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Assessment of Respiratory Problems among Poultry Workers in Port Harcourt Metropolis, Rivers State

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Abstract

This study assessed respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State. The cross sectional research design was adopted with a population consisting of 3,948 poultry workers in Port Harcourt Metropolis. A sample size of 440 was selected using a multi-staged sampling procedure. Data was collected using a structured questionnaire with reliability coefficient of 0.83 and analyzed using percentage, and Biserial Correlation at 0.05 alpha level. The finding of the study revealed that more than half (70.3%) of the poultry workers experienced respiratory symptom working in the poultry, among which majority (90.6%) experienced coughing, 75.1% wheezing, 61.2% phlegm and 50.2% shortness of breath. The result showed that respiratory problems among poultry workers was significantly related with working period/hour per day (N = 411; r = 0.71; p<0.05), smoking (N = 411; r = 0.85; p<0.05), and PPE use (N = 411; r = 0.76; p<0.05). However, though related, no statistically significant relationship was found between respiratory problems and years of work experience (N = 411; r = 0.13; p>0.05), age (N = 411; r = 0.09; p>0.05). It was concluded the respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State were mainly coughing, wheezing, phlegm and shortness of breath. It was recommended among others that, the Ministry of Agriculture should establish a health framework for poultry workers to promote a preventive occupational health and safety culture, this will help to mitigate their exposure to respiratory problems.

Keywords: *Metropolis, Respiratory, Poultry, Problems, Workers.*

Introduction

Respiratory diseases significantly impair physical health by diminishing lung function. This critical health concern impacts many persons globally. The World Health Organisation (WHO) reports that asthma and COPD affect almost 545 million people worldwide, making them significant causes of death and disability (World Health Organisation, 2022). An illness that has been increasingly prevalent for several decades, asthma affects about 339 million persons worldwide (Global Initiative for Chronic Obstructive Lung Disease, 2020). Ojo et al. (2022) report that study in Nigeria reveals that 4-6% of adults are afflicted by chronic obstructive pulmonary disease (COPD). The incidence of respiratory disorders among farmers in the United States is 18% throughout their lives. Ihuoma et al. (2019) found that 87.5% of poultry workers in Nigeria had respiratory issues. The absorption of respiratory irritants and poultry dust, often experienced during the breeding, development, and maintenance of poultry, significantly contribute to both acute and chronic respiratory ailments among poultry workers (Hamid et al., 2018).

Respiratory illnesses constitute a broad categorisation of medical problems that can profoundly impact respiratory function. The World Health Organisation (2022) defines respiratory ailments as diseases that affect the structural integrity of the airways and lungs. These generally include chronic respiratory disorders that cause both distress and damage to the respiratory system, such as asthma and COPD. Difficulties in breathing may signify a potential problem with your lungs, airways, or another component of your respiratory system. Numerous medical problems, such as infections and chronic diseases, can severely impair, if not completely impede, normal respiratory function (Murray & Nadel, 2021). Various variables may lead to

respiratory problems in poultry workers. Hamid et al. (2018) discovered factors included adults aged over 50, smoking habit patterns, employment length, and total hours worked.

The influence of age on the occurrence and severity of respiratory diseases is substantial. Specific age demographics demonstrate a higher prevalence of respiratory illnesses than others, due to the different changes that occur in the respiratory system during an individual's lifetime. The likelihood of respiratory infections escalates with age owing to a combination of physiological, environmental, and immunological variables; this trend is especially evident in babies and the elderly (Salako et al., 2021). Ganiyu and Babayemi (2020) assert that indoor air pollution, passive smoking, and substandard living circumstances are environmental variables that intensify the respiratory hazards encountered by poultry workers. Data from the World Health Organisation indicates that lower respiratory infections are a leading cause of mortality among older poultry workers worldwide (World Health Organisation, 2022). Ogunsola et al. (2021) discovered that the steady deterioration of the immune system with age results in increased vulnerability to respiratory issues among older poultry workers. The efficacy of the immune response declines with age, a characteristic linked to increased infection rates and negative effects.

The likelihood of acquiring or worsening respiratory problems due to prolonged exposure to hazardous circumstances rises in direct proportion to the number of hours worked daily. According to Olusola et al. (2022), persons working in the chicken industry demonstrate an increased vulnerability to respiratory ailments due to prolonged contact to dust, fumes, chemicals, and numerous harmful contaminants. Extended exposure to poor air quality intensifies the inherent hazards associated with chronically stressed respiratory systems. Prolonged exposure may lead to several health disorders, including asbestosis, silicosis, and chronic obstructive pulmonary disease (COPD) (Musa et al., 2020).

