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Presentation of Content

In a first article we present, *Burnout and health personnel in Morelos*, by ROQUE-NIETO, Nohemí, PÉREZ-MAYO, Augusto Renato and RODRÍGUEZ-BAHENA, Beatriz Lizbeth, with adscription in the Universidad Autónoma del Estado de Morelos, in the next article we present, *Proposal for measuring the impact of the quality of work life on business competitiveness: expert panel method*, by ACOSTA-MELLADO, Erika Ivett, RUIZ-PEREZ, Roberto, LOPEZ-LIRA-ARJONA, Alfonso and CHAPARRO-DIAZ, Christian Gabriel, with adscription in the Instituto Tecnológico de Sonora, in the next article we present, *Commercial model to optimize supply chains in local markets*, by GONZÁLEZ-GARCÍA, Arcelia, LANDEROS-BOTELLO, Ana Gema, CALDERA-BURGOS, Ana Perla and REGALADO-PÉREZ, Mayra Nayelli, with adscription at Universidad Autónoma de Zacatecas, in the last article we present, *Study of psychosocial risk factors in companies in Cd. Obregón, Son. Mexico*, by NARANJO-FLORES, Arnulfo Aurelio, RAMIREZ-CARDENAS, Ernesto, RODRÍGUEZ-GÁMEZ, Iván Francisco, FIMBRES-RAMÍREZ, Rodrigo Víctor, with adscription in Instituto Tecnológico de Sonora.

Content

Burnout and health personnel in Morelos

Burnout y el personal de salud en Morelos

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Abstract

This research aims to identify the existence of burnout syndrome in a sample of 124 nurses from a health organization in Morelos. The instruments used were the Maslach Burnout Inventory (MBI) and a questionnaire to measure the sociodemographic and employment profile of the study subjects. We sought to measure the existence of the syndrome in three subscales measured by the MBI: emotional exhaustion, depersonalization, and personal fulfillment at work, and relate them to sociodemographic and occupational variables. A descriptive statistical study and an inferential analysis were carried out using the statistical package SPSS version 26. The main results found were the following: Nurses present low levels of burnout according to the results obtained in its three dimensions: emotional exhaustion (9.62), depersonalization (3.31) and personal fulfillment at work (41.87). There are no significant differences between the three dimensions of burnout and the sociodemographic and occupational variables. Although the results indicate low levels of Burnout, it is pertinent to replicate the research in other groups of nurses susceptible to suffering from the syndrome, as well as to carry out interventions, providing them with strategies that allow them to face the demands of their activity.

Burnout syndrome, Nursing staff, Occupational stress

Resumen

Esta investigación tiene como objetivo identificar la existencia del Síndrome de burnout en una muestra 124 enfermeras de una organización de salud en Morelos. Los instrumentos empleados fueron el Maslach Burnout Inventory (MBI) y un cuestionario para medir el perfil sociodemográfico y laborales de los sujetos de estudio. Se buscó medir existencia del síndrome en tres subescalas que mide el MBI: agotamiento emocional, despersonalización y realización personal en el trabajo y relacionarlos con las variables sociodemográficas y laborales. Se realizó un estudio estadístico descriptivo y un análisis inferencial utilizando el paquete estadístico SPSS versión 26. Los principales resultados encontrados fueron los siguientes: Las enfermeras presentan bajos niveles de burnout de acuerdo con los resultados obtenidos en sus tres dimensiones: agotamiento emocional (9.62), despersonalización (3.31) y realización personal en el trabajo (41.87). No existen diferencias significativas entre las tres dimensiones del burnout y las variables sociodemográficas y laborales. Aunque los resultados indican bajos niveles de Burnout, es pertinente replicar la investigación en otros grupos de enfermeras susceptibles a padecer el síndrome, así como a realizar intervenciones, dotándoles de estrategias que les permitan hacer frente a las demandas en su actividad.

Síndrome de Burnout, Personal de enfermería, Estrés ocupacional

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Introduction

Origins of the term "burnout syndrome"

In 1974, a psychiatric doctor Herbert Freundenberger, who worked as a volunteer assistant at the Free Clinic in New York for drug addicts, together with other young and idealistic volunteers, observed that after a more or less long period, between one and three years, most of the doctors suffered a progressive loss of energy, demotivation, lack of interest in their work to the point of exhaustion, together with various symptoms of anxiety and depression.

