

**IMPLICATION FOR OFFICE ENVIRONMENT ERGONOMIC INTERVENTION:  
A STUDY OF LOCAL GOVERNMENT OFFICES IN KATSINA STATE OF  
NIGERIA**

**ABDU GAMBO**

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## DEDICATION

This piece of work is entirely dedicated to my late father, Alhaji Saje Dangambo Katsina and his entire family both living and late.



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## ABSTRACT

Work-related musculo-skeletal disorders among the office workers are issues of global concern as they account for over 40% of work place safety and health hazards. In Nigeria, back pains and upper extremities disorder as well as eyes syndrome are common epidemics among the office workers in the Nigerian Public Sector with negative effects on the workers' output and the economy in general. The main objective of this research is to investigate the cases of work related musculo-skeletal disorders among the workers of Local Government offices in Katsina State of Nigeria in relation to the nature of office facilities, nature of office ergonomic policy and ergonomic awareness of the workers. Questionnaire approach was adopted based on 5 Likert scales. Qualitative approach using structured-unobtrusive observation was also adopted to support the findings of the questionnaire method. Thus, 250 questionnaires were distributed to 10 Local Governments out of 34 Local Governments of the state using randomised cluster sampling. 218 questionnaires were retrieved representing 86.55% mean response rate, while 210 were ready for the analysis. From the survey of the workers' opinion and the observation of office ergonomic risk factors, it was found that there is a prevalence of work related musculo-skeletal disorders among the workers in Katsina State Local Government offices based on the mean opinion of 3.38, poor office facilities based on the mean opinion of 2.49, poor ergonomic policy based on the mean opinion of 2.35 and poor ergonomic awareness based on the mean opinion of 2.48. Similarly, the result of correlational analysis of the three elements of office ergonomic intervention (office facilities, office ergonomic policy and office ergonomic awareness) shows positive relationship of  $r=0.545$ ,  $r=0.441$  and  $r=0.44$  respectively. It is therefore concluded that in order to solve the problem of work related musculo-skeletal disorders among the staff of Local Government offices in Katsina State of Nigeria, the three elements of ergonomic intervention must be improved at once in order to achieve sustainable office work environment for the overall productivity of workers.



## ABSTRAK

Gangguan musculo-rangka yang berkaitan dengan pekerjaan di kalangan pekerja pejabat merupakan isu-isu yang menjadi kebimbangan global kerana mereka merupakan lebih 40% daripada isu keselamatan tempat kerja dan bahaya terhadap kesihatan. Di Nigeria, sakit belakang dan bahagian kaki ke atas serta mata adalah sindrom wabak penyakit biasa di kalangan pekerja-pekerja pejabat di Sektor Awam Nigeria dengan kesan negatif ke atas produktiviti pekerja dan ekonomi secara umum. Objektif utama kajian ini adalah untuk menyiasat kes-kes gangguan musculo-rangka yang berkaitan dengan pekerja di pejabat-pejabat Kerajaan Tempatan di Katsina State Nigeria berhubung dengan kemudahan di pejabat, dasar ergonomik di pejabat dan kesedaran ergonomik di antara pekerja. Pendekatan soal selidik telah diterima pakai berdasarkan 5 skala Likert. Pendekatan kualitatif menggunakan pemerhatian berstruktur tidak menonjol juga telah diguna pakai untuk menyokong penemuan kaedah soal selidik. Oleh itu, 250 borang soal selidik telah diedarkan kepada 10 Kerajaan Tempatan daripada 34 Kerajaan Tempatan yang terdapat di negeri ini menggunakan persampelan kelompok rawak. 218 soal selidik telah diambil mewakili 86,55% kadar tindak balas purata, manakala 210 bersedia untuk analisis. Berdasarkan kajian terhadap pekerja dan pemerhatian faktor risiko pejabat ergonomik, didapati bahawa terdapat satu kelaziman gangguan musculo-rangka kerja yang berkaitan di kalangan pekerja di pejabat Katsina Kerajaan Tempatan berdasarkan pendapat min 3.38, kekurangan fasiliti berdasarkan pendapat min 2.49, dasar ergonomik yang lemah berdasarkan pendapat min 2.35 dan kurang kesedaran ergonomik berdasarkan pendapat min 2.48. Begitu juga, keputusan daripada analisis korelasi daripada tiga elemen ergonomik pejabat (kemudahan pejabat, polisi ergonomik dan kesedaran ergonomik) menunjukkan hubungan positif  $r = 0,545$ ,  $r = 0.441$  dan masing-masing  $r = 0.44$ . Maka dengan ini dirumuskan bahawa untuk menyelesaikan masalah gangguan musculo-rangka kerja yang berkaitan di kalangan kakitangan pejabat Kerajaan Tempatan di Katsina State of Nigeria, tiga elemen ergonomik akan ditingkatkan untuk mencapai persekitaran kerja di pejabat yang mampan untuk produktiviti keseluruhan pekerja.



