

FACTORS ASSOCIATED WITH LOW BACK PAIN AMONG GARMENTS WORKERS IN SELECTIVE GARMENTS OF DHAKA

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DOI : <https://www.doi.org/10.56726/IRJMETS52133>

ABSTRACT

Background & Objective: As Bangladesh's biggest export earnings, Ready-Made Garments now have 4.22 million workers who are at risk of growing LBP due to their working pattern. This study aims to find out factors those might be associated with and contributing to LBP among RMG workers.

Methodology: Observational cross-sectional quantitative survey design was followed to find out the association between LBP and other factors (age, gender, BMI, duration of work, department of work and position during work) among 215 RMG workers from 2 garments factories in convenient way.

Results & Discussion: This study found that 38.1% of the garments workers suffer from lower back pain (n=82). A significant Association has been found between lower back pain among the garments workers and long duration sitting work (Chi-square = 13.405, p = 0.037), working for longer period of time (Chi-square = 58.929, p = 0.021) older age (Chi-square = 63.609, p = 0.000) and female gender (Chi-square = 6.120, p = 0.013) and there is no association found between lower back pain and BMI of a worker (Chi-square = 1.417, p = 0.516).

Conclusion: LBP is associated with increased age, female gender, long duration of sitting work and longer months of work and not associated with BMI of the workers.

Recommendations: The study can be re-conducted in a broader aspect with a large number of participants as a standardized RCT, the results would be more significant.

Keywords: Low Back Pain, LBP, Factors, RMG, Garments Worker.

I. INTRODUCTION

1.1 Background

Ready-made Garments has been the biggest contribution to Bangladesh's export earnings, which is now 83% (BGMEA, 2022). More than 4000 factories are producing readymade apparels involving 4.22 million (Haque & Bari 2021). The worker role can be classified into cutting, sewing, finishing and quality control (Shazzad et al. 2018). The workers usual posture is sitting and standing (static) with walking, lifting and forward bending works (dynamic) and sometimes in combination. The working hour is approximately 11 hours (Hossain et al. 2018). This huge number of working group have a work pattern where they maintain a single sedentary posture during their day-long work, which in most cases, a wrong posture. The environments and working equipment of the garments are also not ergonomically sound and work-friendly most of the time. Working for a long duration in a wrong posture in an unfriendly environment increases the chances of developing work-related musculo-skeletal disorder (Jahan et al. 2015). Constant sitting affects mostly the neck and lower back region (Okunribido et al. 2006). Due to the nature of job the back pain is a common phenomenon to the majority of female workers (Jana, P. 2008). Low Back Pain is considered to be one of the two most common work related musculo-skeletal disorders a garment workers of Bangladesh may face; the other one in neck pain. Twelve months prevalence of WMSDs was found high in female garment workers, that is 24.7% (n=46) (Hossain et al. 2018). The prevalence of low back pain as found 23.4% in garments workers who work in sitting

and standing positions in selected garments factories of Savar city, Dhaka, Bangladesh (Jahan, N. 2015). Thirty six percent cutting and finishing operators suffered from LBP according to the findings of Alam, S.M.I. 2013. The highest prevalence of musculoskeletal pain among garments workers was found in the 40 to 49 ages group (Jahan et al., 2015). There should be some associated factors causing the increasing prevalence of low back pain in garment workers that requires further study.

II. LITERATURE REVIEW

The apparel industry of Bangladesh started its journey in the 1980s in the hand of late Nurool Quader Khan. He had a vision of how to transform the country. Bangladesh Garment Manufacturers and Exporters Association or BGMEA was founded in 1977 and in 1978, he sent 130 trainees to South Korea where they learned how to produce readymade garments. With those trainees, he set up the first factory "Desh Garments" to produce garments for export. At the same time, the late Akhter Mohammad Musa of Bond Garments, the late Mohammad Reazuddin of Reaz Garments, Md Humayun of Paris Garments, Engineer Mohammad Fazlul Azim of Azim Group, Major (Retd) Abdul Mannan of Sunman Group, M Shamsur Rahman of Stylecraft Limited, the first President of BGMEA, AM Subid Ali of Aristocrat Limited also came forward and established some of the first garment factories in Bangladesh. Many prudent and hardworking entrepreneurs had followed their footsteps and started RMG factories in the country. Despite many difficulties faced by the sector over the past years, it has carved a place in world market and kept continuing to show strong exhibition. Now, the apparel industry is Bangladesh's biggest export earner with value of over \$27.9 billion of exports in 2019-20 financial year. In 1983-84 financial year, total export of Bangladesh was 811.00 USD, in which export of RMG was 31.57 USD, which was 3.89% of the total. In 2021-22, total export of Bangladesh has increased to 52082.66 USD, in which export of RMG is 42613.15 USD, which is 81.82% of the total. The country is exporting its apparels to 27 countries of European Union, to USA, to UK, to CANADA and 15 non-traditional countries of the world. Our main export items are Trousers, T-Shirts & Knitted shirts, Sweaters, Shirts & Blouses and Underwear. The tagline to be proud is **"MADE IN BANGLADESH WITH PRIDE" (BGMEA, 2022).**

In 2021, Haque & Bari conducted a three-stage stratified (location, factory type and grade of workers) randomize survey on 1,119 workers from 160 factories. In addition, 160 managers were surveyed at the factory level.

"Some of major findings are highlighted as follows:

1. The estimated size of workers in RMG sector is 4.22 million. Currently, the male to female ratio of workers is 41:59.
2. Nearly 15% of factories have foreign staffs and they are mostly engaged in management and merchandising position.
3. The average age of workers is 26 years. Nearly 74% are married. And, majority of workers having highest educational attainment either up to junior schooling or primary schooling.
4. Nearly 89% of the workers have migrated to the factory locations from other districts and the rest are local.
5. Nearly 61% of workers use machine during work and almost all had received training before handling these machines.
6. In general, RMG workers work six days a week for 8 hours. In addition, 73% were involved in overtime duties for another 8.5 hours per week. On average, they take leave for 5 days in a year.
7. We have found that on average male workers expect to work for 11 years and the number is 8 years for female workers.
8. On average, there are four members in their household and among them two are earning members.
9. The average household income is Tk. 23,699 per month whereas, the average income per RMG worker per month is found to be Tk. 11,402. In 65% cases, their spouse is also employed in garments sector. Besides, 43% households have additional income sources.
10. Average household expenditure per month is Tk. 16,596. Of which, 36% are food expenses, 23% are expenses for housing and rest are non-food expenses.
10. Nearly 62% workers send remittance back to their home in rural settings, and cumulatively the estimated amount transferred is 1010 taka per month. About 82% workers use mobile banking services to transfer the remittance.

11. During COVID-19 on average factories were closed for 33 days. And, nearly 3 out of 1000 workers were tested positive during the time of our survey."

Looking into prevalence of low back pain in garments worker, many studies were found studies addressing musculo-skeletal disorders among garments and textile workers in different countries. The findings are tabulated below.

Prevalence of Low Back Pain and other MSDs among textile and garments workers in different countries

Country	Prevalence of LBP and other MSDs in textile and garments workers	Author
Bangladesh	The prevalence of musculo-skeletal pain within 7 days of the interview was 77.1%, which is a much higher figure than in the general population. The most affected sites were: shoulder (17.9%), lower back (15.2%), neck (13.8%) and knee (10.8%). Multiple regional pain was the commonest finding in 173 of 350 workers. In this pilot study rheumatoid arthritis was diagnosed in 0.9%, undifferentiated arthritis in 1.1%, nonspecific low back pain in 4.6%, soft tissue rheumatism in 3.7%, osteoarthritis in 0.9% and lumbar spondylosis in 1.1%; spondyloarthropathy was seen more often, in 1.42%, possibly explained by the small numbers.	Shazzad et al. 2018
Bangladesh	Among 151 respondents, 70.86% suffered from low back pain, 71.42% having LBP are overweight, 78% of the interviewed smoking workers have LBP, and all the interviewed workers (151) used nonadjustable chair.	Iqbal et al. 2021
Bangladesh (Savar - Talisman limited, Dhaka Export Processing Zone, Bangladesh)	Among 102 cutting section workers, 96.07% reported regarding musculoskeletal symptoms troubled them in one or more body regions during the past 12 months. Among the symptom, wrist joint was the area with the highest prevalence of musculoskeletal symptom (95.2%), followed by shoulder (37.5%), lower back (67.3%), ankle/feet (91.6%), knee (84.6%), thigh (55.5%), upper back (60.6%) and elbow (38.4%). Most of the (96.07%) of participants had an associated risk factor.	Kabir et al. 2017
Bangladesh	60.7% of the total respondents had musculoskeletal disorders. All of the respondents who had musculoskeletal disorders had pain in different sites whereas neck-36.7%, Lower back-22.2%, shoulder joint-18.9% and rest of them had pain in elbow, upper back and in hip joint. Regarding pain pattern, majority (81%) of the respondents had temporary pain that's means sometimes in a day they were suffered by the pain whereas 13.0% respondents had continuous pain. 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($\pm$ 4.6) years. Among the total respondents 10.0% had muscular weakness in different sites. Musculoskeletal disorders were associated with gender ($p=0.005$), age group ($p=0.036$), and marital status ($p=0.017$) respectively whereas education and weight of the respondents had almost significant difference.	Jahan et al. 2015
Bangladesh (Dhaka)	A total of 235 (57%) of the workers reported musculoskeletal pain in at least one body part during the last month. Among the nine reported musculo-skeletal disorders, the prevalence of lower back pain was highest (41%) followed by pain in the knees (33%). Multivariable	Nabi et al. 2012

	analysis showed lower prevalence of any MSD among workers in OSH compliant factories, and workers with regular working hours (8 hrs/day). The risk of developing any MSD was significantly higher for age group ≥ 31 years than the age group 25–30 years.	
Multiple countries	This narrative literature review article reviewed 17 studies and found that the musculoskeletal problems/ disorders were the highest of all health problems among the garment workers with a prevalence of 78.89%. 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 most common region affected were back, followed by shoulder. Other major health problems were cardiovascular, respiratory, gastrointestinal, gynecological, ophthalmological and nutritional problems and mental illness. 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 evident 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.	Lillypet et al. 2017
India (Kolkata)	Musculoskeletal problems (69.64%) were the commonest health problem. The body areas commonly affected was neck (64.10%), low back (41.03%), hand, wrist, finger, and shoulder. Musculoskeletal morbidity was more common among older (>45 years) workers than in younger (<45 years) ones (77.27% vs. 67.78%), in females as compared to males (76.93% vs. 67.44%), in illiterate workers as compared to those who were literate (75.08% vs. 68.60%), and in substance abusers as compared to those who had no history of substance abuse (74.32% vs. 60.53%).	Saha et al. 2010
India (Bengaluru)	Musculoskeletal problems were the most common problems present among 110 (51.4%) study participants. 61.22% of the females worked in standing posture.	Vidusha et al. 2019
India (North India)	Data was collected from 1329 workers. The subjects were divided in to 2 groups: workers with LBP (cases) and workers without LBP (control) based on presence or absence LBP at the time of examination. Multivariate logistic regression analysis was used to determine the risk factors. The point prevalence of LBP was found to be 34.91%. The 12 month prevalence and lifetime prevalence was 41.08% and 39.65% respectively. Workers with history of LBP in the past 12 months (OR= 16.41, 95% CI: 11.90-22.64, $p=0.001$), married workers (OR= 2.85, 95% CI: 1.83-4.44, $p=0.001$), those who perceived their work to be excessive (OR=1.42, 95% CI: 1.05-1.92, $p=0.022$) and those who did unsupervised yoga and gym workout were (OR= 1.37, 95% CI: 1.08-1.75, $p=0.009$) found to be risk factors for LBP.	Bindra et al. 2017
Nepal	One month period prevalence of LBP was 35% ($n = 324$), being higher in females than males (45% versus 28%; $P < 0.001$).	Paudyal et al. 2013
Sri Lanka	Musculoskeletal problems were reported by 15.5%, the most	De Silva et al.

