



Characterization of occupational accidents in workers of a manufacturing company in León, Nicaragua, year 2022-2023

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ABSTRACT

The objective of this article is to characterize occupational accidents in workers of a manufacturing company in the city of León, Nicaragua, in the years 2022-2023. A descriptive, retrospective, cross-sectional study was applied. The study area was plant 4 of this company, the sample was made up of 94 workers. From the results we obtained, it is found that 27 workers are in the age range of 28 to 32 years, the most affected workers were the operators with 83 cases (88.3%), the seniority in the job was from 4 to 6 years with 38 cases (40.4%), the time of occurrence of the accidents was during the first shift (morning shift) with 62 cases (65.96%), The risk factors that most frequently occurred for the occurrence of accidents were unsafe acts with 54 cases (57.4%), most accidents were commuting

with 76 cases (80.85%), according to the severity of the accident, the affectations were of a mild type with subsidy in 53 cases (56.4%) and according to the nature of the injury there were 76 cases (80.9%) diagnosed as contusions.

INTRODUCTION

The International Labor Organization (ILO) 2019 estimates that “Occupational accidents worldwide are increasing as the working population increases”; This represents a great problem because most companies are not emphasizing prevention and safety as they should be. According to ILO 2023 “Workplace accidents are responsible for another 330,000 deaths”; which leads to a worldwide concern about the problems we are experiencing about the increase in accidents that occur in the different areas of work. (Trabajo, 2023)

The Nicaraguan Social Security Institute (INSS) reflects in Statistical Yearbook 2022 that “Professional risk insurance includes protection in accidents at work, whether within the work area or usual route between the worker’s home or workplace or vice versa.” (Social, 2022). Every day countless people die because of accidents and occupational diseases. The annual number of deaths from these incidents is estimated to be at least 1.9 million. Approximately 90 million disability-adjusted life years (DALY) can be attributed to exposure to various occupational hazards. In addition, approximately 360 million non-fatal occupational accidents occur each year, resulting in an average of more than four days off work. These statistics are unacceptable and demand immediate action to ensure the safety and well-being of workers.

At the international level, Caneda, and Erika Paola (2021) characterized the occupational accidents that occurred in Seguridad Privada S.A. in Bogotá from 2018 to 2019. Through a descriptive, quantitative study, he found that the age at which most accidents occur is between 20-24 years (22 cases); about severity, 56% were minor, with 2 fatal accidents; it is confirmed that the most affected position is that of the guards with 40 cases, being those who made the highest report of absenteeism; The most frequent type of injury is related to blows, contusion or crushing in 40%. On the other hand, Escorcía Portón, M. P. (2021) characterizes occupational accidents in an occupational risk management company during the period 2016-2019. A descriptive, retrospective observational study was conducted; taking the entire population that met the inclusion criteria composed of 1,847 cases of occupational accidents reported to the ARL during the period 2016-2019. The accident rate in the four years of study showed a downward trend; men with 77% have more accidents than women, the age range of 25-29 years is the one that has the most accidents with 24%, the positions of operator and commercial advisor are the ones that suffered the most accidents, and the day of the week had no variability from Monday to Friday they obtained 17% of accidents, injury agents, safety conditions in 69% and biomechanical hazards in 15%.

For her part, Ramírez López, Martha Patricia (2019) studied the characteristics of work-related accidents at the National University of Colombia. The most relevant results were that the most affected sex were males; the sites where the highest number of accidents occurred were common areas such as stairs, corridors, parking lots, and vehicular circulation areas with 39%; the location of the injury is in the upper limbs with 33 cases. The most affected job position was that of teachers (26%).

In addition, Rucoba Pinedo, Julio César (2018) – during the period 2014-2018, characterized work accidents in the Tarapoto Business Unit. Including the following variables: frequency indices, severity and incidence, and other variables: type of accident, accident by contractual relationship, and by month. During 2014, 2015, and 2016, the number of fatal accidents was 1, 0, and 1. In 2017 there were 128 incidents, two disabling and one fatal. In 2018 the number of incidents was 59, 1 disabling, and zero fatal accidents. The number of incidents per contractual relationship in order from highest to lowest is contractor personnel, own personnel, and third parties.

At the national level, Quintana Ríos, Omri Moisés (2020) characterized the occupational accidents that occurred among workers of the Bertha Calderón Roque Hospital, Managua-Nicaragua, 2018; Among the most relevant results, it found that the most affected sex was women (72%); the morning work shift with the highest number of affected people (70.66%); the nature of the injury, with contusions/internal injuries being the most common (54.66%); the location of the lesion is the fingers of the hand, and multiple anatomical sites injured (12% respectively). The most affected job position was that of nursing assistant (13.33%); the area of greatest occurrence was public roads; Falls at the same level presented the most significant form of accident.

