

Impact of occupational stressors on MSDs among garment workers in the EFZ, Ghana.

Efua Vandyck

Department of Family and Consumers Sciences
College of Agriculture and Consumer Sciences
University of Ghana, Legon - Ghana
Email: evandyck@yahoo.com

vandyef@ug.edu.gh

Mobile: 233-20-818-7875

Docea Fianu

Dept. of Family and Consumers Sci., University of Ghana, Legon -
Ghana

Email: dfianu@ug.edu.gh

Matilda Papoe

Social & Behavioural Sci. Dept., School of Public Health, University of
Ghana

ABSTRACT

Globalization of textiles and apparel has brought economic growth, and also occupational health problems such as musculoskeletal disorders (MSDs) to modern industrialized societies. MSDs are caused by multiple factors, generally categorised into physical and psychosocial factors. This study therefore explored the relationship between work-related stress and musculoskeletal pain (an indicator for MSDs) in the garment industry of the Export Free Zone (EFZ) in Accra, Ghana. Stratified and convenience sampling methods were used to select 300 participants from 815 garment producers. A self-administered structured questionnaire was used to elicit information on psychosocial factors. A physical discomfort survey was employed to identify MSDs attributed to the performance of task in their workplace. Majority of the respondents were young females, with low educational qualifications. Findings indicated a relationship between occupational stressors and musculoskeletal symptoms of the upper and lower back. When workers experienced higher levels of occupational stressors, they tended to suffer MSDs at the Upper and Lower Backs with greater frequency and discomfort. Both employers and occupational health service providers should be well aware of its presence in an effort to reduce and control MSDs

Keywords: Psychosocial factors, physical factors, musculoskeletal pain, garment producers, occupational stress, well being.

1. Introduction :

The changes occurring in the world of work are many. With changes in the nature of work, organizations and the patterns of

working lives, come new challenges of health and wellbeing of employees. Sen (1993) and Nussbaum (2001) have suggested that the three core dimensions of wellbeing are psychological, physical, and social functioning. The integration of the physical and the psychosocial work environment has become important. Promoting the health of employees is not only a good thing in itself as a moral imperative, but it also promotes the well-being of the organisations for which they work. The clothing industry is generally seen relatively as a safe place to work as compared with other industries. The major health risks do not rise from immediate, potentially fatal hazards. Instead, the risks that clothing workers face come from more subtle hazards whose effect accumulates over time and leads to fatigue, pain and musculoskeletal disorders (MSDs) (Gunning et al., 2001). Work-related musculoskeletal disorders (WMSDs) are a group of painful disorders of the nervous system and soft tissues such as ligaments, muscles, tendons, joints, cartilage and supporting blood vessels (Bernard et al., 1994). An overload of physically strenuous tasks, postures and movements often pose a threat to the musculoskeletal system leading to musculoskeletal fatigue, pain or disorders. MSDs are caused when the physical capacity of the muscles, joints, ligaments etc. is not in balance with the external forces that act upon the body. According to Canadian Centre for Occupational Health & Safety (2014) pain is the most common symptom associated with WMSDs. These disorders have received many names, such as: repetitive motion injuries, repetitive strain injuries, cumulative trauma disorders, overuse syndrome to mention a few. Most of the names do not accurately describe the disorders. For example, the term "repetitive strain injuries" suggests that repetition causes these disorders, but awkward postures also contribute the pain or disorder. These terms are used synonymously.

The development of WMSDs of employees is a complex multi-dimensional concept and managing them is a complex task, a burden on individuals and organisations. They affect the quality and duration of employees' working life and are reported to be the third most frequent reason for disability and early retirement in the United States of America (U.S.A.) (Brenner & Ahern, 2000). In the U.S.A., the total cost associated with MSDs increased from \$81 billion in 1986 to \$215 billion in 2005 (Deeney and O'Sullivan, 2009). In terms of cost of MSDs, the U.S.A. Occupational Health and Safety Act (OSHA) in 2000 reported that MSDs accounted for 34 percent of all lost-workday injuries and illnesses. Again, the employers reported nearly 600,000 MSDs requiring time away from work yearly. Each year, MSDs accounted for more than \$15 billion to \$20 billion in workers' compensation costs. Total direct costs add up to as much as \$50 billion annually (OSHA, 2000).

