

Health problems among garment factory workers: A narrative literature review

Lillypet S, PhD^{1*}, Jain T, MD², Joseph B, MD³

1- PhD Scholar of Saveetha University, Ramaiah Institute of Nursing Education and Research, Bangalore, India. 2- Professor, Community Medicine, Saveetha University, Chennai, India. 3- Professor and Head, Community Health, St. John's Medical College, Bangalore, India.

Abstract

Received: March 2017, Accepted: July 2017

Background: Garment factories in India contribute to the economic growth and it is the second largest sector for employment. Many unskilled laborers from rural location work in this sector. The common jobs handled by them are sewing, ironing, packing and lifting heavy loads which are monotonous, continuous and prolonged. Working for a long period of time without rest, absence of personal protective equipment and inadequate provision of ergonomic facilities at workplace leads to major health-related issues among the workers. The objective of this study was to identify the pattern and prevalence of major health problems among garment factory workers.

Materials and Methods: A comprehensive electronic search of PubMed, CINAHL, Scopus, Science Direct and Cochrane Library was carried out using the search strategy. All freely available studies with a full-text article in the database and detailed study methodology were included in this review.

Results: Seventeen studies were included in this review. The studies revealed that the major health problems among the garment workers were musculoskeletal disorder, cardiovascular, respiratory, gastrointestinal, gynecological, ophthalmological and nutritional problems and mental illness. The musculoskeletal problems were the highest among all with a prevalence of 78.89%. The most common region affected were back, followed by shoulder.

Conclusions: Review of health problems among garment factory workers revealed that the musculoskeletal disorder were more prevalent. The majority of the studies were carried among women. Therefore, it is necessary to organize specific programs aimed at prevention of musculoskeletal disorders among garment workers.

Keywords: Health Problems, Garment, Workers, Factory

Introduction

Economic growth is one of the primary goals of the national economic policies. India is one of the fast growing economies in the world; the textile industry in India is an area which contributes to the economic growth. Textile and clothing are considered as the oldest, largest and most global industries in the world and in India, it is also considered as the second largest employment sectors. It plays an important role as a source of earning foreign exchange (1). In India, textile industry comprises mainly of small-scale, non-integrated spinning, weaving, finishing, and apparel-making enterprises. Textile and cotton industries offer a wide range of opportunities

including entry-level jobs for unskilled labor in developing countries. Brenton et al. suggested that the sector absorbs a large number of unskilled labor, typically from rural locations. The annual growth rate of the garment sector reached to 9%, just below China's that had reached 10.9%, during the last 11 year period i.e. from 2001 to 2012 (1). India stands as the world's second largest populated country with 1.26 billion in 2014 and people employed in textile and cotton industries were 8 million in 2013. The Apparel

* **Corresponding author:** Santham Lillypet, Ramaiah Institute of Nursing Education and Research, Bangalore, India.

E-mail: santhamlilly@msriner.com

Export Promotion Council (AEPC) estimated that in value terms, the size of the Indian textile market was Rs. 1692952 million in 2007 recording a growth of 8.81% (2). In India, the readymade garment industry is providing employment to more than 3 million people and the majority is from low socio-economic status covering both men and women (2).

The workers in the garment factories are mainly exposed to prolonged sitting, prolonged standing, highly repetitive work, lifting of heavy objects, working with their hands lifted to shoulder level or even higher, and working with their back twisted or bent forward, that have been shown to predict impaired work ability and enhance long-term sickness (3). The workers also perform hard work and work for long hours.

The workers of the informal sector and small-scale industries are subjected to various workplace hazards. International studies have identified numerous health problems among industrial workers in general and garment workers in particular. Workers with high physical work demands are well documented to be at elevated risk for impaired work ability, musculoskeletal disorders, cardiovascular disease, long-term sickness absence, early retirement and all-cause mortality. Specifically, the workers with repetitive nature of work due to the physical demands are prone to get physical, psychological and nutritional health problems (4, 5). The most common health hazards are respiratory problems, cardiovascular diseases, gastrointestinal diseases, gynecological diseases, and neurological, musculoskeletal and nutritional problems.