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## CHAPTER 1

### INTRODUCTION

#### 1.0 Introduction

Safety, healthiness and sustainability of work environment are issues that deserve great attention, as work environment becomes almost synonymous with other human environments. According to Alan (2010), average working adults spend more than one third of their daily hours at work. According to Saurin and Fereira (2009), a work environment covers the totality of the atmosphere where task is designed, supervised carried out and completed. From other environmental indices, a work environment is a physical or geographical location, as well as the interior and exterior surroundings of for example office environment. In the context of this study, office environment is considered in terms of the physical site of the office as well as the general activities within the building such the office layout, work design, working facilities, temperature and humidity, light intensity and other elements of work place safety and health (Visher, 2012).

A safe working organization is the one that provides healthy outcome for its people through promoting occupational safety and health practice as its corporate policy to ensure that workers are physically and mentally safe (Hymel *et al.*, 2012). In the design of work places, furniture, office layout and equipment, it is important to consider the features, sizes and biological make up and the capability of workers who will use them. This is exactly where the question of office ergonomics comes about. Ergonomics is the practice of designing products, systems or processes to take proper account of the interaction between them and the people that use them so that they do not inflict harm on them (Alan, 2010).



Ergonomics as a multidisciplinary field has contributions from Psychology, Engineering, Biomechanics, Industrial design, Human Resource Management, Anatomy and Physiology, and Anthropometry. Its thrust is the study of designing equipment and devices that fit the human body and its cognitive abilities. Therefore, the two terms "Human factor" and "Ergonomics" are essentially synonymous (Jeffress, 2000). Human beings, unlike machines or equipment, have no standard form and that their sizes, strengths and biological tolerances are important to consider when designing work places and work facilities (Kohn, 1998; Mc Glothlin, 2012).

Workers who complain of bad back or stiff –nakedness (which are attributable to the poorly designed tables, desks, chairs or work stations), such complaints could have been prevented if there is a proper application of Ergonomic and Anthropometric principles (Alan, 2010; Cavalho *et al.*, 2014). Considering the poor OSH records of the third world countries and particularly Nigeria (Adeogun & Okafor, 2013), Local Government staff are more vulnerable to ergonomic injuries due to their physical exposure to certain safety risk factors resulting from poor office facilities and work policy.

Nigeria as a signatory to Geneva Conventions on Occupational Safety and Health in 1981, and in conformance with the international requirement, a Bill was passed in 2012 by the Nigerian Legislators called "Labour Safety and Welfare Bill" which empowers the National Council for Occupational Safety and Health to enforce and implement Occupational Safety and Health measures and awareness in Nigeria to cover both formal and informal sectors (Keith 2014). However, according to Nigerian legal system, this bill does not translate into National Law (Act) until it is ratified by the executive arm of Government (President). Due to neglect of safety and health issues in Nigeria, this Bill has not been accented by the president and it is therefore not enforceable. Therefore, based on this, it could be said that, the Occupational Safety and Health Bill of 2012 is ineffective in Nigeria and this makes the implementation of Safety and Health Laws very insignificant. With this scenario, occupational safety and health practice in Nigeria is very poor (Adeogun & Okafor, 2013).

This lack of implementation capacity of OSH in Nigeria exposes workers especially of the governmental offices to serious occupational or ergonomic risk factors and hence the complaints of musculo-skeletal pains become order of the day, and which they often associate with primordial factors (Adedoyin, 2009). This therefore makes it



necessary to carry out research with specific emphasis on governmental offices of Katsina State Local Governments in Nigeria to study their office environment in relation to office ergonomic scenario which comprises the issues of *musculo-skeletal pains among the workers, office ergonomic facilities, ergonomic policies of local government offices and the level of ergonomic awareness of workers*. This is with a view to studying their relationship, in order to suggest the guidelines on how to reduce the exposure of workers to risk factors capable of escalating the prevalence of musculo-skeletal injuries of back, neck, wrist, and shoulders so as to achieve safe, healthy and sustainable office work environment.

