

A questionnaire survey on knowledge and concern about eyestrain (Asthenopia) among Readymade Garment (RMG) workers of Ashulia in Bangladesh



Daffodil
International
University

Project report on knowledge and concern about eyestrain (Asthenopia) among Readymade Garment (RMG) workers of Ashulia in Bangladesh

A Dissertation submitted to Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University in partial fulfilment of the requirement for the degree of Bachelor Of Pharmacy (B. Pharm)

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APPROVAL


This questionnaire survey project report on **knowledge and concern about eyestrain among garment workers of Ashulia in Bangladesh** submitted by **Santa Akter** to the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, has been approved as its style and content and has been acknowledged as satisfactory for the partial fulfillment of the criteria for the degree of Bachelor of Pharmacy.

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CERTIFICATE

This is to certify that the research findings inscribed in this project are new, original and have never been submitted in full for any degree or diploma from this university. The entire dissertation which is submitted as a project work for the partial fulfilment of the degree of Bachelor of Pharmacy, is based on the findings of the author's (ID: 191-29-253) personal investigation.

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DECLARATION

I hereby declare that I have completed my project report in complete satisfaction of the requirements for the degree of Bachelor of Pharmacy at Daffodil International University (DIU) under the supervision of Farhana Israt Jahan, Associate Professor, Department of Pharmacy, Faculty of Allied Health Science (FAHS). I confirm that this entire project work is originally done by me. I am also stating that neither this project nor any portion of this project has not been submitted to another institution for the award of a bachelor's degree or any other degree.

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DEDICATION

Dedicated to my parents, my family and those who helped and supported me along the way

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First and foremost, I would like to express my deepest gratitude to the Almighty Allah for giving me the knowledge, strength, ability and opportunity to undertake this project and to complete it satisfactorily.

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Santa Akter

Author

ABSTRACT

Among Readymade Garment workers, prolonged eye-focused activities including stitching, cutting, and occasionally monitoring digital gadgets are what lead to eyestrain. The study examined how many garment employees in the sewing, cutting, and finishing sections knew about, were concerned about, and how severe the eyestrain problem was.

The sample consisted of 100 garment workers from the locality of Ashulia. Personal interviews were used to gather data from the chosen samples. Given how frequently the workers' eyes were utilized throughout their employment in the garment factories, it was discovered that this negatively impacted their eye health.

According to the study's findings, sewing department employees were more prone to eyestrain than those in other departments and the most reported symptoms were blurry eyes and headache. Among participants 49% were known of eyestrain or asthenopia and the rest 51% were unknown or partially known about eyestrain. According to the study, working period and work pressure among the workers played significant roles in developing eyestrain. From the study it's clear that majority (90.36%) had eyestrain among the sample and 9.64% did not have eyestrain due to their work.

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Chapter 1

Introduction

1. Introduction

Eyestrain, often referred to as asthenopia, is a disorder in which a patient has a wide range of symptoms while using their eyes, including ocular tiredness and pain in or around the eyes, headaches, and occasionally blurred or double vision. This is typically brought on by heavy, repetitive computer or close work (1) (2) (3).

Asthenopia can be classified into two types internal and external; Internal asthenopia is when the individual feels strains and pains inside the eye, and external asthenopia is when the individual feels dryness and irritation on the front of the surface of the eye (4). Uncorrected refractive defects, vergence anomalies, heterophorias, and accommodative dysfunctions are all potential causes of internal asthenopia. The main causes of external asthenopia are factors in the viewing environment, including illumination, poor image quality, flashing stimuli, and dry eyes (5) (6).

1.1 Internal Asthenopia

The eye accommodates when someone focuses on a close item or reads something close by. As the eye adjusts its optical power to retain a clear image and concentrate light onto the rear of the eye, this is known as accommodation (7). It accomplishes this by altering the curvature of the eye's lens utilizing the ciliary body.

If the patient has a straightforward uncorrected refractive error, like hyperopia (long-sightedness) or astigmatism, the symptoms can be managed rather easily with a pair of glasses for use up close, which the optometrist will calculate during the eye exam (8) (5).

1.2 External Asthenopia

The individual's daily environment has a significant impact on their exterior asthenopic symptoms. In an office or study setting, it is not always possible to ensure that the individual's close work is in a convenient setting as well as the light sources are adequate. In this situation, the patient may only rely on the optometrist's treatment to get better.

Minor environmental adjustments, such as minimizing heating and air cooling in rooms, can benefit a person's ocular surface. Dry eye symptoms are frequently overlooked in a person's treatment plan, but minor adjustments, such as using ocular lubricants, taking omega 3 supplements, cleaning and massaging the eyelids, can have a remarkable impact on a patient's comfort and asthenopic symptoms (9) (10) (5).

1.3 Symptoms and causes

The signs and symptoms of eyestrain or asthenopia might differ from person to person depending on the underlying reason and any eye conditions. The most typical signs are as follows:

- discomfort near the eyes
- headache that could be made worse by using the eyes
- blurry vision,
- burning, painful, or fatigued eyes
- sensitivity to light,
- trouble keeping one's eyes open,
- dizziness (11) (12) (13) (14)

When the muscles that help focus the eyes grow weary, eye strain occurs. The shape of the eye's lens is altered by the ciliary muscles. To focus on close or far objects, they bend the lens in various ways. When these muscles are used for extended durations, eye strain develops. The following activities include eye strain:

- Reading
- Driving
- Completing a small craft or activity (15) (1) (14).

The usage of smartphones and other portable electronic gadgets can strain the eyes. Blue light and small typefaces might strain the eyes.

Rapid eye movement wears down the extraocular muscles of the subject. They are the muscles that allow eyes to move up and down as well as side to side. This form of eye strain can result from playing video games (16).

1.4 Diagnosis

An expert in eyes may inquire about potential causes of eyestrain complaints. During a visit, an eye checkup that includes a vision test is possible (17) (14).

- **Eye exam:** An eye exam comprises vision tests and a thorough inspection of the anatomy of the eyes using non-invasive tools like an ophthalmoscope (18).
- **Brain imaging:** A brain computed tomography (CT) or magnetic resonance imaging (MRI) test may be required if there is suspicion that a person may have a structural issue with their brain (18).

1.5 Remedies for eyestrain or Asthenopia

The majority of the time, a person's environment and way of life can be changed in order to treat asthenopia or eyestrain. Here are some suggestions for managing asthenopia at home and at work:

- **Light adjustment:** When engaging in particular activities, such as reading or stitching, having enough light might assist lessen strain and tired eyes. While doing any type of close work, the light source should be placed behind the person and positioned so the light is focused on the task. If a person is working or studying at a desk, it is preferable if a lamp shade is on a light that is placed in front of them. The important thing is to have adequate lighting that doesn't shine in the eyes. It will be easier for eyes to watch TV in a room with soft or dim lighting (19) (14) (20).
- **Taking pauses:** When eyes are kept fixed on one thing for too long without resting, asthenopia develops. Taking regular breaks is crucial, whether one is reading, using a computer, or driving. Discomfort can be lessened by switching away from monitors or pages occasionally and taking a break to rest eyes (21) (14).

- **Enhancing the air quality in a space:** Changing the environment's air quality, such as by using a humidifier, may hopefully prevent dry eyes. Avoid having air blow directly into your face. This can be accomplished by relocating a chair away from vents for heating and cooling, changing fans, or moving space heaters. Vents should be placed away from one's face when driving (14) (22).
- **Utilizing artificial tears:** Artificial tears sold over-the-counter (OTC) assist keep eyes lubricated, which helps ease or prevent dry eyes brought on by straining. Employing them can help relieve symptoms even if eyes feel normal when sitting down to operate at a computer or perform another close task (23) (14).

1.6 Medical treatment for Asthenopia or eyestrain

When symptoms of asthenopia are severe or connected to an underlying illness, medical therapy may be necessary.