Workplace MSDs has many variations and related concepts. The multiple factors that cause MSDs can generally be categorised into mechanical/physical and psychosocial ones (Cheng et al., 2005; Sprigg et al., 2007). The occurrence of MSDs as a result of various mechanical risk factors such as force, repetitive action, awkward postures, static

postures, quick motions, contact stress and vibration from poor postures, poorly designed and maladjusted workstations have been amply discussed by Dul and Weerdmeester, 2008; Kroemer, 2009; Shahnava, 2001; Ortiz et al., 1991; OSHA, 2000; Punnett and Wegman, 2004. MSDs among garment workers were noted to affect the arms, hands, fingers, wrist, neck, back, wrists, legs, and shoulders (Kesslerling 2000; Coover and Thompson, 2003; Chavalitatsakulchai and Shahnava, 1993).

Psychosocial factors at work have also been shown to play important roles in the development of musculoskeletal disorder in different body parts. Important psychosocial factors that have been mentioned are high work demands and decision latitude (Choobineh et al., 2010), low social support (Ahlberg-Hulten et al., 1995), low job control (MacDonald et al., 2001; Leka and Jain, 2010) and lack of autonomy (Parkes et al., 2005; MacDonald et al., 2001). These factors may act uniquely or in combination.

Closely connected to these psychosocial factors is work-related stress (Leino, 1989; Leka and Jain, 2010) which is a pattern of reactions that occurs when workers are presented with work demands that do not match their knowledge, skills or abilities, or that challenge their ability to cope (Leka and Jain, 2010; Kroemer, 2009; WHO, 2005). Donald et al. (2005) and Whitfield (2009) found a link between work stressors and employee wellbeing. They acknowledged the impact of physical and mental ill health on absenteeism in a number of studies and argued that employers should be aware of the impact of reduced wellbeing and ill health in monetary terms. A degree of stress, however, is necessary in that it assists in achieving both work and personal goals (Kroemer, 2009; NTWorkSafe, 2003). Unchecked stress, however could result in an inverted "U" (a direct, linear, and negative) relationship between stress and productivity as reported by Jamal and Baba (1992). According to Marras (2004) and Chen et al. (2005), the co-existence of stress and MSDs has been found to magnify the negative impacts of a single condition on an individual's labour force activity.

Gunning et al., (2001) and Bureau of Labour Statistics (2004) found that employees in garment manufacturing have a higher prevalence of musculoskeletal disorders or pain, especially of the back, as work activities are repetitive and involve awkward postures. This implies that musculoskeletal pain would be an important health problem among garment workers. In spite of the high injury rate, few studies have focused on this occupation in Ghana. Very little, if any, is known about the situation of the Ghanaian garment industry worker. Again, often studies on hazards workers are exposed to in the workplace concentrate on physical, chemical, mechanical and biological types and not on occupational stress and ergonomics. Unfortunately, the occupational health and safety laws of Ghana are limited scope. There is no provision in the existing statutes to solve emerging hazards such as ergonomic problems (Clark 2009 and Tettey 2003). This paper is one of the first to explore the relationship between occupational

stressors and musculoskeletal pain in the garment industry in Accra, Ghana. It is believed that if the Ghanaian garment producer's work could be transformed in such a way that it combines optimal work performance with minimum stress and wear, productivity will be enhanced. He/she may comfortably compete in the global village (Vanyck and Fianu 2012).

2. Aim

The study was to explore the relationship between occupational stressors and musculoskeletal pains (MSPs) of garment employees in the EFZ in Accra, Ghana.

3. Objectives were to investigate

- occurrence, frequency and severity of musculoskeletal pain employees encountered that was attributed to their work.
- occupational stressors employees encountered
- relationship between occupational stressors and musculoskeletal pain (MPSs) of the body of employees

4. Research Methodology

4.1 Sample :

The study employed a survey design in which a quantitative method was applied. It involved a sample of 300 individuals selected from a total of 815 garment manufacturing employees from seven (7) different companies in the Export Free Zone (EFZ) in Accra, Ghana. They were chosen by stratified and convenience methods of sampling. To look at the relationship between physical demands (MSPs) and psychosocial demands (occupational stress) in the garment-trade-work environments, it was necessary to use two (2) self-administered structured questionnaires to collect information from respondents.

