

# Influence of Age and Gender on Levels of Knowledge of Anambra Motor Manufacturing Company (ANAMCO) Workers towards Occupational Health Hazard

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## Abstract

*The study explored the level of knowledge of ANAMCO workers regarding occupational health hazards. Two null hypotheses were tested at 0.05 level of significance. A total number of 521 workers of ANAMCO constituted the population for the study. The sample for the study was 261 workers selected by means of stratified sampling technique. The instrument used for the study was Knowledge of Occupational Health Hazard (KOH) questionnaire, which was developed by the researcher. Frequency, percentages and chi-square statistics were adopted for data analysis. Result revealed that younger workers reported higher knowledge than older workers; male workers reported higher knowledge than the female workers. There are significant differences in the levels of knowledge of workers, with younger workers differing significantly higher than the older workers and the males differing significantly higher than the females. It was recommended, among others, that management of ANAMCO should try to show more commitment to the training and organisation of knowledge oriented programmes. This will help equip workers on knowledge regarding hazards associated with their jobs.*

**Keywords:** Knowledge, occupational health, hazards, age and gender

## Introduction

The global world of work has changed considerably since the era of industrial revolution. In the workplace, there is repeated re-organizing, downsizing and expanding of organizations as very common today (Ferrie, Westerlund, Oxenstierna and Theorell, 2007). The desire by management practitioners to maintain high level of productivity without any consideration of the workers' health and well-being has been associated with a number of work hazards occurrences in the workplaces. This has resulted to poorer physical and mental health outcomes on workers, working in different organisations (World health Organisation-WHO, 2010).

The situation has attracted the interest of scholars to explore the impact of the work environment on workers and the entire society. This becomes important since workplace, other than the home environment takes the largest proportion of the workers' time (Reason, 2010). Indeed, for many people, particularly in developing countries like Nigeria, the boundary between workers' home and workplace is blurred, since they often undertake agricultural or cottage industry activities within the home. Irrespective of the need for safe workplace condition, the WHO (2010) had noted that in developing world, there had not been genuine interest to protect the workers against the hazards of their jobs. Besides, researches (e.g. Omoroegbe, 1998; Hunter, 2011; Mital & Ghahramani, 2011) had observed that industries in the developing world are not only dangerous to the workers but also pose threat to the general public in terms of pollution (Owumi, 1997).

The concept of occupational health hazards derives from the realization that workers are at special risks of injury and health impairment arising from exposures to hazards in the workplace (Zoni and Lucchini, 2012). WHO (1999) had therefore defined occupational health hazards as the potential risks to health and safety of workers in their workplace. WHO (1999) classified occupational hazards in terms of mechanical; ergonomically poor working conditions; biological agents; physical factors; reproductive hazards; allergenic agents; chemical hazards, social hazards and psychological stress.

The above classification becomes necessary because in developing countries, workers may be exposed to workplace hazards without adequate knowledge about unsafe working conditions. Subsequently, they may not know the necessary precautionary measures to be taken in order to avert hazards associated with their work environment (Asogwa, 1986). Similarly, Weidpass, Meo and Vainio (2011) had contended that some personality variables such as workers' attitude, workers' psychic durability (emotional state of worker at a given time) and level of knowledge of workers contribute to the level at which workers are exposed to the various classes of hazards in their workplace. The present study therefore focused on examining workers' levels of knowledge towards the nine classifications of hazards as put forward by WHO.

Knowledge as defined by Omoroegbe (1998) is the fact of understanding events, issues or objects that are acquired either through learning or experiences. Some theories, such as the Aristotle epistemology theory of knowledge (384-322BC) tried to explain knowledge. According to this theory, people know about things and

events around them through their senses and that knowledge can mean any of the following; to be aware of something; to be certain about it; to learn and remember something; to have understanding or grasp of the object of knowledge (health hazards); to be familiar and be able to recognise or identify something; and to have experience and training and be intimate with something. Aristotle believed that experience is the source of all knowledge. The relevance of this theory to this study is that workers become knowledgeable of occupational hazards when they are aware, understand and are certain about health hazards associated with their work environment. The study therefore defines knowledge as the act of being aware, understanding and being certain about the potential dangers to health in the workplace. The study explored workers' age and gender in relation to their levels of knowledge regarding occupational health hazards. Mital and Ghahramani (2011) had earlier classified workers' age in terms of young and old workers, contending that the young workers are those workers within the age range of 19-45. The old workers, they classified as those within the age range of 46-65. This study adapted the above classification by classifying young workers as those within the age range of 20-45 and the old workers as those within the age range of 46-65. This classification was based on the fact that ANAMCO company employs workers that are up to 20 years and above and retires their workers at the age of 65.