According to the cause, several treatments may be used, such as:

- Contact lenses
- Glasses
- Prescription or over-the-counter eye drops
- Refractive surgery (24) (25)

1.7 Relief and prevention of Asthenopia or eyestrain

It is crucial to take care of the visual system by doing the following things in order to prevent visual tiredness or asthenopia:

- Making sure there is a good light source in working area.
- Five minutes per hour resting the eyes. It's best to stop working, standing up from desk, and going for a walk or engaging in another activity. It's crucial to refrain from using phone during the visual break.
- Artificial tears are used to lubricate the eyes and prevent dryness.

- Frequent blinking aids in maintaining eye lubrication. The best blinking pattern is ten blinks in a row.
- Putting a shield over the display of a computer or other electronic device.
- Examining one's posture and ensuring that they are standing at least 50 centimeters away from the computer.
- Attending yearly ophthalmological reviews to rule out all the refractive issues that could affect vision (26) (27).

Although eyestrain can be a pain, the symptoms are simple to treat and it doesn't cause long-term harm to the eyes. It normally isn't significant and goes away when eyes are rested or other measures are taken to ease eye pain. Eyestrain symptoms may occasionally be a sign of an underlying eye disease that requires medical attention (28) (1).

1.8. Background of the study

During the past 20 years, Bangladesh's ready-to-wear (RMG) industry has been a key player in providing rural marginal populations with employment opportunities (29). Around 4.0 million people work in the 7,000 garment factories that are currently in operation in this nation, the majority of whom are women. The primary output of the textile industries is readymade clothing (RMG), woven and knitted, as well as other textile items. This labor necessitates a continual and close use of the eyes (30).

So, it is mostly evident that the eyehealth of the garment workers is getting compromised in their job. In light of this, a study was carried out to ascertain the knowledge, concerns, and eyehealth status of the textile workers. 100 garment workers from Ashulia, Bangladesh were directly interviewed for this study. According to their age, gender, and lifestyle, the study reveals the proportion of employees who are knowledgeable, concerned, or recently have been experiencing eyestrain (Asthenopia).

Chapter 2

Objectives

2. Objectives

2.1 General Objectives

The primary objective of this analytical study is to determine the proportion of garment workers who have asthenopia and have little understanding of or concern about it.

2.2 Specific Objectives

1. To know briefly about eyestrain or Asthenopia.
2. To know about management of eyestrain of targeted population.
3. To know how work, sleep, food habit and life style affects eye health of the population.
4. To know how medicines are used by the population in eye problems.
5. To know how much the population are known or concerned about their eye health.
6. To know whether age or gender has any effect on eye strain or Asthenopia.

Chapter 3

Literature review

3. Literature review

3.1. Title: Asthenopia Among University Students: The Eye of the Digital Generation

Authors: Rayah Issam Touma Sawaya, Nour El Meski, Joelle Bou Saba, Malek Shatila, Zeinab Aidibe & Umayya Musharrafiéh.

Background

One of the main medical issues that students deal with throughout their academic years is asthenopia, or eye strain.

Objective

The purpose of this study is to investigate the risk factors for asthenopia development and to ascertain the frequency of asthenopia within a sample of university students majoring in diverse fields.

Method

This cross-sectional study was carried out in the spring semester of 2019 among students enrolled in several faculties at the American University of Beirut. A self-administrated anonymised questionnaire that asked questions about demographics, the usage of digital devices, asthenopia symptoms, potential risk factors, and preventative measures was given to the students. Asthenopia and the various variables were correlated using a bivariate analysis. After adjusting for confounding factors, a multivariate analysis was performed to evaluate the amount to which the various variables contributed to asthenopia.

Results

Asthenopia has been found to be prevalent in 67.8% of cases, with hazy vision being the most often reported symptom (27.0%). The relationship between asthenopia and the following factors was examined using a bivariate analysis: demographics, usage of digital devices, justifications for doing so, and preventive measures. An independent t-test was used to assess age, which is a continuous variable. A series of logistic regression analysis was carried out for the variables for which a p-value of less than 0.2 was discovered. With every additional year of age, asthenopia was shown to be reduced by 0.693 times, old age has been demonstrated to be a factor of protection for asthenopia. Less than four hours of communication device use ($p=0.012$), fewer than four hours each day ($p=0.000$), and a duration of less than three years of

consistent use ($p=0.023$) were all statistically significant in having a negative correlation with asthenopia. In terms of safeguards against digital eyestrain, we discovered that using eye drops and taking frequent breaks were preventative measures ($p=0.004$; $OR=0.375$ and $p=0.000$; $OR=0.399$, respectively), while using adjustable displays was a risk factor ($p=0.000$; $OR=3.083$).

Conclusion

The sample of university students showed a non-negligible prevalence of asthenopia. The findings of this study advocate the implementation of focused screenings for asthenopia amongst students in college and emphasize the significance of creating awareness campaigns.

3.2. Title: Induced Myopia among Readymade Garment (RGM) Workers

Authors: Md. Anisur Rahman, Sarah Rahman, Jamsed Faridi, Faria Tilat Toma, Ashfia Farhin Huq & Ashraful Islam Khondokar.

Background

To ascertain the readymade garment worker's induced refractive error, both those employed in the knitting and computing departments as well as those working elsewhere.

Method

In Joydevpur, Gazipur, Bangladesh, 600 employees from 2 firms participated in an anticipated cross-sectional analytic study in January 2020. Group A consists of 300 employees who spent at least six hours a day, five days a week, at the knitting sector. Group B is made up of an additional 300 employees who were hired to act as drivers, caretakers, and security guards in addition to loading and unloading. Refractive error prevalence in both groups were compared.

Results

Those in group A had a mean age of 26.61 4.99 (95% CI, 26.04 27.18), while those in group B had a mean age of 28.51 5.69 (95% CI, 27.86 29.15). There were 52 and 28.3 cases of refractive error in the two groups, respectively. 424.9775, or the chi-square statistic. 0.00001 is the p-value. Significant at a 0.05 p value. The Pearson correlation between knitting time and refractive error showed a strong positive connection ($R = 0.7619$). The chi-square statistic for

visual acuity between the two groups is 33.1866. 0.00001 is the p-value. Significant at a 0.05 p value.

Conclusion

Knitting employees at readymade garment (RMG) are more likely than other employees working on the same premises to experience late onset myopia.

3.3. Study of Digital Eye Strain due to Extended Digital Device use among Undergraduate Medical Students during COVID - 1 Pandemic: A Cross Sectional Study

Authors: Urmil Chawla, Priyamvada Yadav, Joginder Pal Chugh & Gunjan Chadha.

Background

Due to the added requirement for the implementation of online lessons during the lockdown time during the COVID-19 pandemic, the use of electronic devices has increased significantly. With the development of online classes throughout this epidemic, the current study seeks to assess the incidence of eye strain caused by digital devices and related factors among undergraduate MBBS students.

Method

Students were given access to an online survey via a Google Form, which was available for 6 weeks. The kids were contacted through a variety of social media channels. The questionnaire asked questions about a range of topics, including user-related ergonomic issues for digital eye strain. An Excel spreadsheet was used to analyze the results.

Results

Out of the 580 respondents who completed the questionnaire, 551 were chosen to participate in the study. The sample population's average age was 21.12 + 2.02 years. Following the introduction of online classes, average screen time increased by 106.61% (3.54 0.15 hours), that was statistically significant (p 0.05). The most often utilized device was a mobile phone (88.02%; n = 485). 76.77% (n=423) indicated at least one non-ocular symptom, while 88.02% (n=485) had at least one digital eye strain symptom. The most prevalent ocular symptom was feeling like the eyes were heavy or weary (73.87%), while having trouble concentrating

(48.82%) was the most prevalent non-ocular symptom. Females were found to have a higher prevalence of both ocular (92.03%) and non-ocular (82.61%) symptoms than males.

Conclusion

After the start of COVID-19 lockdown, there has been a sharp rise in digital eye strain among undergraduate students who spend a lot of time on screens. Along with limiting screen time and using effective refractive correction, there is a need to raise awareness about ergonomic environment change. Keywords: COVID-19, online classes, digital devices, and digital eye strain.

