

Effect of Educational Program for Prevention of Health Hazards in Poultry Processing Slaughterhouse's Workers in Egypt

HANAA HAMAD MOHAMED EL SAIED¹, AFAF IBRAHIM², EFFAT EL KARMALAWY³

¹Assistant Lecturer, Community Health Nursing, Faculty of Nursing, Cairo University.

²Assisst.Prof of Community Health Nursing, Faculty of Nursing, Cairo University

³Prof. of Community Health Nursing, Faculty of Nursing, Cairo University

Correspondence to Hanaa Hamad Mohamed El Saied, Email : hanaa.hamad@cu.edu.eg, Tel. +20 01098945758

ABSTRACT

Background: Poultry workers are exposed to a variety of occupational health hazards on a daily basis.

Aim: To assess the effect of educational program for prevention of health hazards on knowledge and self-reported practices of poultry processing slaughterhouse's workers in Egypt.

Methods: A quasi – experimental one group pretest- posttest design was utilized. Setting; the study was conducted in large poultry slaughterhouse at El Menofia governorate. A systematic random **sample** of 306 poultry workers was selected. Two tools were used to collect data, the first is Poultry processing slaughterhouse's health hazards questionnaire and the other is an observational checklist for poultry work environment.

Results: reveals that 3.4%, 97.7% and 88.8% of workers had satisfactory level of knowledge in pre, post and follow up tests respectively. While 2.3%, 96.1% and 91.3% of workers had satisfactory level of self-reported practices in pre, post and follow up tests respectively. There was a highly statistical significant correlation between workers' knowledge, Health belief scale and self-reported practices ($p=0.0001$).

Conclusion: Knowledge, self-reported practices, Health belief model scale among poultry processing slaughterhouse workers had been improved after application of training program with statically significance differences between pre, post and follow up tests.

Keywords: Occupational hazards, Poultry workers and Training program

INTRODUCTION

The poultry slaughterhouse continues to grow and contribute significantly to the gross domestic product in many countries. The slaughterhouse expects working shifts of eight to eleven hours, during shifts workers are exposed to occupational health hazards which include physical hazards such as noise, vibration, exposure to cold and ergonomic stress from manual, repetitive tasks that require force, chemical hazards such as gases, vapors and chemicals, mechanical hazards such as carrying heavy loads, repetitive movements, falls and slippery floor and biological hazards such as direct contact with viruses and bacteria. These hazards impact on slaughterhouse processing workers' health, with harm not only to workers' health but also as an economic burden due to the loss of their livelihoods and the need for treatment and compensation in the slaughterhouse. This endeavors to highlight the contribution poultry processing plays in the development of physical agents and ergonomic stress related occupational diseases in poultry slaughterhouse processing workers¹.

Poultry slaughter and evisceration processes begin with off-loading live poultry from transport trucks, then workers typically shackle the birds in a hanging room after which they are stunned, slaughtered, bled-out, and de-feathered. The birds are washed and inspected during evisceration or removal of the birds' internal organs. Moreover the birds are placed in chiller baths of water and anti-microbial agents to reduce pathogen loading. A variety of chemicals, extreme temperatures and high noise levels which present in facilities where poultry slaughter and evisceration occur may lead to occupational hazards. Reports of health effects during poultry slaughter and evisceration have often include eye and respiratory

irritation, respiratory symptoms. Musculoskeletal disorders (MSDS) and occupational injuries have also been reported².

Poultry processing workers perform one of the most dangerous jobs and the work environment poses risks greater than those faced by workers in many other manufacturing processes and sectors. In addition to impacting on worker health, exposure may impact on absenteeism, reduce the quality of life of workers and compromise productivity and product quality. Work practices are often in conflict with principles which state that everyone is entitled to the enjoyment of favorable, safe and health conditions at work. Conditions which typically develop include blood pressure and musculoskeletal disorders, noise-induced hearing loss, hypothermia, frostbite and ergonomic effects including work-related upper limb disorders such as carpal tunnel syndrome¹.

Poultry processing involves strenuous and repetitive work, with workers at risk for overuse injuries. Live birds are received and then passed through a production line that requires workers to hang, kill, pluck, clean, eviscerate, cut, package, and box poultry parts at a rapid pace, and workers also clean and repair equipment, assemble boxes, and move pallets of packaged poultry. Potential risk for overuse injuries such as Carpal tunnel syndrome exists with each of these occupational duties³.