	prevalent complaint being lower back problems.	2013
Sri Lanka (Kogalla)	164 (15.5%) of workers reported musculoskeletal symptoms occurring more than 3 times or lasting a week or more during the previous 12-month period. Back (57.3%) and knee (31.7%) were the most common sites of pain.	Sarah et al. 2012
Ethiopia (Oromia region)	The magnitude of self-reported LBP was 64.9% during the last 12 months. Workers, those had a longer working experience were 2 up to 10 times the chance to have developed work-related LBP than those with shorter work experience. The magnitude of work-related LBP among garment industry is high.	Tafese & Kebede 2018
Ethiopia	This systematic review and meta-analysis found that 54.2% of the included study participants experienced low back pain in the previous year, while 27.1% experienced upper back pain. The highest prevalence was reported among pedestrian back-loading women.	Mengistu et al. 2021
Low-Middle Income Countries (Bangladesh, India, Turkey & Nigeria)	This scoping review presents 98% of sewing machine operators studied in Nigeria and 79% of garment workers in Kolkata, India reported MSPs. Six studies reported the prevalence of lower back pain ranging from 11.1% to 64.7%. Tiwari and colleagues reported that 21% of subjects in their study in India had sciatica. Studies in Bangladesh and Nigeria found that participants reported discomfort in their shoulders as well with prevalence rate ranging from 20% to 35%. Problems with neck (prevalence rate between 34% and 65%), elbow, upper limbs, hands, and upper back (prevalence rate between 17% and 75%) were also reported in studies in Bangladesh, India, Turkey, and Nigeria.	Hajaraih et al. 2019

Hajaraih et al. 2019 also investigated into respiratory problems, nutrition and digestive issues, vision and hearing problems, female reproductive health issues, dermatological and other health outcomes in their scoping review.

Respiratory Problems: Eight of the 19 articles reported conditions related to respiratory problems, such as the common cold, nasal obstruction, rhinitis, eye irritation, redness, congestion, fever, and headache. The same study found that 18% of garment workers in Kolkata reported having acute problems such as fever, persistent cough, colds, and diarrhea. Eighty two percent of garment workers had experienced persistent fever and 79% had a cold according to a study in Bangladesh. Respiratory problems troubled 21% of subjects in Jaipur, India, and 46% of participants in two districts in Dhaka, Bangladesh. A study in Cambodia found that 45.7% of participants had a respiratory tract infection. Textile workers exposed to cotton dust reported more respiratory symptoms than the unexposed workers (36.9% vs. 21.2%), revealed a study from Benin. Textile workers in a study from Sao Paulo, Brazil linked exposure to cotton dust to nasal obstruction (64%), nasal itching (57.2%), rhinorrhea (46.7%), and sneezing (66.1%).

Nutrition and Digestive: Six articles reported health problems such as food poisoning, heartburn, malnutrition, anorexia, underweight, and anemia among garment/textile workers. Among these, a study of female workers in a garment factory in Phnom Penh, Cambodia found that 31% were underweight and 96% had low iron stores, of which 47% had marginal iron stores, 22% were iron deficient, and 27% were anemic. A second study in Kolkata found that 38% of subjects had malnutrition problems, 27% reported acidity and heartburn, and 16% had been diagnosed with hypertension. A study of female garment workers in Bangladesh found anemia among 31%, anorexia among 22%, and low BMI among 43%. A study by Bandyopadhyay et al. reported 23% of subjects were hyperactive and had heartburn, 12% were underweight and had BMI < 18.5, while 11% had hypertension.

Vision and Hearing: Six studies reported vision and hearing problems among subjects. A study by Ashraf et al. of workers in a weaving unit in Pakistan reported that 22.5% had some degree of hearing loss. Three studies found vision problems among subjects with prevalence ranging from 10% to 12%. A study on textile dyeing workers in Iran reported 29% subjects experienced eye irritation, 29% had eye itching, and 18% eye redness. A study from Bangladesh found that 56.5% of subjects had eye stains.

Dermatological: Subjects reporting dermatological problems were found in studies from India and Bangladesh. Skin disease at a 25% rate and angular stomatitis at a 15% rate were reported by the garments workers of Kolkata. The other study from Kolkata found 15% of garment industry workers lived in households in which at least one member, perhaps the worker, had angular stomatitis or cheilosis, and another 31% lived in a household affected by pallor (paleness). Skin problems among 20% of the subjects were reported by Mehta. Ahmed and Raihan reported 59% of the subjects in her study were experiencing pruritus while 57% also reported dermatitis.

Female Reproductive Health Issues: Three studies in Bangladesh and India observed problems related to reproduction for women. A considerable proportion, 35.5%, of female workers in Ahmed and Raihan's study in Dhaka, Bangladesh, had an abortion to retain their jobs. Hasnain et al. reported that 10% of female workers subjects also in Dhaka had dysmenorrhea. Twelve percent of subjects in Kolkata, India reported menstrual problems in the study of Bandyopadhyay et al.

Other Health Outcomes: Nine studies reported that at least 10% of subject had health outcomes that do not fall under any of the categories above. For instance, Metgud et al. reported muscular pain and fatigue indicated by a decrease in hand grip strength and increase in heart rate among the sample of women workers in the spinning section of a wool-textile factory in India. Saha et al. stated that 21% of the workers they studied were experiencing insomnia, and 14% had generalized weakness. Bandyopadhyay et al.'s study found that 21% reported lack of sleep, while 19% reported generalized weakness. The study from Turkey reported laceration, puncture, amputation, or avulsion among 56% of the subjects, contusion, abrasion, hematoma or crush among 19%, and fracture or dislocation among 16%. In the study of Bangladesh, jaundice were reported among 52% of subjects and 58% of subjects in the same study had helminthiasis.

Lillypet et al. (2017) has reviewed 17 articles and found similar findings. The findings were classified into followings –

Musculoskeletal problems: 14 among 17 reported of MSKs. A study conducted in Sri Lanka reported a prevalence of 15.5% for musculoskeletal problems in garment factory workers during the last twelve months, and 78.8% of workers suffered from skeletal problems reported in a study conducted in Gazhipur district. 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. Back pain was the most commonly reported disorder among those with musculoskeletal disorder, it ranged from 22.2% to 68.5%. Among sewing machine operators, it was found that 60% of the women were suffering from back pain. 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% to 60.7%. Shoulder pain alone ranged from a low prevalence of 24.4% to the highest prevalence of 50.2%. 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. The documented prevalence of pain in the upper back ranged from 35.6% to 52%. 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. 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. The other symptoms reported by the garment workers were had muscular weakness in different sites 10%, complaints of aches 68.1%, numbness 43%, stiffness 25.9% and weakness of the affected part 21.5%.

Cardiovascular problems: Cardiovascular and hypertension were documented in five studies. 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. The prevalence of

hypertension documented in studies were 1.9%, 10.5% and 16.07%. 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.

Gynecological problems: Gynecological 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. 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.

Respiratory problems: Eight reviews documented the respiratory problems. 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%. Another study conducted in Sri Lanka showed that a very low proportion i.e. 3.4% of the workers had respiratory symptoms. Health status among the female workers conducted in Bangladesh reported that 46% of the respondent had respiratory problems. 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%. 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.

Gastrointestinal problem: Gastrointestinal problem was reviewed in three studies. 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. Two studies reported that 16.67% and 17.4% of the factory workers were suffering from angular stomatitis.

Neurological problem: Neurological related problem was documented in six studies. The most frequently reported illness was headache reported by 95.56%; the studies revealed varying prevalence of headache 8%, 8.7%, 40% and 70%. 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.

Ophthalmic problem: Four studies were reviewed. 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. The prevalence of eye strain ranged from 22% to 56.5%. 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.

Nutrition problem: Total of seven articles were reviewed for nutrition-related problems. In general, it was evident from the studies that the common problem was malnutrition and anemia. The prevalence of malnutrition ranged from 68.8% to 20.4%. A study conducted among female garment workers in Bangladesh on Morbidity patterns, nutritional status, and health-care-seeking behavior revealed that 43.3% of the workers were underweight, and 16.3% were overweight among the workers with anemia. The prevalence of anemia ranged from 31% to 57% and in another study done in the same country, it was revealed that 50% of women had moderate anemia. It is also important to note that the studies showed that prevalence of anemia was more common among women than men. 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.

Mental health problem: Four studies were reviewed for the mental health problems. 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%). 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. A study conducted in Bangalore revealed that 5.9% of the workers were under severe psychological distress and another study conducted in Kolkata reported that 20.1% workers were suffering

from insomnia. 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 (± 14.9) was reported for the physical domain, whereas the lowest score 42.5 (± 12.0) was reported for the psychological domain, and overall 63.8% were satisfied with their health. 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.