4.2 Questionnaire:

The questionnaire to collect information on occupational stress factors consisted of close-ended statements that required respondents to rate information on a 5-point Likert scale to specify their level of agreement or disagreement and capturing the intensity of their feelings on a symmetric agree-disagree scale of 1-5 where "1" was "strongly agree" to "5", "strongly disagree".

Information on the physical aspects was obtained by using a symptom survey that was developed based on the Manitoba Ergonomic Guideline (1999) on Programme Development and Implementation. This recorded information on the prevalence of musculoskeletal complaints in the different body regions, attributed to the performance of tasks in their workshops during the past two (2) months. MSPs were defined by frequency and intensity of pain. Respondents were required to indicate any pain experienced at work over the past 2 months regardless of the gravity of the pain.

Clearance was sought from the Institutional Review Board and the research was reviewed, approved and awarded the Ethical

Clearance Certificate. Permission to use the companies for the study was sought from management of the companies (mostly the CEOs). Convenient times for the data collection were arranged with the employers and the employees. To characterise occupational stressors in the workplace, participants rated 22 questions on occupational stress on a five-point Likert scale. The study used a standardised job stress test by Manning and Curtis (2007) with a reliability coefficient of 0.873 to measure the occupational stressors at the workplace.

4:3 Data collection:

Managers allowed researchers to approach workers during the noon break and sought consent from participants who were willing to be part of the study. Trained investigators were present to explain to all the participants the aims of the study, the contents of the questionnaire, and how to complete it. Whereas the majority of the respondents answered the questionnaire at the factory site and questionnaires collected by researchers and assistants, few questionnaires were taken home by respondents to be completed. Three hundred (300) completed questionnaires were received.

4.4 Analyses:

The SPSS software version 18.0 (2009) was used to generate frequency and percentage distributions. The Pearson's product-moment correlation test was carried out to test the level of significance of the relationships among MSPs and the job stress at value of $p < 0.05$. The analysis focused on only MSPs affecting the shoulder, upper and lower backs because they were found to be common among the workers (occurrence and severity). The Results are presented using both descriptive and inferential statistics to gain an understanding of the relationships among the study variables.

5. RESULTS

5.1 Sample Characteristics:

The majority (81%) of the participants were young adults between 21 and 35 years of age with 36%, 39% and 17% having completed first cycle (primary), second cycle (secondary) and tertiary (Teacher training college, Polytechnic, University) institutions respectively. The length of time respondents had been employed in their respective factories varied- from two months to a maximum of 4 years with a mean of 1½ years. While 87% of the respondents were females, 13% were males. Seventy seven percent were single and 97% of the respondents were machinist and about 6% were quality control and 4.3%, packaging and trimming workers. Less than 2% each reported as designers, pattern makers, cutters and supervisors. Some supervisors, designers, pattern makers, cutters and sometime machinist doubled as quality control, trimming or packaging workers.

5.2 MSPs experienced during the last 2 months in employees' body parts attributed to work

While 68% the respondents reported that they had experienced bodily pains/discomfort they could relate to their work 2 months prior

to the data collection, 32% said they did not experience any bodily pains or discomfort. The 68% of respondents were asked to rate the occurrence of discomfort in the body part and the frequency of occurrence. The percentage ratings of presence of discomfort/pain in the employees' body part, the frequency of occurrence and severity of pain are presented in Table 1

Between 32% to 68% of the respondents said that they never experienced pains in the hip (67%), thigh (65%), ankle/feet (62%), wrist/hand (50%), neck (46%), shoulder (40%), lower back (35%) and upper back (32%). While less than 30% of the respondents complained of occasional pain in the thighs (26%), ankle/feet (24%), hips (21%), and between (38%) and (48%) complained of occasional pain in the upper back (48%), lower back (43%), shoulder (42%), wrist/hand 38% and neck (38%).