The workers in the garment factories are exposed to work which require high concentration such as cutting, stitching and finishing which causes headache and visual discomfort. The workers also receive low income to survive and spend a majority of their time in the factory. They find it difficult to buy the required calories and to cook food. For this reason, they choose to take unhygienic food which cause various types of health

problems like food poisoning, diarrhea, gastric pain, malnutrition, abdominal pain, etc. A study found that workers in the readymade garment industry suffer from some health problems like malnutrition, less appetite, diarrhea, hepatitis (jaundice), food poisoning and so on, that are related to the food they usually take.

According to the data available, approximately 60% of the population employed in the garment industry are women (6). Studies have reported that woman perform a dual role and often end with stress, which result in psychological related problems.

The medical facilities available in factories are not sufficient. Nurses available in factories provide first aid and handle emergency situation. This has been proved in a survey conducted in Coimbatore, in the state of Tamil Nadu, the findings of which revealed that most of the workers suffer from health problems. Neither do the workers have rest in between their work nor do they get proper nutrition (7). Keeping the above facts in mind and based upon the related literature, and confirmed by many studies, health problems are prevalent among the garment factory workers. However, it was not possible to single out a particular problem among the workers. Therefore, an attempt was made to review the available articles to identify the pattern and prevalence of common health problems among garment factory workers and to assess the changes in the quality of life. This review will give an overall idea about the various health problems.

Material and Methods

An extensive literature search was made in the studies related to health problems among garment factory workers. The studies which were published from January 2009 to 2015 were included in this review. A comprehensive electronic search of PubMed, CINAHL, Scopus, Science Direct and Cochrane Library was carried out. The cross references of the article were searched for relevant articles and the elimination of duplicates of the study was

assessed in original studies. The studies meeting the inclusion criteria were further scrutinized by the researcher for the

completion of the article. The following are the key literature search strategies that were used (Table 1).

Table 1: Keywords used for literature search strategy

Sl. No	Concept	Keywords
1	Employers' company	Garment industry, textiles industry Garment manufacturing company Apparel industry, clothing industries
2	Risk factors	Personal, ergonomics and psychosocial
3	Quality of life	Health related quality of life Work related quality of life
4	Employee	Garment workers, tailoring, ironing, sewing machine operators
5	Disorders	Health problems, health status, occupational hazards

The review comprised a full article freely available in the electronic search. The majority (9 articles) of the study designs included were cross-sectional studies, randomized controlled trials (RCTs, 1), cohort study (1), case study (1), surveys (2), descriptive study (1), and empirical study (2) that were related to the health problems of garment workers. The studies were conducted in various parts of the world of which a majority were from

Bangladesh. On the basis of the selection criteria, seventeen studies were reviewed. On reviewing the studies, it was found that all the studies were conducted among the garment factory workers who were involved in sewing machine operations, cutting, ironing, packing, tailoring and helping. Abstracts and articles in which methodology was not properly mentioned were excluded (Figure 1).

