



## Correlation Analysis of Emotional Control in Female Workers, Operative Yielding, Nutritious Food and Female Health Symptoms in the Biomedical Industry in Tijuana, México

Luis Andrés Mondragón Chavero<sup>1</sup>, Hugo Lee Martínez<sup>2</sup>, Denise Lee Garibi<sup>2</sup>, María Elena Garibi Chapula<sup>2</sup>, ENF ECI Ángel Antonio Colorado Rodríguez<sup>3</sup>, Carlos Raúl Navarro González<sup>3</sup>, Luis Andrés Mondragón Chavero<sup>4</sup>, Rosa María Duque Sevilla<sup>5</sup>, María del Carmen Corral Nuñez<sup>6</sup>, Gustavo López Badilla<sup>6,7</sup>, Lorena Jazmín Rodríguez Martínez<sup>7</sup>, Rocío Selene Rodríguez Galindo<sup>7</sup>, Ana Karen Villaseñor Alemán<sup>7</sup>

<sup>1</sup>Departamento de Ingeniería Industrial, CETYS Universidad, Tijuana, Baja California, México.

<sup>2</sup>Departamento Ergonomía Aplicada, Ergomedical de México, Astrónomos 13802, INDECO Universidad, Tijuana, Baja California, México.

<sup>3</sup>Profesor de Campo Clínico en UABC–Universidad Autónoma de Baja California, Valle de las Palmas, Tijuana, Baja California, México.

<sup>4</sup>Departamento de Ingeniería Industrial, Universidad Autónoma de Baja California, Mexicali, Baja California, México.

<sup>5</sup>Departamento de Ingeniería Industrial, Tecnológico Nacional de México, Instituto Tecnológico de Tijuana, Tijuana, Baja California, México

<sup>6</sup>Departamento de Ciencias Aplicadas, Instituto Internacional para el Desarrollo Empresarial (INIDE), Tijuana, Baja California, México.

<sup>7</sup>Departamento de Ciencias, Secundaria Federal Emiliano Zapata No. 32, Valle Las Palmas, Campus Tijuana, Baja California, México.

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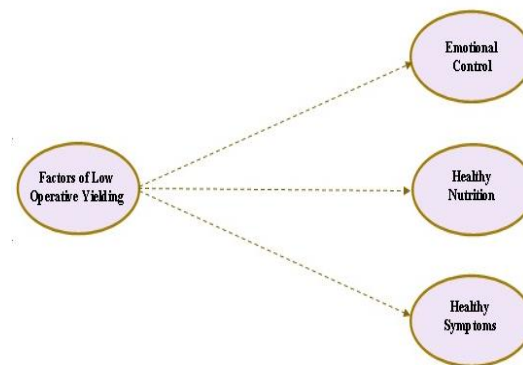
**Abstract** – This investigation is of great relevance in the industrial sector and is prepared with great respect for the working women of industrial companies around the world, who thanks to their great effort, and are a great labor force in each industry where they work. The presence of healthy actions in women's as the menometrorrhagia and gynecorrhagia health symptoms, which can generate a from a mild discomfort to a strong abdominal pain that can cause poor performance of female workers in a biomedical industry installed in the city of Tijuana, in which the operational performance was evaluated for weekly periods of a manual assembly area in industrial processes of a production line. It was observed that during monthly periods, where certain working women suffered from this uncomfortable health symptom, they generated various types of errors and thus produced defective products, being a great concern for the managers, supervisory and specialized personnel in the manufacturing areas, where the investigation was made. This critical situation was originated bad emotional control in female workers of the manufacturing areas of the industrial company evaluated, and the generation or errors and defective manufactured products, decreasing the operative yielding of the female workers evaluated. To improve this critical situation was made a nutritious food with apples, oranges and strawberries; and use motivational pop music with active breaks, observing an excellent attitude of female workers, and

increase in his operative yielding and in productive and quality yielding. This investigation was made in 2023.

