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ORIGINAL

Occupational risks in workers of CADE food industry and the Montúfar Battalion, Santo Domingo

Riesgos laborales en trabajadores de la industria de alimentos CADE y del Batallón Montúfar, Santo Domingo

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ABSTRACT

Introduction: occupational risk is any circumstance capable of causing danger in the context of the development of an activity within the work day.
Objective: identify the occupational risks to which workers in the CADE food industry and the Montúfar Battalion are exposed, Santo Domingo, 2022.
Methods: observational, descriptive cross-sectional research. The universe was 100 people and through non-probabilistic sampling for convenience and the established exclusion and inclusion criteria, the sample was made up of 59. The data were tabulated through Microsoft Excel for better study and understanding.
Results: Regarding the working hours of the respondents, it was established that 44,8 % worked more than 40 hours and 27,6 % worked 20 to 40 hours and less than 20 hours; In the battalion, 63,3 % work between 20 to 40 hours and 36,7 % work more than 40 hours. It was determined that 48,3 % of the sample in the Cadepan industry considers noise to be high and 41,4 % establishes that there is no noise; while in the battalion 96,7 % of workers are exposed to high noise.
Conclusions: raising awareness of the personnel who work in both institutions on topics such as the proper use of equipment and tools specific to the area is a first-order task, in addition, adopting correct work postures to avoid health problems in the future.

Keywords: Occupational Risks; Workers; Ergonomics; Occupational Hygiene.

RESUMEN

Introducción: el riesgo laboral es toda circunstancia capaz de causar un peligro en el contexto del desarrollo de una actividad dentro de la jornada de trabajo.
Objetivo: identificar los riesgos laborales a los que están expuestos los trabajadores de la industria de alimentos CADE y el Batallón Montúfar, Santo Domingo, 2022.
Métodos: investigación observacional, descriptiva de corte transversal. El universo fue de 100 personas y a través de un muestreo de tipo no probabilístico por conveniencia y lo criterios de exclusión e inclusión establecidos, la muestra quedó conformada por 59. Los datos fueron tabulados a través de Microsoft Excel para su mejor estudio y comprensión.
Resultados: En cuanto a las horas de trabajo de los encuestados se pudo establecer que el 44,8 % trabajan más de 40 horas y el 27,6 % de 20 a 40 horas y menos de 20 horas; en el batallón el 63,3 % labora entre 20 a 40 horas el 36,7 % más de 40 horas. Se determinó que el 48,3 % de la muestra en la industria Cadepan considera el ruido elevado y el 41,4 % establece que no hay ruido; mientras que en el batallón el 96,7 % de los trabajadores están expuestos a un ruido elevado.

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Conclusiones: la concientización del personal que labora en ambas instituciones sobre temas como el uso adecuado de equipos y herramientas propias del área, es tarea de primer orden, además, adoptar posturas de trabajo correctas, para evitar problemas en su salud a futuro.

Palabras clave: Riesgos Laborales; Trabajadores; Ergonomía; Higiene Laboral.

INTRODUCTION

According to the World Health Organization (WHO), occupational accidents differ from occupational diseases because they usually occur as sudden and unexpected events caused by unsafe working conditions. They are usually more visible and require immediate medical attention, so they are better identified and reported. It is known worldwide that occupational diseases are caused every year within companies, which attracts the attention of both employers and bosses.

According to the International Labor Organization (ILO), the prevention of occupational risks is the key to improving the health and safety of workers in companies; therefore, it is of utmost importance to know the strategies to avoid accidents and occupational diseases, including planning through training that involves governments.[1]

In the Americas region, there are significant challenges related to health and safety. Available figures indicate 11,1 fatal accidents per 100 000 workers in industry, 10,7 in agriculture, and 6,9 in the services sector. Some of the most critical sectors for the region's economies, such as mining, construction, agriculture, and fishing, are also among those with the highest incidence of accidents.[1,2]