Chapter 4

Materials & Method

4. Materials and Method

4.1 Time frame and target population

It was a cross-sectional study conducted on Readymade Garments worker in Ashulia, Dhaka , Bangladesh. The survey was carried out in February and March,2023. For the study, only employees who met the inclusion requirements were enrolled.

4.2 Inclusion and Exclusion Criteria

Participants in the study have to meet the inclusion criteria. These were the inclusion requirements:

- The subject's age should range from 18 to 40.
- The minimal daily working hours for an employee should be six.
- The employee should be literate in or at least understand Bangla.

The study did not include any employees who met the exclusion criteria. Criteria for exclusion included:

- Wearing eyewear prior to working in the facility.
- Ocular co-morbidity of any kind.
- Being pregnant and refusing to participate in the survey.

4.3 Questionnaire Design

A questionnaire was prepared and target demographic was approached and asked to respond with questionnaires on paper. The study was totally conducted physically, with questions that were self- administered provided in pen and paper-based formats. Total response of participants were recorded. The subject's age, how long they have worked in the factory, whether they have any visual issues, and any symptoms they may have experienced while working, such as headaches, eye strain, or fuzzy vision, were all noted. The questions were as following:

1. What is your name?
2. Gender?
3. What is your age?

4. Your working department?
5. Do you know about eye strain or Asthenopia?
6. Do you have any eye problem?
7. If yes, what kind of eye problems do you face?
8. If yes, did you consult any doctor?
9. If yes, how often do you see a doctor?
10. Did the doctor suggested any medications?
11. If yes, did you take those medications accordingly?
12. Which/what type of medications did the doctor prescribed you?
13. If no, did you take any medications by yourself to get rid of eye problems?
14. Which /what type of medications did you take?
15. Do you wear glasses or any preventive tips during work period?
16. Your working period? (Hour)
17. How many hours do you get to sleep?
18. Do you have to work overnight often?
19. Do you feel that you have excessive work load?
20. Do you have other health conditions like- diabetes/hypertension/tooth problem etc?
21. How much time do you stare at smartphone / TV in a day?
22. Do you intake enough water in a day?
23. Do you eat in proper pattern throughout the day?
24. Do you think you eat enough food that is good for your eye health?
25. Do you clean your eyes properly?
26. Do you know which foods are good for eye health?

4.4 Sample size and sampling technique

Data from this study were collected through a convenient sampling technique.

The sample size in this study was 100 and feedback was stopped when the target of 100 was met.

4.5 Method of analysis

Forms that are filled out, collected, and evaluated to ascertain the results. In order to get the results, MS Excel was used for the statistics. The final data was expressed as frequencies and percentages.

Chapter 5

Result & Discussion

5. Results & Discussion

5.1 Demographic profile of workers and their knowledge about eyestrain (Asthenopia)

A total of 100 workers were surveyed using the pre-made questionnaire out of which 17 participants (17%) were disqualified from the study because they satisfied the exclusion criteria. The study comprised the remaining 83 participants (83%) who satisfied the inclusion requirements.

Table 1: Percentage of knowledge about eyestrain

Characteristics	Number of workers	Frequency (%)
Yes	37	49%
No	15	20%
May be	23	31%

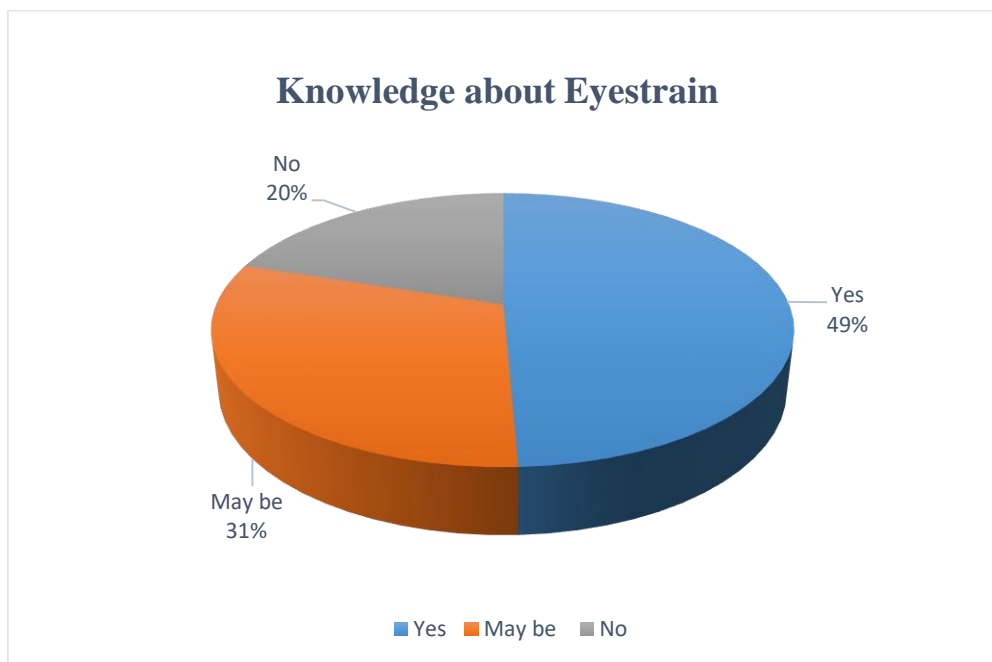


Chart 1: Knowledge about eyestrain or Asthenopia among workers

Discussion: Among 83 participants who were enrolled for the study, 37 workers (49%) were aware of eyestrain or asthenopia, while 23 workers (31%) knew something about it but not very well, and 15 workers (20%) knew nothing at all (**Chart 1**).

5.2 Percentage of workers with and without eyestrain

Table 2: Percentage of workers with and without Eyestrain

Characteristics	Number of workers	Frequency (%)
With eyestrain	75	90.36%
Without eyestrain	8	9.64%

Among the 83 workers who were included in the study, 75 workers (90.36%) had eyestrain and 8 workers (9.64%) did not have eyestrain (**Chart 2**).

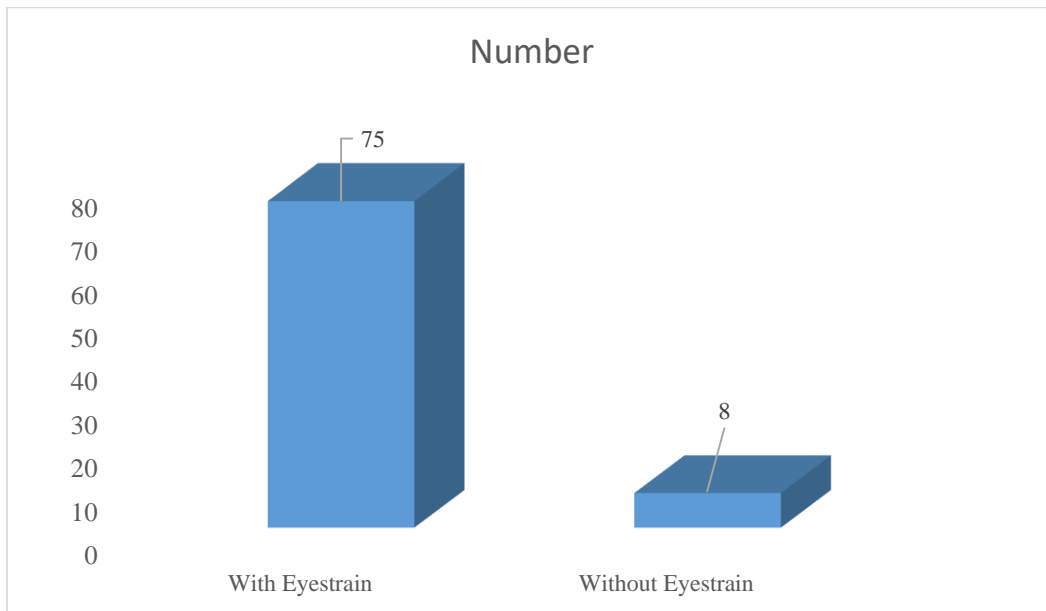


Chart 2: Number of workers with and without Eyestrain

5.3 Percentage of workers having eyestrain according to working section, gender and age

Table 3: Percentage and number of workers having eyestrain according to working section