**Keywords:** Healthy symptoms, biomedical industry, emotional control, nutritious food, productivity and quality indices.

### 1. INTRODUCTION

The operative yielding of workers of industrial process as men or women, depends of some factors that are presented every day and are and it occurs with greater impact on some days of each month of the year. Some factors that can occur frequently in all months of the year are the emotional control, nutritional health and menometrorrhagia and gynecorrhagia, especially in women, who when they have control of the aforementioned aspects, generate considerable operational performance (Oyarzo et al, 2022). This was to beings the support to obtain levels of productivity and quality of any type of industrial company worldwide. In this scientific study was made ana analysis of the factors mentioned (emotional control, nutritional health and menorrhagia, menometrorrhagia and metrorrhagia, especially in women), and be correlated with the productivity and quality levels, observing some relevant aspects in some days of each month of 2023, when was made this investigation, where the workers evaluated were womens (Dhital, 2017).



**Fig -1:** Types of factors that generates low operative yielding in women’s in industrial operations.  
**Source:** Analysis of investigation.

#### 1.1 Biomedical Industry in Tijuana

Is an important industry worldwide where are manufactured a lot type of medical instruments and equipments to be used in the clinical and surgical activities, and in a lot houses. In table 1 is presented the main medical products fabricated in the biomedical industry of Tijuana city (AIMT, 2023).

**Table -1:** Principal medical products manufactured in the biomedical industry of Tijuana (2023)

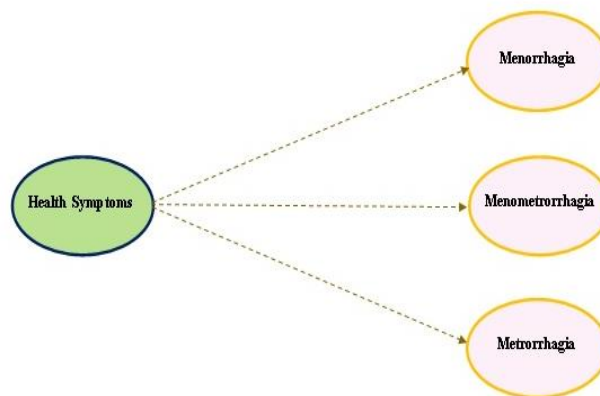
Characteristics	Cost	Functionability	Flow Production
Medical Products			
Digital Arm Blood Pressure Monitor	High	Is utilized to measure the blood pressure	Lineal
Examination Lamps	Low	Is used to examine eyes, ears and nose	Lineal, U-Line

First Aid Kit	Medium	Is applied in medical emergency actions	Lineal, G-Line
Oximeter	Medium	Is utilized to measure the oxygen in blood	T-Line, U Line
Plastic Gloves	Low	Are used by doctors in general and surgical activities	Lineal, T-Line
Plastic Hoses	Low	Are utilized to connect medical instruments and liquid medications	G-Line, T-Line
Scalpel	Medium	Is applied in surgical activities	Lineal, U Line
Stethoscope	High	Is utilized to check vital signs	Lineal, G-Line
Surgical Scissors	Medium	Are used in surgical actions	U-Line, T-Line
Syringes	Medium	Are applied in general medicine and surgical activities	G-Line, U Line

Table 1 shows the main medical products that are manufactured in the biomedical industry where was made this scientific study, which is located in an industrial zone of the Tijuana city. This was important to know each type of biomedical product manufactured and determine the type of process flow, in according the materials utilized in each type of fabricate biomedical product and its functionality, as is illustrated in table 1.

### 1.2 Health Symptoms in Female Workers of Biomedical Industry

Women are a great workforce in Tijuana’s industries, because they can work with great passion and enthusiasm, and can achieve higher levels of operational performance than certain men (Bits et al, 2017; Hartsch et al, 2021). They were made their functions responsibly, but at certain periods of each month or year, they suffer from health symptoms due to their hormonal process, which sometimes harms them, causing low productive performance and thus the presence of errors and thus defective products. Figure 2 illustrates three main hormonal symptoms that occur in women working in a biomedical industry in Tijuana, correlating them with their productive level (Ackerman et al, 2022).