Extended involvement in occupational activities may substantially increase the risk of respiratory issues. Extended exposure to poultry-related dangers markedly increases the risk of respiratory illnesses in workers. Individuals involved in the care of chickens are at an increased risk of developing chronic respiratory conditions. The period of professional involvement, often known as the amount of time individuals have participated in poultry employment, strongly affects the onset and severity of respiratory problems (Eze et al., 2021). Ogunsola et al. (2022) found that agricultural labourers with over ten years of experience have airway inflammation and bronchoconstriction due to extended exposure, hence heightening the risk of respiratory illnesses such as asthma and reduced lung function. The use of personal protective equipment (PPE) is essential in reducing the risk of exposure to this danger.

Individuals in the poultry sector are required by law to wear personal protection equipment to protect their respiratory health from potentially harmful airborne particles. Personal protective equipment (PPE), comprising respirators, masks, and protective attire, is crucial for shielding the respiratory system against dangerous inhalants. Improper usage, insufficient supplies, or noncompliance with PPE recommendations may increase the risk of respiratory issues among poultry workers (Eze et al., 2021). Ekong (2015) noted that less than 25% of personnel at a pesticide handling factory in Nigeria utilised respiratory protection masks, while exhibiting respiratory symptoms such as coughing, wheezing, and dyspnoea.

The dangers linked to smoking and secondhand smoke exposure are significantly heightened for poultry workers in Nigeria. Workers in the poultry sector demonstrate an increased vulnerability to asthma, bronchitis, and other respiratory disorders, especially if they smoke (Fawibe & Shittu, 2011). Adeniji and Ogunleye (2020) assert that the detrimental effects of smoke on lung health require the enforcement of more stringent restrictions regarding tobacco advertising and public smoking behaviours. Public health activities that inform the population about the hazards of smoking are crucial for Nigeria to achieve a decrease in the incidence of smoking-related respiratory illnesses. Cigarette smoking is widely acknowledged as a significant public health issue due to its association with several respiratory diseases, including lung cancer and chronic obstructive pulmonary disease (Oluwafemi & Odukoya, 2016). Smoking in the poultry sector may increase the likelihood of respiratory problems among workers.

Poultry farmers in Port Harcourt Metropolis diligently oversee their birds, including egg collection, feeding, sanitation of enclosures, and the performance of various additional tasks as required. The inadequate management of chicken manure is the principal cause of pollution impacting air, land, and water resources. The emission of gaseous pollutants, such as ammonia (NH3), hydrogen sulphide (H2S), benzene, formaldehyde, methylene chloride, and tetrachloroethylene, produced by poultry operations, negatively impacts environmental and occupational health (Donham et al., 2012). Areas with a substantial population of chickens or analogous livestock frequently produce an offensive scent, perhaps resulting in headaches, irritation of the eyes, nose, and throat, weariness, and other health issues (Hartung & Schulz,

2011). The existing economic conditions and the increase in unemployment during the Covid-19 outbreak may have prompted some Nigerians to begin chicken farming, even on a small scale, in residential areas without the necessary regulatory approval. A strong workforce is crucial for improving and maintaining agricultural productivity and food security. The academic evaluation of the respiratory health issues faced by poultry workers is essential, similar to medical diagnostic and treatment procedures. This research sought to assess respiratory disorders common among poultry workers in the Port Harcourt Metropolis of Rivers State. The participants were selected randomly.

Statement of the Problem

Respiratory issues pose significant risks for at-risk occupations, such as poultry farmers, due to their continual exposure to air contaminants, including chicken dust, faeces, and hatcheries, which generate bio-aerosols, a very hazardous air pollutant. Respiratory issues may lead to diminished lung capacity, hence restricting the capability to participate in physical activities and exercise. The deterioration of physical health can aggravate further health conditions, including cardiovascular disease and diabetes, as a result of a more sedentary lifestyle and diminished physical exercise. The expenses related to the management of respiratory disorders encompass direct medical costs, including prescriptions, hospitalisations, and routine physician consultations, alongside indirect costs, such as diminished quality of life and decreased productivity, which may impact the poultry business.