Mengistu et al. (2021) has explained in their study that the pooled prevalence of occupational-related low back pain in the previous year was (54.2% [95% CI: 48.2, 60.0]). The pooled prevalence of low back pain in the previous year was (52.8% [95% CI: 51.3, 54.3]) based on the subgroup analysis by occupation. The lowest prevalence (25.5% [95% CI: 21.5, 29.9]) was reported among construction workers, while the highest prevalence (67.3% [95% CI: 62.7, 71.6]) was reported among all women who are commonly back-loading. In general, the study found that at least 1 out of 4 study participants experienced work-related upper back pain, while 1 out of 2 participants experienced low back pain regardless of occupation categories. Performing physical exercise can reduce low back pain and the exercise in combination with education is likely to reduce the risk of low back pain.

III. METHODOLOGY

3.1 Study Design

Observational cross-sectional quantitative design is to be followed in the study.

3.2 Study Population

Garments workers aged from 18 to 52 years old working in Dhaka, Bangladesh.

3.3 Study Area/ Site

Data shall be collected from two garments situated in Pallabi, Mirpur, Dhaka, Bangladesh from the following options:

1. United Computerized Labels Limited, Pallabi, Mirpur – 12, Dhaka.
2. Brother Trader Wear & Alpona Fashion Print, Eastern Housing, Pallabi, Mirpur, Dhaka.

3.4 Study Period

April 2022 to January 2023.

3.5 Sample Size

Data was collected from 253 participants, but due to incompleteness, 38 filled-up questionnaires were rejected. Hence the sample size is 215.

Number of study subjects: 215

Age: 18 to 52 years

Sampling Technique: Convenient sampling

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusion Criteria

1. All the garment workers who were working at least 6 months.
2. Age: 18-59 years old.
3. Those who were willing to participate in the study.

3.6.2 Exclusion Criteria

1. Pregnant women or the mother who has a less than six months old baby.
2. Previous surgical history (Surgery in pelvic region, spinal surgery, LUCS).
3. History of major back injury due to road traffic accident or any accident.
4. History of having any joint or bone disorder or having Prolapse Lumbar Intervertebral Disc (PLID).

3.7 Sampling Technique

215 workers from two selected garment factories those meet the criteria's of this study were selected conveniently in this study.

3.8 Data Collection Tools/ Materials and Procedures

The researcher has developed a questionnaire with and translated the questionnaire to Bangla. The questionnaire then cross-checked for easy understanding and then approved by the ethical committee of BOU before going for data collection.

3.9 Data Management and Analysis

Data were inputted into Statistical Package for the Social Sciences (SPSS) (Version 16) spreadsheet for analysis and descriptive analysis was considered. Data were also inputted into a Microsoft Office Excel 2010 spreadsheet both for analysis and presentation.

3.10 Quality Control and Quality Assurance

The investigator was eager to make this study an incredible example and in order to do so all possible measures were taken to improve the quality of the study. The investigator followed the ideal steps of scientific research properly. Both the investigator and second investigator used the Bangla questionnaire in order to make it easier for the workers and make them easier verbally in order to get the data correct, where necessary or if the participant faced problem understanding them. The quantitative data were analyzed by SPSS and Microsoft Office Excel in order to avoid human error. Filled questionnaire, after coding, were saved in researcher's locker for preservation of information and the data were preserved in a password protected computer with coding after the input without any personal information of the participants.

3.11 Ethical Consideration

The investigator carried out the study after approval from the dean and coordinator/ the ethical committee of BOU. Permission was also taken from the managing directors of two selective garments for collecting data. The participants were properly informed about the purpose of the study and informed consent was signed prior getting each participant response. The investigator was conscious about the privacy of the participants and confidentiality of them; they were allowed to withdraw their participation from the study anytime. The investigator was entirely aware about the transparency, steps to follow in research and staying unbiased. Garments approval.

IV. RESULTS AND DISCUSSION

4.1. Demographic, social and work related findings

4.1.1. Age of the Participants

The age ranged from 18 years to 52 years. The most frequent age range is 23 to 27 years (n=70, 32.6%). That implies that most of the workers are aged less than 30 years and less works in garments after 40 years of age. Mean age of the participants was 28.94 years.

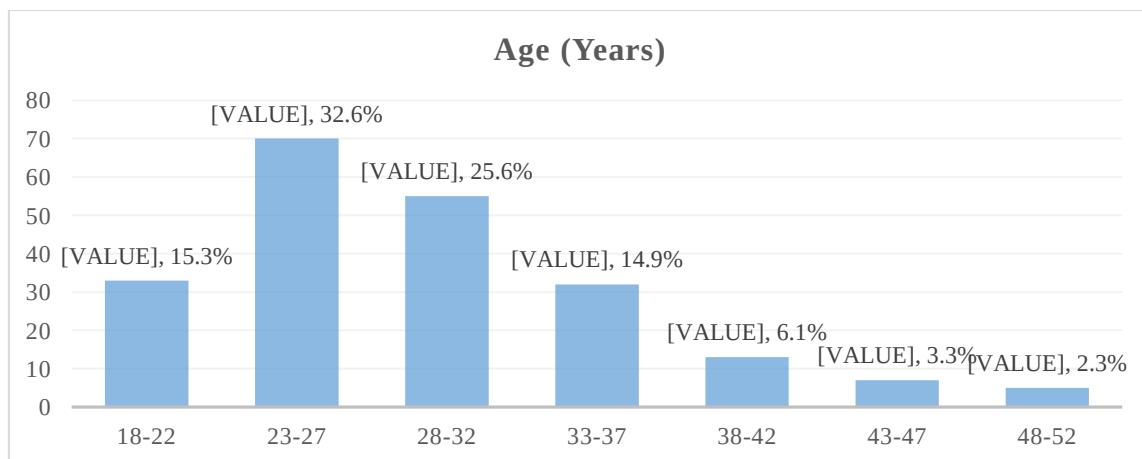


Figure 1: Age of the participants

4.1.2. Gender of the Participants

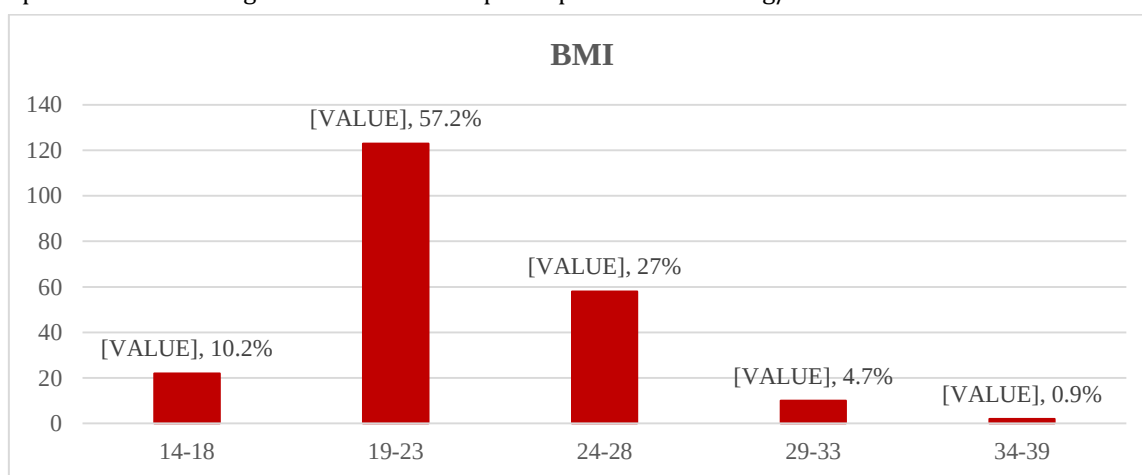
Among 215 Participants, 107 were male (49.8%) and 108 were female (50.2%). So, they ratio between male and female is 1:1 (Table 4.1).

Table 4.1: Gender of the Participants

Gender	Number of Participants	Percentile (%)
Male	107	49.8%
Female	108	50.2%
Total	215	100%

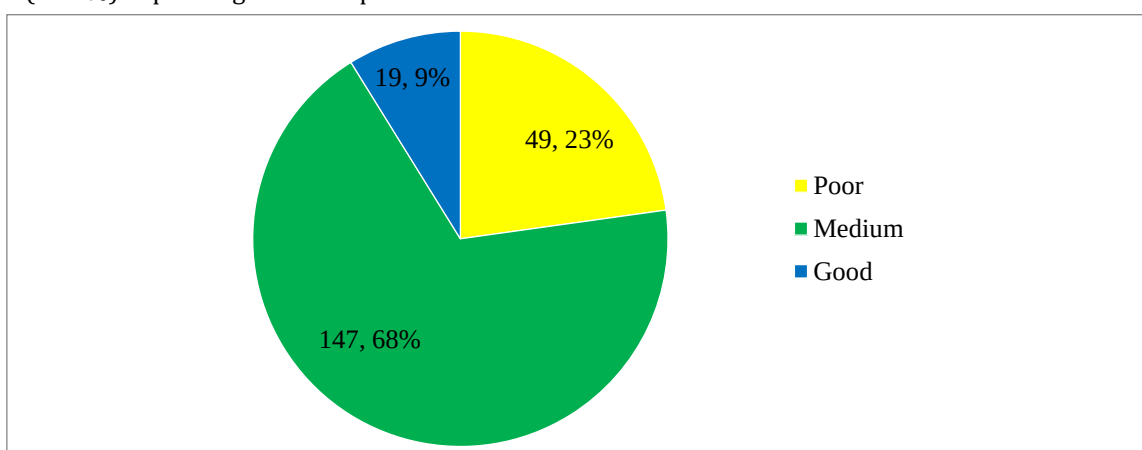
4.1.3. BMI of the Participants

The BMI ranged from 14.23 kg/m² to 38.44 kg/m². Most common BMI range is between 19 to 23 kg/m² (57.2%, n=123). A very few number of participants have BMI more than 30 kg/m². So, in this study, the BMI of most participants are within the normal range a very few are there who are overweight or obese and few of the participants are underweight. Mean BMI of the participants was 22.68 kg/m².


Figure 2: BMI of the participants

4.1.4. General health & comorbidities of the Participants

Among 215 participants, 147 has medium health (68.37%), 49 have poor health (22.79%) and 19 have good health (8.84%) depending on visual parameter.


Figure 3: General health of the participants

Only 8.84% of the participants have mentioned some kind of comorbidities (n=19). Among those reported commodities, 10 reported of having hypotension (4.7%), 3 reported of hypertension (1.4%), 3 have urinary issues (1.4%) (One participant has frequent urination along with vitamin deficiency), 2 have bowel issues (0.9%) (One has constipation, another has bowel problem along with tummy ache and vomiting), 1 has anemia (0.5%). None has reported of known diabetes or thyroid issues.