**Fig -2:** Health symptoms occurred female workers of biomedical industry of Tijuana.

**Source:** Analysis of investigation.

Figure 2 shows the main healthy symptoms, which were occurred in some times of each of the months that was made this investigation and was illustrated in figure 2, with each characteristic of each type of healthy symptoms presented in figure 2, where was presented in diverse periods of each month of the period of the scientific study. Also, was evaluated the main aspects determined to eliminate or reduce these healthy symptoms in womens workers of this biomedical industry evaluated, which each symptom was different (Melander et al, 2020).

### 1.3 Industrial Processes

Are industrial activities that are utilized to elaborate industrial operations in any type of industrial companies, and in the biomedical industry of Tijuana are specialized industrial processes, which are applied to the fabrication of medical accessories and instruments (Batha et al, 2020). Table 2 shows relevant aspects presented in the biomedical industry where was made this investigation (Brewer et al, 2018).

**Table -2:** Relevant factors of industrial processes of biomedical industry of Tijuana (2023)

Main Aspects	Productivity	Quality	Velocity
Type of Process			
Lineal	Great quantity of manufactured products	Reliability to the fabricated products (85%)	High
U-Line	Medium quantity of manufactured products	Reliability to the fabricated products (80%)	Medium
T-Line	Medium quantity of manufactured products	Reliability to the fabricated products (75%)	Low
G-Line	Small quantity of manufactured products	Reliability to the fabricated products (75%)	Low

Table 2 illustrates the main factors of the process flow that were utilized in the biomedical industry, where was made this relevant investigation, with the characteristics of productivity, quality and velocity of the diverse process flow, being important at the moment to plain any type of manufactured product in this industrial company (Häggström et al, 2016).

## 2. METHODOLOGY

This scientific study was obtained relevant information to relate the healthy symptoms of female workers that works in a biomedical industry of Tijuana and their operative yielding, which was an impact in the productivity and quality indices. For this investigation, was made three activities, which are explained now:

- a) Correlation analysis of healthy symptoms and emotional control of female workers and comparative with men workers of manufacturing areas.

- b) Evaluation of operative yielding of female workers.
- c) Analysis of productivity and quality levels of manufactured products.

### 3. RESULTS

This investigation was important in the comparative analysis of the operative yielding of female and men workers of manufacturing areas of a biomedical industry located in the Tijuana city, where was made specialized evaluations to determine the relevant aspect of the female workers in this industrial company. These results are explained in next sections.

#### 3.1 Comparative Analysis of Female and Men Workers With Healthy Symptoms and Emotional Control

This part of the investigation was made to evaluate the comparative analysis of works (womens and men), which are presented in table 3, the main aspects as healthy symptoms and emotional control, which were an effect in the operative yielding of these works evaluated, being 10 as total of an analysis (five womens and five men).

**Table -3:** Important aspects in the comparative of operative yielding of female and men workers (2023)

Relevant Factors	Healthy Symptoms	Emotional Control	Operative Yielding
Workers			
Female 1	G	A	A
Female 2	B	I	I
Female 3	B	I	I
Female 4	G	A	A
Female 5	G	A	A
Male 1	G	A	A
Male 2	G	A	I
Male 3	B	I	A
Male 4	G	A	A
Male 5	G	A	A

G. Good, B. Bad; A. Adequate, I. Inadequate

Table 3 presents the main factors that were an impact in the operative yielding of workers (five womens and five men), and with this an effect in the productivity and quality levels. As is showed in table 3, the relevant aspects analyzed, presents when works as female or male, were with good health, the emotional control and operative yielding were adequate, and when workers evaluated were with bad health,

emotional control and operative yielding were inadequate. This was an effect in the productivity and quality levels of the manufactured products of the industrial company where was made this scientific study. Is important mention that female workers with good health were better operative yielding of men, of this group of workers evaluated.