Local government is targeted in this study primarily because of its problems of under-funding (Kyenge, 2013) which becomes a serious obstacle to its effective functioning, including its inability to provide healthy, safe and conducive office environment for its workers. A study conducted by Okereke and Daniel (2010) further reveals the fact that Patani Local government, and three other Local Governments in the North Western Geo-political Zones including some sampled Local Governments in Katsina State are the ones with worst scenario of work environment in terms of office accommodation (Office Physical Environment), furniture, working facilities and that their safety and health measures are not reliable.

Based on this evidence, it can be extrapolated that the health issues of ergonomic (musculo-skeletal) disorders identified among the office workers could be attributed to the poor office environment with no ergonomic facilities to ensure their safety and health, low level of ergonomic awareness and poor ergonomic policy in Nigeria. These are the central issues which this study wants to address in order to ensure effective intervention for the health, safety and maximum productivity of the local government employees and other governmental offices in Katsina State of Nigeria.

### **1.1 Background of the Study**

The prevalence of ergonomic injuries, especially the office work related musculo-skeletal disorders are issues of both local and global concern with grave socio-economic consequences. Serious intervention efforts are needed for the health, safety and overall productivity of workers. This is because, from the current global workforce of 2.9 billion,



around 1.95 to 2.3 million workers die across the globe as a result of work related or occupational injuries caused by exposure to work place risk factors. This epidemic is increasing at an alarming dimension. (Takala, 2002; ILO, 2005; Altuwaiji, 2008; Lippincott, 2010).

From these cases, about 35% are victims of office work related musculo-skeletal disorders who are associated with computer and typing jobs (ILO, 2005; Kalla, 2010; Niu 2010; Ranasinghe *et al.*, 2011). The number of millions of workers who are victims of work related musculo-skeletal disorders is expected to double by the year 2020 (Kalla, 2010).

Currently at local level, in Nigeria, according to the Report of Federal Ministry of Labour and Productivity Inspectorate Department, FMLPID (2014), there were about 31,830 cases of work related occupational injuries in between the period of 2002 to 2012 (average of 3,185 per annum), and significant percentage of these cases are work related musculo-skeletal injuries which accounts for the 4% reduction of the Gross Domestic Product (GDP) of the country which is estimated annually to be 510 billion US Dollars (Nigerian National Bureau of Statistics, 2014; Saidu *et al.*, 2011). Still, occupational and work related injuries are under reported in Nigeria (Umeokafor *et al.*, 2014).

This underestimation of work related injuries is as a result of limited insurance coverage of workers and substantial cases of under reportage of certain injuries in record keeping system which is the common case in the third world countries (Barrientos, 2008). Another factor responsible for the under reportage of such cases is the personal reason and the fear of taking so many sick leave which is not favourable to the employee, as number of sick leave in a year is recorded and considered in annual employees' appraisal and evaluation form and this can affect them negatively in their career advancement.

In Kano city alone, there is a study which discovered that substantial number of workers have experienced several cases of especially musculo-skeletal pains which have not been reported to the management of the organisation for one reason or the other and such injuries are body pains, discomfort in the lower back region, neck, shoulders etc., especially among the office employees (Saidu *et al.*, 2011). Similarly, from the previous study on the survey of cases of lower back pains and neck disorder among workers conducted between South Africa and Nigeria, with 67% of the study conducted in Nigeria,



with 48% percent of samples covering office workers, there was a significant number of such cases from the Local Government workers (Louw *et al*, 2007).

The above scenario therefore calls for effective intervention so as to tackle this problem of work related musculo-skeletal disorder which is a common phenomenon among the typist, secretaries, personal assistants and other related computer and clerical jobs in the governmental offices in Nigeria. *The emphasis for invention is on the Local Government offices where due to the problem of underfunding, the work environment is not equipped with good office facilities to take care of their safety and health (kyenge & Okereke, 2013).* This is a situation which if not taken seriously, can lead to further escalation of the epidemic of work-related musculo-skeletal disorders which as shown above, has devastating socio-economic consequences. (Sylvia *et al.*, 2013). Hence, there is a strong need for effective intervention to save the situation.