Of those who described their pains as often, 17% had their pain in the lower back, 16% in the upper back, 14% in the neck, 12% in the ankle/feet, 12% in the shoulder, 9% in the hip, 8% in the wrist/hands and 6% in the thighs. As regards constant pain in shoulder, upper back, lower back, thigh, ankle/feet, wrist/hands, neck and hip, 8%, 5%, 4%, 3%, 3%, 3%, 2% and 2% were reported by respondents respectively.

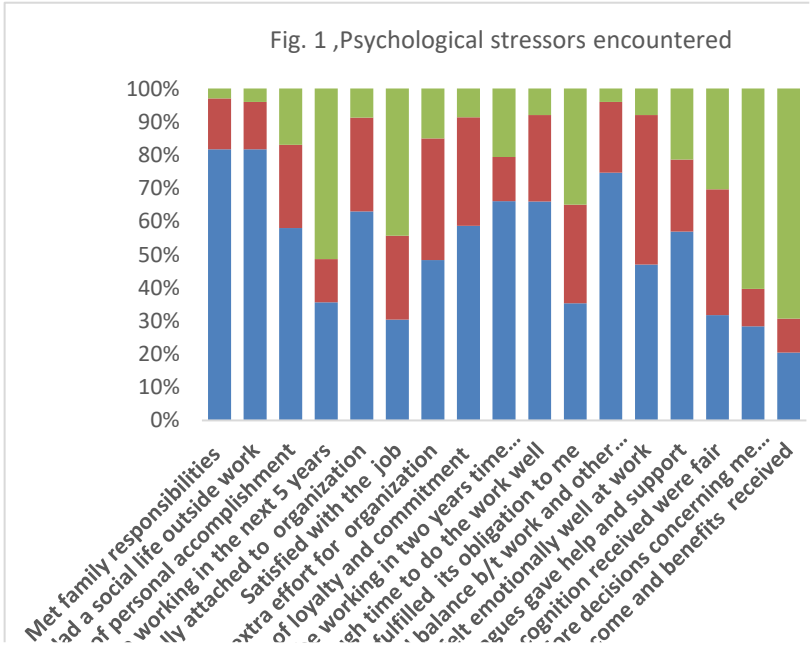
Those who described their pains as severe, 11% had complaint in the upper back, 10% in the shoulder, and 9% in the thigh and in the lower back. Less than 7% of the respondents each described their discomfort in the hips (4%), ankle/feet (6%), neck (4%) and wrists/hands (3%) as severely painful. Apart from the lower back (64%) and upper back (56%) where respondents reported of slight pain, less than 50% rated the pain in the other various body parts as slight pain. While 60% or more each rated the pain in the hip (67%), ankle/feet (66%) and the thighs (61%) as insignificant pain less than 36% rated the lower and upper back pain as insignificant.

Table 1 Rating of presence of pains in employees' body parts, frequency of occurrence and severity of pain (%)

Body part	Frequency of occurrence of pain (%)				Severity of pain (%)	
	Never	Occasionally	Often	Always	Slight Pain	Sever Pain
Hip	67.7	21.0	9.3	2.0	28.4	3.9
Thighs	64.9	26.7	5.9	2.6	28.4	5.9
Ankle/feet	63.8	23.5	9.8	2.9	29.1	9.7
Wrist/hands	50.4	38.2	8.4	2.9	42.6	2.9
Neck	45.6	38.2	14.3	1.9	44.5	9.9
Shoulder	39.7	42.2	13.3	4.8	48.5	4.0
Lower back	35.3	43.1	17.7	3.9	64.4	9.3
Upper back	32.0	47.8	15.5	4.7	56.8	11.2

5.3 Occupational stressors encountered in the workplace

To gain an insight into psychosocial stressors, respondents were asked to rate occupational stressors they encountered in the workplace based on 22 stress items (Figure 1).



Eight two percent (82%) of the respondents agreed they were able to meet family responsibilities while still doing what was expected of them at work; 81% had a social life outside work; 74% maintained a good balance between work and other aspects of their lives and 66% were likely to be working in their organization in two years' time. The respondents agreed they had enough time to do their work well (65%), were emotionally attached to the organization (63%) and felt a sense of commitment and loyalty to their organization (59%). Fifty seven percent (57%) of the respondents agreed colleagues helped and gave support when needed. Another 57% felt in control and on top of things at work and yet another 57% had feeling of personal accomplishment from their work. Fifty four percent (54%) agreed they liked the work they did and 53% proudly mentioned the organization they worked for to people.