Poultry workers are occupationally exposed to many respiratory hazards at work and display higher rates of asthma and respiratory symptoms than other workers. Dust is one of the components present in poultry production and is biologically active as it contains microorganisms. It can cause asthma, chronic bronchitis, chronic airways obstructive disease (COPD), allergic alveolitis, and organic dust toxic syndrome (ODTS). Obstructive pulmonary

disorders were higher in workers with longer exposure to poultry dust. In addition, a high prevalence for asthmatic and nasal symptoms was noted in poultry workers⁴.

The objective of the study was to assess the effect of educational program for prevention of health hazards on knowledge and self-reported practices of poultry processing slaughterhouse’s workers in Egypt.

Research hypotheses: To fulfill the aim of the study, the following hypotheses were formulated:

H1: The posttest- mean scores of occupational health hazards knowledge of poultry processing slaughterhouse’s workers who are exposed to educational program will be higher than the pretest –mean scores.

H2: The posttest - mean scores of safe self-reported practices of poultry processing slaughterhouse’s workers who are exposed to educational program will be higher than the pretest –mean scores.

MATERIALS AND METHODS

Research Design: Quasi-experimental one group pre-test-post-test design was utilized to fulfill the aim of the study.

Setting: The study was conducted in one of the largest poultry processing slaughterhouses at Kafr Dawood - El Menofia governorate. This slaughterhouse is chosen because it has big work force more than 1000 workers who are ensured. Also it has large size nearly two acres and it produces nearly 3000 bird per hour.

Sample: Sample size was (306) poultry workers out of (1000), the calculated sample number was chosen by systematic random sample.

Tools of Data Collection:

First tool: Poultry processing slaughterhouse’s health hazards questionnaire: It was developed by the researcher and is consisted of demographic characteristics, medical and occupational data, worker’s life style, worker’s knowledge about Occupational health hazards, worker’s self-reported practices and Health belief model three levels rating scale of poultry workers.

Second tool: observational checklist for poultry work environment.

Data collection procedure: During assessment phase, poultry processing worker’s personal data, poultry processing worker’s health habits and life style, poultry processing worker’s medical history, medical record, current chronic diseases, sick leaves, occupational history, reported injuries, accidents, falls & slips, health insurance, referral system, knowledge toward health hazards, poultry processing worker’s self-reported practices were been filled out by the participants and observational checklist for poultry work environment was been filled out by the researcher during the working day. The researcher remained in the slaughterhouse during the completion of the questionnaires, which took an average of 30 minutes. In the implementation phase, based on the results obtained, the researcher designed the nursing education program. The aim of this educational program was to provide poultry processing worker with knowledge and measures of safe work practices for prevention of health hazards and to promote behaviours that encourage a healthy and safe working conditions. The program included

knowledge about all types of occupational health hazards (physical, chemical, mechanical, biological and psychological hazards) and preventive measures for each hazard including personal protective equipment, hand wash technique, body mechanics and first aid for fracture, bleeding, burn, poisoning, eye and skin chemical irritation. The program had been conducted in the form of eight sessions (one session for pre-test, five sessions for educational program and two for post-test). Data show, poster, pamphlet, flyers, role play and a compact disc with a short documentary video on preventive measures and safe work practices were been used during the program. During evaluation phase, reassessment had been done using the knowledge part and self-reported safe work practices immediately post educational program and 3 months later. The tools had been filled out by the participants in the slaughterhouse at break time. Data had been collected three days/week for two hours each day during the working day. Related booklet had been distributed at the end of the program for each worker.

Ethical and legal considerations: Primary approval was obtained from the research ethical committee at the Faculty of Nursing-Cairo University. Then permission from the slaughterhouse’s manager had been obtained.

Participation in the study was voluntary; the ethical considerations included explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants.

Data Analysis: SPSS version 20 was used. Numerical data were expressed as means and standard deviations. Quantitative data were expressed as frequencies and percentages. Comparison between pretest, posttest, and 3 months follow up test was done by using t-test and ANOVA.