Exploring the age of workers in relation to their levels of knowledge towards occupational health hazards, Keyserling (2006) studied the knowledge of impacts of sedentary work among young and old workers in Canada. Results showed that young workers reported higher knowledge of musculoskeletal disorders than the old workers. Similarly, Chien, et al. (2003) assessed knowledge of specific occupational hazards in scrap-tire shredding industry in China. Results showed that the young workers were more knowledgeable of occupational hazards than the old workers. On the contrary, Mital and Ghahramani (2011) found from the study of injury profiles of a large communication company in Canada that young workers have less knowledge than the old workers towards their workplace hazards. Another contradictory finding by Hunter (2011) indicated that both the young and old workers of the Blue Asbestos industry in Wittenoom in Western Australia, were that a case of Mesothelioma resulted from exposure to asbestos fibres. This is because other causes of the diseases are extremely rare in and outside the industry.

Gender is another crucial issue in predicting knowledge of workers towards occupational health hazards. Keyserling (2000) investigated the knowledge of back pain problem among sedentary workers in Canada. Result showed that men had higher knowledge of back pain problem associated with sedentary work than women. In a related study, Norback and Edling (2012) compared males and females on levels of knowledge of accident occurrence in Birmingham, United Kingdom. Result showed that men reported higher knowledge than women.

On the contract, Leino and Hanninen's (2013) finding on workers' knowledge of their workplace hazards indicated that females had higher knowledge than males. Spurgeon, Gompertz and Aarington (2010) had however, observed that when the knowledge is coming either from medical or professional bodies, irrespective of workers' gender, all the workers try to heed to the advice. They therefore concluded that the difference found by other researchers regarding gender on knowledge of hazards could be moderated by source of the knowledge.

The above reviewed literature called for studies on the levels of knowledge of workers towards occupational health hazards. This is because the studies were carried out in other countries whose cultural background are not the same with our own industrial settings. The available Nigerian studies in occupational health hazards are not focusing on level of knowledge of workers towards occupational hazards. Also, remembering the fact that workers who are knowledgeable of the harmful effects of the work conditions are most likely to indulge in safe behaviours and practices in the world of work and bearing in mind that workers' safe practices at work lead to high productivity, optimal health and total life satisfaction, it becomes imperative that study be carried out in this area, using Nigerian sample.

### **Purpose of the Study**

The purpose of the study was to examine the influence of age and gender on the levels of knowledge of ANAMCO workers towards occupational health hazards.

Specifically, the study examined:

1. the influence of age on workers' level of knowledge towards occupational health hazards.
2. the influence of gender on workers' level of knowledge towards occupational health hazards.

### **Research Questions**

1. what is the influence of age on workers' level of knowledge towards occupational health hazards?
2. what is the influence of gender on workers' level of knowledge towards occupational health hazards?

### **Hypotheses**

1. There is no statistically significant difference in the levels of knowledge of ANAMCO workers towards occupational hazards based on age ( $p < .05$ ).

2. There is no statistically significant difference in the levels of knowledge of ANAMCO workers towards occupational hazards based on gender ( $P < .05$ ).

## Methods

The research design adopted for the study was the descriptive survey design.

The study was carried out in Anambra Motor Manufacturing Company (ANAMCO), which situates in Enugu State, Nigeria. ANAMCO assembles cars and fabricates car spare parts and uses some chemicals that are hazardous to health of workers. Hazards associated with the nature of their job include physical hazards, mechanical hazards, ergonomically poor working conditions, psychological stress, social conditions, reproductive hazards and allergenic agents. The workers' exposure to these hazards formed the bases for the choice of the company for the study.

The population for the study consisted of all the 521 workers of ANAMCO, Enugu. Out of this number, 199 of the workers were older workers while 322 of them were younger workers. A total number of 106 of the workers were females, while 415 of them were male workers.

The sample for the study was 261 workers selected by means of stratified and proportionate sampling techniques. Available data on the number of workers per section allowed stratification of workers into males and females, young and old in eight work sections that make up ANAMCO. Thereafter, proportionate sampling was adopted in selecting workers from the eight work sections, in proportion of 1:2 of the number of the workers in each section. The sections are: administrative with 46 workers, mechanical 152, assemblage 142, health unit 62, security 43, bursary 38, catering 18 and laundry 20 workers.