However, the respondents who agreed they were willing to put in extra effort for their organizations were 48%. While 47% felt emotionally well at work, 35% were not likely to be working in the establishment in the next 5 years. The employees mentioned that they received fair rewards and recognition from their job (32%), saw a future for them in their organization (31%) and 30% felt satisfied with their jobs. Twenty-eight percent (28%) employees reported that they were consulted before decisions concerning them were made and only

19% were satisfied with income and benefits they received.

Relationship between occupational stressors and MSPs

MSPs	Correlation coefficient
MSP affecting the Shoulder	-.191**
MSP affecting the Upper Back	.316**
MSP affecting the Lower Back	.117*
MSP affecting the Hips	-.232**
MSP affecting the Ankles	-.119*
MSP affecting the Thighs	-.234**
MSP affecting the Wrist	-.211**
MSP affecting the Neck	-.322**

* signifies that $p < 0.05$; ** signifies that $p < 0.01$

The MSPs were correlated with occupational stressors by using of Pearson product-moment correlation. The results indicated that occupational factors had significant positive correlation with MSPs affecting the Upper Back ($r = .316$, $p < 0.01$, $n = 300$) and Lower Back ($r = .117$, $p < 0.05$, $n = 300$). Although occupational stressor seem to affects significantly (0.05) all parts that were investigated, the focus is on the upper back and lower back as the study recorded frequent and significant MSPs in these body parts (tables 1 and 2).

6. DISCUSSION

Young females, with low educational qualifications dominated the garment industry as key players. Globally, women typically make up 74% of the garment industry workforce (ILO, 2000). Generally, the sewing of apparel is viewed as a feminine vocation generally in Ghana. Perhaps this is because sewing, like cooking, cleaning, washing and other jobs carried out originally in the confines of the home were culturally categorized as domestic and female roles. Again, in the garment industry, work is largely assigned on the basis of gender. Most machinists are women, while in the cutting, ironing, and finishing sections almost all the workers are men (O' Rourke, 2003). It is therefore not surprising that females respondents were more than the males.

For long term sustainability of a company, it is essential to have workers who can perform multiple jobs. Such workers are valuable as they reduce the budget of the firm. Some respondents seemed to have cross training on their jobs as employees such as supervisors, designers, pattern makers, cutters and sometime machinist doubled as quality control, trimming or packaging workers. Global competition also often induces downsizing in companies and promotes multi-skilled workers capable of performing different roles.

The bodily pains/ discomfort experienced by 68% are as may be expected as the respondents performed precision tasks at a relatively fast pace with work cycles that were repetitive. Respondents ($\geq 16\%$) experienced pain frequently (often and always) in the upper

back, lower back and shoulders which were sometimes described as severe pain. The task demands and the lack of adjustability of workstations of sewing machine operators often lead to sustained awkward postures. Such postures result in MSDs (Kaergaard and Andersen, 2000; Rempel et al., 2007). Shoulder abduction and neck and upper back flexion are required of the task. Occurrence of shoulder, lower and upper back pain encountered by respondents is consistent with reports by Lu (2009) who documented that the garment workers encountered musculoskeletal disorders like pain at the wrist, shoulder and the back. However, less pain/discomfort were experienced in the hips, neck, wrist/hand, ankle/feet and thighs. Complaint of severe pains in the upper back, in the shoulder, and in the lower back is consistent with reports by Keyserling (2000) and Chen et al. (2005) who also found severe back pain as common occupational health problem amongst workers in modern industrialized societies.

About a $\frac{1}{3}$ of the participants' psychosocial needs and tasks such as workload, control over their job and job stress were adequately met and were described as not stressful. They were rarely under high levels of time pressure, engaged in high work pace or overloaded with work. Psychosocial elements in the workplace are important for job performance and turnover. For example, work-related stress can lead to increased problems with ill health especially if occupational stressor are prolonged or particularly intensive (Kroemer, 2009; NTWorkSafe, 2003). When employees feel they are cared for they are often more satisfied and perform better. How employees feel about themselves as members of their organisation depends on social interactions and support, management style, job demands, content, control and security. Employees have to be motivated, feel recognized, secure, belonging, appreciated and rewarded in ways that are meaningful and valuable to them.