Characteristics	Number	Frequency (%)
Sewing	44	58.67%

Folding	9	12%
Packaging and others	10	13.33%
Computer or digital device based	4	5.33%

Discussion: According to working section, most workers are from sewing section who had eyestrain (58.67%), 13.33% were from packaging and other sections, 12% were from folding section and 5.33% were from computer and digital device based section since most of the participants were from sewing section (**Chart 3**)

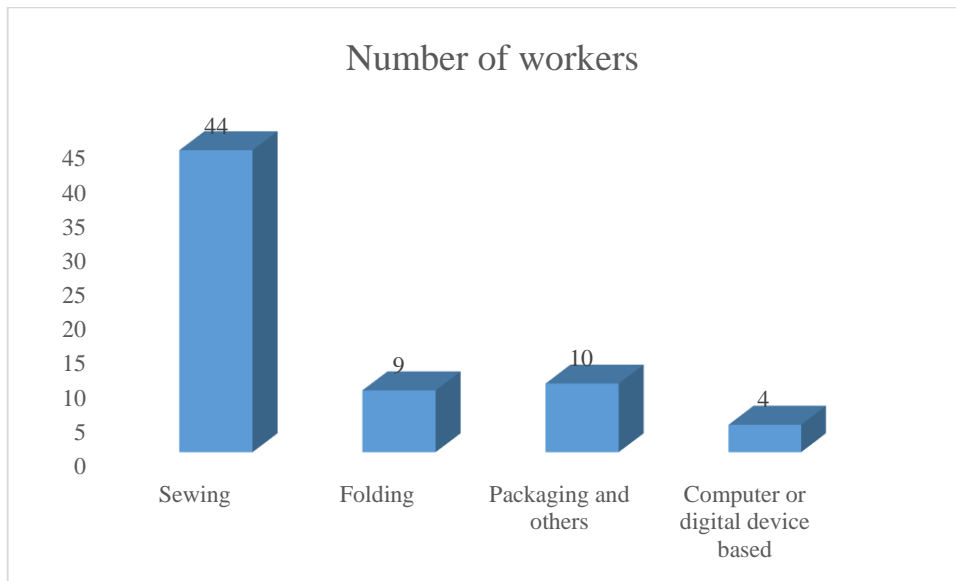


Chart 3: Number of workers having eyestrain according to working section

Table 4: Percentage of workers having eyestrain according to gender

Characteristics	Number of workers	Frequency (%)
Male	19	25.33%
Female	56	74.67%

Discussion: According to gender, females (74.67%) were suffering more from eyestrain as most of them worked in sewing section where male (25.33%) were suffering less from eyestrain as most of them did not work in sewing section (**Chart 4**)

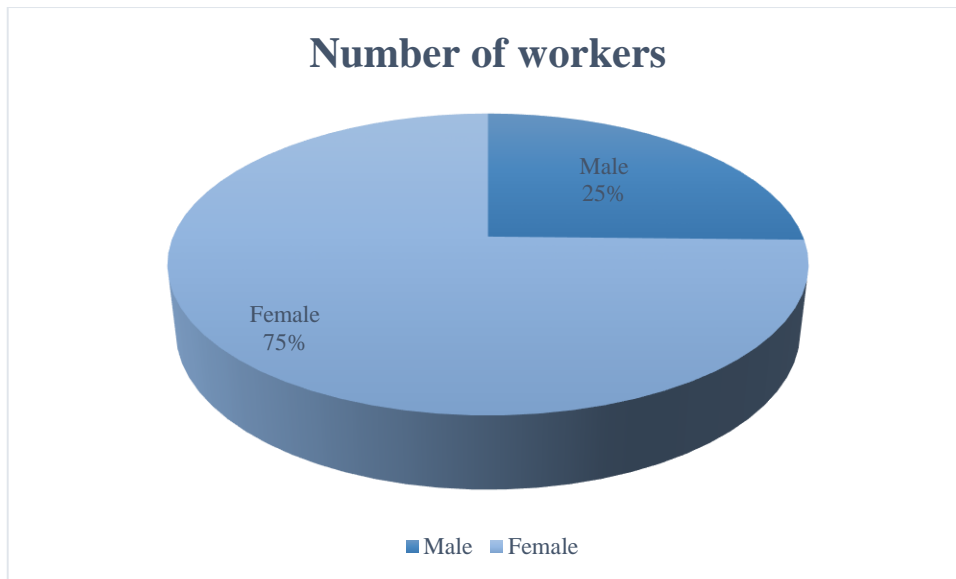


Chart 4: Number of workers having eyestrain according to gender

Table 5: Percentage of workers having eyestrain according to age

Characteristics	Number of workers	Frequency (%)
18-20	6	8%
21-25	13	17.33%
26-30	40	53.33%
31-39	10	13.33%
40+	6	8%

Discussion: In accordance of age, most were 26-30 years who had eyestrain, 17.33% were 21-25 years of age, 13.3% were 31-39 year of age and 18-20 & 40+ aged were 8% (**Chart 5**)

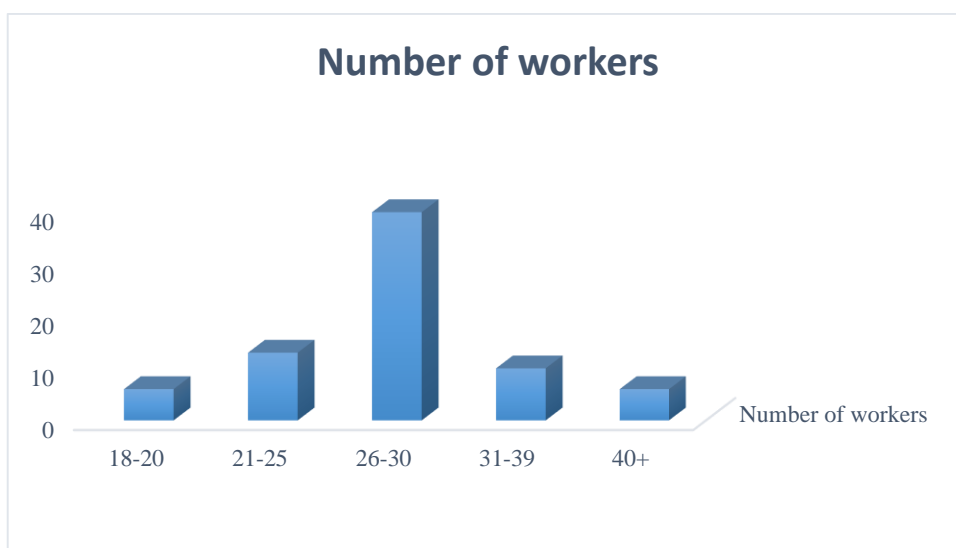


Chart 5: Number of workers having eyestrain according to age

5.4 Percentage of workers according to symptoms, frequency of doctor consultation, type of medicine used in eyestrain and eyewear

Table 6: Percentage of workers according to symptoms

Characteristics	Number	Frequency (%)
Blurry vision	15	20%
Blurry vision & headache	15	20%
Blurry vision, pain & headache	8	10.67%
Pain & blurry vision	7	9.33%
Headache & itching	12	16%
Pain & redness	11	14.67%
Headache , irritability & itching	7	9.33%

Discussion: Most commonly reported symptom was blurred vision as documented in **Table 5**. Headache and pain were also reported as most occurring or faced symptoms (**Chart 6**)