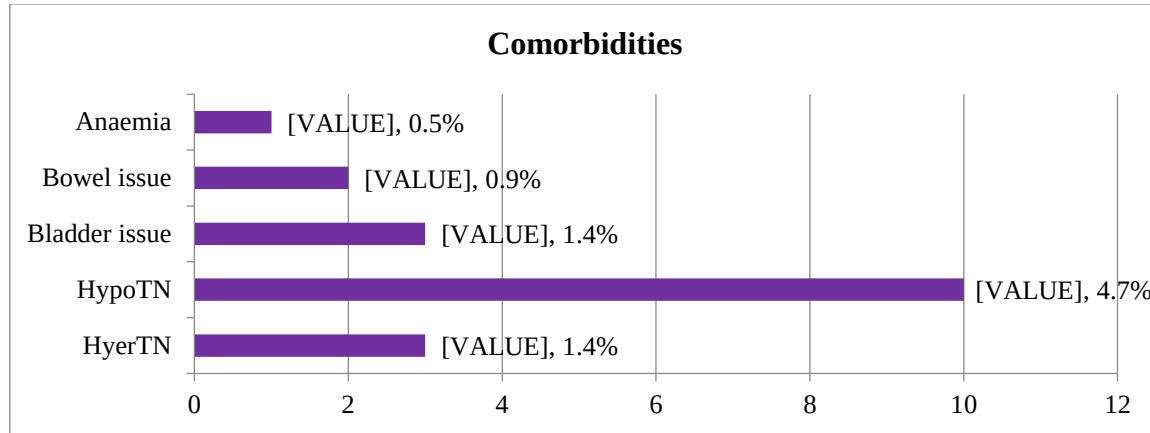


Figure 4: Comorbidities of the participants

4.1.5. Food habit, drinking water and hygiene among the participants

Food habit: among 215 participants, 170 have responded to the question of food habit; 137 said they have a good food habit with balanced diet and nutrition (63.7%), 33 participants said or made it clear in conversation that they do not have a good food habit (15.3%), where in most cases, they cannot effort proper nutrition. Forty five of them did not respond to the question (20.9%).

Drinking water: among 215 participants, 140 have responded to the question of drinking enough water; 129 said they drink enough water in a day (60%), 11 participants said or made it clear in conversation that they do not drink enough water in a day (5.1%). Seventy five of them did not respond to the question (34.9%). Among 215 participants, 119 have responded to the question of having access to safe drinking water; they all said yes as a response (55.35%). Rest of 96 participants either did not answer to the question or do not have access to safe drinking water (44.65%).

Hygiene: among 215 participants, 100 have responded to the question of practicing hygiene in daily life; they all said or made it clear in conversation that yes, they maintain hygiene (46.5%). Rest of 115 participants either did not answer to the question or do not maintain hygiene (53.5%).

4.1.6. Smoking and other addiction among the participants

Among 215 Participants, 175 said they do not smoke (81.4%) and 40 said they are smokers for different duration of time (18.6%). All of female participants are non-smokers (n=0). Among 107 male participants, 67 are non-smokers (62.6%) and 40 are smokers (37.4%) (Table 4.2).

Table 4.2: Smoking among the participants

Response	Number of Participants	Percentile as per gender (%)	Percentile (%)
Yes	Male - 40	37.4%	18.6%
	Male - 67	62.6%	81.4%
No	Female - 108	100%	
Total	215		100%

Smokers reported of smoking 6.8 sticks daily on an average (n=26). Reported duration of smoking are 2 years (n=1), 3 years (n=3), 4 years (n=1) and 8 years (n=1).

Only 3 male participants have reported of drinking sometimes (1.4%); these three are also smokers. Rest 212 participants did not mention any other addiction (98.6%).

4.1.7. Exercise routine of the participants

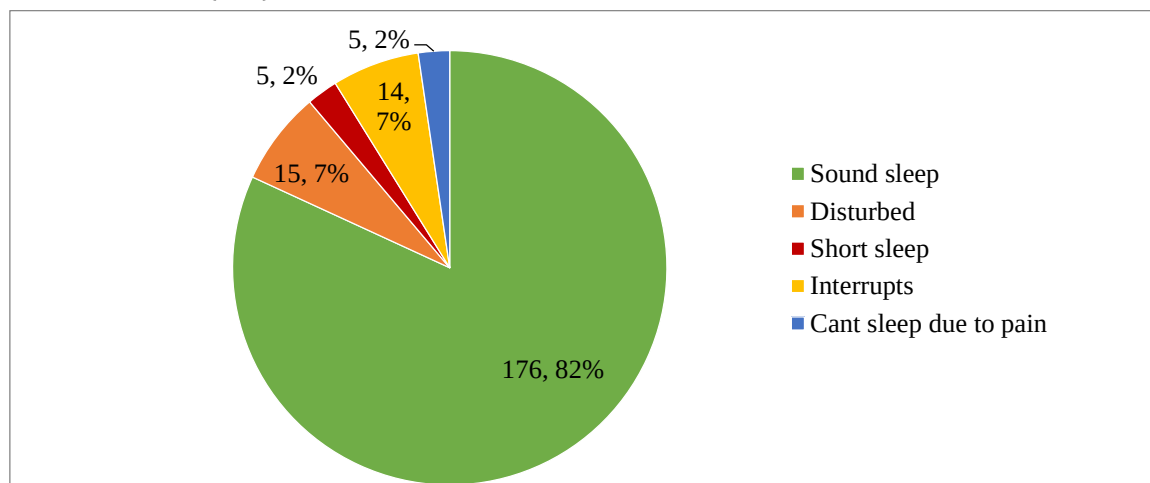
Among 215 Participants, 163 responded with 'No' (76%) and 52 responded with 'Yes' (24%) to the question "Do you exercise?" (Table 4.3). All of those who said they exercise mentioned 'Walking' as an exercise as they come to their workplace by walking. Two of them mentioned Gym-based exercise along with walking (0.9%). Those who walk, walk 1005.3 meter (1km) on an average (n=19), 16.7 minutes on an average (n=9) and 3 days per week (n=12) as a routine.

Table 4.3: Exercise among the participants

Response	Number of Participants	Percentile (%)
Yes	52	24%
No	163	76%
Total	215	100%

4.1.8. Sleep habit of the participants

Among 215 participants, 176 have reported of having sound sleep (81.86%), 15 reported of having disturbed sleep (6.98%), 5 are short sleepers or wakes up easily (2.33%), 14 have reported of interrupted sleep (6.51%) and 5 said they cannot sleep due to pain (2.33%). All those who mentioned that they cannot sleep due to pain have Lower Back Pain (LBP).


Figure 5: Sleep habit of the Participants

4.1.9. Psychological status and other concern of the participants

Among 215 Participants, 24 have reported of 'Good' psychological status (11.2%), 28 have mentioned that they are 'Stressed' (13%) and 163 mentioned nothing regarding to their psychological status (75.8%) (Table 4.4).

Table 4.4: Psychological status of the participants

Response	Number of Participants	Percentile (%)
Good	24	11.2%
Stressed	28	13%
No response	163	75.8%
Total	215	100%

Five participants have mention other individual health concerns – Tuberculosis (n=1), Tumor (n=1), Irregular Menstruation (n=1), Ovarian disease (n=1), Tuberculosis (n=1).

4.1.10. Educational status of the participants

Among 215 participants, 68 can only sign their name (31.6%), 63 received primary education (29.3%), 1 studied up to class 6 (0.5%), 41 studied up to class 8 (19.1%), 3 studied up to class 9 (1.4%), 22 studied up to class 10 (10.2%), 7 completed their SSC (3.3%), 6 completed their HSC (2.8%), 3 studied diploma (1.4%) and only 1 participant completed graduation (0.5%).

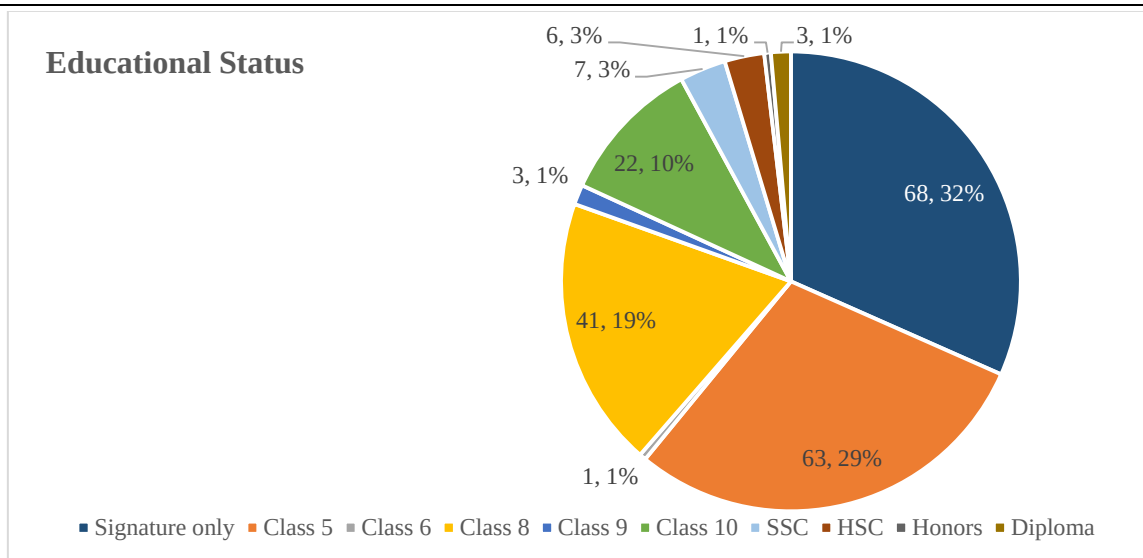


Figure 6: Educational status of the participants

4.1.11. Marital status of the participants

Among 215 participants, 156 were married (72.6%), 51 were unmarried (23.7%), 2 were divorced (0.9%), 5 were grass-widow (2.3%) and 1 was separated (0.5%).