Some participants rarely felt frustrated (41%) or overwhelmed (46%) and their work had clear guidance (48%). Generally, in garment manufacturing, employees develop and use personal skills and often know what they have to do and how to get it done. Though the content may be repetitive and monotonous they are often less challenging. This is because the planning and organization of fashion in the supply chain is taking care in product development and garment employees are given the tools for manufacturing; their work is simplified and standardized. However, low levels of occupational stressors can be mistakenly interpreted as satisfaction of their work rather than low expectations.

The respondents (55%) however, sometimes encountered stressful situations as they felt unappreciated, overwhelmed with the work, unchallenged, depressed and also frustrated. They indicated that they were sometimes overloaded and their work entailed so many tasks that made them feel fragmented. Management did not reward them for their contribution and work lacked clear guidance. They dreaded going to work and were likely to miss work.

Some of the participants rated workers' social support as lacking because there was lack of access to social or professional support groups and poor communication and consultation as management and employees did discuss issues openly with each other. The respondents (55%) complained of poor salaries and management also hardly rewarded any extra work performed. Monetary rewards may be in accordance with ILO guidelines but the states' economy may dictate workers desires. Even though a large paycheck may keep a worker on the job physically, but that alone may not keep a person on the job emotionally. Participants encountered layoffs and the number of workers, resources for work were inadequate. These issues could present major negative consequences for the organisations production and moral in the workplace. Whitfield (2009) encouraged organizations to think beyond the health aspects of wellbeing by paying attention to reducing work-related stress. This is because as employees have worse health problems if they feel insecure; their work is monotonous and repetitive; they have little autonomy, control and task discretion; there is an imbalance between effort and reward and there are few supportive social networks. The results also indicated that psychological factors had significant positive correlation with MSPs affecting Upper Back and Lower Back. This association implies that when workers experience higher levels of job stress, they tend to suffer MSPs affecting the Upper Back and Lower Back with greater frequency and discomfort. The results suggest an interaction between MSPs and psychosocial risk factors in the workplace of garment workers that may increase the risk of reporting symptoms in the upper and lower backs. Ergonomic intervention strategies that aim to minimize the risks of work related MSPs of the upper and lower back should therefore not only focus on physical work factors but also psychosocial work factors. However, it should be noted that, comparing the parts considered in this paper, the MSP in the neck has a relatively higher linear correlation with the psychosocial job stressors. This is a relatively new finding and hence gives room for more research.

7. CONCLUSION AND RECOMMENDATION

The results indicated a relationship between psychosocial stressors and musculoskeletal symptoms of the upper and lower back. The associations between occupational stressors and musculoskeletal pain suggested that psychosocial factors must be given due considerations when managing garment workers to reduce MSPs. Both employers and occupational health service providers should be well aware of its presence in an effort to reduce and control MSPs

8. REFERENCES

1. AHLBERG-HULTEN, GK, THEORELL T & SIGALA, F. 1995. Social support, job strain and musculoskeletal pain among female health care personnel. *Scand J. Work Environ Health* 21 :435-9.
2. BERNARD, B, SAUTER, S, FINE, L., PETERSEN, M & HALES, T. 1994. Job task and psychosocial risk factors for work-related musculoskeletal disorders among newspaper employees [*Scandinavian Journal of Work, Environment & Health* 20\(6\): 417-426](#)