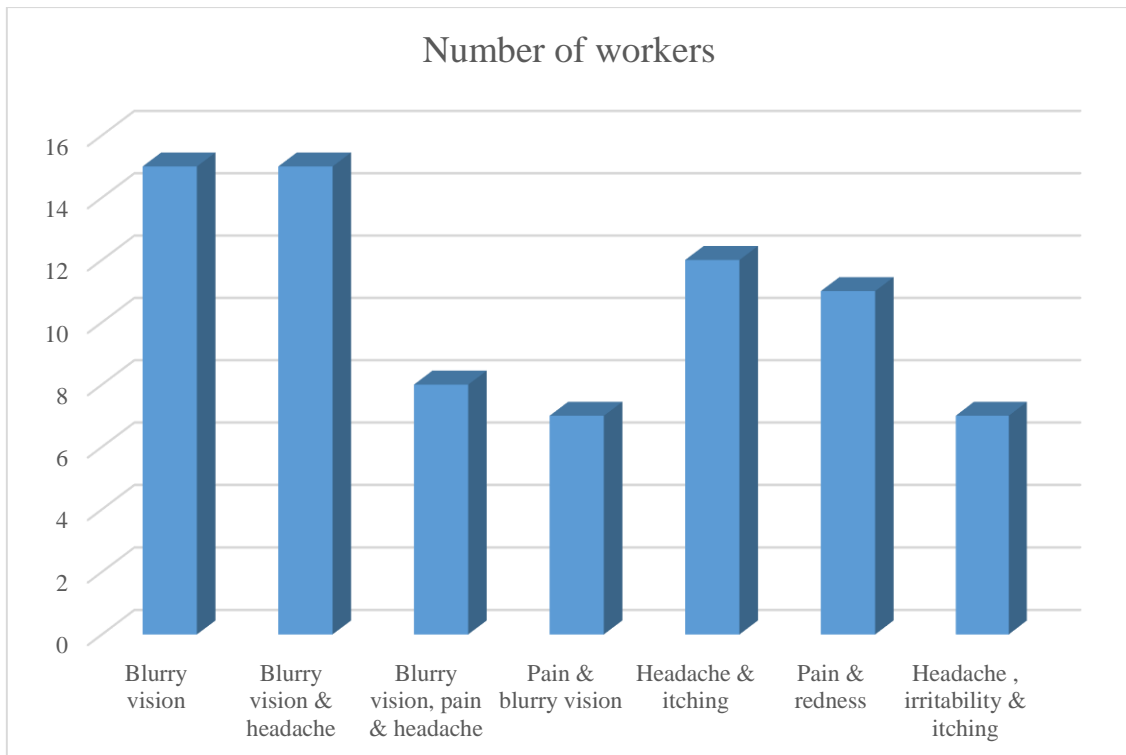


Chart 6: Number of workers according to symptoms

Table 7: Percentage of workers according to consultation of doctor

Characteristics	Number of workers	Frequency (%)
Annually	30	40%
Never	45	60%

Discussion: 60% of the total participants who have eyestrain consulted doctor annually where 40% of them never consulted doctor (**Chart 7**)

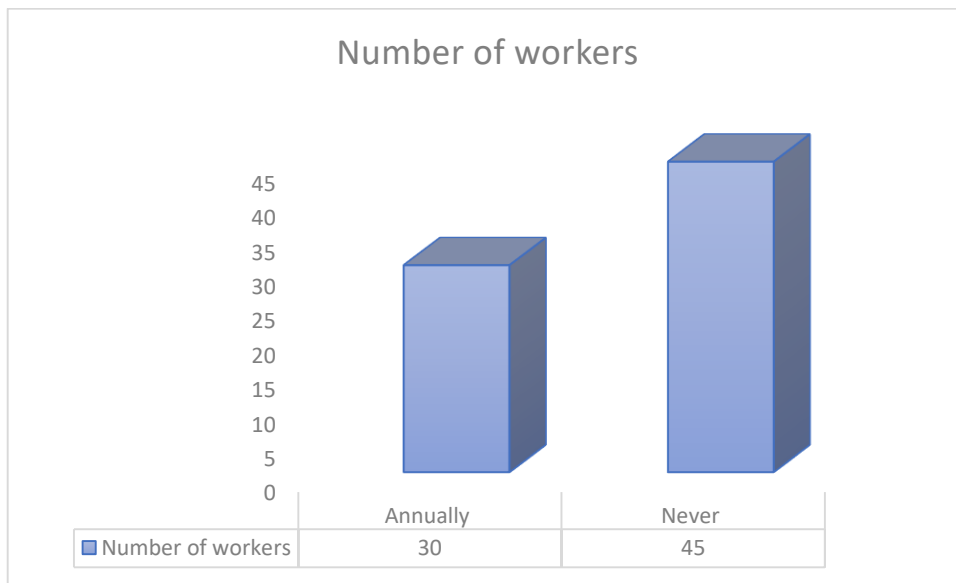


Chart 7: Number of workers according to doctor consultation

Table 8: Percentage of type of medicine used

Characteristics	Number of workers	Frequency (%)
Eye drop	30	40%
Oral medication	15	20%
No medicines used	30	40%

Discussion: Most of the workers who consulted doctor were recommended eye drop (40%) , 20% of them were recommended oral medication and at the same time most of them were not recommended any medicines (**Chart 8**)

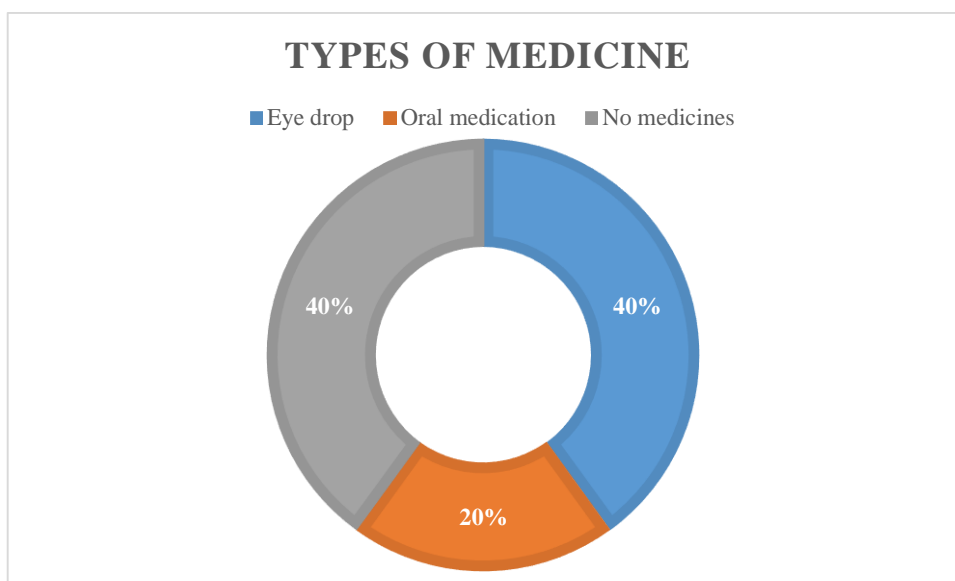


Chart 8: Percentage of types of medicine used

Table 9: Percentage of workers who wears an eyewear during work

Characteristics	Number of workers	Frequency (%)
Yes	15	20%
No	60	80%

Discussion: Majority of the population did not use any kind of eyewear (80%) during their work but 20% used an eyewear during their work (**Table 9**)



Chart 9: Portion of workers according to use of an eyewear during work

5.5 Distribution of potential risk factors and lifestyle choices

Table 10: Percentage of workers according to their work schedule

Characteristics	Number	Frequency (%)
Working period		
8 hours	15	20%
10 hours	30	40%
12 hours	22	29.33%
>12 hours	8	10.67%
Overtime		
Yes	65	86.67%
No/depends	10	13.33%

Discussion: The majority with eyestrain reported that they worked 10 hours (30%) or more such as 12 hours (29.33%). Most of them had to do overtimes (86.67%). So a significant correlation was found between eyestrain and doing overtimes/working for quite long time without any breaks (**Table 10**)