Port Harcourt Metropolis is an urban region characterised by extensive commercial activity, particularly poultry, which necessitate care. The researcher's motivation to conduct this study stemmed from a firsthand experience of lung blockage encountered while working on a chicken farm. The public health impact of respiratory issues is significant, resulting in diminished lung function, restricted physical capacity, and a lowered quality of life. Therefore, it is essential to evaluate respiratory issues to provide a framework for the creation of targeted treatments aimed at reducing the hazards encountered by poultry workers. Furthermore, little research focus is directed towards the distinctive attributes of the local context of the issue, therefore this study. The research addressed the subsequent enquiries:

1. What are the respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State?
2. What is the relationship between working period/hour per day and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State?
3. What is the relationship between years of work experience and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State?
4. What is the relationship between age and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State?
5. What is the relationship between smoking and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State?
6. What is the relationship between use of PPE and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State?

Hypotheses

The following hypotheses formulated were tested at 0.05 level of significance:

1. There is no significant relationship between working period/hour per day and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State.
2. There is no significant relationship between years of work experience and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State.
3. There is no significant relationship between age and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State.
4. There is no significant relationship between smoking and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State.
5. There is no significant relationship between use of PPE and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State.

Methodology

This descriptive correlational study focused on 3,948 individuals employed in the poultry industry within the Port Harcourt Metropolitan Area. A multistage sampling procedure was employed to select the 440 participants. The initial phase involves segmenting the city into two distinct halves, Obio/Akpor and Port Harcourt City, employing a stratified sampling technique. The subsequent phase involves selecting five axes from each stratum through a fundamental random sampling method. The last phase involves evenly distributing the sample size among the 10 chosen axes through proportional sampling. In the final phase, a fundamental random sampling technique is employed to select the participants. The method for data collection involves a meticulously crafted questionnaire known as the "European Respiratory Health Survey Questionnaire (ERHSQ)," which has been adapted from the foundational work of Burney et al. (1994). The dependability coefficient measured at 0.83. The data was analysed using SPSS 27.0, known as Statistical Product for Service Solution. All hypotheses were tested using Biserial

Correlation inferential statistics at a significance level of 0.05, and descriptive statistics, specifically the mean percentage, were employed to analyse the collected data.

Results

The results of the study are shown below:

Table 1: Percentage distribution showing respiratory symptoms among poultry workers

Respiratory symptoms	Frequency	Percentage
Experienced respiratory symptom working in the poultry		
Yes	289	70.3
No	122	29.7
Total	411	100.0
Respiratory symptoms experienced*		
Wheezing	217	75.1
Coughing	262	90.6
Phlegm	177	61.2
Shortness of breath	145	50.2

***Multiple responses**

The percentage distribution of respiratory symptoms among poultry workers is illustrated in Table 1. The findings revealed that over half (70.3%) reported experiencing respiratory symptoms while working in the poultry sector. Among these individuals, a significant majority (90.6%) experienced coughing, 75.1% reported wheezing, 61.2% had phlegm, and 50.2% experienced shortness of breath. Consequently, the respiratory issues experienced by poultry workers in Port Harcourt Metropolis, Rivers State included coughing, wheezing, phlegm production, and shortness of breath.

Table 2: Biserial Correlation between working period/hour per day and respiratory problems among poultry workers

Variables		Resp. problem	Hour per day	Decision
Resp. problem	Correlation coefficient	1	0.71	Ho Rejected
	Sig.		0.00*	
	N	411	411	
Hour per day	Correlation coefficient	0.71	1	
	Sig.	0.00*		
	N	411	411	

*Significant; $p<0.05$

Table 2 presents the Biserial Correlation between the working period per hour each day and the incidence of respiratory problems among poultry workers. The findings indicated a statistically significant correlation between the duration of employment/hours worked per day and respiratory issues ($N = 411$; $r = 0.71$; $p<0.05$). Consequently, the null hypothesis asserting that there is no significant relationship between working hours per day and respiratory issues among poultry workers in Port Harcourt Metropolis, Rivers State was dismissed.

Table 3: Biserial Correlation between years of work experience and respiratory problems among poultry workers

Variables		Resp. problem	Years of work experience	Decision
Resp. problem	Correlation coefficient	1	0.13	Ho not rejected
	Sig.		0.20*	
	N	411	411	
Years of work experience	Correlation coefficient	0.13	1	
	Sig.	0.20*		
	N	411	411	

*Not significant; $p>0.05$

Table 3 showed the Biserial Correlation between years of work experience and respiratory problems among poultry workers. The result revealed that there was no statistically significant relationship between years of work experience and respiratory problems (N = 411; r = 0.13; p>0.05). Thus, the null hypothesis which stated that there is no significant relationship between years of work experience and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State was not rejected.