3. BRENNER, H & AHERN W. 2000. Sickness absence and early retirement on health grounds in the construction industry in Ireland. *Occup Environ Med.* 57(9): 615-20.
4. BUREAU OF LABOUR STATISTICS 2004. Bureau of Labour Statistics Case and Demographic characteristics for work-related injuries and illness involving days away from work. Bureau of Labour Statistics. U.S. Department of labour March 25th 2004
5. [Canadian Centre for Occupational Health & Safety](#) (2014)
6. <http://www.ccohs.ca/oshanswers/diseases/rmirsi.html> [retrieved on January 2014]
7. CHAVALITATSAKULCHAI, P & SHAHNAVAZ, H. 1993. Musculoskeletal disorders of female workers and ergonomics problems in five different industries of Thailand. *Journal of Human Ergology* 22(1): 29-43.
8. CHEN, WQ, YU, IT-S & WONG, TW. 2005. Impact of occupational stress and other psychosocial factors on musculoskeletal pain among chinese offshore oil installation workers. *Occupational and Environmental Medicine*, 62: 251-256.
9. CHOUBINEH, A, MOVAHED, M, TABATABAIE SH & KUMASHIRO, M. 2010. Perceived demands and musculoskeletal disorders in operating room nurses of Shiraz City Hospitals. *Industrial Health* 48: 74-84
10. CLARK EDITH (2009). Do occupational health services really exist in Ghana? A special focus on the agricultural and informal sectors. <http://www.ttl.fi/NR/rdonlyres/DC409CAA2C978E3579CBFC217/0/11DOOH> [Retrieved June 3 2009]
11. COOVERT, MD, & THOMPSON, LF. 2003. Technology and Workplace Health. In J. Campbell Quick and LE Tetrick (Eds.). *Handbook of Occupational health Psychology* Washington, D C; American Psychological Association (221-241).
12. DEENEY, C, & O'SULLIVAN, L. 2009. Work related psychosocial risks and musculoskeletal disorders: potential risk factors, causation and evaluation methods. *Work* 34 (2): 239-48.
13. DONALD, I, TAYLOR, P, JOHNSON, S, COOPER, C, CARTWRIGHT, S & ROBERTSON, S. 2005. Work environments, stress and productivity: An examination using ASSET. *International Journal of Stress Management* 12 (4): 409-423
14. DUL, J & WEERDMEESTER, B. 2008. *Ergonomics for Beginners: A Quick Reference Guide*. 3rd ed. CRC Press, London.
15. E- FACTS 9 (2014) Work-related musculoskeletal disorders (MSDs): an introduction. European Agency for Safety and Health at Work <https://osha.europa.eu/en/publications/factsheets/71>
16. http://www.osha.mddsz.gov.si/resources/files/pdf/E-fact_09_-_Work-related_musculoskeletal_disorders_-_MSDs_-_an_introduction.pdf [retrieved on 9January 2014]
18. GUNNING, J, EATON, J, FERRIER, S, FRUMIN, E, KERR, M, KING, A & MALTBY, J. 2001. *Ergonomic Handbook for the Clothing Industry*. Union of Needletrades, Industrial and Textile Employees, Institute for Work and Health, and Occupational Health Clinics for Ontario Workers, Inc. Canada
19. ILO 2000. *Labour Practices in the Footwear, Leather, Textiles and Clothing Industries*. ILO Office 2000: Geneva Switzerland
20. JAMAL, M & BABA, BV. 1992. Stressful jobs and employee productivity; results from studies on managers, blue-collar workers and nurses. *International Journal of Management* 9: 62-67.
21. KAERGAARD, A & ANDERSEN, J. 2000. Musculoskeletal disorders of the neck and shoulders in female sewing machine operators: prevalence, incidence, and prognosis. *Occup Environ Med.* 2000 (57); 528-534
22. KEYSERLING, EM. 2000. Work place risk factors and occupational musculoskeletal disorders. Part1: A review of biomechanical land

