

APPLICATION OF ERGONOMICS PRINCIPLES IN SEWING CLOTHES AMONGST FASHION DESIGNERS IN POST COVID 19 PANDEMIC IN OGBA/EGBEMA/NDONI LOCAL GOVERNMENT AREA OF RIVERS STATE.

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Abstract

The study focused on application of ergonomics principles in sewing cloth amongst fashion designers in Post COVID Pandemic in Rivers State. Specifically the study determined hunching over a sewing machine, use anti-fatigue mat, and keep working surfaces/table at elbow height. Research design was a descriptive survey. Three research questions guided the study. Area of the study was Ogba/Egbema/Ndoni Local Government Area of Rivers State. Population was made up of 96 Fashion Designers in ONELGA. Multi-stage sampling technique methods were used to select 45 Fashion Designers. Questionnaire was used for data collection. Data were analyzed using Mean and Standard Deviation. Results of the study was five (5) questions on avoid hunching over a sewing machine, these includes the use of Appropriate Posture ($\bar{x}= 3.15$), Use of Comfortable Stool ($\bar{x} 2.96$), Stool should be Placed on Flat Surface ($\bar{x} 3.25$) and others. There are Five (5) Questions on keep working surfaces at elbow height, these includes Cutting Tables ($\bar{x} 3.42$), Ironing Table ($\bar{x} 3.20$), Weaving Table ($\bar{x} 2.95$) and others. And five (5) questions on the use of anti-fatigue mat these includes avoid the use of Hilly Shoes ($\bar{x} 2.92$), Worn-Out Shoes ($\bar{x} 3.00$), Rough Floor ($\bar{x} 3.10$) and others. Based on these finding, the study recommended that the fashion designers should avoid hunching over a sewing machine in order to prevent musculoskeletal pains, they should use suitable table/surfaces in cutting, ironing and sewing clothes as this will reduce fatigue stress and other illness and also they should use anti-fatigue mats in their fashion homes as it will allow them to move to and fro without getting stressed out.

Keywords: Ergonomic Principles, Sewing Clothes, Fashion Designers, Post COVID Pandemic

Introduction:

After contracting COVID for more than 12 weeks, a condition known as post COVID pandemic (also known as long COVID) can occur (Saniasaiys and Slam 2010). He suggested that weeks or months after the initial infection, the Post COVID Pandemic condition could manifest. People who have undergone hospitalization or who required intensive care while recovering appear to be more susceptible to long-term effects. Additionally, individuals without symptoms or with only mild to moderate symptoms during the initial infection are seen to have post-COVID condition. Even if a person hasn't had a COVID test or diagnosis, they may still experience the symptoms of the Post COVID Condition. This might have been because there wasn't much emphasis on ergonomics during the pandemic, which limited testing capacity.

The study of people and how to make workplaces injury-free is known as ergonomics. Repetitive

motions and poor posture are two characteristics that frequently contribute to injuries sustained during physical work. The goal of ergonomic equipment design science is to reduce operator discomfort, agony, and injury (Safety and Health Administration 2013). Instead than forcing a person to adapt to a job, the field of research known as ergonomics looks for methods to keep people safe, comfortable, and productive by adapting human capabilities and limitations in the product or process both at work and at home (Ergonomics occupational safety and health 2019).

Ergonomics is the engineering and design of goods, processes, and systems using psychological and physiological concepts. It is a profession that integrates theory, concepts, data, and methodologies to design for human welfare and overall system performance. It is a scientific field that focuses on understanding how humans and other system components interact. In 2020, the International

Ergonomics Association. According to Grandjean (2008), the practice of adapting products and processes to fit with people's best abilities in order to improve wellbeing and maximize productivity. Some of the principles include maintaining the "S" curve of the spine, reducing excessive force, keeping everything within easy reach, working at the appropriate heights, reducing excessive motion, minimizing fatigue & static load, minimizing pressure points, etc. The fundamental ideas behind ergonomics emphasize the conduct that employees should engage in to prevent ergonomic injuries like musculoskeletal disorders (MSP). Although it is not a standardized phrase, it frequently refers to making sure that workers are using tools and methods that are a safe match for their physical capabilities. The use of neutral posture, task rotation to prevent overuse of muscles and other tissues, proper hand holds and gripping technique, and appropriate lifting, carrying, pushing, and pulling techniques depending on the situation are all examples of ergonomics principles. When sewing clothes, one can use these principles.