The instrument used for the study was "Knowledge of Occupational Health Hazard (KOH) Questionnaire" which was designed to measure the knowledge of workers regarding their workplace hazards. The questionnaire consisted of two sections. Section A dealt with personal data of the respondents' (job status). Section B is made up of 10 – items that measured nine components of hazards namely social, chemical hazards, psychological, stress, mechanical, biological, allergenic agents, physical, ergonomically poor working conditions are reproductive hazards. Item 2 measures social, items 3 and 4 measures chemical hazards, item 5 measures psychological stress, item 6 measures mechanical hazards, item 7 measure biological hazards, item 6 measures mechanical hazards, item 7 measures biological hazards, item 8 measures allergenic agents, item 9 measures physical hazards, item 10 measures ergonomically poor working conditions while item 11 measures reproductive hazards.

Draft copies of the KOHQ were sent to three lecturers in the Department of Health and Physical Education, University of Nigeria, Nsukka who critically examined the instrument in terms of appropriateness and suitability to the purpose of the study. The face validity of the instrument was determined through the judgement of these three experts. In order to establish the reliability of the instrument, 96 copies of the instrument were administered to workers of Emenite Nigeria Ltd, Enugu. The data were analyzed using Product Moment Correlation coefficient, which determined the split-half reliability of the instrument. The split-half reliability of .85 was obtained. This was corrected with Spearman-Brown formula, = .92, to estimate the validity of the instrument.

In order to facilitate the distribution of the questionnaire, the researcher raised an introductory letter to the General Manager Personnel unit of the organization. A total number of 261 copies of the questionnaire were distributed to the workers and this was done through the eight sectional heads of the company. The instrument was distributed as follows: administrative 23, mechanical 76, assemblage 71, health unit 30, security 23, bursary 19, catering 9 and laundry 10. The time allotted for the filling of the questionnaire was thirty minutes and these were filled and collected on the spot. A hundred per cent return rate was achieved with 221 copies correctly filled. This yielded a return rate of 86.73 per cent.

Frequency, percentages and chi-square statistics were used to analyse data on the level of knowledge of workers regarding occupational hazards. The research questions were answered using frequencies and percentages. In determining the level of knowledge, Asshur (1977) criteria were applied. By these criteria, corrected response scores of less than 40 per cent of the variables investigated were considered low level knowledge. Scores that fall between 40-59 per cent were considered as moderate level of knowledge, while 60-80 per cent was high level, and above 80 per cent classified as very high level of knowledge. Hypothesis 1 and 2 were tested using the chi-square statistics. The analysis were done using Statistical Package for Social Sciences (SPSS) version 18.

## Results

This section is concerned with the presentation and analysis of the data generated from the study.

**Research Question One:** What is the influence of age on workers' levels of knowledge towards occupational health hazards?

**Table 1:** The Level of Knowledge of Old and Young Workers' Occupational Health Hazards

S/N	Components of Occupational Health Hazards	Old workers (n=151)		Young workers (n=70)		Decision	
		f	%	f	%	Old workers	Young workers
1	Social hazards	75	88	126	93	Very high	Very high
2	Chemical hazards	35	41	56	41	Moderate	Moderate
3	Psychological stress	56	66	86	63	High	High
4	Mechanical hazards	73	86	114	84	Very high	Very high
5	Biological hazards	62	73	79	58	High	Moderate
6	Allergenic agents	67	79	130	96	High	Very high
7	Physical hazards	54	64	62	73	High	High
8	Ergonomically poor working conditions	46	54	97	72	Moderate	High
9	Reproductive hazards	47	55	80	59	Moderate	Moderate

Table 1 revealed that the old workers showed very high level of knowledge in areas of social hazards and mechanical hazards, while indicating high levels of knowledge in areas of psychological stress, biological hazards, allergenic agents and physical hazards. It is in areas of chemical hazards, ergonomically poor working conditions and reproductive hazards that they showed moderate levels of knowledge.

Regarding the young workers, the table revealed very high level of knowledge in areas of social hazards, mechanical hazards and allergenic agents. They reported high levels of knowledge in areas of psychological stress, physical hazards and ergonomically poor working conditions. Chemical hazards, biological hazards and reproductive hazards are the three areas of hazards that the younger workers showed moderate levels of knowledge.

