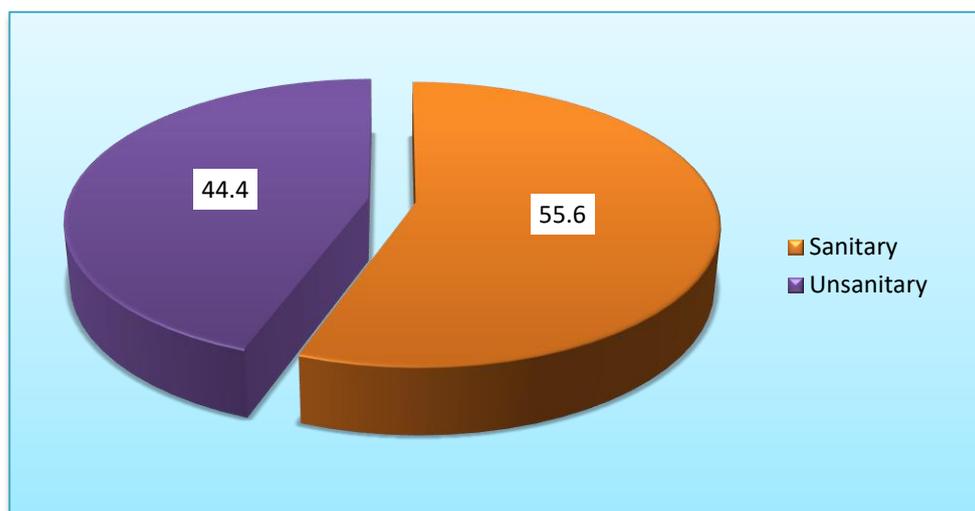


Figure (3): Percentage distribution of the environmental condition of poultry farms (n=9).

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Table (2): Relation between total knowledge level of studied workers and their socio-demographic characteristics(n=80).

Items	Total knowledge level						X ₂	p-value
	Poor (n=45)		Average (n=21)		Good (n=14)			
	No	%	No	%	No	%		
Age								
20-	17	37.8	3	14.3	7	50.0	7.232	0.124
30-	16	35.6	12	57.1	6	42.9		
40+	12	26.7	6	28.6	1	7.1		
Marital status								
Single	12	26.7	2	9.5	9	64.3	12.698	.013*
Married	31	68.9	18	85.7	5	35.7		
Widow	2	4.4	1	4.8	0	0.0		
Level of education								
Can't read and write	2	4.4	1	4.8	5	35.7	23.84	.008*
Can read and write	4	8.9	0	0.0	0	0.0		
Primary	10	22.2	1	4.8	0	0.0		
Secondary	19	42.2	10	47.6	5	35.7		
Technical institute	4	8.9	6	28.6	2	14.3		
University	6	13.3	3	14.3	2	14.3		
Income								
Enough	12	26.7	10	47.6	1	7.1	6.936	.031*
Not enough	33	73.3	11	52.4	13	92.9		
Residence								
Rural	32	71.1	18	85.7	13	92.9	3.843	0.146
Urban	13	28.9	3	14.3	1	7.1		

Table (4): Correlation between total knowledge level, total reported practices level of studied workers and exposure to health hazards (n= 80).

The variables	Exposure to health hazards		Total knowledge	Total practices
Exposure to health hazards	R	1	-.618	-.162
	P-vale		.029*	.015*
	N	80	80	80
Total knowledge	R	-.618	1	.504
	P-vale	.029*		.000**
	N	80	80	80
Total practices	R	-.162	.504	1
	P-vale	.015*	.000**	
	N	80	80	80

Discussion

Regarding socio-demographic characteristics of studied workers, the present study revealed that approximately two fifth of them were between age 30 to 40 year with mean age 34.00 ± 7.76 years old. This result agreed with **Al-Sarray, (2018)**, who studied "Avian Influenza Knowledge, Attitudes and Practices among a Sample of Poultry Farm and Bird Market Workers in Baghdad" (n=210) and found that more than half of workers were between age 30 to 40 years old.

Concerning marital status of studied workers, the current study revealed that more than two thirds of them were married. This result was supported by **O Oluyeye & O Ojo, (2021)**, who studied "Occupational and Environmental Health Concerns on Unsafe Acts and Conditions in Poultry Production Sites in Ido-Osi, Ekiti State, Nigeria" (n=50) who reported that the most of workers were married.

Regarding level of education of studied workers, the current study revealed that approximately two fifth of them had secondary education. This finding agreed with **Iwuala et al., (2020)**, who studied "Respiratory Health Problems and Use of Personal Protective Equipment among Poultry Farm Workers in Owerri Senatorial Zone, Nigeria" (n=400) and found that more than half of workers had secondary education. This might be due to job requirements that don't need high qualification.

Concerning monthly income of studied workers, the current study revealed that more than two thirds of them hadn't enough monthly income. This finding in the same line with **Rizk et al., (2018)**, who studied "Occupational Health Hazards as Perceived by Poultry Processing Slaughterhouse Workers, Egypt" (n=278) and reported that more than half of workers had less than average monthly income. From the researcher point of view,

income may affect workers' loyalty to work and their job satisfaction.