Finally, Downs Pérez, Karen Elizabeth (2019) characterize the occupational accidents of the staff of the “Carlos Roberto Huembes” Hospital Managua, Nicaragua, in January 2016-December 2018. It determined that the age of the workers affected was mostly 26-35 years 56 cases (47%), with a predominance of women 83 cases (70%), with cleaning personnel with 27 cases (23%) presenting the most accidents. The diagnosis was for contusions and internal injuries, and the most affected anatomical region was the lower limbs.

Based on the analysis of previous studies, this article aims to characterize the occupational accidents that occurred among workers of a manufacturing company in the city of León, Nicaragua for the year 2022-2023, with the purpose of knowing the current situation and based on this, providing information to implement safety measures that would allow the reduction of this labor phenomenon that affects work absenteeism, low productivity and increased costs to the public health system and Social Security.

MATERIAL AND METHODS

Descriptive, retrospective, cross-sectional research was carried out, the study area was plant 4 of a manufacturing company. The universe was made up of 1843 workers, when calculating the sample we obtained that it was 319 workers of the company, however, when carrying out this study it was found that in two years 94 accidents had occurred, which were taken as a sample to carry out this study, while the type of sampling was probabilistic for convenience, information was obtained from the statistics of occupational accident reports provided by the Human Resources Directorate. It was carried out in 2022-2023.

The criteria that were considered to include in the study workers who presented occupational accidents during their working day were: personnel working in Plant 4 of said company, accidents reported during the study period, containing the Notification of Work Accidents sheet, and having the complete clinical file.

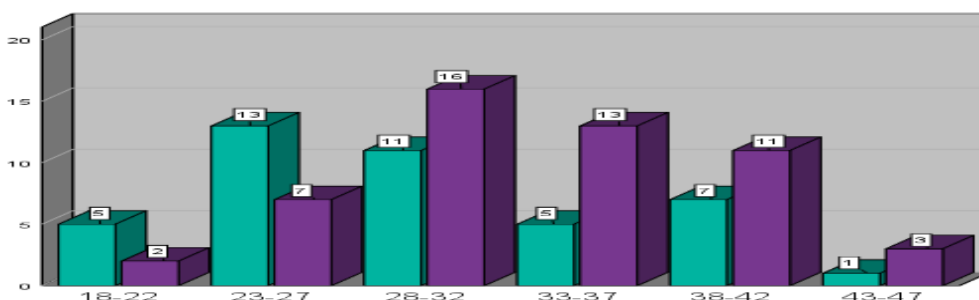
Authorization to implement the study was requested from the authorities of the CIES UNAN Managua and from those responsible for the company, explaining that as far as possible the name of the company and the workers would be omitted and that the data collected would be handled confidentially, which would only be used for the purpose of carrying out this study.

The collection of information was carried out on Saturdays by going to the company’s medical post area, where the medical manager facilitated access to the system or database in which accidents are recorded. The information was collected by filling out a form previously prepared by the author, which contains the following relevant data to characterize: socio-occupational characteristics of the workers, risk factors that characterize the occurrence of occupational accidents, types of occupational accidents and their affectation according to the severity, diagnosis of workers who suffered a work accident. The data were processed and analyzed using the SPSS version 21 program.

RESULTS AND DISCUSSION

Figure 1.

Age and sex of the personnel who suffered occupational accidents in a manufacturing company in the city of León, Nicaragua, year 2022-2023



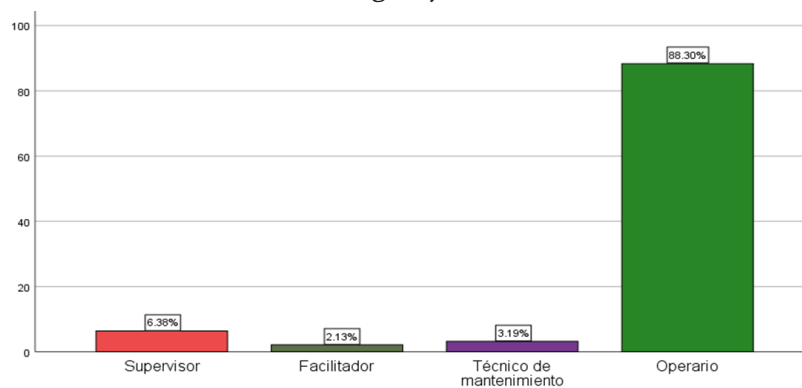
Source: Statistics Manufacturing Company 2022-2023.