Effective intervention as the focus of this study, involves the change and improvement in the level of office facilities of the Local Government offices which have serious health implication for the workers. Similarly, as highlighted above, the work policy of governmental offices in Nigeria has no consideration for human factor (Nnedinma, 2014) and this also has to be changed as a means of ergonomic intervention. Another stimulating issue in this research is that, to date, there is a limited literature and researches with respect to office ergonomics (Menendez *et al.*, 2012), and the workers especially at the Local Government level are lacking in office ergonomic training and awareness (Ismaila, 2010). There is therefore the need to create ergonomic awareness as another model of intervention

Hence, there is a strong need for researches in the various aspects of ergonomics, particularly office ergonomics as continuous researches have established a link between work place situations and development of musculo-skeletal injuries (Menendez *et al.*, 2012; Verina *et al.*, 2007; & Alan, 2013).

## **1.2 Problem Statement**

The problem of office work- related musculoskeletal disorders has negative consequences on the workers' output, and is regarded as one of the most common and most costly occupational health problems with grave socio-economic consequences.



The epidemic of this occupational health problem is common among the computer users, secretaries and other clerical workers in the governmental offices in Nigeria. The rising profile of this epidemic in the governmental offices is firmly connected to the poor nature of office facilities, poor nature of ergonomic policy as well as low level of ergonomic awareness among the workers of public sector in Nigeria (Adedoyin *et al.*, 2009). These are three key issues as the focus of this study. These issues need to be investigated so as to curve the prevalence of work related musculo-skeletal disorders which has a devastating consequences on the office workers' output and the economy in general as it accounts for the drop in the sectoral Gross Domestic Product of the country which is estimated to be \$510 annually (Nigerian National Bureau of Statistics, 2014).

It was reported that from 2011 to date, the cases of work related musculoskeletal disorders accounted for 33% of all workplace injuries and illnesses, sprains, strains and tears accounted for 38% of injuries and that, such injuries which occur as a result repetitive motion mostly found in typing and other office jobs required a median of 23 days away from work. (Frush, Redlin & Cruze 2011).

Thus, based on the above, justification there is a great concern for effective ergonomic intervention in the office work environment of public sector, specifically the Local Government offices by way of *improving the nature of office facilities, nature of ergonomic policy and boosting ergonomic awareness among the workers*. From the study of Labeodan *et al.* (2013) in the governmental offices in Nigeria, 70% of the office workers associated with computer work and other clerical activities have experienced musculo-skeletal pains in the neck, shoulder, back and wrist as a result of *poor ergonomic facilities, poor ergonomic practice (policy) and poor ergonomic training (awareness)*. This is similar to the findings of the previous survey of Adedoyin *et al.* (2009) concerning the epidemic of musculo-skeletal pains among governmental office workers associated with computer work including Local Governments, which revealed that the most common complaints of musculo-skeletal pains were low back pain with 78%, finger pain with 10% and neck disorder (stiffness and pains) accounting for 12%.

The first issue is that, poor office environment of Local Governments in Nigeria which leads to *poor office ergonomic facilities* is a valid reason for ergonomic intervention in order to reduce the vulnerability of workers to risk factors for work related musculo-skeletal disorders. As a result of poor funding of Local Governments in Nigeria, the office



environment is equipped with poorly designed office facilities (Okereke & Daniel 2010; Abbass *et al.*, 2012 Kyenge, 2013). Therefore, intervention is needed in order to change or improve the nature of office work facilities for the health and productivity of the workers.

For example, a report from Naira Forum (2015) highlighted one of the local governments in Nigeria where due to lack of decent office accommodation and basic office facilities, toilets were converted to offices for the local government staff. This scenario applies to almost all other Local Government Councils in Nigeria where for example, a report of Katsina State Ministry of Finance and Economic Planning (2005) highlighted that inadequate funding of local governments militated against the supply and maintenance of office facilities and general staff welfare. This is therefore, a strong confirmation of the poor office ergonomic environment of the Local Government offices and is the reason why the offices are equipped with poor ergonomic facilities. This situation is a good factor for the development of health problems, especially of work related musculo-skeletal disorders among the office workers.