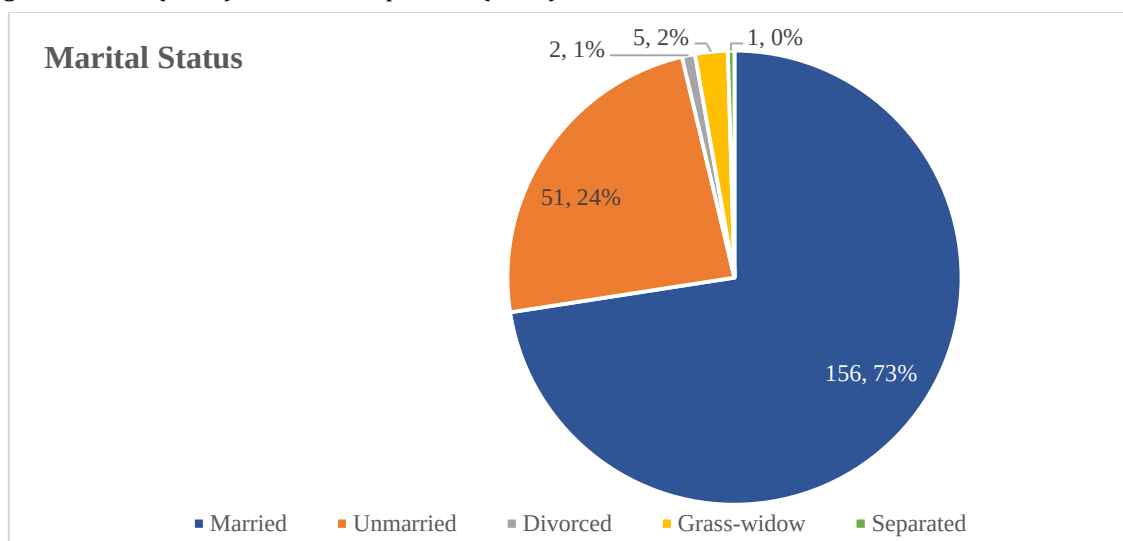


Figure 7: Marital status of the participants

4.1.12. Migration to Dhaka for work

Among 215 Participants, 195 said they have migrated to Dhaka (90.7) and 20 said they did not migrate to Dhaka for work or they are permanent residents of Dhaka (9.3%) (Table 4.5).

Table 4.5: Migration to Dhaka

Response	Number of Participants	Percentile (%)
Yes	195	90.7%
No	20	9.3%
Total	215	100%

4.1.13. Housing condition of the participants

Among 215 Participants, 8 lives in Kacha house (3.7%), 111 lives in Pacca house (51.6%), 54 lives in Semi-pacca house (25.1%) and 42 lives in Tin-sheded house (19.5%).

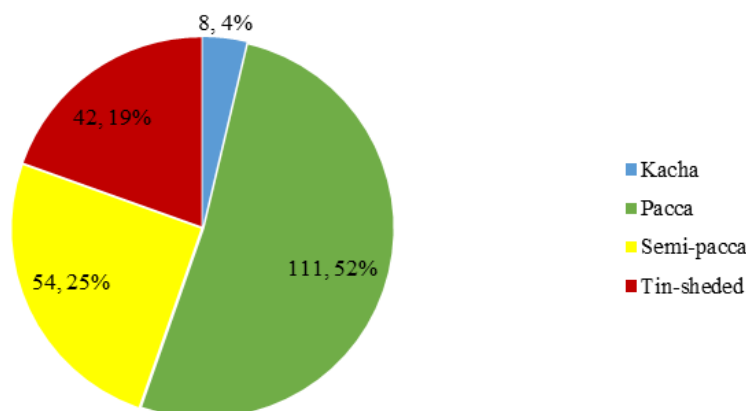


Figure 8: Housing condition of the participants

4.1.14. Number of family members of the participants

The number of family members varied from 1 to 8 persons. Mean was 3.8 persons. Sixty three among total participants have 4 family members (29.3%). Maximum families are combined of 4, 3 and 2 members. Seven participants said that they live alone (3.3%) and 12 participants have 7 or 8 members in their family (5.6%).

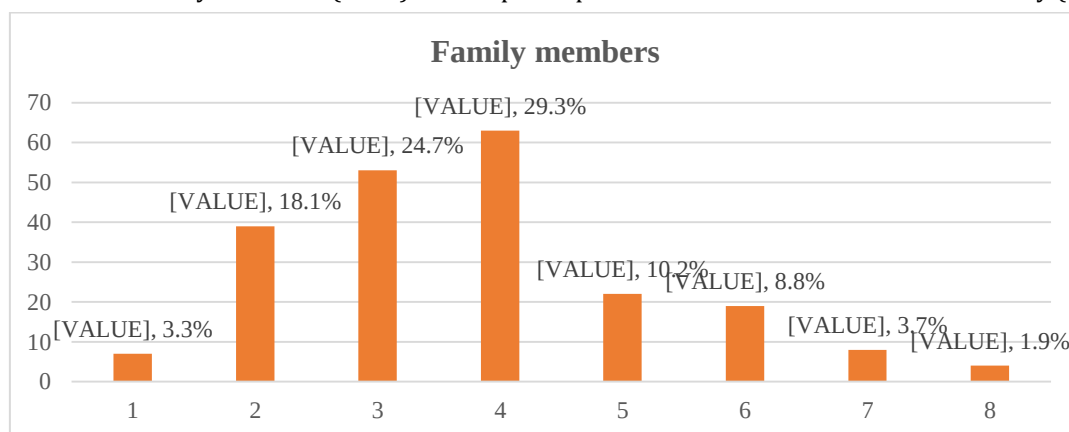


Figure 9: Number of family members of the participants

4.1.15. Garments from where data were collected

Among 215 participants, 100 were from Brother Trader Wear & Alpina Fasion (47%) and 115 were from United Level Limited (53%).

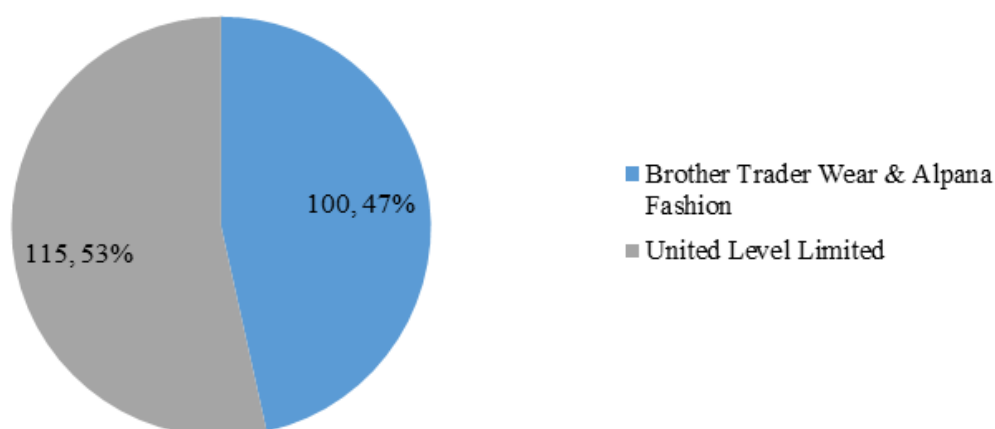


Figure 10: Garments from where data were collected

4.1.16. Department of working of the participants

Among 215 Participants, 81 worked in Sewing (37.7%), 1 worked in Embroidery (0.5%), 5 worked in Layering (2.3%), 20 worked in cutting (9.3%), 27 worked in Printing (12.6%), 23 worked in finishing check (10.7%), 7 worked in Quality Control (3.3%), 13 worked in Packing (6%), 23 worked in Ironing (10.7%), 1 worked in Delivery (0.5%), 1 worked in Cleaning (0.5%) and 13 worked in handling Heavy Machineries (6%).

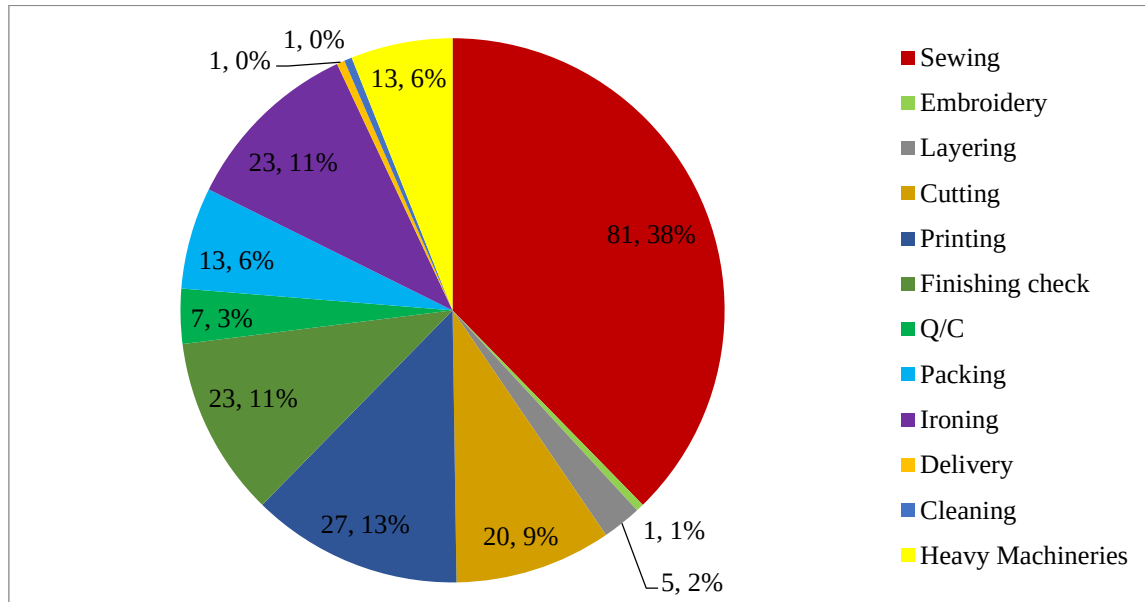


Figure 11: Department of working of the participants

4.1.17. Position of working of the participants

Among 215 Participants, 109 worked in sitting position (50.7%), 63 worked in standing position (29.3%), 32 worked in walking position (14.9%), 13 worked in repeated bending position (6%), 2 worked in twisting position (0.9%), 2 worked in squatting position (0.9%), 2 worked with vibration of machine (0.9%). Five among 215 have multiple positions during work – standing, repeated movement and.