The most affected age group was 28-32 years old with 27 workers, with 16 cases predominating the female sex, followed by the 23-27 age group with 20 cases, of which 13 were male and 33-37 years old with 18 cases, mostly affected 13 female cases, the 43-47-year-old group in the case of the male sex is the least affected with 1 case.

Downs Pérez, Karen Elizabeth (2019) concludes, as in this study, that the most affected age group is between 26–35 years old, since they are of economically active age, also concluding that women reported more occupational accidents, due to the vulnerability to the risk factors to which the personnel under study are exposed and because they are the most representative group in this Institution.

Figure 2.

Occupation of workers who suffered occupational accidents in a manufacturing company in the city of León, Nicaragua, year 2022-2023.



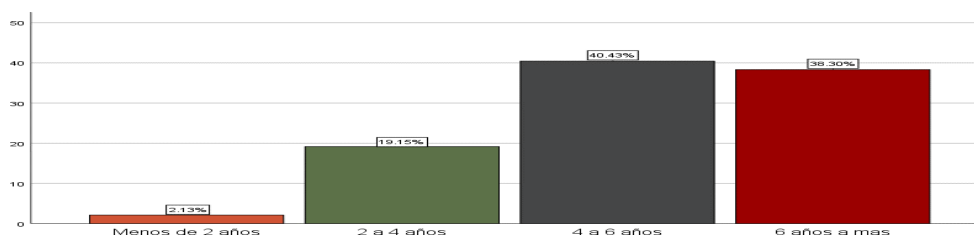
Source: Statistics Manufacturing Company 2022-2023.

The most affected occupations according to the profile were operator personnel with 83 cases (88.3%), followed by supervisors with 6 cases (6.4%), maintenance technicians with 3 cases (3.2%), and facilitators with 2 cases (2.1%)

With respect to the occupation of this study, a relationship is established with the study by Escorcía Pontón, M. P. (2021), where operating personnel are the most affected by their exposure to differ

Figure 3.

The seniority of workers who suffered occupational accidents in a manufacturing company in León, Nicaragua, year 2022-2023.



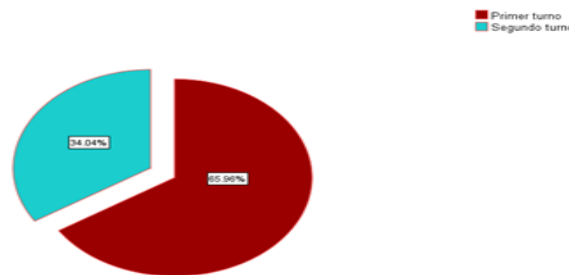
Source: Statistics Manufacturing Company 2022-2023.

Seniority in the job was 4 to 6 years with 38 cases (40.4%), followed by the group of 6 years or more with 36 cases (38.3%) and from 2 to 4 years 18 cases (19.1%).

We conclude that seniority is not decisive when it comes to suffering accidents, since those who presented the highest number of cases were workers with experience in their jobs, who had seniority of 4 to 6 years, however, the factors that possibly led to an accident was the lack of caution when performing their tasks, unsafe acts motivated by incorrect practices or violation of safety standards, regulations or techniques in the performance of their work, making the worker more susceptible to accidents.

Figure 4.

Work shift of workers who suffered workplace accidents in a manufacturing company in the city of León, Nicaragua, year 2022-2023



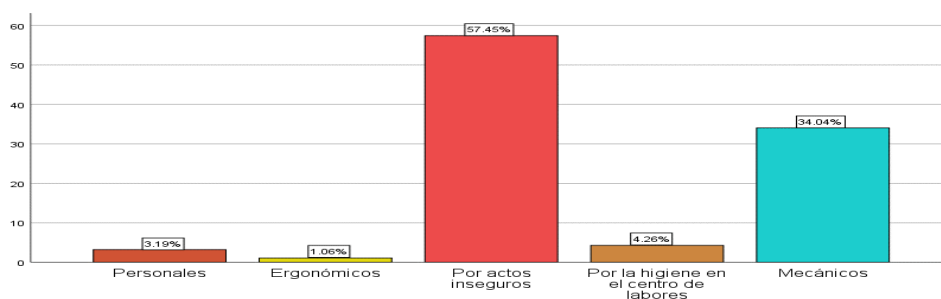
Source: Statistics Manufacturing Company 2022-2023.