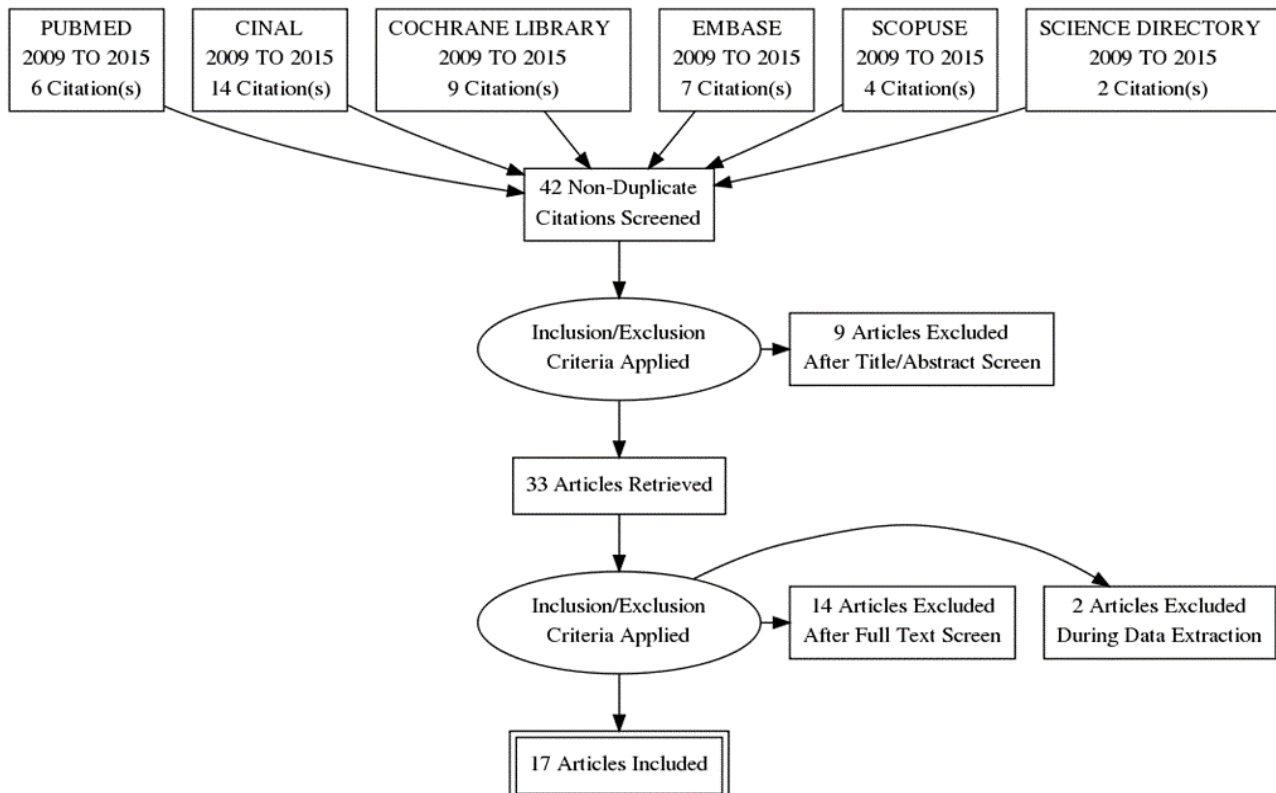


Figure 1: Flow diagram of literature review

Titles of all identified studies were stored in a new database in Mendeley Reference Manager, 1.17.11. A bibliography was generated after removing the double references, which included the title, keywords, and abstract of each reference found. The study selection was completed in two steps. In the first step, author screened the titles, keywords, and abstracts of all references retrieved by the literature search to determine if articles met the inclusion criteria. A standardized digital form with inclusion criteria was designed for this purpose. In the second step, the author retrieved the full-text article for studies where inclusion or exclusion could not have been identified on the screening. These were fully reviewed and subsequently assessed for inclusion (8, 9).

Result

The following are the most common health problems among the garment workers as identified in the review:

Musculoskeletal problems: Around 14 studies were reviewed (2-5, 7, 10-18). The majority of the studies have documented that musculoskeletal problems were among the most common health problems in the garment industries. A study conducted in Sri Lanka reported a prevalence of 15.5% for musculoskeletal problems in garment factory workers during the last twelve months (11), and 78.8% of workers suffered from skeletal problems reported in a study conducted in Gazhipur district (5). A study conducted in the slum area of Kolkata showed that 69.6% of the garment workers reported musculoskeletal problem as the chief complaint. A study conducted in Bangalore reported that 71.9% of the musculoskeletal problems were caused by ergonomic factors (19). Back pain was the most commonly reported disorder among those with musculoskeletal disorder, it ranged from 22.2% (12) to 68.5% (4). Among sewing machine operators, it was found that 60% of the women were suffering from back pain (2). Neck and shoulder pain both occurred together

and it was commonly reported among sewing machine operators. The reported prevalence of neck pain ranged from 50.5% (20) to 60.7% (21). Shoulder pain alone ranged from a low prevalence of 24.4% (21) to the highest prevalence of 50.2% (20). A study conducted in Denmark among sewing machine operators revealed that 11.9% workers had at least, one day absence due to neck-shoulder problems within the past year, while 4.7% workers had 8 days or more due to the problem (13). The documented prevalence of pain in the upper back ranged from 35.6% (21) to 52% (17).

According to the study conducted among Bangladeshi garment workers regarding the pattern of pain, majority (81%) of the respondents had temporary pain that means once a day, whereas 13% had continuous pain (12). Regarding the severity of the pain, 38.5% had mild pain, 35.2% had moderate pain and 2.4% had severe pain. The mean duration of pain was 1.97 ± 4.6 years (12).

The other symptoms reported by the garment workers were had muscular weakness in different sites 10% (12), complaints of aches 68.1%, numbness 43%, stiffness 25.9% and weakness of the affected part 21.5% (21).

Cardiovascular problems: Cardiovascular and hypertension were documented in five studies (3, 4, 7, 15, 21). A longitudinal study of morbidity and nutritional status of workers employed in a garment factory conducted in Bangalore reported that both cardiovascular illness and hypertension increased by 0.53% in two years (3). The prevalence of hypertension documented in studies were 1.9% (7), 10.5% (21) and 16.07% (15). A study done in Bangladesh to find out the health status of the female garment workers reported that 41.5% of the female garment workers had hypertension and 39% of them were suffering from heart diseases caused due to heavy workload (4).

Gynecological problems: Gynaecological problem was among the common problems reported in female workers. A study conducted in Bangalore to assess the change in the morbidity profile among garment factory

workers revealed that gynecological problems showed an increase of 5.35% in two years (3). The problems were menstrual irregularities, polycystic ovaries, vaginal discharge, infertility, cancer cervix, and uterine prolapsed and urinary tract infections. Another study conducted in Kolkata among small scale industry workers revealed that 12.2% of the female workers faced menstrual related problems (21).

Respiratory problems: Eight reviews documented the respiratory problems (3-5, 7, 11, 12, 21, 22). A study done in a textile unit, Coimbatore, reported that the high dust level present in the factory caused by cotton has given rise to asthma and respiratory problems. The females affected by asthma were 30%, respiratory problems 18%, and congestion in the chest and breathlessness 10% (7). Another study conducted in Sri Lanka showed that a very low proportion i.e. 3.4% of the workers had respiratory symptoms (11). Health status among the female workers conducted in Bangladesh reported that 46% of the respondent had respiratory problems (4). A study conducted in Bangalore revealed that both respiratory illnesses (rhinitis, respiratory infections, bronchitis, and bronchial asthma) and thyroid related illnesses increased by 2.14% (3). A study conducted in Dhaka city to find out the occurrence of respiratory problems revealed that 4.33 % of the workers had running nose and 7.67% had cough (22).

Gastrointestinal problem: Gastrointestinal problem was reviewed in three studies (4, 7, and 21). The common ailments were hyperacidity (23.3%) and heart burns (26.79%). A study conducted in Bangladesh among readymade garment industry workers revealed that 55% of workers had stomach ache, 71.5% had gastric pain, and 75.5% had abdominal pain (4). Two studies reported that 16.67% (7) and 17.4% (21) of the factory workers were suffering from angular stomatitis.