According to Leiter, the type of work these people did was characterised by no fixed hours, very long hours, very low pay and a very demanding social context, usually tense and compromised. Freundenberger described the process by which these people become less sensitive, unsympathetic, aggressive and organisationally despotic and toxic co-workers or bosses in relation to patients and co-workers, distant and cynical, with a tendency to blame patients and co-workers for their own problems and create negative organisational climates.

This homogeneous behavioural pattern Freundenberger classified as "Burnout", i.e. being burned out, burned out, burned out, which was the term also used to refer to the effects of chronic consumption of toxic substances of abuse. At that time, this word was commonly used in athletic, sporting and artistic jargon, referring to those subjects who did not achieve the expected results, despite the effort made.

In 1976 the social psychologist Cristina Maslach, studying the emotional responses of employees in the helping professions, chose the same term used colloquially by Californian lawyers to describe the gradual process of loss of responsibility and cynical disinterest among their co-workers. Burnout was a socially accepted expression: those affected felt easily identified with this descriptive, non-stigmatising term like psychiatric diagnoses.

Hence, it was necessary to know in which professions this factor was most prevalent. Thus, the first published studies related to burnout syndrome in different professionals, such as doctors, nurses, social workers, teachers, police, among others, as well as in the media, emphasised the importance of individual differences such as previous personality differences, such as perfectionism, idealism, excessive involvement in work, rather than the influence of objective working conditions.

A process of intervention was initiated through prevention and intervention seminars aimed at adequate coping. However, such indiscriminate use of the term caused it to lose its scientific rigour as it was used by researchers and others giving it different connotations, which ranged from considering it as a syndrome associated with working directly with people, after a prolonged time of high emotional involvement with the client, based on Seligman's paradigm of learned helplessness, which is a psychological condition in which a subject learns to believe that they are helpless, that they have no control over the situation in which they find themselves and that whatever they do is useless.

In 1981, Maslach and Jackson provided the concept and methodology for studying the phenomenon by defining burnout as a three-dimensional syndrome characterised by: emotional exhaustion, depersonalisation and reduced personal fulfilment. Due to this conceptual characterisation of the term, they created a specific instrument to measure the levels of the syndrome based on these three components. The instrument is called the Maslach Burnout Inventory (MBI), which is known and applied today.

Nowadays, studies on burnout have been acquiring special importance in different work environments, becoming a specific concern of those who work in the fields of health, social service and education in a fundamental way, and extending this concern to police officers and employees of organisations with negative organisational climates and toxic leadership.

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The concept of burnout

The conceptual delimitation of the term burnout has changed over time and it is possible to establish two perspectives: clinical and psychosocial. The clinical perspective considers it as a state that the subject reaches as a consequence of work-related stress. The early work of Freundenberger and Pines and Aaronson was directed in this direction.

The psychosocial perspective, on the other hand, sees it as a process that develops through the interaction of characteristics of the work environment and personal characteristics, with distinct manifestations in different stages as indicated in the work of Maslach and Jackson.

Another key distinction that can be made about burnout is its conceptualisation as a state or as a process. In the first case, viewing burnout as a state implies that the subject is "labelled" as burned out, in that his or her state is the end product of high levels of stress. However, the conceptual perspective that views it as a process has other, apparently more encouraging implications: here burnout is approached as a particular coping mechanism to stress that involves phases in its development, and where burnout is understood as a response to work-related stress when the functional coping strategies usually used by the subject fail, acting as mediating variables in the relationship between perceived stress and its consequences.

Multiple interpretations of the concept historically givenFreundenberger[i]*:*

A sense of failure and a depleted or worn-out existence resulting from an overtaxing of the worker's energy, personal resources or spiritual strength.

Pines and Kafry : A general experience of physical, emotional and attitudinal exhaustion.

Edelwich and Brodsky: Progressive loss of idealism, energy and motives experienced by people in the helping professions as a result of working conditions.

Freundenberger: A state of fatigue or frustration given by devotion to a cause, way of life or relationship that does not produce the desired reward.

Pines, Aaronson and Kafry: A state of physical, emotional and mental exhaustion caused by being involved for long periods of time in situations that affect the person emotionally.

Maslach and Jackson: A response to chronic work stress that involves the experience of being emotionally exhausted, the development of negative attitudes and feelings towards the people with whom one works (depersonalisation attitudes), and the appearance of processes of devaluation of one's own professional role. They see burnout as a three-dimensional syndrome characterised by: a) emotional exhaustion, b) depersonalisation and c) reduced personal fulfilment.