The occurrence of accidents was during the first shift (morning shift) with 62 cases (65.96%) and 32 cases in the second shift (afternoon shift) 34.04%.

Quintana Ríos, Omri Moisés (2020) corroborate, as does the present study, that the highest number of accidents occurred during the morning shift, this is related to the time of entry to work and the fact that many workers go against time, and when traveling they do not exercise adequate caution, causing accidents due to unsafe acts.

Figure 5.

Risk factors for the occurrence of occupational accidents in workers of a manufacturing company in the city of León, Nicaragua, year 2022-2023



Source: Statistics Manufacturing Company 2022-2023.

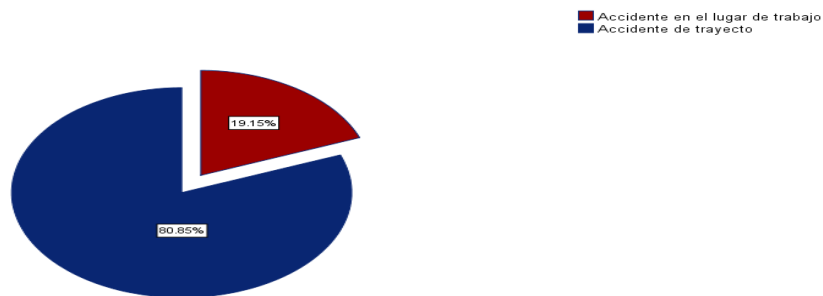
The risk factors that most frequently occurred for the occurrence of accidents were unsafe acts with 54 cases (57.4%), followed by mechanics with 32 cases (34%), hygiene conditions in the workplace follow order with 4 cases (4.3%), concluding with personal and ergonomic factors with 3 (3.2%) and 1 (1.1%) case respectively.

Escorcía Portón, M. P. (2021). It concludes that the main agents of injury for accidents were safety conditions at 69% and biomechanical hazards at 15%, observing a close relationship with the present study in which unsafe acts predominate since workers did not pay attention to the conditions present in their environment. Such as wet roads, holes, or animals traveling on the roads.

The mechanical factor is closely related to moving machines or means of transport in poor condition.

Figure 6.

Types of occupational accidents suffered by workers of a manufacturing company in León, Nicaragua, year 2022-2023.



Source: Statistics Manufacturing Company 2022-2023.

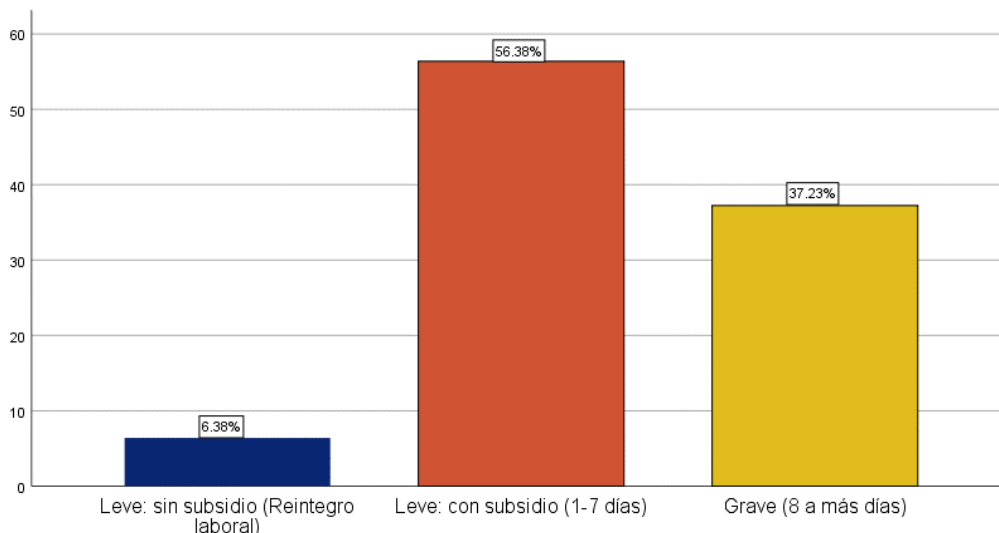
The accidents registered were commuting with 76 cases (80.85%), followed by work-related accidents with 18 cases (19.15%).

Ramírez López, Martha Patricia (2019) in a quantitative, retrospective case study conclude that the sites where the highest number of accidents occurred were common areas such as stairs, corridors, parking lots, and vehicular circulation areas, which is related to this study since the accidents that predominate are those of commuting.