Using a needle and thread, sewing is the process of creating or mending clothing or other items, according to Kooler (2009). The art of sewing involves creating stitches on fabric using a sewing needle and thread to fasten or connect items. Prior to the development of spinning yarn or weaving cloth, sewing is one of the oldest textile industries, dating back to the Paleolithic period (Hurley 2002). According to Barber (2001), sewing is a crucial life skill that can be used to build self-confidence in students. You can improve your focus and concentration while sewing, which also teaches you the value of patience and self-control. Fine motor skills are also improved. Knowing your own limits, improving your skills, and achieving concrete goals while stepping outside of your comfort zone all contribute to the growth of confidence and self-esteem.

The word "clothing" refers to any article of clothing that is worn on the body. Textiles, animal skin, or other thin sheets of materials sewn together can be used to make clothing. Physically, clothing serves many purposes during hazardous activities like cooking, farming, etc. and it protects the wearer from rough surfaces, rash-causing plants, and other hazards. The wearing of clothing is primarily restricted to human beings and is a feature of human societies. The amount and type of clothing can be

gender specific (Pander, 2004). Clothing serves purposes beyond merely covering the body. As one learns more about the effects clothing has, their appreciation of clothing will grow. The meaning of clothing has been profound throughout history. It has revealed the artistic creativity, cultural rituals, and handicraft abilities of the populace. Technology advancements are also reflected in clothing. Animal skins were probably used to make clothing in the past. Modern technology offers a wide variety of fabrics, finishes, and manufacturing techniques. Despite these advancements, however, the justifications for donning clothing remain the same as they have throughout history (Kpolovie 2010).

The art of applying design, aesthetics, clothing construction, and elements of natural beauty to clothing and its accessories is known as fashion design. It varies over time and space and is influenced by culture and various trends. "A fashion designer makes clothing for consumers, such as dresses, suits, skirts, and handbags and shoe accessories." He or she may focus on designing clothes, accessories, or jewelry, or many people work in more than one of these fields. (Brown, 2006). When designing their garments and accessories, such as rings, bracelets, necklaces, and earrings, fashion designers employ a range of diverse techniques. Because it takes time to get a garment on the market, designers must be aware of shifting consumer preferences. Fashion designers are in charge of coming up with unique designs for each piece of clothing, which may involve shape, color, textiles, detailing, and more. 2015 (Hebrero).

Statement of the Problem

The importance of using ergonomics principles while sewing clothing cannot be overstated, since the phrase ergonomics is becoming more and more common in today's industry, from office chairs to beds and even fashion accessories, due to the growing tide of stress, weariness, and an aging workforce. Marketing careers appear to be on the rise, and it has been noted that fashion designers do not apply ergonomics principles to their work. As a result, they suffer from the damage that results from a worker's job being inappropriate for them, which damages their back, shoulder, forearm, wrists, and hand muscles, tendons, and nerves. Since this will lower the risk of developing musculoskeletal disorders (MDP), it is appropriate to teach fashion designers the importance of applying ergonomics principles to sewing. However,

despite research on the value of good posture at home, there does not seem to be much agreement on the application of ergonomics principles to sewing and the benefits that come with it. The study examines how fashion designers stitch clothing after the COVID pandemic in Rivers State using ergonomics principles.

Purpose of the Study

The main purpose of this study was to examine application of ergonomics principle in sewing clothe among fashion designers in Post COVID 19 Pandemic in Ogba/Egbema/Ndoni Local Government Area of Rivers State.

Specifically, the study seeks to:

1. Determine the extent to which hunching over a sewing machine can affect fashion designers in Post COVID 19 Pandemic in ONELGA, Rivers State.
2. Determine the extent to which keeping work tables/surfaces at elbow height, helpful to fashion designers in Post COVID 19 Pandemic in ONELGA, Rivers State.
3. Find out the extent to which anti-fatigue mat useful to fashion designers in Post COVID 19 Pandemic in ONELGA, Rivers State.

Research Questions

The following research questions guided the study

1. What are the effects of hunching over a sewing machine?
2. What are the benefits of keeping work table/surfaces at elbow height?
3. What are the usefulness of using anti-fatigue mat.

Methodology

Research Design: The study adopted a descriptive survey research design. This is because the design is interested in gathering the opinion of respondents in a given population using questionnaire (Nworgu, 2015).

Area of the Study: The study was conducted in Rivers State's Ogba/Egbema/Ndoni Local Government Area. There are 42 villages in it. Geographically, it is surrounded by Ogba on the south, Egbema on the north, and Ndoni on the east. All of the villages in the L.G.A. are served by the

numerous secondary public and private schools that were established in ONELGA. The people of ONELGA are renowned for their tranquility, friendliness, and hospitality. Consequently, they can live side by side with the strangers who come to ONELGA from all over the world. Their primary vocations are farming and trading, and their mother tongues are Igburu and Egi. They also do a little fishing, but English and Pidgin English are their primary languages.