**Research Question Two:** What is the influence of gender on workers' levels of knowledge towards occupational health hazards?

**Table 2:** The levels of Knowledge of Male and Female Workers towards Occupational Health Hazards

S/N	Components of Occupational Health Hazards	Males (n=166)		Females (n=55)		Decision	
		f	%	f	%	Males	Females
1	Social hazards	103	62	44	80	High	Very high
2	Chemical hazards	148	89	49	89	Very high	Very high
3	Psychological stress	105	63	18	33	High	Low
4	Mechanical hazards	133	80	53	96	Very high	Very high
5	Biological hazards	152	92	45	81	Very high	Very high
6	Allergenic agents	119	72	40	73	High	High
7	Physical hazards	95	57	21	38	Moderate	Low
8	Ergonomically poor working conditions	132	80	41	75	Very high	High
9	Reproductive hazards	123	74	48	87	High	Very high

Table 2 showed that the male ANAMCO workers demonstrated very high levels of knowledge in areas of chemical hazards, mechanical hazards, biological hazards and ergonomically poor working conditions. They showed high levels of knowledge in areas of social hazards, psychological stress, allergenic agents and reproductive hazards while showing moderate level of knowledge only in area of physical hazards.

On the issue of female workers, the Table reported very high levels of knowledge in five areas namely; social hazards, chemical hazards, mechanical hazards, biological hazards and reproductive hazards. They showed high levels of knowledge in areas of allergenic agents and ergonomically poor conditions, while indicating low levels of knowledge in areas of psychological stress and physical hazards.

**Hypothesis One:** There is no statistically significant difference in the levels of knowledge of ANAMCO works based on age ( $p < .05$ )

**Table 3:** Differences between Old and Young Workers on Level of Knowledge of Occupational Health Hazards

S/N	Components of Occupational Health Hazards	N	cal. X <sup>2</sup>	Table Value	df
1	Social hazards	221	11.3*	3.84	1
2	Chemical hazards	221	2.8	3.84	1
3	Psychological stress	221	12.2*	3.84	1
4	Mechanical hazards	221	39.1*	3.84	1
5	Biological hazards	221	12.8*	3.84	1
6	Allergenic agents	221	10.21*	3.84	1
7	Physical hazards	221	19.4*	3.84	1
8	Ergonomically poor working conditions	221	11.7*	3.84	1
9	Reproductive hazards	221	5.8*	3.84	1

\* = Significant

Table 3 showed that items 1( $X^2 = 11.3$ ,  $p < .05$ ); 3( $X^2 = 12.2$ ,  $P < .05$ ); 4( $X^2 = 39.1$ ,  $P < .05$ ); 5( $X^2 = 12.8$ ,  $P < .05$ ); 6( $X^2 = 10.21$ ,  $P < .05$ ); 7( $X^2 = 19.4$ ,  $P < .05$ ); 8( $X^2 = 11.7$ ,  $P < .05$ ); and 9( $X^2 = 5.8$ ,  $P < .05$ ) are significant because the calculated  $X^2$  of the items are greater than the table  $X^2$ . This implies that there are significant differences in the levels of knowledge of occupational health hazards among the old and young ANAMCO workers. The young workers reported higher knowledge of occupational health hazards by showing significant differences in five question items out of the eight question items found significant. Therefore, the null hypothesis was rejected. However, the old and young workers did not differ in their levels of knowledge of their workplace hazards in question item 2.

**Hypothesis Two:** There is no statistically significant difference in the levels of knowledge of ANAMCO workers based on gender ( $p < .05$ ).

**Table 4**

Differences between the Male and Female Workers on Level of Knowledge of Occupational Health Hazards

S/N	Components of Knowledge	n	cal. X <sup>2</sup>	Table Value	df
1	Social hazards	221	22.1*	3.84	1
2	Chemical hazards	221	2.81	3.84	1
3	Psychological stress	221	21.8*	3.84	1
4	Mechanical hazards	221	13.8*	3.84	1
5	Biological hazards	221	25.8*	3.84	1
6	Allergenic agents	221	3.08	3.84	1
7	Physical hazards	221	10.8*	3.84	1
8	Ergonomically poor working conditions	221	26.8*	3.84	1
9	Reproductive hazards	221	8.14*	3.84	1