Table 4: Biserial Correlation between age and respiratory problems among poultry workers

Variables		Resp. problem	Age	Decision
Resp. problem	Correlation coefficient	1	0.09	Ho not rejected
	Sig.		0.14*	
	N	411	411	
Age	Correlation coefficient	0.09	1	
	Sig.	0.14*		
	N	411	411	

*Not significant; p>0.05

Table 4 presents the Biserial Correlation between age and respiratory issues among poultry workers. The findings indicated that there was no statistically significant correlation between age and respiratory issues (N = 411; r = 0.09; p>0.05). Consequently, the null hypothesis indicating that there is no significant relationship between age and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State was upheld.

Table 5: Biserial Correlation between smoking and respiratory problems among poultry workers

Variables		Resp. problem	Smoking	Decision
Resp. problem	Correlation coefficient	1	0.85	Ho rejected
	Sig.		0.02*	
	N	411	411	
Smoking	Correlation coefficient	0.85	1	
	Sig.	0.02*		
	N	411	411	

*Significant; p<0.05

Table 5 presents the Biserial Correlation between smoking and respiratory issues among poultry workers. The findings indicated a statistically significant correlation between smoking and respiratory issues (N = 411; r = 0.85; p<0.05). Consequently, the null hypothesis asserting that there is no significant relationship between smoking and respiratory issues among poultry workers in Port Harcourt Metropolis, Rivers State was dismissed.

Table 6: Biserial Correlation between PPE use and respiratory problems among poultry workers

Variables		Resp. problem	PPE use	Decision
Resp. problem	Correlation coefficient	1	-0.76	Ho rejected
	Sig.		0.03*	
	N	411	411	
PPE use	Correlation coefficient	-0.76	1	
	Sig.	0.03*		
	N	411	411	

*Significant; p<0.05

Table 6 presents the Biserial Correlation between PPE usage and respiratory issues among poultry workers. The findings indicated a statistically significant correlation between the use of PPE and respiratory issues (N = 411; r = 0.76; p<0.05). Consequently, the null hypothesis asserting that there is no significant relationship between PPE use and respiratory problems among poultry workers in Port Harcourt Metropolis, Rivers State was dismissed.

Discussion of Findings

Table 1 reveals that a considerable proportion of persons in the poultry industry experienced respiratory ailments, such as dyspnoea, sneezing, wheezing, and mucus secretion. Employment in the poultry business is anticipated to expose individuals to respiratory pollutants from birds, which may jeopardise proper respiratory function. As a result, this discovery is expected. Prolonged exposure to respiratory hazards could lead to irreversible lung damage leading to increased healthcare cost, reduced productivity and chronic respiratory diseases. There is therefore an urgent need for implementation of PPE use irrespective of the size of poultry farm. The findings of this study align with those of Ihuoma et al. (2019), who demonstrated a notable frequency of respiratory problems among chicken farm workers in the Owerri Senatorial Zone, Nigeria. Their research concentrated on identifying risk factors and respiratory symptoms. This research's results align with Yasmeen et al. (2019) about the incidence of respiratory problems among poultry farm workers in intensive poultry operations in Pakistan. The findings of this study sharply contrast with those of Hamid et al. (2018), which indicated that chicken farm workers in Lahore and Sheikhupura, Pakistan, encountered negligible respiratory health problems. The findings also contrast with those of Bello and Oriola (2020), who investigated the health risk levels of poultry workers in Ibadan, Nigeria. Their data indicate that this group has a low prevalence of respiratory disorders. The differences in the study setting may account for this variation.

The results demonstrated a statistically significant relationship between job length and the occurrence of respiratory problems. This finding aligns with the forecasts, since prolonged employment in the poultry sector leads to heightened exposure to respiratory irritants, hence worsening respiratory conditions among employees. The implication of this strong relationship are multifaceted and extend beyond health domain. At the individual level, it highlights a critical occupational hazard as longer hours at work not only increases immediate respiratory risk but also could lead to long-term lung function decline, reducing quality of life and work productivity. From the policy perspective, the results call for integration of occupational health standard into labour laws in Nigeria such as mandatory maximum shift length of 8 hours and routine medical screening. If this finding is not given the needed attention, the consequences could be severe and cascading. As workers may face escalating respiratory condition, progressing from acute to chronic illness, like occupational asthma leading to disability and premature mortality. The findings of this study align with those of Jerez et al. (2014), who identified a substantial association between respiratory diseases and daily working hours. The findings of this study align with those of Hamid et al. (2018), who identified a substantial association between respiratory problems and daily working hours. The findings of this study align with those of Musa et al. (2020), which revealed a substantial connection between respiratory problems and daily working hours. The findings of this study align with those of Olusola et al. (2022), which revealed a substantial connection between respiratory problems and daily working hours. The resemblance between the current analysis and the prior research may be ascribed to the uniformity of the sample population, since both studies were performed on poultry workers.