Population for the Study: The 96 fashion designers that made up the study's population in ONELGA came from two different sources: the Local Government Council in ONELGA and the Secretary of the Fashion Designers Association in Rivers State, ONELGA Branch.

Sample and Sampling Technique: In Rivers State's ONELGA, a multi-stage sampling approach was employed to choose fashion designers. In ONELGA, Rivers State, this method was used to choose fifteen (15) fashion designers from each of the three (3) communities that made up the population, for a total of forty-five (45) fashion designers.

Instrument for Data Collection: Questionnaire was used for data collection; the questionnaire was divided into two sections:

While Section 1 contained the respondent's personal information, Section 2 was divided into three clusters in accordance with the three distinct study questions and aims. The instrument was duly validated by three experts, two (2) from the home economics/hospitality management education department and one (1) from the vocational and technical education in Federal College of Technical, Omoku. Responses to the questionnaire items were based on a four-point rating scale, ranging from Strongly Agree (SA) (4 Point), Agree (A) (3 Point), Disagree (D) (2 Point), and Strongly Disagree (SD) (1).

Reliability of Instrument: The reliability of the study was assessed by administering the instrument to thirty (30) fashion designers from the Rivers State local government area of Obio/Akpor who weren't included in the population under investigation. With the help of SPSS, the Cronbach Alpha reliability technique was employed to assess, and the results showed that the instrument is reliable with an index of 0.89.

Method of Data Collection: One research assistant and 45 volunteers handed handwritten copies of the questionnaire to respondents over a period of one week. Three questionnaire items were immediately recovered, yielding a return rate of 89.17 percent.

Method of Data Analysis: A cut-off value of 2.50 was selected for decision-making; items with mean

ratings of 2.50 and above were regarded as agree, while those with ratings below 2.50 were treated as disagreed. Data gathered from the study were analyzed using mean score and standard deviation.

RESULTS

The results are presented on the table according to the three research questions that guided the study.

Research Question 1: What are the effects of hunching over a sewing machine?

Table 1: Mean and Standard Deviation Responses on the Effect of Hunching over a Sewing Machine Amongst Fashion Designers in Post Covid 19 Pandemic in ONELGA, Rivers State

S/N	Effects of Hunching over a Sewing Machine	\bar{x}	SD	Decision
1.	Appropriate sewing posture must be observed at all times	3.15	0.90	Agree
2.	Use comfortable stool or chair	3.30	0.87	Agree
3.	Sewing machine must not be too high or low	2.96	0.85	Agree
4.	Stool should be placed on a flat surface	3.25	0.95	Agree
5.	Broken stool should be replaced	3.00	0.79	Agree
Cluster Mean and Standard Deviation		3.1	0.87	Agree

Note: \bar{x} = Mean, SD = Standard Deviation

Table 1 shows that item 1,2,3,4, & 5 has mean score of 2.50, indicating that there is need to avoid hunching over a sewing machine. The cluster mean

of 3.1 and standard deviation of 0.87 reveals that hunching over a sewing machine should be avoided and be discontinued.

Research Question 2: What are the benefits of keeping work tables/surface at elbow height?

Table 2: Mean and Standard Deviation Responses on Keeping Work Table/Surfaces at Elbow Height Amongst Fashion Designers in Post Covid 19 Pandemic in ONELGA, Rivers State

S/N	Benefit of Keeping Work Tables/Surfaces at Elbow Height	\bar{x}	SD	DECISION
The Following Should be Under Your Elbow Height				
1.	Cutting table	3.42	0.98	Agree
2.	Ironing table	3.20	0.89	Agree
3.	Weaving table or machine	2.95	0.75	Agree
4.	Sewing machine	3.10	0.65	Agree
5.	Fabric shelves/cupboards	3.25	0.95	Agree
Cluster Mean and Standard Deviation		3.2	0.84	Agree

Note: \bar{x} = Mean, SD = Standard Deviation

Table 2 show that items 1,2,3,4 &5 were identified as some of the application of ergonomics principles in

sewing clothe with mean score of above 2.50, indicating that there is need to keep working surfaces at elbow height the cluster mean of 3.2 and standard

deviation of 0.84 reveal that keeping work surfaces at elbow height is required for sewing clothes amongst fashion designers.

Research Question 3: What are the usefulness of using anti-fatigue mat?