### 3.2 Evaluation of Operative Yielding of Female Workers

This section of this scientific study was relevant, because was correlated the operative yielding in a graph of the women’s workers of the group of workers analyzed, with the healthy symptoms of women’s, where is illustrated in figure 3. This figure presents the correlation rate (CR), with the three principal health symptoms of female workers, which were presented in some periods of each month of the 2023, where was made this investigation. This figure shows in three colors the presence of the healthy symptoms and the correlation rate–CR percentages, observing that with the blue color that indicates the menometrorrhagia, was the less negative effect in women’s, being a hard health symptom, and with this healthy symptom, women’s were high productivity and quality levels. Also, with orange color was presented the menorrhagia, which was showed with high and low productivity and quality levels, correlated with the health symptoms of womens workers, and finally the gray color with the metrorrhagia that was presented the high and medium correlation rate with the productivity and quality levels and the healthy symptoms mentioned. This is observed in figure 3.

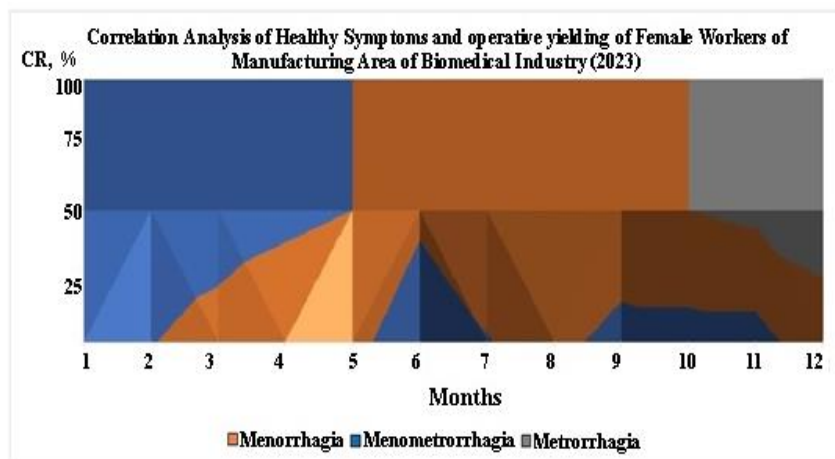


Fig -3: Evaluation of relation between healthy symptoms of women’s and production factors (2023)

### 3.3 Analysis of Productivity and Quality Indices

Once the two previous sections were prepared, we proceeded to evaluate the productivity and quality levels in percentages, which were observed in table 4, the indices in percentages of each worker of the group evaluated, indicating that was better in the operative yielding of female workers than male workers that was participating int this scientific study. This is illustrated in table 4.

Table -4: Productivity and quality levels in a biomedical industry of Tijuana (2023)

Relevant Factors	Productivity, %	Quality, %	Operative Yielding, %
Workers			
Female 1	83	84	86
Female 2	74	76	78
Female 3	79	80	89
Female 4	80	82	87
Female 5	84	84	88
Male 1	80	83	86
Male 2	79	80	85
Male 3	70	75	76
Male 4	78	82	83
Male 5	80	83	84

Table 4 illustrates the productivity and quality levels obtained of the evaluation of the operative yielding of the group of workers analyzed (five women and five men), and was depending of the evaluation of table 3.

#### 4. CONCLUSIONS

This scientific study was relevant indicating that female workers with healthy symptoms were better than male workers of a small group evaluated, but was obtained important information to determine that women’s have more internal strength and responsibility to reach goals in industrial process and any type of activities, where participate women’s. This investigation can be taken as interesting action, at the time to contract new personnel in industrial activities and other type of actions to work, being relevant in the operative yielding and with this in the productivity and quality indices that can generates economical gains or less in industrial companies.

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