



## ILLUMINATION LEVELS AND EYESTRAIN IN WORKERS FROM A PHARMACEUTICAL COMPANY IN MEXICO CITY

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### INTRODUCTION

- There are few studies about eyestrain or asthenopia in the Mexican and international pharmaceutical industry.
- Eyestrain or asthenopia is considered as an expression of visual fatigue, through the following ocular symptoms: burning, pain, itching, gritty feeling, redness, tearing and headache.



### INTRODUCTION

- This study evaluates the association between eyestrain symptoms and levels of lighting in the conditioning area in a pharmaceutical company from Mexico City.
- In the area of preparation of the pharmaceutical industry, the work process that has as activity develops observation, testing, quality control of pharmaceutical products that are made, for this reason, involves using your view to 100%.

### THEORETICAL FRAMEWORK

- Visión



Visual Problems

- Astigmatism



### THEORETICAL FRAMEWORK

- Myopia



- Hiperopya



### METHODS

- We performed a cross-sectional study of 34 workers from a conditioning area.
- Lighting levels were measured at the workplace with Luxmeter Mercher Model 05860.
- The light meter was adjusted and operated at the beginning and during the evaluation

## METHODS

- The reflection factor was also evaluated
- A visual fatigue questionnaire was applied to the workers and a visual examen was performed.
- Frequencies and the odds ratio for the illumination and visual complains were calculated with the SPSS program.

## RESULTS

- A 69.69% of workers in the conditioning area were women.
- The average age in both men and women was between 41 and 50 years old, with a seniority length from 3 to 12 years.
- A 75% of workers used lenses with graduation and 76.93% of workers have an average of 1 to 10 years with a visual impairment.

## RESULTS

- Illumination levels in the conditioning area

87.87% of workers felt that the lighting was adequate in the conditioning area.

According to the study of lighting in five of the eight lines the levels were below the recommended level of 200 lux not optimal according to NOM-025-STPSS-2008).

Reflection levels were within the norm in the different lines.

## RESULTS

- Symptoms of fatigue and visual disturbances

Two the most frequent symptoms were:

- Headache with a prevalence of 51.52%
- Redness and burning eyes with a prevalence of 54.55%.
- The 57.57% of workers had at least 3 symptoms of eyestrain.

- Visual disturbances more common in these workers were:

- Astigmatism and myopia (12.1%),
- Compound Myopic Astigmatism (12.1%),
- Astigmatism (33%),
- Myopia (12.1%) and
- Myopia and presbyopia (9.1%).

## RESULTS

- Association between lighting and visual fatigue symptoms

Workers with low illumination levels had significant increased risk of having visual complains such as:

- Eyelid twitch (OR= 22.16)
- Headaches (OR= 12.8)
- Eye redness (OR= 10.2)
- Itching (OR= 12.7)

## DISCUSSION

- Based on this study results we can conclude that workers visual fatigue symptoms in the conditioning department is related to low levels of illumination.
- Workers with visual problems such as astigmatism, myopia, compound myopic astigmatism, and an inadequate workplace have a higher eye accommodative asthenopia or eyestrain.
- If this situation is not solved, it may impact in workers health and company's productivity.

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## THANK YOU

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AT WORK IS A  
FEELING OF  
BEING, OR  
HAPPINESS  
SELF-PLEASURE  
WORKER IN  
RELATION TO  
THEIR WORK.**