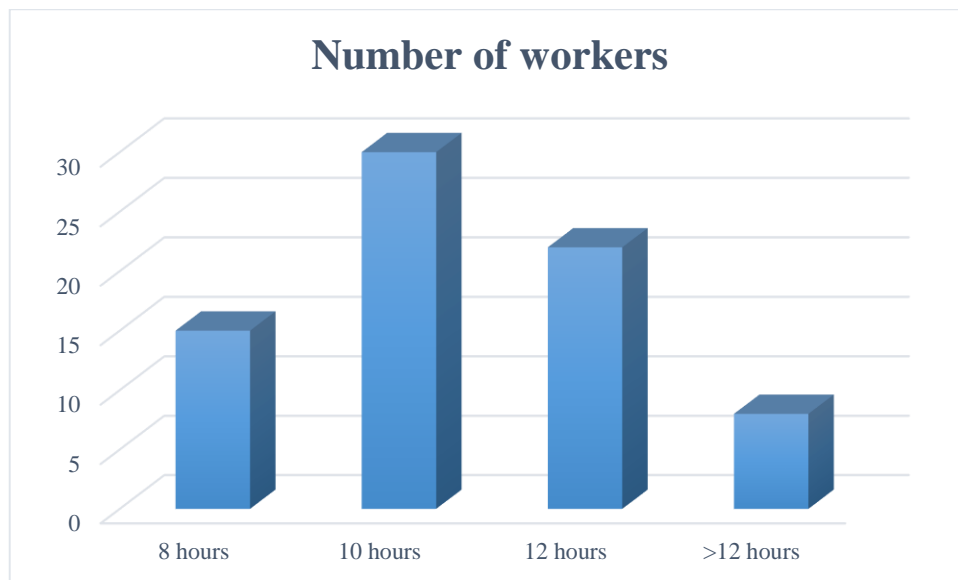


Chart 10: Number of workers according to their working period

Table 11: Percentage of workers according to their sleep hours

Characteristics	Number of workers	Frequency (%)
6 hours	47	62.67%
7 hours	16	21.33%
>7hours	9	12%
8 hours or more	3	4%

Discussion: From the table above its clear that 62.67% of the participants slept 6 hours, 21.33% slept 7 hours, 12% slept more than 7 hours and 4% slept 8 hours or more (**Chart 11**)

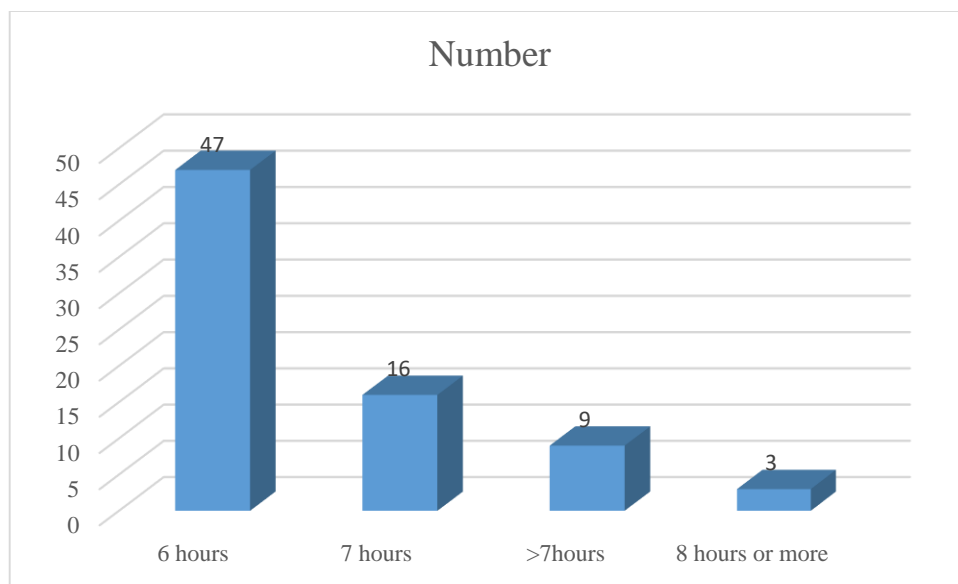


Chart 11: Number of workers according to their sleep hours

Table 12: Percentage of workers according to time spent on TV/phone & work pressure

Characteristics	Number of workers	Frequency (%)
Time spent on TV/Phone		
<1 hour	35	46.67%
1 hours	17	22.67%
2 hours	14	18.67%
3 hours	3	4%
>3 hours	6	8%
Work pressure		
Yes	37	49%

Sometimes	9	12%
Depends	29	38.67%

Discussion: It was reported that about 22.67% workers used smartphone or watched TV 1 hour and only 8% used smartphone or watched TV more than 3 hours. 49% with eyestrain agreed that they had excess work pressure and other 38.67% admitted that working pressure depended on how much time they had to work (**Table 12**)

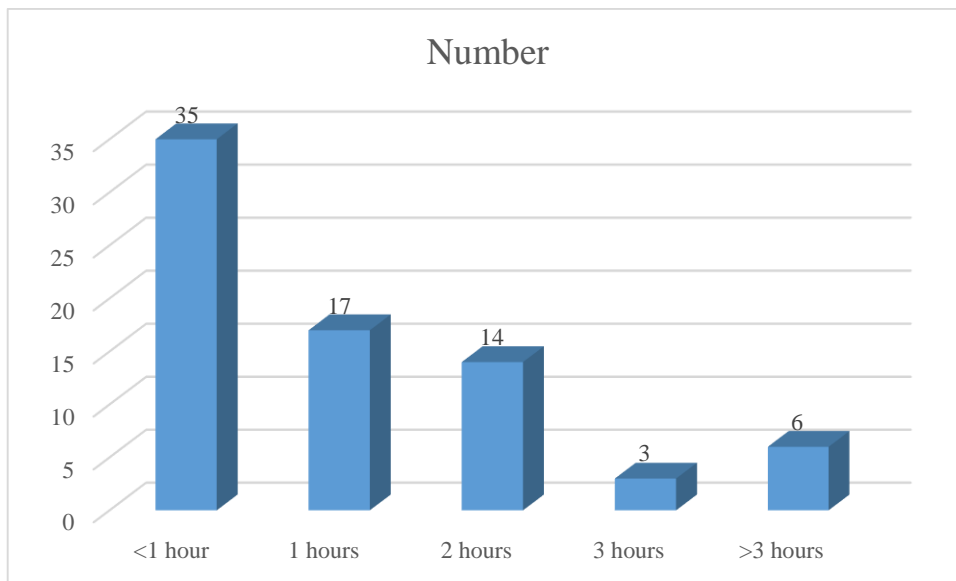


Chart 12: Number of workers according to time spent on TV/Phone

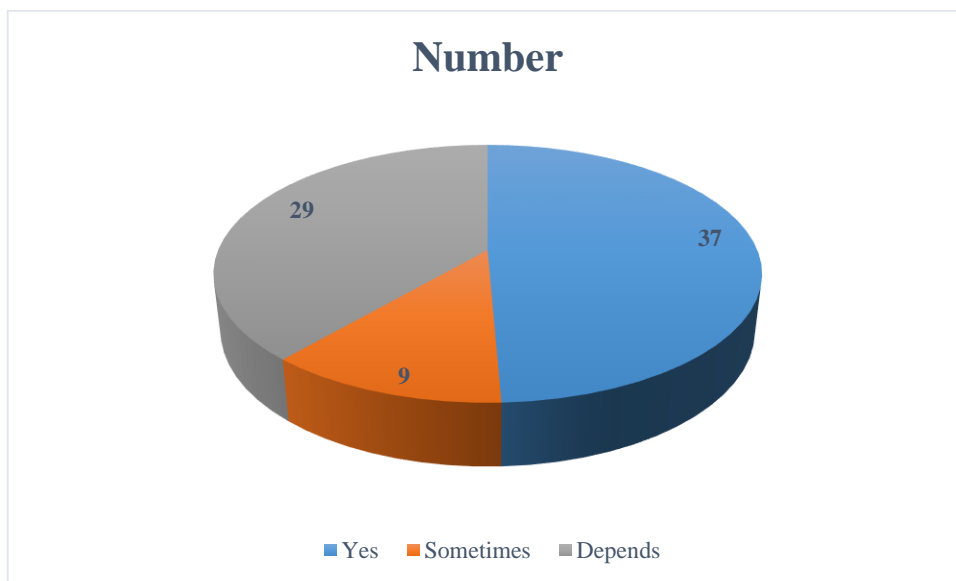


Chart 13: Number of workers according to excessive work pressure felt

5.6 Concern about eyestrain, eating patterns and hygiene

Table 13: Percentage of workers according to their hygiene maintenance

Characteristics	Number	Frequency (%)
Yes	60	80%
No / sometimes	15	20%

Discussion: According to the table above, 80% participants maintained eye hygiene or cleaned their eyes on daily basis where 20% did not maintained proper eye hygiene (**Chart 14**)