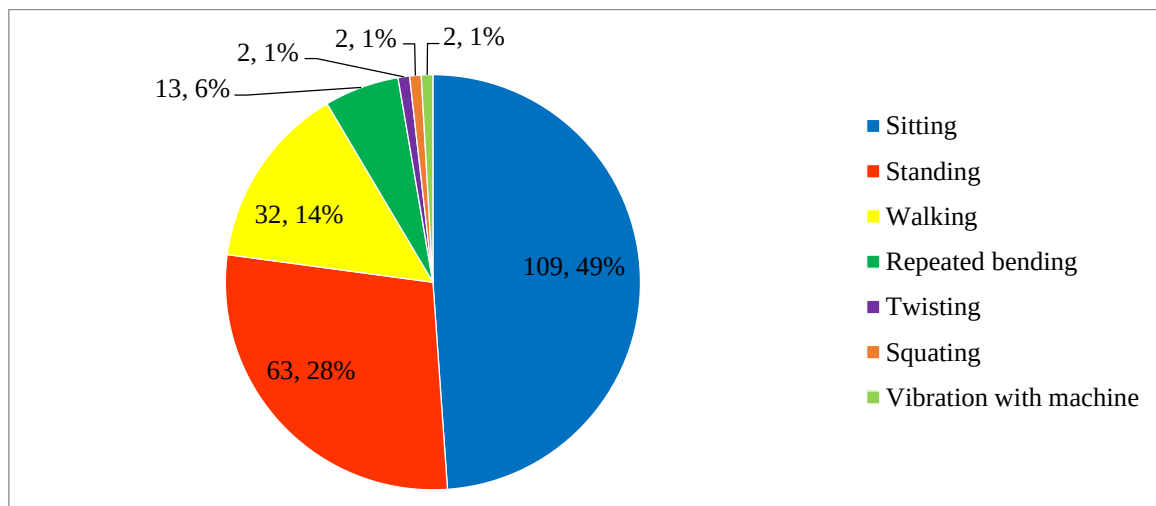


Figure 12: Position of working of the participants

4.1.18. Income of the participants

The income ranged from 6,000 to 35,000 BDT. Mean income was 10,086.05 BDT. The salary ranged from 6,000 to 14,000 BDT among the general workers which includes regular payment with overtime pay and 92 of the total participants earn 8000 to 9999 BDT (42.8%).

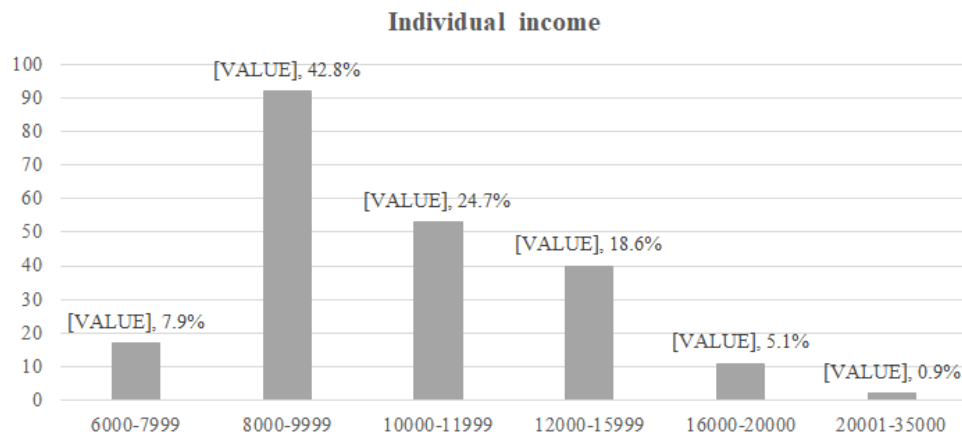


Figure 13: Income of the participants

4.1.19. Duration of work of the participants

The duration of work in present garments ranged from 3 months to 144 months, with an average of 38.12. Most of the workers working duration is 3 to 5 years in their current workplace (n=78, 36.3%). The total duration of work ranged from 6 months to 492 months, with an average of 55.3 months and most of the workers total working duration is 3 to 5 years (n=81, 37.7%).

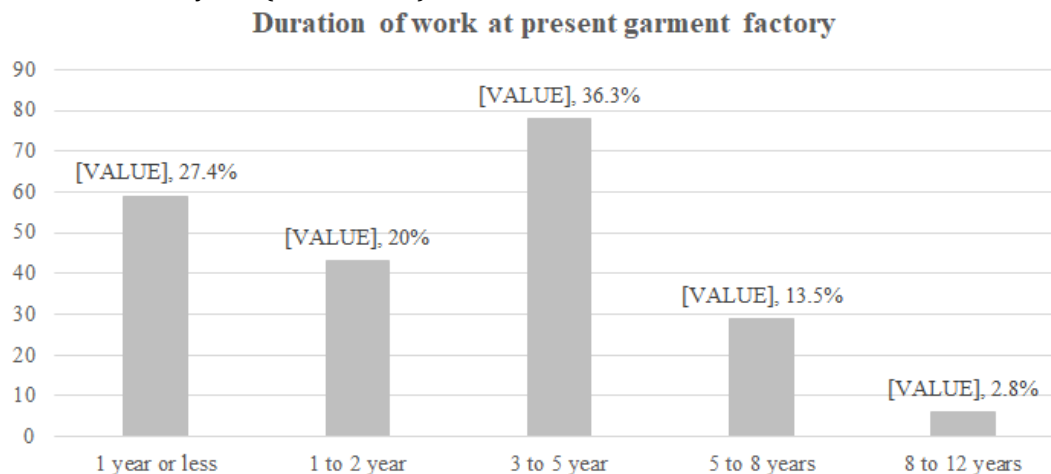


Figure 14: Duration of work at present garment factory

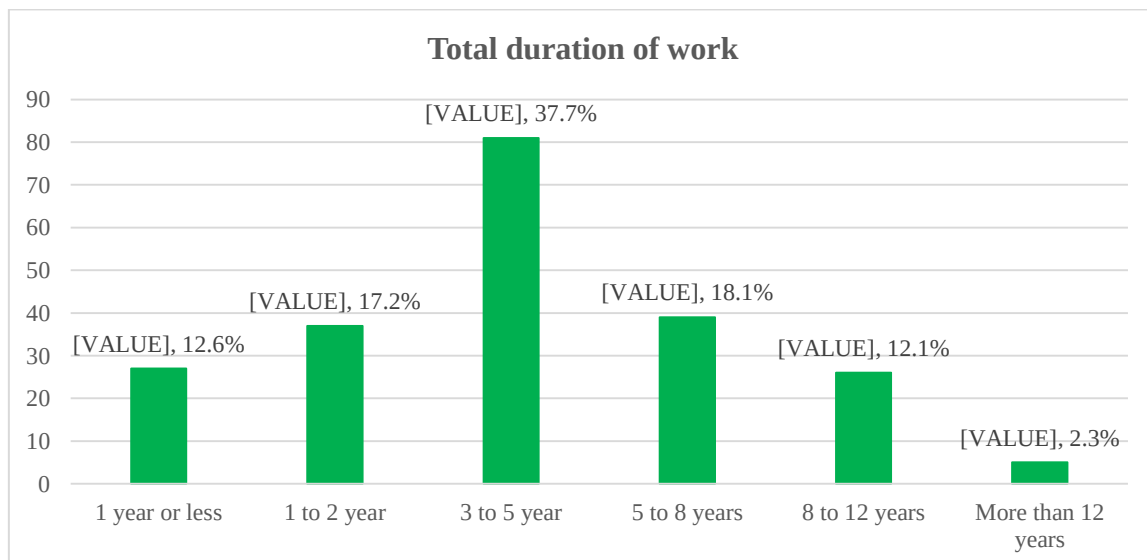


Figure 15: Total duration of work of the participants

4.1.20. Special working facilities from the garment factory

Among 215 Participants, 197 said they didn't receive any special facility from the garment factory they work in (91.6%) and 18 said they have received some sort of facilities from the garment factory they work in (8.4%) (Table 4.6). Among the 18 respondent, 6 have mentioned about good sitting facility (Good chair (n=4), Mora (n=1), Sitting facility (n=1)) and only one mentioned about leave (n=1).

Table 4.6: Special working facilities

Response	Number of Participants	Percentile (%)
Yes	197	91.6%
No	18	8.4%
Total	215	100%

4.1.21. Physical trouble while working in the current garment factory

Among 215 Participants, 111 said they have experienced some kind of physical trouble while working in the current garment factory (51.6%) and 104 said they have not experienced any kind of physical trouble while working in the garment (48.4%) (Table 4.7).

Table 4.7: Physical trouble while working

Response	Number of Participants	Percentile (%)
Yes	111	51.6%
No	104	48.4%
Total	215	100%

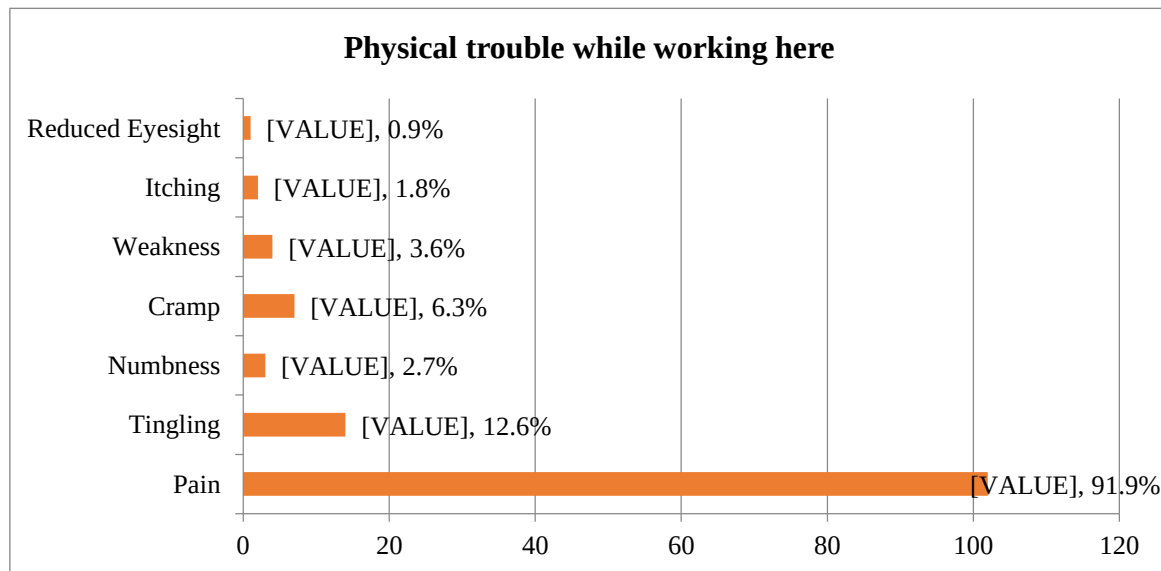


Figure 16: Physical trouble while working in current garment

4.1.22. Physical trouble affecting activities of daily living (ADLs)

Among 111 Participants with some sort of physical troubles, 47 said the physical trouble is affecting their activities of daily living (ADLs) (42.3%) and 64 said the physical trouble is not affecting their activities of daily living (ADLs) (57.7%) (Table 4.8). Few of those who have said the physical trouble is affecting their activities of daily living (ADLs), have sorted ADLs affect in 3 types – all work (n=3), sit to stand (n=2) and sitting work (n=2).