An occupational hazard is any circumstance capable of causing danger in developing an activity within the workday that harms the employer in his physical, psychological, etc. state. It is everything that can produce an accident, and its consequences can be severe and consequential injuries for the industry since it has been carried out within the company. The effect of such an accident will always be negative on the person who suffers it. The risk factors in the various types of work are different. Therefore, the damages caused are of different magnitudes of severity. It will always depend on where the task is performed and the nature of the work in which they are performing it.[2,3]

Workers are exposed to several risks due to inadequate working conditions, and this can generate consequences in the health status of the worker; this, in turn, is combined with the factors that may occur outside the work area, such as family or personal situations to which the person is exposed daily; the reaction to these stimuli varies depending on the interpretation that each person gives to that stimulus. Therefore, the reaction will also be different.[4]

There are adverse health risks that can affect both physical and mental health. These stressors can alter and unbalance a person's resources and abilities to manage and respond to work-related activities. They are myriad and can be caused by many aspects of the job: lack of control, long hours, work intensity, variable and unpredictable schedules, poor organizational communication upwards, horizontally or downwards, or ambiguity of overload roles or others.[5]

The following are considered psychosocial risk factors: longer workload hours, excessive work under pressure, strong or weak management, lack of job recognition, strenuous and hazardous tasks, sudden and unplanned changes and organizational changes, no possibility of breaks, and high mental workload.[5]

The objective of this research was determined from this information and a bibliographic study that preceded it; it was defined to identify the occupational hazards to which workers in the food industry CADE and Battalion Montúfar, Santo Domingo, 2022 are exposed.

METHOD

Non-experimental, observational, descriptive, cross-sectional research to identify the level of occupational risk to which workers were exposed. According to its purpose, the research was applied, and based on the results, a proposal of internal policies for the company was established, as well as educational talks that favored the workers' health.

In this study, the population was made up of workers of the Adventist and military network, who present different characteristics related to the object of study; in this research, both male and female workers were taken into account, who are of legal age and who are legally contracted. The universe was 100 people, and through this non-probabilistic convenience sampling, the sample consisted of 59. The main characteristic of the sample is that they work in the CADE food factory, located in the city of Santo Domingo at Km 14 1/2 of the Quevedo road.

Inclusion criteria

The staff of the CADE food factory.

Male and female participants over 18 years of age.

Personnel who will voluntarily participate in the project surveys.

Exclusion criteria

Personnel who did not attend the day the survey was conducted. Personnel who did not fill out the instrument in its entirety.

Personnel who did not sign the informed consent form.

The variables used in the study were age, sex, level of education, work activity, hours of work, and personal protective equipment.

Data collection, processing, and analysis techniques

The instrument, Survey on Occupational Safety and Health Conditions in Ecuador, developed by a group of more than 40 researchers from the Faculty of Labor and Human Behavior Sciences of the SEK International University (UISEK), was applied to obtain the information. Data were collected on seven dimensions: 1. sociodemographic and labor dimension; 2. employment conditions dimension; 3. occupational safety dimension; 4. industrial hygiene dimension; 5. ergonomic dimension; 6. psychosociological dimension; and 7. occupational health dimension. Once the information was collected, it was tabulated in Microsoft Excel and worked with percentage and whole data.

RESULTS

The most prevalent age in the Cadepan food industry is 18-34 years (men: 13,6 %, women 11,9 %), while in the battalion, 40,7 % of the respondents were 35-54 years old. Regarding educational level, secondary education is the most prevalent (Battalion: 25,4 %, Cadepan: 11,9 % males and 8,5 % females); however, the educational level of higher technician presented 8,5 % of the female gender of Cadepan.

The highest percentage related to the job position is operational (Battalion: 27,1, Cadepan: 20,3 % men, 16,9 % women), and regarding the activity to which they are dedicated, in the food industry, the highest percentage corresponds to the manufacturing industry (men: 13,6, women: 11,9 %); as opposed to 40,7 % of the battalion workers who correspond to the service area.

Regarding the working hours of those surveyed, it was established that 44,8 % work more than 40 hours and 27,6 % from 20 to 40 hours and less than 20 hours; in the battalion, 63,3 % work between 20 to 40 hours and 36,7 % more than 40 hours (table 1).