Neurological problem: Neurological related problem was documented in six studies (3-5, 7, 11, 21). The most frequently reported illness

was headache reported by 95.56% (5); the studies revealed varying prevalence of headache 8% (11), 8.7% (21), 40% (4) and 70% (5). A study conducted in Bangalore revealed that the other neurological ailments faced by the workers such as hand tremors, peripheral neuritis and headaches had an incidence of around 12% in two years among the workers (3).

Ophthalmic problem: Four studies were reviewed (3-5, 7). A Study done on the health problems of women working in a textile unit Coimbatore revealed that working for long hours cause eye strain, and 45% of the workers reported eye problem (7). The prevalence of eye strain ranged from 22% (5) to 56.5% (4). A study done in Bangalore among factory workers reported that ophthalmologic problems (refractive errors, eye irritation) increased from about 14% to 21% within two years (3).

Nutrition problem: Total of seven articles were reviewed for nutrition-related problems (3, 5, 14, 21-24). In general, it was evident from the studies that the common problem was malnutrition and anemia. The prevalence of malnutrition ranged from 68.8% (5) to 20.4% (21). A study conducted among female garment workers in Bangladesh on Morbidity patterns, nutritional status, and healthcare-seeking behavior revealed that 43.3% of the workers were underweight, and 16.3% were overweight among the workers with anemia (22). The prevalence of anemia ranged from 31% (22) to 57% (4) and in another study done in the same country, it was revealed that 50% of women had moderate anemia (24). It is also important to note that the studies showed that prevalence of anemia was more common among women than men (24). The study conducted in Bangalore also revealed that on repeated nutritional assessment, over a period of 2 years, the workers also showed an increased BMI (3).

Mental health problem: Four studies were reviewed for the mental health problems (7, 18, 19, and 21). Only one study reported mental health disorders, where it was found

that the common disorders were somatic illness (11%), anxiety (7.6%), social dysfunction (7.1%) and symptoms of depression (6.8%) (18). A study done in a textile unit in Coimbatore revealed that 35% of the workers had job-related stress, 82% experienced mental tension and 75% had work pressure (7). A study conducted in Bangalore revealed that 5.9% of the workers were under severe psychological distress (19) and another study conducted in Kolkata reported that 20.1% workers were suffering from insomnia (21).

Only two studies reported the quality of life among garment factory workers who were suffering from musculoskeletal problem and one study reported that the highest (best) average score 70.2 (\pm 14.9) was reported for the physical domain, whereas the lowest score 42.5 (\pm 12.0) was reported for the psychological domain, and overall 63.8% were satisfied with their health (11). One more study revealed that the workers experienced a change in their life after joining the job. About 35% of the workers had negative feelings with respect to better quality of life, economic independence, confidence, and increased self-esteem (18).

Discussion

Among 17 studies reviewed, majority of the studies have documented musculoskeletal problem as one of the most common health problem among the garment industries. The study also revealed that the most common site of musculoskeletal problem was back and shoulder. A study among sewing machine operators revealed that a majority of men (45.4%) were suffering from shoulder pain while 60% women were suffering from back pain, and 29% of men and 38.1% of women faced both back and neck pain. A small percentage complained of pain in their hands (2). The studies also revealed gender difference. A study conducted in Danish textile revealed differences in the health problems between genders (13).

An ergonomic study conducted among sewing machine operators revealed that 52.8% of men experienced pain once a week or once a month, whereas 23.6% of women workers faced pain once in less than a week. A lower percentage of workers faced constant pain for 1 or 2 days resulting in leave for at least two days (2).

A study conducted in two textile factories in Turkey revealed that the one-year prevalence of self-reported pain including lower back, upper back and neck among 35 to 45 year-old Swedish residents was 69.5% for women and 63.2% for men. It was stated that, in physically strenuous tasks, women had a higher risk of this problem than the men (10).