4.2 Pain profile

4.2.1. Presence of pain in the body

Among 215 Participants, 112 said they do not have any pain in the body (52.09%) and 103 said they have some kind of pain in their body (47.91%) (Table 4.8).

Table 4.8: Presence of pain

Response	Number of Participants	Percentile (%)
No	112	52.09%
Yes	103	47.91%
Total	215	100%

Those who have some kind of pain have mentioned Lower Back, Upper Back, Neck, Chest, Shoulder, Elbow, Forearm, Thigh, Knee, Ankle and whole body as pain site.

4.2.2. Site of pain in the body

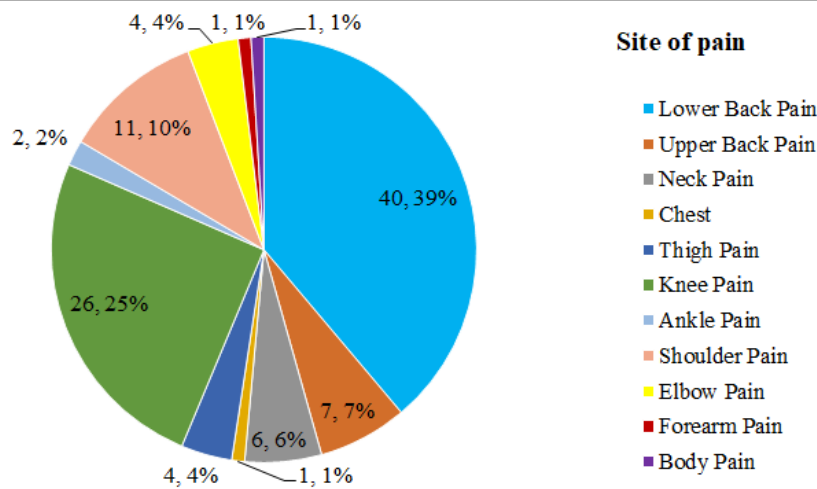


Figure 17: Site of pain in the body

4.2.3. Presence of Lower Back Pain

Among 215 Participants, 133 said they do not have Lower Back Pain (LBP) (61.9%) and 82 said they have Lower Back Pain (38.1%) (Table 4.9).

Table 4.9: Presence of LBP

Response	Number of Participants	Percentile (%)
No	133	61.9%
Yes	82	38.1%
Total	215	100%

4.2.4. Description of Lower Back Pain among the participants

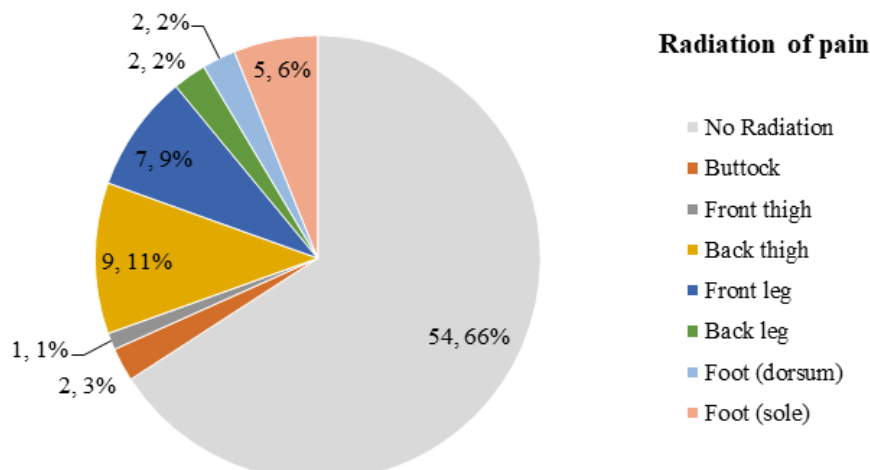


Figure 18: Radiation of pain

Those who have radiating pain have their radiation to buttock (n=2, 7.1%), front thigh (n=1, 3.6%), back thigh (n=9, 32.1%), front leg (n=7, 25%), back leg (n=2, 7.1%), dorsum of foot (n=2, 7.1%) and sole of foot (n=5, 17.9%).

Other symptoms with pain

Among 82 participants, 17 reported of other symptoms (20.7%) along with lower back pain and 65 said that they do not have any other symptom (79.3%) along with their lower back pain.

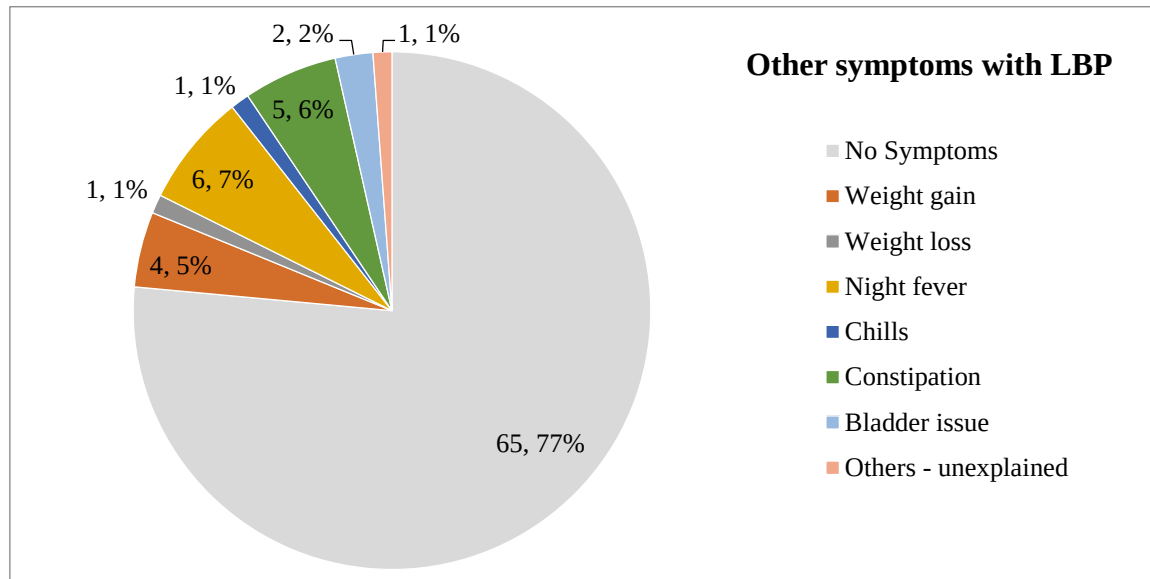


Figure 19: Other symptoms with LBP

Those who have reported of other symptoms, have additional weight gain (n=4, 23.5%), weight loss (n=1, 5.9%), night fever (n=5, 29.4%), constipation (n=5, 29.4%), bladder issue (n=1, 5.9%) and 1 unexplained symptom (5.9%). Among these participants, one has reported of having constipation and chills together and another participant has reported of having night fever, constipation and bladder problem together. Nobody complained about any nervous issues, loose motion or IBS, even if asked.

Other works that might be contributing to LBP -

Among 82 participants with LBP, 34 did not mention any other work that might contribute to their LBP (41.5%). Nineteen of them said that they do 'Nothing' other than their RMG job (23.2%), 27 participants (26 female and 1 male) have mentioned about 'Household chores' (32.9%) and 2 of them mentioned 'Bending' (2.4%) that can contribute to their LBP.

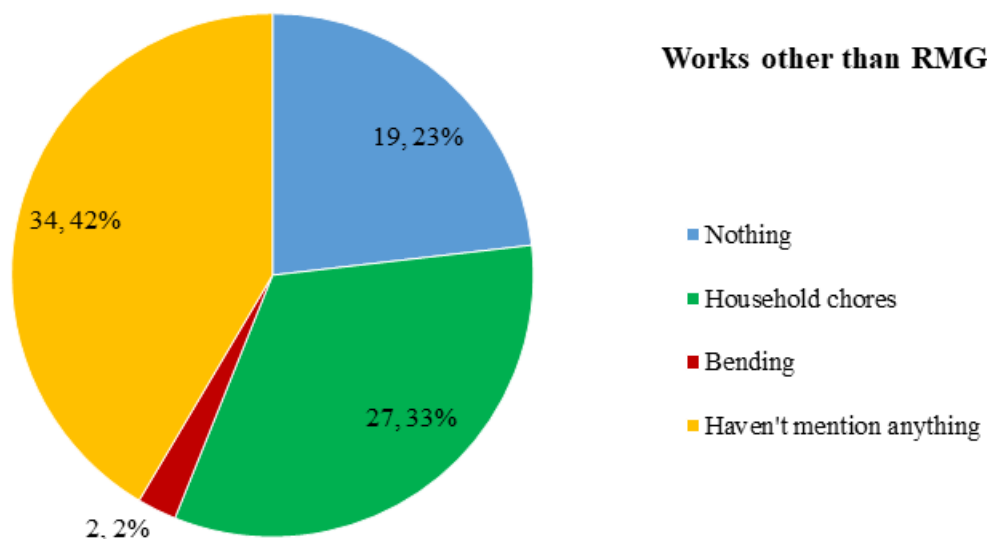


Figure 20: Works other than RMG

4.2.6. Cause of LBP and self-management among the participants

Cause

The main cause of LBP according to the participants is 'Long duration sitting work' (n=50, 61%) and second cause reported was 'Long duration standing work' (n=13, 15.9%). Other causes are 'Long duration walking work' (n=2, 2.4%), 'Sitting & standing work' (n=2, 2.4%), 'Standing & walking work' (n=2, 2.4%), 'Repeated bending or twisting' (n=4, 4.9%), 'Injury' (n=2, 2.4%), 'Lifting heavy object' (n=4, 4.9%), 'After marriage' (n=1, 1.2%), 'After pregnancy' (n=1, 1.2%) and no particular reason (n=1, 1.2%).