Table 1. Distribution of the sample according to working hours

	Cadepan		Battalion	
	No	%	No	%
Less than 20 hours	8	27,6	0	0
20 - 40 hours	8	27,6	19	63,3
More than 40 hours	13	44,8	11	36,7
Total	29	100	30	100

Regarding personal protective equipment, 72,4 % of the workers at Cadepan used gloves, and 86,2 % at the Battalion. Regarding boots, 58,6 % of Cadepan workers and 93,2 % use them at the Battalion. Regarding masks, 69,0 % use them at Cadepan and 82,8 % at the Battalion. Although the frequency of use is high, there is a low percentage of workers who do not use them, which could be considered a risk (table 2).

Table 2. Personal protective equipment

	Cadepan						Battalion					
	Yes		No		Total		Yes		No		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Gloves	21	72,4	8	27,6	29	100	25	86,2	5	17,2	30	100
Boots	17	58,6	12	41,4	29	100	27	93,1	3	10,3	30	100
Mask	20	69	9	31	29	100	24	82,8	6	20,7	30	100

The analysis of noise perception shows that 48,3 % of the sample in the Cadepan industry consider noise to be high, and 41,4 % state that there is no noise, while in the battalion, 96,7 % of the workers are exposed to high noise. (table 3)

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Table 3. Noise perception				
	Cadepan		**Battalion**	
	No	**%**	**No**	**%**
No noise	12	41,4	-	-
Elevated	14	48,3	29	96,7
Very high noise	2	6,9	1	3,3
There is noise	1	3,4	-	-
Total	29	100	30	100

Table 4 shows the illumination level, showing that 86,2 % of the workers surveyed have adequate illumination in the Cadepan industry, and 100 % of the battalion's workers state that they have excellent illumination.

Table 4. Lighting level				
	Cadepan		**Battalion**	
	No	**%**	**No**	**%**
Yes	25	86,2	30	100
No	4	13,8	-	-
Total	29	100	30	100

Table 5 shows that 48,3 % of Cadepan's workers and 90 % of the battalion's workers report that the working temperature is comfortable.

Table 5. Working temperature				
	Cadepan		**Battalion**	
	N	**%**	**N**	**%**
Comfortable	14	48, 3	27	90
Not comfortable	9	31	3	10
Very Hot	6	20,7	-	-
Total	29	100	30	100

41,4 % of workers in the Cadepan industry are not exposed to chemical substances; likewise, 69 % in the battalion; on the other hand, regarding the inhalation of noxious vapors, 65,5 % of Cadepan workers are not exposed to contamination by noxious vapors, while 58,6 % of workers in the battalion are. (table 6).

Table 6. Industrial hygiene in terms of handling chemical substances																
	Cadepan								**Battalion**							
	Yes		**No**		**Never**		**Total**		**Yes**		**No**		**Never**		**Total**	
	No	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**
Handling of chemical substances	9	31	12	41,4	8	27,6	29	100	10	34,5	20	69	-	-	30	100
Inhalation of noxious vapors and chemicals	5	17,2	19	65,5	5	17,2	29	100	17	58,6	13	44,8	-	-	30	100

The survey also revealed that 55,2 % of workers in the Cadepan industry walk frequently, and in the battalion, 50 %; however, the other 50 % of the battalion is standing and not walking during their workday. In their daily workday, 48,3 % of the workers perform awkward postures, 31 % lift, move, or drag heavy loads, and 34,5 % perform repetitive movements. On the other hand, 63,3 % of the battalion works in awkward postures, 93,3 % lifts, moves, or drags heavy loads, and 60 % performs repetitive movements.

It was also found that 58,6 % of the workers in the Cadepan industry were in good health, 10,3 % in excellent health, 20,7 % in fair health, 3,4 % in poor health, with the same value, 3,4 % of the workers were in feeble health, while 53,3 % of the workers in the battalion were in excellent health, 30 % in excellent health and finally 16,5 % of the workers in the battalion were in good health.