Concerning studied workers residence, the present study revealed that more than three quarters of them were lived in rural areas. This results was consistent with **Al-Sarray, (2018)**, who found that nearly two thirds of workers from rural areas.

The findings of present study showed that more than half of studied workers had poor total knowledge level about occupational health hazards in work environment. This finding supported by **Rizk et al., (2018)**, who reported that more than two third of workers had poor total knowledge about occupational health hazards. This finding might be due to lack of training courses about occupational health safety in poultry farms.

The current study showed that, less than three fifth of studied workers had unsatisfactory total reported practices level regarding safety measures and more than two fifth of them had satisfactory total reported practices regarding safety measures. These findings disagreed with **Al-Sarray, (2018)**, who reported that most of worker had satisfactory total practice regarding preventive measures and tenth of them had unsatisfactory total practice regarding preventive measures. This might be due to lack of training courses and unavailability of personal protective equipments in poultry farms.

Regarding environmental assessment of poultry farms, the current study revealed that, more than half of farms have sanitary environment. This finding wasn't in the same line with **Aderounmu et al., (2020)**, who studied about "Assessment of Health Hazards and Challenges among Poultry Workers in Egbeda Local Government Area of Oyo State, Nigeria" (n=80) and reported that more than three fifth of poultry farms had poor working environments. This might be due to the farms

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owners are concerned with the interior structure of farms and presence of some facilities such as suction fans, intact windows, lighting and among others.

The present study showed that there were a statistically significant relations between total knowledge level of studied workers about occupational health hazards and their level of education, monthly income and marital status. These findings were in similarity with **Hassan et al., (2021)**, who studied "Knowledge, Attitude, and Practices on Antimicrobial Use and Antimicrobial Resistance among Commercial Poultry Farmers in Bangladesh" (n= 420) and found that there was a statistically significant relation between knowledge of workers, monthly income and level of education. Also supported with **Adeoye et al., (2017)**, who studied "Occupational Health Problems Confronting Poultry Farm Workers in Ogun and Oyo State, Nigeria" (n=320) and found that there was significant relationship between workers' knowledge and marital status. This might be due to workers' level of education impact their perception toward occupational hazards in work environment.

Regarding to the correlation between total knowledge level, total reported practices level of studied workers and exposure to health hazards, the present study showed that there were statistically significant correlation between studied workers exposure to health hazards and their total reported practices level. This finding agreed with **Aderounmu et al., (2020)**, who found that there were significant positive linear correlations between workers exposure to health hazards and total practices level regarding preventive measures ($r=0.481$, $P=<0.05$). This might be due to level of knowledge reflected on the level of practices which lead to minimize occurrence of health hazards among poultry workers.

Conclusion:

Poultry workers were exposed to a variety of occupational health hazards. More than half of studied workers had poor total knowledge level regarding occupational health hazards. Less than three fifth of them had unsatisfactory total reported practices level regarding safety measures related to occupational health hazards in work environment. There were statistically significant relations between total knowledge level of studied workers and their marital status, level of education and monthly income. There was highly statistically significant relation between total knowledge level of studied workers and their total reported practices level about occupational health hazards. Also, there were statistically significant correlation between total knowledge level, total reported practices level of studied workers and exposure to health hazards.

Recommendation:

- Applying occupational safety and health programs to increase knowledge and practices of poultry workers in order to ensure positive perception in poultry farms.
- Ensure that sufficient supplies as(PPE, disinfectants, vaccines and among others) are available in poultry farms to allow tasks to be completed safely and without risks to health.
- Booklets and posters should be available at poultry farms and distributed to all workers about occupational health hazards and using of personal protective equipment.
- Furture researches are needed to assess perception of poultry workers about occupational health hazards, ensure safety and health measures of workers in poultry farms.

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مخاطر الصحة المهنية بين عمال مزارع الدواجن

ولاء عبد الواحد إبراهيم محمود - نهلة عاشور سعفان - هدية فتحي محي الدين

يتعرض عمال مزارع الدواجن للعديد من المواقف الخطرة في ممارساتهم اليومية نتيجة الارتباط الوثيق بين العمال والدواجن وبيئة عمل شاقة مما يجعلهم عرضة للعديد من المخاطر الصحية تتضمن المخاطر الفيزيائية و الكيميائية و البيولوجية و الميكانيكية و النفسية. لذا هدفت الدراسة إلي تقييم مخاطر الصحة المهنية بين عمال مزارع الدواجن. وقد أجريت الدراسة في مزارع الدواجن بمدينة بنها في إدارتين (كفر مناقير و منشية عزيز) والتي شملت 9 مزارع. وقد تم اخذ عينة غرضيه والتي ضمت 80 عامل. وأسفرت نتائج الدراسة إلي أن اقل من خمس عمال الدراسة لديهم معلومات جيدة عن مخاطر الصحة المهنية و اقل من ثلاثة أخماس منهم كان لديهم كفاءة غير مرضيه من إجمالي الممارسات في ما يتعلق بإجراءات السلامة تجاه مخاطر الصحة المهنية في بيئة العمل. كما أوصت الدراسة انه يجب تطبيق برامج الصحة المهنية لزيادة المعرفة و الممارسات لدى عمال مزارع الدواجن من أجل ضمان التصور الإيجابي في مزارع الدواجن.