It was evident from the review that both personal and work-related factors had a significant association with musculoskeletal disorders. A study conducted in Dhaka city assessed the prevalence of musculoskeletal disorders among the Bangladeshi garment workers. A statistically significant difference was found among both genders (74.6% in men and 51.65% among women, $P = 0.005$). The prevalence of musculoskeletal disorders was 57.6% in the age group of 15-30 years and 83.3% in the age group of 30-35 years ($P = 0.036$), and 74.7% of worker were married and 25.3% were not married ($P = 0.017$). The mean working hour was 12.51 (\pm 1.50) hours and with regard to posture, for the majority of the respondents, machine height was normal while for the majority of the respondents, seat was not adjustable (12).

The other major ergonomic risk factors identified were the exertion of force with hands (83.8%) while using handle tools or handle parts, continuous sitting (76.8%), continuous standing (24.3%), and bending and twisting at the waist (79.4%), use of electronic devices (0.5%), and exposure to vibration (68.6%). Workstation and task analysis showed that static muscle loading, the absence of armrest, the absence of footrest and abnormal posture and movements adopted during work were the major contributing factors for musculoskeletal symptoms (19).

The strength of the review includes well established guidance for narrative review and that the duplication of the data were avoided by using specific criteria for selection.

Adopting a mixed design with a majority of studies having cross-sectional was a major limitation to this study. The studies were limited by the different measures used in the analysis. Impact of the study was not included. Majority of the studies included were from Bangladesh.

Conclusion

It is evident from the literature review that the factory workers are exposed to various health problems. The musculoskeletal problem is the most common problem among the garment factory workers as documented in the studies. The prevalence of musculoskeletal disorder varied from 15.5% to 78.89% and the most reported prevalence of back pain was between 22.2% and 68.5%, among the factory workers involved in sewing, cutting and delivering. The majority of the population in the garment factory are women. The causes of the musculoskeletal problem were related to continuous sitting, bending and twisting at the waist, abnormal posture and movements during work and continuous standing. From the review, it is clear that the sewing machine operators also work for long hours. Anxiety, depression and somatic illness are also associated with the musculoskeletal problem. Nutrition also plays an important role in the workers. The improper diet leads to malnutrition which leads to health related problems.

Acknowledgements

The author thanks all the co-authors for their participation in the review. Our sincere thanks to library and computer staffs for their timely help. We are also grateful to all the staff who helped directly and indirectly.

Conflict of interests: None declared.

Reference

1. Keane J, Willem te Velde D. The role of clothing and textile industries in growth and development strategies. Investment and Growth Programme. London, United Kingdom: Overseas Development Institute; 2008 May 7; 71p. Final Draft.
2. Roy S. Garments industry in India: some reflections on size distribution of firms. [Internet]. 2009 [cited 2009 Jun 30]. Available from: <http://www.ihindia.org/Formal-and-Informal-Employment/Paper-5-Garment-Industry-in-India-Some-Reflections-on-Size-Distribution-of-Firms.pdf>
3. Chandra N, Dubey N. Role of rest period : An ergonomic study on sewing machine operators. Research Journal of Family, Community and Consumer Sciences 2014; 2(7):12-4.
4. Joseph B, Minj Ch, Fernandes G, Marandi M. A longitudinal study of the morbidity and nutritional status of workers employed in a garment factory. Pak J Med Sci 2011; 27(1):41-3.
5. Ahmed Sh, Raihan MZ. Health status of the female workers in the garment sector of Bangladesh. Journal of The Faculty Economics and Administrative Sciences 2014; 4(1):43-58.
6. Kane G. Facts on cambodia's garment industry. Amsterdam, Netherlands: Clean Clothes Campaign; 2014. 13 p. Available from: <https://cleanclothes.org/resources/publications/factsheets/cambodia-factsheet-february-2015.pdf>
7. Thomas S. A study on the health problems of women working in a textile unit in coimbatore. International Journal of Science and Technology 2011; 1(5):200-3.
8. Yue P, Liu F, Li L. Neck/shoulder pain and low back pain among school teachers in China, prevalence and risk factors. BMC Public Health 2012;12:789.
9. Schneider E, Irastoeza X, European Agency for Safety and Health at Work (EU-OSHA). OSH in figures: Work-related musculoskeletal disorders in the EU — Facts and figures. Luxembourg: Publications Office of the European Union; 2010. 184 p.
10. Berberoğlu U, Tokuç B. Work-related musculoskeletal disorders at two textile factories in edirne, Turkey. Balkan Med J 2013; 30(1):23-7.
11. De Silva P, Lombardo S, Lipscomb H, Grad J, Østbye T. Health status and quality of life of female garment workers in Sri Lanka. Galle Medical Journal 2013; 8; 18(1):1-7.
12. Jahan N, Das M, Mondal R, Paul S, Saha T, Akhtar R, et al. Prevalence of musculoskeletal disorders among the Bangladeshi garments