One of the factors that directly affect the psychosocial risk is the mental effort they have to make in their work area (Cadepan: 55 % Battalion: 37 %); likewise, the workers partly perceive support from their superiors (Cadepan: 52 % Battalion: 20 %); although the percentage is lower of those who do not perceive support from the authorities, it could still be considered a risk. Regarding work interference with family life, they consider it partly (Cadepan: 34 % Battalion: 30 %). They were asked if the commuting time from work to home influenced

them. Likewise, several said partly (Cadepan: 41 % Battalion: 7).

89,7 % of the workers in the Cadepan industry had back discomfort or pain, 62,1 % had discomfort in the upper limbs, and 79,3 % had discomfort or headache, respectively. In contrast, the battalion members did not have any discomfort or affliction.

DISCUSSION

According to the ILO, substantial part-time work (21-34 hours per week), part-time work of short duration (20 hours or less), and marginal part-time work (less than 15 hours per week). According to Art. 3 of the Labor Code, Freedom of Work and Contracting, the Labor Code states that "the worker is free to devote his effort to the lawful work that he wishes" (para. 1), which means that no person can be forced to perform work for free, or paid work that is imposed by law, no one is forced to work, there must always be a contract and the corresponding remuneration.[1]

These results coincide with the study of Ron DA[6] in his unpublished thesis on occupational hazards in nursing personnel working in the trauma operating room area of a hospital in Guayaquil, where he indicates that 38 % of the participants are affected mainly by an ergonomic risk and 48 % by a mechanical risk; so they concluded that due to inadequate body mechanics, the most common disorder is lumbago.

Similarly, in the research by Dávila ML[7], whose most significant results were that 22 % of the workers did not know the risks to which they are exposed, but after the educational training, good results were obtained, increasing the level of knowledge to 73 %, giving an average increase of 51 % in knowledge of occupational risk prevention, culminating the educational project successfully.

It is important to note that Ecuadorian legislation issued by the Ministry of Labor of Ecuador (MTE) has approached the treatment of psychosocial risks at work. Thus, through Ministerial Agreement MDT-2017-0082 of September 19, 2017, the MTE seeks to regulate and eradicate discrimination and workplace harassment, two elements of the group of psychosocial risks of work. In the same way, said Agreement addresses, although limitedly, psychosocial risks in general, establishing, in its "Art. 9.- Of the psychosocial risk prevention program- in all companies and public and private institutions, which have more than ten workers, the psychosocial risk prevention program must be implemented."[8]

In a more profound aspect, fatigue is understood as the decrease in an individual's physical and mental capacity after having performed a job for a certain period. From an occupational perspective, *work fatigue* is defined as "a transitory loss of the ability to perform a job, consecutive to the prolonged performance of the same."[9] When we talk about transitory loss, we refer to the achievement of the activity regularly, that is why it is essential to take active breaks to avoid getting to work fatigue.[10]

In the analyses carried out by Córdova Montes ChD et al.[11], the lack of recovery correlates with more than one type of fatigue, which can be explained because there is no proper rest for workers, which increases the feeling of fatigue. In this sense, it is evident the need to modify this factor to address and prevent the presence of general and mental fatigue within the company through a review, as far as possible, of work schedules and rest hours between shifts jointly between the employer, employees, the union and other elements involved, to reach a possible agreement between the parties in which they seek to improve working conditions, which would impact the productivity and satisfaction of workers and, thus, also wins the company.

The causes of fatigue can be physical, for example, forced body postures, displacements, overexertion, or handling of loads, and psychological, such as excessive reception of information, information processing, fatigue from trying to respond to everything, according to Cuellar C et al.[12]

CONCLUSIONS

Continuous training to improve the quality of life, safety, and well-being, as well as the prevention of occupational hazards in Cadepan and Battalion workers, is of prime importance. This training should include topics on risk factors that are exposed in the workplace. Encourage the personnel of both industries to undergo continuous medical check-ups to evaluate their health status; if there is any health problem, the doctor will prescribe the necessary and appropriate medications and initiate if they need to rest.

Both institutions are recommended to take active breaks, muscle stretching and recreational exercises to prevent future problems. It is also recommended to both institutions to manage policies to show more support from the authorities and superiors. As well as providing practical workshops related to occupational ergonomics. Conduct health campaigns within the companies.

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