Table 3: Mean and Standard Deviation Responses on the Need to Use Anti- Fatigue Mat Amongst Fashion Designers in Post Covid 19 Pandemic in ONELGA, Rivers State

S/N	Use Of Anti-Fatigue Mat	\bar{x}	SD	DECISION
The Following Point Should Be Avoided				
1.	A Rough Floor	3.10	0.97	Agree
2.	Worn Out Shoes	3.00	0.85	Agree
3.	Inferior Floor Covering	2.85	0.65	Agree
4.	Hilly shoes	2.92	0.75	Agree
5.	SlipperyFloor	3.30	0.98	Agree
Cluster Mean and Standard Deviation		3.3	0.85	Agree

Note: \bar{x} = Mean, SD = Standard Deviation

Table 3 shows that item 1, 2, 3, 4&5 were scores above 2.50, indicating that there is need to use anti. Cluster mean of 3.3 and standard deviation of 0.85, reveals that the use of anti-fatigue mat are needed in sewing clothes amongst fashion designers in Rivers State.

Discussion of Findings

According to the research questions that guided the study, the findings are analyzed. The findings in relation to Research Question One show that fashion designers experience the effects of hunching over a sewing machine, which has resulted in musculoskeletal diseases. In order to manage the situation, they have implemented practical measures such as adopting proper postures, using comfortable stools or chairs in place of broken stools, and positioning stools on flat surfaces. These results are expected rather than startling. This can be due to the rigorous labor they do every day in their many workplaces. As a result, using ergonomics concepts is quite advantageous.

According to Meghan (2022), hunching over an object might cause neck discomfort, poor balance, migraines, excessive weariness, bodily pain, and respiratory problems. In addition, he listed three other issues related to hunching, including incontinence, constipation, heartburn, and impaired digestion. Stress incontinence and abdominal pressure are encouraged by poor posture. He claims that slumping over anything might cause constipation. The anus is slightly closed in such

position, making it more difficult for the abdominal muscles to assist in excrement removal. When stomach acid splashes back up into the esophagus due to acid reflux, hunching over an object can create heartburn. Hunching puts pressure on the abdomen, which can drive stomach acid in the incorrect way.

Result of Research Question 2, the study's conclusions focused on maintaining work surfaces and tables at elbow height. According to the survey, fashion designers have a significant demand for cutting tables, ironing tables, weaving tables or machines, sewing machines, and fabric shelves or cabinets at elbow height. This may be the result of experiences they have had while working and afterward, such as discomfort in their hands, backs, chests, and other body parts. As a result, the study's findings have helped them realize the need of using some ergonomics concepts when sewing clothing. This result is consistent with Goldstar's assertion from 2021 that the cutting table should be positioned a few inches below the elbow. When sitting, the sewing table's height should ideally be at or just above elbow level. On the other hand, a cutting table should be positioned a few inches below eye level. Cutting tables often fold up simply and are lightweight, allowing you to transport your workplace with ease. They come in a broad range of sizes and colors, allowing you to customize them as well. He continued by saying that cutting tables frequently highlight durability and practicality. Ideally, you should utilize a sewing table to

complete your sewing more quickly while also improving ergonomics. By maintaining work surfaces at elbow level, you can lower your chance of developing stress-related illnesses including weariness and musculoskeletal disorders.

Results of Research Question 3, In accordance with the research questions that guided the study, the findings are analyzed. The results of research question 3 show that fashion designers can use anti-fatigue mats to help reduce pain caused by stress and fatigue. As a result, the fashion designers agreed to avoid using rough floors, worn-out footwear, subpar floor covering, hilly footwear, and slippery floors in their workplaces. The results were universally accepted since they will lower the chance of suffering injuries brought on by different types of falls.

This is in line with the theory put forward by ESE direct (2005) that anti-fatigue matting is elastic and absorbs shock waves from walking while reducing pressure points when standing. The rubber flooring promotes light, frequent leg and foot movement, which helps to enhance blood circulation and hence lessen weariness and exhaustion. The following health issues, such as lower womb condition, joint and spine compression, foot difficulties, etc., have also been connected to prolonged standing on hard surfaces. He listed further advantages of anti-fatigue matting, including safety for workers, cost savings, a reduction in slips, trips, and falls, insulation against chilly floors, and an improvement in productivity.

Conclusion

The study investigated the various ergonomics sewing strategies used by apparel designers in ONELGA, Rivers State following the COVID pandemic. In order to prevent tiredness, stress, and other musculoskeletal disorders, fashion designers should avoid hunching over sewing machines, use anti-fatigue mats, and maintain work surfaces and tables at elbow height, according to the study's conclusions.

Recommendations

Based on the findings of the study, the following recommendations are proffered:

1. The fashion designers should avoid hunching over a sewing machine in order to prevent musculoskeletal problems.
2. The usage of appropriate tables and surfaces by fashion designers when cutting, ironing, and stitching clothing may lessen tiredness, stress, and other illnesses.
3. Anti-fatigue mats are something that fashion designers should use in their houses since they will be able to walk around without being stressed out.
4. Through social media, fashion designers should be made more aware of and sensitive to the need to apply ergonomics principles to their work.

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