RESULTS

Table 1: Percentage distribution of workers regarding their age, sex, income, marital status and educational level (n=306)

Personal characteristics	Frequency	%
Workers' age:		
20-30 years	97	31.6
31-40 years	116	37.9
41-50 years	93	30.3
x ± SD	35±12.1 years	
Gender:		
Male	116	37.9
Female	190	62.1
Income:		
Inadequate	213	69.6
Adequate	93	30.3
Marital status		
Single	74	24.2
Married	199	65
Divorced	14	4.5
Widowed	19	6.3
Educational level		
read and write	102	33.3
secondary education	204	66.7

Table 1 reveals that 31.6% of workers were between 20- 30 years old while 37.9% of workers were between 31-40 years and 30.3% of them were between 41-50 years old. As regards workers' gender 37.9% of workers were male while 62.1% of them were female. Table (1) also reveals that 69.6% of workers had inadequate income while 30.3% of them had adequate income.

Regarding marital status, Table 1 also reveals that 65% of workers were married and 6.3% of them were widow while 4.5% of workers were divorced also 24.2% of them were single. The table also illustrates that 66.7% of workers had secondary education, whereas 33.3% of workers can read and write 1.

Figure 1 shows that 3.4% of the workers had satisfactory level of knowledge in pretest while 97.7% of them had satisfactory level of knowledge in posttest and 88.8% of workers had satisfactory level of knowledge in follow up test.

Table 2 indicates that there was a highly statistical significant correlation between worker's level of knowledge and worker's level of practices (p=0.0001).

Regarding correlation between worker's knowledge and Health belief scale, Table 2 illustrates that There was a highly statistical significant correlation between knowledge and Health belief scale (p=0.0001). Furthermore there was statistical significant correlation between worker's health belief scale and self-reported practices (p=0.0001).

Figure (1) Knowledge levels of poultry processing workers in pre, post, and follow up tests. (n=306)

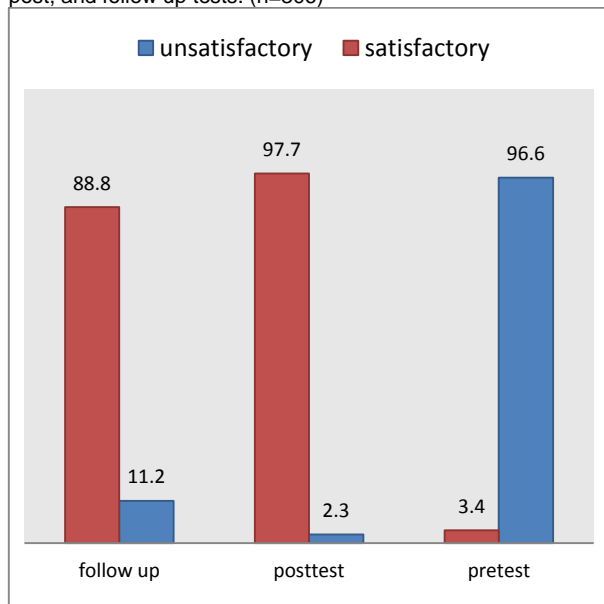


Table 2: Relation between knowledge, practice and health belief model (n=306):

Scores	Knowledge		Practice		Health belief scale	
	r	p	r	p	r	p
Knowledge	1		0.98	0.0001*	0.96	0.0001*
Practice			1		0.97	0.0001*
Health belief scale					1	

*Significant at p-value< 0.05.

DISCUSSION

Discussion of the study findings are categorized under the following parts:

Part (I): demographic characteristics of workers: The result of the current study revealed that about more than one third of workers aged between 31-40 years. Such result was completely agree with results of a study done by Sutanto⁵, on one hundred people to study Highly Pathogenic Avian Influenza Knowledge, Attitudes, and Practices Study Among Live Bird Market Workers in Jakarta, – Indonesia that found majority (48%) of the participants aged between 25 and 39 years.

The result of the current study revealed that more than half of workers were females. This result supported by the result of the study done by Musolin, et al² on 318 participants to study musculoskeletal disorders and traumatic injuries among employees at a Poultry Processing Plant in South Carolina that found about seventy percent of study population were female. Also, the results of the current study showed that more than half of workers had not enough income. From the research investigator point of view, income may affect workers' loyalty to work and their job satisfaction.