- psychophysical research on risk factors associated with low-back pain. *American Industrial Hygiene Association Journal* 61: 39-50.
23. KROEMER, K. 2009. *Fitting the Human. Introduction to Ergonomics*. 6th edition. CRC Press, London.
 24. LEINO, P. 1989. Symptoms of stress predict musculoskeletal disorders. *J Epidemiology Community Health* 43: 293-300
 25. LEKA, S & JAIN, A. 2010. *Health Impact of Psychosocial Hazards at work: An overview*. WHO Press, World Health Organization. Geneva Switzerland.
 26. MACDONALD, LA, KARASEK, RA, PUNNETT, L & SCHARF, T. 2001. Covariation between workplace physical and psychosocial stressors: evidence and implications for occupational health research and prevention. *Ergonomics* 44 (7): 696-718
 27. MARRAS, WS. 2004. State of the art research perspectives on musculoskeletal disorder causation and control: The need for an integrated understanding of risk. *Journal of Electromyography and Kinesiology* 14: 1-5
 28. Manitoba Ergonomic Guideline, 1999. *A Guide to Programme Development and Implementation*. Manitoba Labour-Workplace Safety and Health, Manitoba's Ergonomic Guideline. <http://www.gov.mb.ca/labour/safety/publicat/guidelin/ergonomic/errgoguid.html> Accessed on September 2001
 29. MANNING G. AND CURTIS K., (2007). *The Art of Leadership* (2nd ed.) New York, NY; McGraw-Hill Companies, Inc. pg 317-318
 30. NTWORKSAFE 2003. *Safe Managing stress in the workplace*. NTWorkSafe a practical guide for managers. NTWorkSafe, Department of Employment, Education and Training. Work health Authority, Northern Territory Government, Australia
 31. NUSSBAUM, MC. 2001. Symposium on Amartya Sen's philosophy: 5 adaptive preferences and women's options. *Economics and Philosophy* 17: 67-88
 32. Occupational Health and Safety Administration 2000. *Ergonomics: The Study of Work*. Available at <http://www.osha.gov> Accessed 16/8/2009
 33. O'ROURKE, DARA. 2003. Outsourcing regulation: Analyzing non-governmental systems of labor standards and monitoring. *Policy Studies Journal* 31(1)
 34. ORTIZ, D. KELLY, M & DAVIS, N. (eds.) 1991. *A Stitch in Time: the Supervisor's Guide to Ergonomics*. Georgia Tech Research Institute, Atlanta.
 35. PARKES, K. CARNELL, SC & FARMER, E. 2005. *Musculoskeletal Disorders, Mental Health and Work Environment (Research Report 316)*. Norwich, England: HSE Books.
 36. PUNNETT, L & WEGMAN, D. 2004. Work-related musculoskeletal disorders: the epidemiologic evidence and the debate. *Journal of Electromyography and Kinesiology* 14 (1); 13-23.
 37. REMPEL, DM, WANG, P, JANOWITZ, I, HARRISON, RJ, YU, F, RITZ BR. 2007. A randomized controlled trial evaluating the effects of new task chairs on shoulder and neck pain among sewing machine operators; The Los Angeles Garment Study. *SPINE* 32 (9): 931-938.
 38. SEN, A. 1993. Capability and well-being. In Nussbanum MC & Sen A (Eds.). *The Quality of Life*. Oxford.
 39. SHAHNAVAZ, HOUSHANG. 2001. *Ergonomic Intervention in industrially developing countries, case study-Iran*. Khodro (car) Company-IRAN. Center for Ergonomics of Developing Countries (CEDC), Department of Human Work Sciences, Lulea University of Technology.
 40. SPRIGG, CA, STRIDE, CB, WALL, TD, HOLMAN, DJ & SMITH, PR. 2007. Work characteristics, musculoskeletal disorders, and the mediating role of psychological strain: A Study of call center employees. *Journal of Applied Psychology* 92 (5):1456-1466.

41. STANSFELD, S & CANDY, B. 2006. Psychosocial work environment and mental health: a meta-analytic review, Scandinavian. Journal of Work and Health 32: 443-462.
42. TETTEY S. N. (2003). OHS policy and Legislation in Ghana – Stakeholders' Workshop Report. Informal Sector Including Small-Scale Enterprises. African Newsletter on Occupational Health and Safety 2003;13:19-21
43. VANDYCK, E, & FIANU, D. 2012. The work practices and ergonomics problems experienced by garment workers in Ghana. International Journal of Consumer Studies 36: 486-491
44. World Health Organization, Regional Office for Africa 2005. Implementation of the Resolution of Occupational health and Safety in the Africa Region http://www.afro.who.int/oc/publication/benin_meeting.pdf Accessed 9/6/2009
45. WHITFIELD, KEITH (eds) 2009. Employee well-being and working life: towards an evidence-based policy agenda. An economic and social research council health and safety executive. report on a public policy. Seminar held at Health and Safety Executive, Rose Court, Southwark, London.