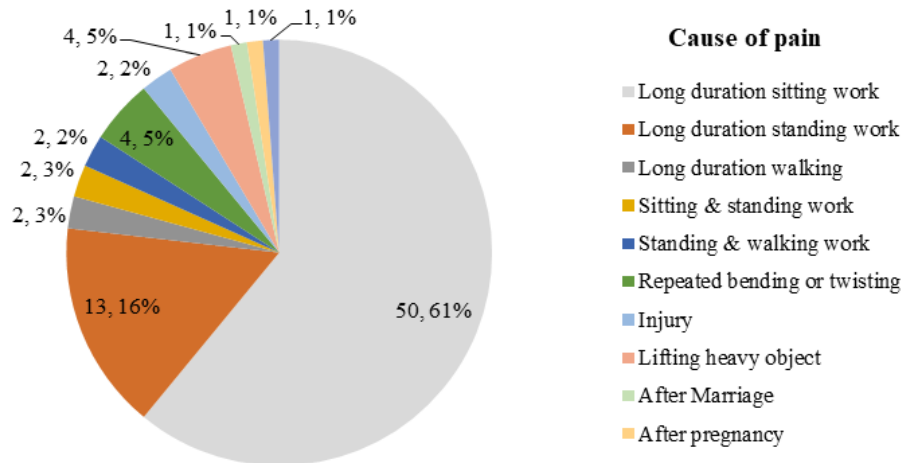


Figure 21: Cause of pain

4.2.10. Awareness on Physiotherapy among the participants

Among 215 Participants, 182 said that they have not heard of Physiotherapy (84.7%) and 33 said that they have heard of Physiotherapy (15.3%) (Table 4.10).

Table 4.10: Awareness on Physiotherapy

Response	Number of Participants	Percentile (%)
No	182	84.7%
Yes	33	15.3%
Total	215	100%

Among the 33 who said that they have heard of Physiotherapy, 26 participants have said that they did never receive Physiotherapy (79%) and only 7 participants have said that they have received Physiotherapy for some reason (21%)

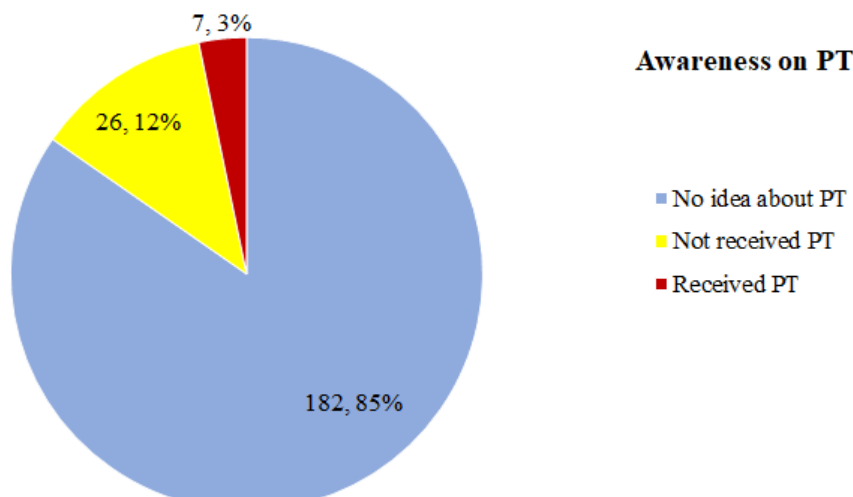


Figure 22: Awareness on Physiotherapy

DISCUSSION**Demographic, social and work related findings**

This study was intended to find factors associated with lower back pain among garments workers. The investigator collected data from two garments factories in Pallabi, Mirpur. There were 215 participants in total; among them 108 (49.8%) were female and 107 were male (50.2%). Participants' age ranged from 18 to 52 years with a mean age of 28.94 years. A study in North India (Bindra et al. 2017) had age ranged from 20 to 50 years in their study. BMI in this study ranged from 14.23 kg/m² to 38.44 kg/m² with a mean BMI of 22.68 kg/m². A number of 203 participants (94.4%) had BMI less than or equal to 28. An Indian study by Tiwari et al. (2003) had BMI ranged below 30 in 373 participants (72.6%) among 514 participants.

This study looked into general health and comorbidities, food habit, drinking water habit and hygiene among the participants and found that most of the participants are of medium health; hypotension, hypertension, bowel & bladder issue and anaemia are the most common commodities. The common symptoms in subjects of the study by Saha et al. (2010) were pain (69.23%), weakness (38.46%), and stiffness (23.08%) of the affected parts. The other morbidities that we detected were generalized weakness (14.29%), acidity and heart burn (26.79%), menstrual problems (5.36%), insomnia (21.43%), problems with vision (12.05%), skin diseases (25%), injury (9.82%), anemia (8.93%), angular stomatitis (14.29%), pedal edema (7.14%), hypertension (16.07%), malnutrition (37.50%), swelling of feet, cough and cold, loose motion, fever, and pain abdomen. Hajaraih et al. (2019) and Lillypet et al. (2017) also investigated into musculoskeletal problems, neurological problems, ophthalmic problems, cardio-respiratory problems, nutrition, digestive and other gastrointestinal issues, vision and hearing problems, gynecological and female reproductive health issues, dermatological, mental health and other health outcomes in their review articles (details in literature review part).

This study looked also asked the participants about their food habit, drinking water habit and hygiene. Many participants have escaped responding to the question of food habit, drinking water habit and hygiene. Among those have answered, 63.7% said that they have a good food habit with balanced diet and nutrition (n=137), 60% said that they drink enough water in a day (n=129). More than 50% said that they have access to safe drinking water (55.35%, n=119). Hundred participants answered positively to the question of maintaining good hygiene (46.5%).

All the female participants are non-smoker in this study (n=108). Among the male garments workers, 37.4% said to be smoker (n=40) and 62.6% are non-smoker (n=67). So a total number of 175 among 215 are non-smoker (81.4%). A study in India by Bindra et al. (2017) found that 1180 never smoked (88.8%) and 149 did smoke (11.2%). Study by Tiwari et al. (2003) found 22.8% smokers (n=117) in their study vs 77.2% non-smokers (n=397).

Fifty two of the total participants said that they exercise (24%) and by exercise they all meant walking. An Indian study found that unsupervised yoga and gym workout were risk factors for LBP (Bindra et al. 2017). In that study 14.4% (n=192) participants said that they exercise among a total number of 1329 participants.

Majority of the participants are sound sleepers (82%, n=176). Others said that they have either short sleep (2%, n=5), interrupted sleep (7%, n=14), disturbed sleep (7%, n=15) and cannot sleep due to pain (2%, n=5).

Twenty four participants said their psychological status is good (11.2%) and 28 said they are somehow stressed (13%). Rest of the responses were nil.

This study has many agreement with the findings of a 2021 three-stage stratified (location, factory type and grade of workers) randomize survey by Haque & Bari on 1,119 workers from 160 factories and 160 managers at the factory level.

Most of the participants are under-educated - either can sign only (31.6%, n=68), completed primary education (29.3%, n=63) and up to class eight (19.1%, n=41). This finding completely agree to the findings of Haque & Bari (2021) who has found workers highest educational level is up junior schooling or primary schooling.

Most of the garments workers are married (73%, n=156). Others are either unmarried (24%, n=51), divorced (0.9%, n=2), grass-widow (2.3%, n=5) and separated (0.5%, n=1). Haque & Bari (2021) had a similar finding in their study - 74% of the participants were found married in their study.

Majority of the garments workers migrated to Dhaka from different regions of the country (90.7%, n=195) and 52% of them live in pacca house (n=111) with an average family members 3.8 persons where 2 to 3 of family members earning. These results are also similar to the findings of Haque & Bari (2021). They found 89% of workers have migrated to the working location from other districts and there are four members in their household; among them two are earning members.

Working hour in both garments under this study is 8 hours with 2 to 4 hours of over-time. Haque & Bari (2021) have stated similar findings in their report that RMG workers work six days a week for 8 hours and 73% of the workers were involved in overtime duties for another 8.5 hours per week. They have found that on average male workers expect to work for 11 years and female workers expect to work for 8 years. The average duration of work in this study is 59.49 months among the participants with an average income of 10 thousand BDT with a starting salary of 6 thousand BDT. In study of Haque & Bari (2021), the average income of per RMG worker per month is Tk. 11,402.

The working department and position of work were much variable among the garments workers in this study. The departments are Sewing (38%, n=81), Embroidery (0.5%, n=1), Layering (2%, n=5), Cutting (9%, n=20), Printing (13%, n=27), Finishing check (11%, n=23), Q/C (3%, n=7), Packing (6%, n=13), Ironing (11%, n=23), Delivery (0.5%, n=1), Cleaning (0.5%, n=1) and Handling heavy machineries (6%, n=13). The positions of the garments workers are sitting (50.7%, n=109), standing (28%, n=63), walking (14%, n=32), repeated bending (6%, n=13), twisting (1%, n=2), squatting (1%, n=2), vibration with machine (1%, n=2). Indian study by Tiwari et al. (2003) had their participants' working position in either sitting (60.7%, n=312) or standing (39.3%, n=202). Vidusha et al. (2019) stated that 61.22% of the females worked in standing posture in Bengaluru, India.

According to the feedback from the garments workers, the garment factories do not provide any special facilities for the workers in prevention of lower back pain (91.6%, n=197). Few of the workers mentioned about special facilities, including good chair or other sitting facility or leave (8.4%, n=18).

About half of the workers suffered from physical troubles (51.6%, n=111) including pain (n=102), tingling (n=14), cramp (n=7), weakness (n=4), numbness (n=3), itching (n=2) and reduced eyesight (n=1) during their work in current garments factory and 47 participants said that their physical troubles have affected their activities of daily living (42.3%).

Physiotherapy awareness among the participants are very poor. Only 12% garments workers said that they heard of physiotherapy (n=26) and only 7 of them have received physiotherapy from some source (3%). The rest of the respondent (85%, n=182) have no idea about Physiotherapy.

V. CONCLUSION

This study found that 38.1% of the garments workers suffer from lower back pain (n=82). A significant Association has been found between long duration sitting work and lower back pain among the garments workers who work in sitting position for a long time (Chi-square = 13.405, p = 0.037). The study also found that workers who have been working for longer period of time tends to suffer more from lower back pain (Chi-square = 58.929, p = 0.021). Another finding of this study is workers of older age tends to have lower back pain more than younger aged workers (Chi-square = 63.609, p = 0.000). The study also reveals that female workers suffer more from LBP than male workers (Chi-square = 6.120, p = 0.013) and there is no association of BMI with lower back pain (Chi-square = 1.417, p = 0.516).

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