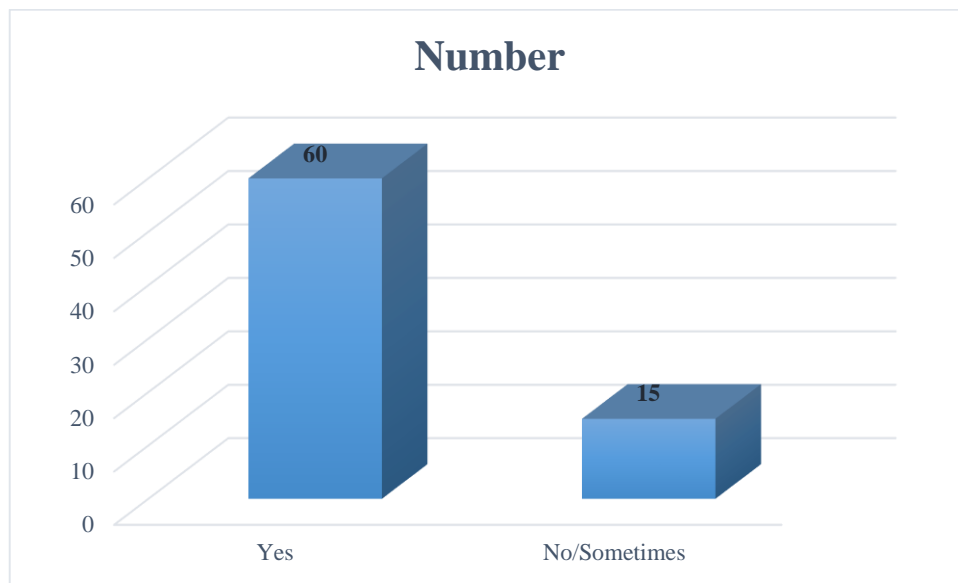


Chart 14: Number of workers that maintained eye hygiene

Table 14: Concern about eye health & eating patterns

Characteristics	Number of workers	Frequency (%)
Eating in proper pattern		
Yes	38	50.67%
No / sometimes	37	49.33%
Enough water intake		
Yes	41	54.67%
No	34	45.33%

Knowledge of foods good
for eye health

Yes	53	70.67%
No / may be	22	29.33%

Discussion: Regarding concerns about eye health, about half of the population did not eat their meals on time and did not intake enough water in a day but the other half did. It was reported that 70.67% were known about the foods which are good for eye health but the rest 29.33% were unknown

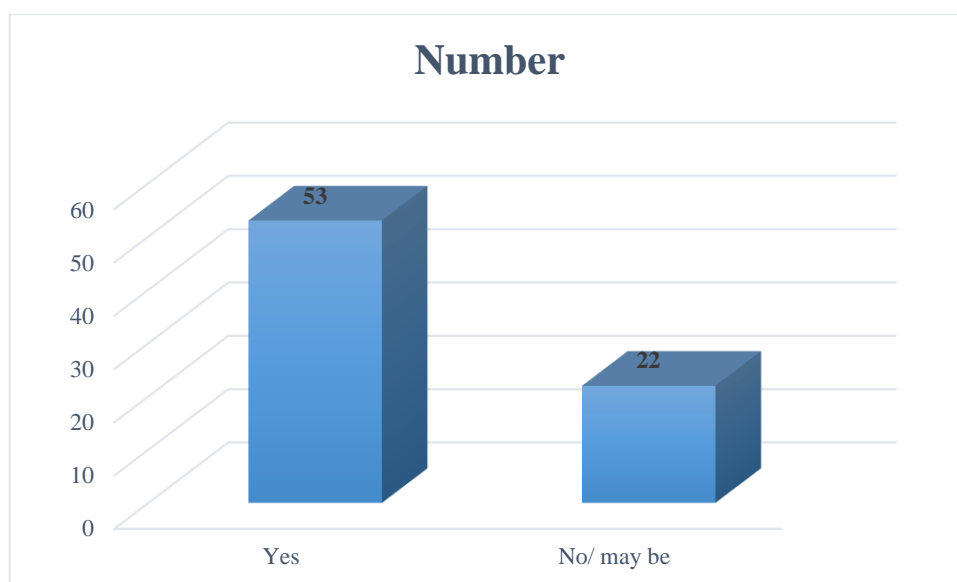


Chart 15: Number of workers according to their knowledge of foods that are good for eye health

Chapter 6

Conclusion

6. Conclusion

A successful industry requires a healthy workforce, and it is a significant loss for both the company and the nation when a worker gains expertise in an area but is unable to support it. According to this study, excessive close work, work pressure, and eyestrain are more common in the sewing department. It is therefore time for every RGM to consider getting frequent eye exams and taking breaks during the workday. Ironically, the owners of the factories and the economy would ultimately gain from better health conditions for the RMG employees.

Future scope: The nature of the labor and an unsuitable work environment have put sewing professional's eyes at risk. Therefore, in the future, clothing companies can implement routine eye examinations, workplace safety rules, and the usage of appropriate eye-protective gear that can enhance workers' eye health and productivity.

Chapter 7

References

7. References

1. Professional, Cleveland Clinic Medical. Eye Strain. [Online] Cleveland Clinic, August 06, 2019.[Cited:April 07, 2023.]https://my.clevelandclinic.org/health/diseases/21059-eye-strain?fbclid=IwAR1R1RuFG7_qY56C4HbSiGCGcpsyshCRrGvq1_UfummyihrbOW-zevYeKdmk.
2. Esen Karamursel Akpek, M.D. Eyestrain. [Online] Johns Hopkins Medicine, August 01, 2021.[Cited:April 07, 2023.] https://www.hopkinsmedicine.org/health/conditions-and-diseases/eyestrain?fbclid=IwAR25c2GmE3pYAju2Yrbo0ZZIPjS2kj0Kh-qtlMWve_SBPs96WxviMVqrV4U.
3. Ray, Michael. asthenopia. [Online] Britannica, September 19, 2016. [Cited: April 07, 2023.] <https://www.britannica.com/science/eyestrain>.
4. Detecting Binocular Vision Anomalies in Primary Eyecare Practice. Bruce J.W. Evans BSc, PhD, FCOptom, FAAO, FEAOO, FBCLA, DipCLP, DipOrth. 06, 2022, Pickwell's Binocular Vision Anomalies, Vol. 06, pp. 11-44.
5. S., Melody. Eye Strain Or Asthenopia. [Online] 1001 Optical, September 15, 2020. [Cited: April 07, 2023.] <https://www.1001optical.com.au/blogs/news/eye-strain-or-asthenopia?fbclid=IwAR33wHMMyzvauDCKeDqQttnLvNbk704aVZWV720-NPme9qFreFVzqSQwLOc>.
6. The Prevalence of Asthenopia and its Determinants Among Schoolchildren. Hassan Hashemi, Mehdi Khabazkhoob, Samira Forouzesh, Payam Nabovati, Abbas Ali Yekta, Hadi Ostadimoghaddam. 01, 2017, Journal of Comprehensive Pediatrics, Vol. 08, pp. 0-1.
7. Mangan, Tom. Eye Accommodation. [Online] All About Vision, April 06, 2021. [Cited: April 07, 2023.] <https://www.allaboutvision.com/eye-care/eye-anatomy/accommodation/?fbclid=IwAR0Tgjn7cCk0QTyqMrjaqgRLgGmOgrcinRXEUxk6csAd3rC92AzJKOeuncU>.
8. Viewing compromised visual stimuli causes dry eye symptoms: Role of the orbicularis muscle . James E. Sheedy, Sowjanya Gowrisankaran. 06, 2006, Journal of Vision , Vol. VI, pp. 0-1.
9. The physiology of eyestrain. Sheedy, J.E. 9, 2007, Journal of Modern Optics, Vol. 54, pp. 1333-1341 .