Another issue in this investigation, is the issue of *poor ergonomic policy of governmental offices in Nigeria*. Intervention is needed in order to change or improve such poor office work policy which also applies to Local Government offices (Okolie & Okoye, 2012). *The nature of work policy of governmental offices in Nigeria totally disregards human factor due to poor OSHA records of Nigeria* (Diugwu *et al.*, 2012; Idubor & Osiamoje, 2013). This is a good factor for the rising profile of musculo-skeletal complaints among computer related and secretarial jobs (Labeodan *et al.*, 2013).

Another critical factor of study is the issue of *low level of ergonomic awareness among the staff of governmental offices in Nigeria*. Here also, there is an implication for ergonomic intervention in order to boost the level of ergonomic awareness among the office workers in Nigeria. According to Ismaila (2010), about 80% of office workers especially in the governmental offices are lacking in ergonomic training and awareness and this, could also be another factor for the epidemic of musculo-skeletal pains among the secretaries and computer users (Kalla, 2010). Poor level of ergonomic awareness was also confirmed by the findings of Ranasinghe *et al.* (2011) where it was indicated that 70.1% of the workers are lacking in ergonomic awareness. According to Menendez (2012), to date, literature and researches in office ergonomics are scarce and this might



generally account for the low level of ergonomic awareness of secretaries, typist and other related computer and clerical jobs.

These three key issues (Nature of Ergonomic Facilities, Nature of ergonomic Policy and Poor level of ergonomic awareness) form the basis of this research as they are considered to be critical factors concerning the epidemic of work related musculo-skeletal disorders which are common in governmental offices in Nigeria and in which guidelines for improvement need to be prescribed based on the research findings.

### **1.3 Research Questions**

Based on the above issues, now the research questions are as follow:

1. What is the current ergonomic scenario of Katsina State Local Government offices?
2. What is the extent of cases of work-related musculo-skeletal pains among the workers of Katsina State Local Government offices?
3. What is the nature of ergonomic facilities, ergonomic policy and ergonomic awareness of staff in Katsina State Local Government offices?
4. What is the relationship among the three elements of office ergonomic intervention? (Ergonomic facilities, Ergonomic Awareness and ergonomic policy)

### **1.4 Research Objectives**

From the above problem statement and research questions, this study seeks to achieve the following objectives:

1. To explore the current ergonomic scenario of Katsina State Local Government offices
2. To determine the extent of cases of musculo-skeletal pains among the workers of Katsina State Local Government offices.
3. To assess the nature of ergonomic facilities, ergonomic policies and ergonomic awareness of staff in Katsina State Local Government offices.
4. To analyse the relationship among the three elements of office ergonomic intervention (Ergonomic facilities, Ergonomic awareness and ergonomic policy).



### **1.5 Significance of the study**

This study has both practical as well as theoretical significance. In the practical sense of it, it is an action oriented as well as public policy research needing the attention of all stake holders towards embarking on ergonomic intervention considering the global as well as the local threats which occupational injuries pose on the quality of life of the working population as highlighted in the problem statement. This research will therefore provide guidelines or baseline information to be applied in overcoming the problems of office work related musculo-skeletal disorders caused by poor working environment at the Local Government level in Katsina State of Nigeria and other Governmental offices with related problem. Similarly, by recommending for effective ergonomic intervention schemes, workers safety; health and productivity will be improved. This is to say that there are signs of ergonomic significance in every aspects of work situations.

Similarly, this work will be a guide towards improving the educational process in Nigeria and elsewhere by recommending that Office Ergonomics as a field should be incorporated in the core curriculum of Business, Management, Secretarial, and Administrative studies to create more awareness on the issues of office ergonomics in Nigeria. This will train and equip the students with knowledge of such things as sitting posture and movement at work before going to the world of employment. By this, it will reduce the cost of further training of employees on ergonomic awareness as they are already equipped with such knowledge and awareness.

Lastly, this study carried out within the context of Local Government, is an addition to the few existing body of literature in office ergonomics as there are scanty literature and researches in office ergonomics as highlighted earlier in the background.

### **1.6 The Scope of the Study**

The scope of this study is an investigation of office ergonomic situations of Katsina Local Government Secretariats offices in terms nature of office ergonomic facilities, ergonomic policies and an assessment of ergonomic awareness of the staff together with their relationship so as to come up with guidelines and suggestions which will help in



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