Quintana Ríos, Omri Moisés (2020), make it clear that the area of greatest occurrence for accidents was public roads, confirming the previous study and corroborating the results of said study that establishes commuting accidents as the main place where accidents occur.

Figure 7.

Affectation according to severity of occupational accidents suffered by workers of a manufacturing company in the city of León, Nicaragua, year 2022-2023.



Source: Statistics Manufacturing Company 2022-2023.

According to the severity of the accident, the effects were mild with a subsidy in 53 cases (56.4%), with incapacity for work of 1-7 days, followed by serious accidents with 35 cases (37.2%) in the capacity of 8 or more days, mild without subsidy 6 cases (6.4%) with immediate treatment and reinstatement.

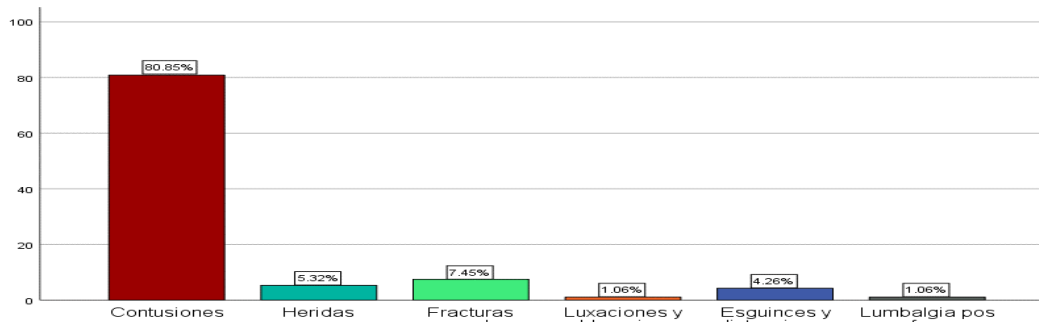
Caneda, Erika Paola (2021), establishes about severity that 56% of the accidents were minor and 2 cases of fatal accidents, presenting a relationship with the present study that concludes that 56.4% of accidents were minor, however, this study does not present fatal cases.

The workers who suffered accidents were absent from their work due to minor injuries with sick leave, being a problem, since regardless of age a physical deterioration is incurred due to the loss of ability to perform their work; they also incur economic problems due to low income and psychological problems due to the irreversible consequences that these accidents can generate in the staff.

On the other hand, we take into account the impact generated by absenteeism from work, since the lack of personnel forces a reorganization, falling on the rest of the workers the tasks, which generates a climate of hostility by having to perform functions that do not correspond to them, causing negative effects on productivity, the economy and the competitiveness of the company.

Figure 8.

Diagnoses presented by workers who suffered occupational accidents in a manufacturing company in León, Nicaragua, year 2022-2023.



Source: Statistics Manufacturing Company 2022-2023.

According to the nature of the injury, there were 76 cases (80.9%) of contusions, followed by closed fractures with 7 cases (7.4%), wounds 5 cases (5.3%), sprains and strains 4 cases (4.3%), and 1 case (1.1%), of dislocations and low back pain after exertion, respectively.

Caneda, Erika Paola (2021) in a study on the Characterization of occupational accidents due to traffic risk that occurred in Seguridad Privada S.A. in Bogotá from 2018 to 2019, determines that the most frequent type of injury is related to blows, contusions, or crushing in 40%.

Downs Pérez, Karen Elizabeth (2019) Establishes that the diagnosis according to the nature of the injury was contusions and internal injuries.

Both authors maintain that contusions are the diagnosis that occupies the first place when suffering accidents, this fact being verified in the present study since we obtained as a result that this was the main diagnosis present in injured workers.

CONCLUSIONS

Taking into account the descriptive analysis carried out, it is found that the age of the affected workers was 28-32 years, due to representing an economically active group, predominantly the female sex, as it is the most representative group in this institution, the operating personnel were the ones who suffered accidents most frequently, who had a work seniority of 4 to 6 years, From the above, we conclude that seniority is not a determining factor in suffering accidents due to accidents occurring in workers with experience in their positions, occurring mainly during the morning shift, which is related to going to work against time and not exercising caution when traveling. The risk factors that most frequently occurred for accidents were unsafe acts, followed by mechanics, due to transport in poor condition. The type of accident that predominated was commuting, with a mild affectation according to the severity

with subsidy, with incapacity for work of 1-7 days. The diagnosis presented by the workers who suffered accidents was contusions.

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