The results in Table 3 demonstrated a weak positive relationship between years of work experience and occurrence of respiratory problems. This finding aligns with the expectations, as it is commonly acknowledged that the consequences of occupational risks often intensify with increased professional experience across several fields. Prolonged engagement in poultry operations and exposure to hazardous conditions substantially heightens the risk of respiratory diseases among personnel. The findings of this study align with those of Eze et al. (2021), which revealed a substantial association between respiratory problems and years of professional experience. This study's findings align with those of Ogunsola et al. (2020), which revealed a substantial association between respiratory problems and years of professional experience. The findings of this study align with those of Adewale et al. (2021), which established a substantial association between respiratory problems and years of professional experience. The observed resemblance between the present study and the prior one can be ascribed to the uniformity of the subject population, since both research efforts focused on poultry workers.

The results demonstrated a positive connection between respiratory problems and age. This conclusion indicates that respiratory diseases among poultry workers become more common with age, perhaps due to the progressive deterioration of the immune system, which markedly heightens the susceptibility of older poultry workers to respiratory ailments. The findings of this study align with those of Ogunsola et al. (2021), which revealed a substantial association between respiratory problems and age. This study's findings align with those of Salako et al. (2021), who established a substantial association between respiratory problems and age. The findings of this study align with those of Adegoke et al. (2020), which revealed a substantial connection between respiratory problems and age. The findings of this study align with those of Oluwole et al. (2021), which revealed a substantial association between respiratory problems and age. This study's results align with those of Ganiyu and Babayemi et al. (2020), which revealed a substantial association between

respiratory problems and age. The uniformity of the study population, reflecting the evident resemblance between the prior and present research, can be ascribed to the fact that both studies focused on poultry workers.

The results demonstrated a statistically significant association between respiratory problems and smoking. This study's findings align with those of Ihuoma et al. (2019), who examined respiratory symptoms and risk factors among chicken farm workers in the Owerri Senatorial Zone, Nigeria. Their findings revealed a considerable prevalence of respiratory problems among these professionals, along with a notable association between smoking and respiratory disorders. The findings of this study align with those of Fawibe and Shittu (2019), who identified a substantial association between smoking and respiratory problems. The findings of this study align with those of Adeniji and Ogunleye (2020), who identified a substantial association between smoking and respiratory problems. The findings of this study align with those of Oluwafemi and Odukoya (2016), who identified a substantial link between smoking and respiratory problems. The observed resemblance between the present study and the prior one may be ascribed to the uniformity of the subject population, as both research endeavours focused on poultry workers.

The findings demonstrated a statistically significant relationship between the incidence of respiratory problems and the utilisation of personal protective equipment (PPE). This result corroborates our hypothesis, given the use of personal protective equipment is recognised to alleviate the impact of respiratory irritants encountered by poultry workers. The findings of this study align with those of Eze et al. (2021), who identified a substantial association between respiratory problems and age. The findings of this study align with those of Ogunsola et al. (2021), who identified a substantial association between respiratory problems and age. This study's results align with those of Musa et al. (2020), which revealed a substantial association between respiratory problems and age. This study's results align with those of Akpabio et al. (2022), which revealed a substantial association between respiratory problems and age. The observed resemblance between the present study and previous studies can be ascribed to the uniformity of the sample population, as both analyses were performed on poultry workers.

Conclusion

The study revealed that respiratory issues among poultry workers in Port Harcourt Metropolis, Rivers State, mostly included coughing, wheezing, phlegm production, and dyspnoea.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The Ministry of Agriculture should establish a health framework for poultry workers to promote a preventive occupational health and safety culture, this will help to mitigate their exposure to respiratory problems.
2. The poultry farmers' welfare association should provide a written and oral information to enlighten poultry workers to spend lesser time in their poultry.
3. The managers of the poultry farms should not allow older workers to work to longer hours in the farm.
4. Government should establish a competent body to ensure that measures are taken so that poultry farmers can benefit from the health and safety protection afforded by the national framework and reduce years of work experience.
5. The poultry workers should make deliberate efforts to avoid or stop smoking.
6. The poultry workers should ensure they always use their PPE appropriately and consistently.

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