The results of the current study showed that majority of workers were married. This result was supported by a study done by Burgus and Neetoo⁶, on 150 participants in Mauritius that found sixty four percent of the participants were married.

The result of the current study revealed that majority of workers had secondary education. This result was contradicted with a study done by Burgus and Neetoo⁶, that found twenty eight percent of participants had secondary education. This may be due to job requirements that do not need high qualification.

Part (2): knowledge and practice levels of workers: Regarding levels of knowledge and self-reported practices, results of the current study showed that majority of workers had unsatisfactory level of knowledge and practices in pretest while majority of them had satisfactory level of knowledge and practices in post and follow up tests. These results supported by the result of the study done by Galizzi & Tempesti⁷ to study workers' perceptions of risk and occupational injuries that found seventy nine point three percent of workers had satisfactory level of knowledge. This may be due to safety and training programs that help in raising poultry workers' knowledge toward hazards as if they perceive it, they can avoid it.

Regarding correlation between knowledge, practice and Health belief scale of the workers, result of the current study revealed that there was a highly statistical significant correlation between worker's level of knowledge and worker's level of practices. Also there was a highly statistical significant correlation between knowledge and Health belief scale. Furthermore there was statistical significant correlation between worker's health belief scale and self-reported practices. This may be because worker who perceives severity, seriousness and barriers of occupational hazards and success to identify it in his work, will perform tasks safely.

CONCLUSION

The results of this study indicated that poultry processing health hazards' knowledge, self-reported practices, Health belief model scale among poultry processing slaughterhouse workers had been improved after application of occupational health hazards and safe work practices training program with statically significance differences between pre, post and follow up tests.

Acknowledgement: Praise to Allah, the Merciful, the compassionate for all gifts I have been offered one of these gifts is the accomplishment of this work. Also, I would to express my deepest thanks to all poultry workers who participated actively in the study.

Source of Support: Self

Conflict of Interest: None

REFERENCES

1. Johannes, Jacobus., c., Engbrecht & Johan., L., Bekker. (2016). The impact of Physical and Ergonomic Hazards on Poultry Abattoir Processing workers. *International Journal of Environmental Research and Public Health*. 13(2):197 DOI: 10.3390/ijerph13020197
2. Musolin., K, Ramsey., J, James., W, David., H & Charles., M. (2014). Evaluation of Musculoskeletal Disorders and Traumatic Injuries Among Employees at a Poultry Processing Plant. Department of Health and Human Services, Centers for Disease Control and Prevention & National Institute for Occupational Safety and Health. Health Hazard Evaluation Report No 2012-0125-3204.
3. Michael S. C, Francis O. W, Jill N. B, Mark R. S, Thomas .A. A, Joseph G. G, Dana .M, Haiying. C, Antonio .J. M, and Sara .A. Q. (2012). The Prevalence of Carpal Tunnel Syndrome in Latino Poultry Processing Workers and Other Latino Manual Workers. *Journal of Occupational and Environmental Medicine: February 2012 - Volume 54 - Issue 2 - p 198-201* doi: 10.1097/JOM.0b013e31823dfd53
4. Viegas., S. Faisca., V., M. Dias., H. Clérigo., A. Carolino., E. Viegas., C. (2013). Occupational exposure to poultry dust and effects on the respiratory system in workers. *Journal of Toxicol Environmental Health A*.;76(4-5):230-9. doi: 10.1080/15287394.2013.757199).
5. Sutanto., Y., C. (2013). Highly Pathogenic Avian Influenza Knowledge, Attitudes, And Practices Study Among Live Bird Market Workers in Jakarta – Indonesia. Department of Clinical Sciences. Colorado State University. <http://doi.org/10.17616/R31NJMSY>.
6. Burgus., H & Neetoo., H. (2016). A Study on Food Safety Knowledge and Perceptions among Poultry workers in Mauritius. Department of Agriculture and Food Science, Faculty of Agriculture, University of Mauritius. *World Poult. Res.* 6(3): 121-130, Research Paper, PII: S2322455X1600017-6
7. Galizzi, M & Tempesti , T. (2014). Workers' perceptions of risk and occupational injuries .Department of Economics, University of Massachusetts Lowell. One University Avenue, FA 302 J, Lowell, MA 01854, USA.