10. Frequency of asthenopia and its association with refractive errors. Wajuihian, Samuel O. 1, 2015, AVEH African Vision and Eye Health, Vol. 74, pp. 0-7.
11. Safady, Dr. Marcus. The digital environment and asthenopia. 09 1, 2015.
12. Is All Asthenopia the Same. Engle, James Sheedy John Hayes Jon. 11, 2003, Optometry and vision science: official publication of the American Academy of Optometry, Vol. 80, pp. 9-732.
13. Ayesha Shariff, MSIV, Robert F. Melendez, MD, MBA. Asthenopia. [Online] EyeWiki, April 05, 2023. [Cited: April 08, 2023.] https://eyewiki.aao.org/Asthenopia?fbclid=IwAR13ykW1ZUwQmQm3gm_GH2dhB8Ih1LRgpUqb5hi3szEQNjpuZ0Ctkm5FDnY.
14. Staff, Mayo Clinic. Asthenopia. [Online] Mayo Clinic, September 15, 2022. [Cited: April 08, 2023.] https://www.mayoclinic.org/diseases-conditions/eyestrain/symptoms-causes/syc-20372397?fbclid=IwAR2utmyta-X1MrvuKXvBlu6dGd40P8YMUDJWs2IPVlihHV3n0IK6SrZ__SM.
15. Troy Bedinghaus, OD. An Overview of Eye Strain (Asthenopia). [Online] verywellhealth, September 12, 2022. [Cited: April 08, 2023.] <https://www.verywellhealth.com/do-you-suffer-from-asthenopia-or-tired-eyes-3421982>.
16. Kramer, Dr. Elise. Digital Eye Strain and the Causes of This Condition. [Online] Miami Contact Lense Institute, June 27, 2022. [Cited: April 09, 2023.] <https://www.miamicontactlens.com/digital-eye-strain-and-the-causes-of-this-condition/?fbclid=IwAR1qq65xvLW0S8W0XjQEK-fo93w3-J7jhPsNjNxq9yxR77akuaeHR1sgA1s>.
17. Expert. Eye strain. [Online] Healthdirect Australia, April 01, 2021. [Cited: April 09, 2023.] https://www.healthdirect.gov.au/amp/article/eye-strain?fbclid=IwAR0-laBJ8oejDyF-DJdIfVNHW-1VmXYhiyy3xv_5j564hTp2i7N5j2OyDI.
18. Vivid Vision. Eye Strain (Asthenopia). [Online] Vivid Vision. [Cited: 04 09, 2023.] https://www.seevividly.com/info/Binocular_Vision/Signs_and_Symptoms/Eye_Strain.
19. Das, Dr. Reema. Eye Strain - How Proper Lighting Can Help Reduce It? [Online] Lybrate, October 23, 2019. [Cited: April 09, 2023.] <https://www.lybrate.com/topic/eye-strain-how-proper-lighting-can-help-reduce->

it/a203d1062fe31c74f440893a1e0977ce?fbclid=IwAR3xnXInhuDfQFIImST0nNkzuLC1FeCHviXZwZyToH326gD_5H9JlrGco-h8.

20. Rodriguez, Miranda. Office Lighting Tips: 7 Simple Ways to Reduce Eye Strain. [Online] Barnett Dulaney Perkins Eye Center, June 11, 2017. [Cited: April 09, 2023.] https://www.goodeyes.com/eye-health/office-lighting-tips-reduce-eye-strain/?fbclid=IwAR0sq4X4fvaNahcZfcW4RqnkdRAznA6dt__76HlaInf-PIKlf2OARB16INc.

21. Lindsay Boyers, CHNC. 8 Ways to Reduce Eye Strain While Working From Home. [Online] verywellhealth, September 10, 2020. [Cited: April 09, 2023.] <https://www.verywellhealth.com/digital-eye-strain-work-from-home-5077257>.

22. Impact of Air Pollution and Weather on Dry Eye. Jordan T. Mandell, Maria Idarraga, Naresh Kumar, Anat Galor. 11, 2020, Part 5. Public health and air pollution in Asia (PAPA): a combined analysis of four studies of air pollution and mortality, Vol. IX, pp. 0-3740.

23. Rohini Radhakrishnan, ENT, Head and Neck Surgeon. How Can I Relieve Eye Pain at Home? [Online] MedicineNet, September 28, 2022. [Cited: April 09, 2023.] https://www.medicinenet.com/how_can_i_relieve_eye_pain_at_home/article.htm?fbclid=IwAR1DzwtYmzML2ZZOoT1ndC0_a2g1AhQivs3QRsttbnFwDmBg_O5zM0LKEEs.

24. O. D. Sonia Kelley, A. Santos-Longhurst. What is asthenopia? [Online] Plano, September 14, 2022. [Cited: April 09, 2023.] https://plano.co/asthenopia/?fbclid=IwAR1DzwtYmzML2ZZOoT1ndC0_a2g1AhQivs3QRsttbnFwDmBg_O5zM0LKEEs.

25. Ann Marie Griff, O.D. Adrienne Santos-Longhurst. Getting Relief for Asthenopia. [Online] healthline, December 18, 2018. [Cited: April 10, 2023.] https://www.healthline.com/health/asthenopia?fbclid=IwAR2MEJcmYjpsv6KrMdY7QY-syoKMnIxG_hceWOQTX-6_03rEsb0syHMsels.

26. Area Oftalmologica Avanzada. Asthenopia. [Online] Area Oftalmologica Avanzada, August 13, 2020. [Cited: April 10, 2023.] https://areaoftalmologica.com/en/terminos-de-oftalmologia/astenopia/?_gl=1*rfpra2*_ga*YW1wLWlxejNWMWJMWjBtAVd5VDhmSE01Qk90dDBWQjFjUnFwMDA3YzdUdWY4WnZOWld0WDBNd3NvYk5tU1NWbFdmUIQ&fbclid=IwAR2eV8Pdvr7i3_qmtrsRwbbDtmyNr2T9IMOs4z00wBFGu3cLgMmHqPEQ6wR4.

27. Digital Eye Strain- A Comprehensive Review. Kirandeep Kaur, Bharat Gurnani, Swatishree Nayak, Nilutparna Deori, Savleen Kaur, Jitendra Jethani, Digvijay Singh, Sumita Agarkar, Jameel Rizwana Hussaindeen, Jaspreet Sukhija, Deepak Mishra. 1, 2022, *Ophthalmology and Therapy*, Vol. XI, pp. 1655-1680.
28. The Eye Practice. Eye strain: When should you worry? [Online] The Eye Practice, March 03, 2017. [Cited: April 10, 2023.] https://www.theeyeppractice.com.au/optometrist-sydney/eye-strain-when-should-you-worry/?fbclid=IwAR2HsVwaSvKwilfpq81qAzJyJ9kPKzjM7M4gWA2fchQaF_L-mBXIIMh5PhU.
29. Health Status of the Female Workers in the Garment Sector of Bangladesh. Shaheen Ahmed, Mohammad Raihan. 1, 2014, *Cankiri Karatekin Universitesi Iktisadi ve Idari Bilimler Fakultesi Dergisi*, Vol. VI, pp. 43-58.
30. Industrial Water Management and Sustainability: Development of SIWP Tool for Textile Industries of Bangladesh. Md. Sazzadul Haque, Nazmun Nahar, Sayed MD. Sayem. 4, 2021, *Water Resources and Industry*, Vol. 25, p. 100145.
31. Expert. Eye strain. [Online] Healthdirect Australia, 04 01, 2021. [Cited: 04 09, 2023.] https://www.healthdirect.gov.au/amp/article/eye-strain?fbclid=IwAR39g-zG1x--aHvlQpRzLtjw-rGCaJ6f8nwFKZHGDEtGeCB67lfd2Dv4c_4.