\* = Significant

Table 4 revealed that items 1( $X^2=22.1$ ,  $P < .05$ ); 3( $X^2=21.8$ ,  $P < .05$ ); 4( $X^2=13.8$ ,  $P < .05$ ); 5( $X^2=25.8$ ,  $P < .05$ ); 6( $X^2=3.08$ ,  $P < .05$ ); 7( $X^2=10.8$ ,  $P < .05$ ); 8( $X^2=26.8$ ,  $P < .05$ ) and 9( $X^2=8.14$ ,  $P < .05$ ) showed significant differences because the calculated  $X^2$  of the items are greater than the table  $X^2$ . This indicates that the male and female ANAMCO workers differed significantly in their levels of knowledge of occupational hazards. The male workers showed more knowledge of occupational health hazards than the female workers by reporting significant differences in four question items out of the seven question items found significant. Therefore, the null hypothesis was rejected. However, the male and female workers did not differ significantly in question items 2 and 6.

## Discussion

As revealed in Table 1, the young workers reported more knowledge of occupational health hazards than the old workers. This was supported by the Chi-Square result in Table 3, which showed significant difference in the levels of knowledge of the young and old workers with the young workers reporting significantly higher knowledge than the old workers. The result supports Keyserling (2006) and Chien, et al (2003) respective findings. Their various findings showed that the young workers had higher levels of knowledge of workplace hazards than the old workers. However, the finding of this study did not collaborate those of Mital and Ghahramani (2011) which found that old workers had significantly higher knowledge than the young workers. In addition, the present finding is at variance with Hunter (2011) observation, which reported no significant difference in the levels of knowledge of old and young workers towards occupational health hazards.

Conceptualizing the old workers as those who have worked for a long time and have gotten old in the job, the Aristotle epistemology theory of anchor in this study becomes inconsistent with the presence result. The theory posits that experience and intimacy are the chief source of all knowledge. Thus, it is expected that the old workers



would have more knowledge of hazards associated with their jobs than the young workers because of long experience and intimacy. However, the result could be explained on the premise that the young workers work more regularly in the shop floors. Therefore, they are more likely to know the hazards associated with their work than the old workers who may have become supervisors and may no longer be working with hazardous substances and equipment. Further explanations could be that most companies, including ANAMCO, company introduce new technologies and machines that the older workers might not be familiar with the hazards associated with them. This is because the young workers work more regularly using the new technologies and machines since they are the ones that work in the shop floors. The old workers only struggle to adjust to the new demands in the work environment.

Regarding the issue of gender, table 2 showed that the male workers reported more knowledge of occupational health hazards than the female workers. The result of Chi-Square statistic in Table 4 indicated similar finding, revealing significantly higher levels of knowledge among the male workers than the female workers. The result is consistent with Keyserling (2000) and Norback and Edling (2012). Their separate studies found significant differences in the levels of knowledge of male and female workers, with males showing higher knowledge than the females. Similarly, Leino and Hanninen (2013) observed significant difference in the levels of knowledge of male and female workers. In their finding, however, the females showed higher knowledge than the male workers.

The present result can be explained on the basis that the male workers of ANAMCO are more exposed to the dangers of the operating systems since their work is more of skilled work than the female workers. This is evident in the differences in the responses as shown in Table 2. For example, the males are more knowledgeable in areas of mechanical hazards, allergenic agents, biological hazards, physical hazards and ergonomically poor working conditions (man and machine relationship).

### Conclusion

The study examined the influence of age and gender on levels of knowledge of ANAMCO workers towards occupational health hazards. The result showed that the younger workers reported more knowledge than the older workers and that the male workers showed more knowledge of occupational health hazards than the female workers. The result also revealed that there are significant differences in the levels of knowledge of workers, indicating that the younger workers showed significantly higher knowledge than the older workers; the males showed significantly high knowledge than the female workers towards their workplace hazards. It then implies that age and gender of workers have influence on workers' level of knowledge of occupational health hazards. It also mean that the older workers and female workers of ANAMCO are not fully aware that some of the substances and equipment used for production in their workplace are hazardous to their health and well-being.

### Recommendations

It is therefore recommended that:

1. More workshops, seminars, training, re-training on knowledge of occupational health hazards should be organised for all cadres of workforce, especially the inexperienced and single workers to help them gain more understanding and be aware of the hazards associated with their jobs.
2. New workers should be given proper orientation to equip them with the knowledge of the prevalence of hazards; their susceptibility and the implications of their exposure to their workplace hazards.
3. The management should try and show more commitment to the training and organisation of programmes geared towards equipping workers with knowledge of occupational health hazards.

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