- workers. Sikkim Manipal University Medical Journal 2015; 2(1):102–13.
13. Kaergaard A, Andersen JH. Musculoskeletal disorders of the neck and shoulders in female sewing machine operators: prevalence, incidence, and prognosis. *Occup Environ Med* 2000; 57(8):528–34.
 14. Khan MR, Ahmed F. Physical status, nutrient intake and dietary pattern of adolescent female factory workers in urban Bangladesh. *Asia Pac J Clin Nutr* 2005; 14(1):19-26.
 15. Saha TK, Dasgupta A, Butt A, Chattopadhyay O. Health status of workers engaged in the small-scale garment industry: how healthy are they? *Indian J Community Med* 2010; 35(1):179-82.
 16. Santos AC, Bredemeier M, Rosa KF, Amantéa VA, Xavier RM. Impact on the quality of life of an educational program for the prevention of work-related musculoskeletal disorders: a randomized controlled trial. *BMC Public Health* 2011; 11(1):60.
 17. Sealetsa OJ, Thatcher A. Ergonomics issues among sewing machine operators in the textile manufacturing industry in Botswana. *Work* 2011; 38(3):279-89.
 18. Shanbhag D, Joseph B. Mental health status of female workers in private apparel manufacturing industry in Bangalore city, Karnataka, India. *Int J Collab Res Intern Med Public Health* 2012; 4(12):1893-900.
 19. Senthil Kumar RK, Joseph B, Sekaran P, Sulekha, Zachariah K, Hariharan R. A study of ergonomic factors contributing to the occurrence of occupation-related musculoskeletal problems in garment workers. *Asian Journal of Ergonomics* 2009; 9:99-107.
 20. Öztürk N, Esin MN. Investigation of musculoskeletal symptoms and ergonomic risk factors among female sewing machine operators in Turkey. *Int J Ind Ergon* 2011; 41(6):585-91.
 21. Bandyopadhyay L, Baur B, Basu G, Haldar A. Musculoskeletal and other health problems in workers of small scale garment industry – an experience from an urban Slum , Kolkata. *IOSR Journal of Dental and Medical Sciences* 2012; 2(6):23-8.
 22. Hasnain G, Akter M, Sharafat SI, Mahmuda A. Morbidity patterns, nutritional status, and healthcare-seeking behavior of female garment workers in Bangladesh. *Electron Physician* 2014; 6(2):801-7.
 23. Islam MZ, Shamim AA, Akhtaruzzaman M, Kärkkäinen M, Lamberg-Allardt C. Effect of vitamin D, calcium and multiple micronutrients supplementation on lipid profile in premenopausal Bangladeshi garment factory workers with hypovitaminosis D. *J Health Popul Nutr* 2014; 32(4):687-95.
 24. Khatun T, Alamin A, Saleh F, Hossain M, Hoque A, Ali L. Anemia among garment factory workers in Bangladesh. *Middle-East Journal of Scientific Research* 2013; 16(4):502-7.