Brill : A dysfunctional and dysphoric state, characterised by an unpleasant mood, such as sadness, anxiety or irritability, related to work, in a person who has no other major psychopathological disturbance, in a job in which he/she has previously performed well in terms of both objective performance and personal satisfaction, and who is then unable to do so again, except by an external intervention of help, or by a job readjustment, and which is related to previous expectations.

Cronin-Stubbs and Rooks: An inadequate emotional and behavioural response to occupational stressors.

Shirom: A consequence of the dysfunction of coping efforts, so that as personal resources decrease, the syndrome increases, so that the coping variable would be a determining factor in the understanding of burnout.

Moreno, Oliver and Aragoneses: A type of work-related stress that occurs mainly in those professions that involve an intense interpersonal relationship with the beneficiaries of one's own work.

Peris : A disorder characterised by the overload and/or destructuring of cognitive tasks beyond the limit of human capacity.

Párraga : A disorder of maladaptation to work-related stress, acute or chronic, either due to a lack of coping resources, or due to a failure to carry out known strategies that would lead to a dysfunctional emotional and behavioural state.

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From all these definitions of burnout, we can extract, following Mingote, that there are common factors among them:

1. Predominance of dysphoric symptoms (unpleasant mood, such as sadness, anxiety or irritability), but above all emotional exhaustion.

2. Behavioural disturbances related to the care model or depersonalisation of the relationship with the client, which implies that the relationship between worker-client is intense and long-lasting for the syndrome to appear.

3. Physical symptoms of psychophysiological stress, such as tiredness to the point of exhaustion, general malaise, together with palliative techniques to reduce residual anxiety such as addictive behaviours, which, in turn, mediate a deterioration in the quality of life, which emerge as a continuous process that occurs gradually and which "establishes itself" in the individual until it provokes the feelings of the syndrome.

4. Syndrome of a clinical-occupational nature that is produced by an inadequate adaptation to work, even though it occurs in presumably "normal" individuals.

5. It is manifested by a lower performance at work and by experiences of low personal fulfilment, insufficiency and inefficiency at work, demotivation and organisational withdrawal.

After this overview or state of the art of the concept, we use Maslach and Jackson's definition of burnout as a response to chronic work stress, which has three dimensions: a) emotional exhaustion, b) depersonalisation and c) reduced personal fulfilment.

The paradigms that study burnout

There are three different perspectives from which Burnout Syndrome has been studied:

Psychosocial approach

This perspective aims to explain the contextual and environmental conditions in which Burnout Syndrome originates, the factors that help to mitigate it (especially social support) and the specific symptoms that characterise the syndrome, mainly of an emotional nature, in different professions. In addition, the most widely used measurement instrument to assess the syndrome, the Maslach Burnout Inventory (MBI), was developed within this approach.

Organisational approach

It focuses on the fact that the causes of burnout syndrome originate at three different levels, the individual, the organisational and the societal. The development of Burnout Syndrome generates in professionals responses to work, which do not always have to appear together, such as the loss of the sense of work, idealism and optimism, or the lack of sympathy and tolerance towards clients and the inability to appreciate work as personal development.

Historical approach

It is an outgrowth of studies on the consequences of the rapid social changes in the United States after World War II on work and working conditions.

In this research we ascribe to the psychosocial perspective, so we make the three-dimensional concept of Burnout our own and use the Maslach Burnout Inventory, Human Services Survey version for data collection.

Explaining these approaches a little further, we find that:

The need to explain the burnout episode (antecedent-consequent relationship of its dimensions), together with the usefulness of integrating it into broader theoretical frameworks that can explain its aetiology in a satisfactory way, has led to the emergence of various theoretical models. These models group a series of variables, considered as antecedents and consequences of the syndrome, and discuss through which processes individuals come to feel burnt out.

The models developed from psychosocial considerations can be classified into three groups:

Socio-cognitive theory of the self

The first group includes models developed within the framework of the socio-cognitive theory of the self. These models are characterised by the use of Albert Bandura's ideas to explain the aetiology of burnout. They basically consider that: a) individuals' cognitions influence what they perceive and do and, in turn, these cognitions are modified by the effects of their actions, and by the accumulation of the consequences observed in others, and b) a subject's belief or degree of confidence in their own abilities will determine how hard the subject will work to achieve their goals and the ease or difficulty in achieving them, and will also determine certain emotional reactions, such as depression or stress, that accompany the action.
Among the models included in this group are Harrison's model of social competence, Cherniss' model, Pines' model and Thompson, Page and Cooper's model of self-control. In the first three models, perceived self-efficacy is the relevant variable for the development of the syndrome, while in the model of Thompson et al. it is professional self-confidence and its influence on personal fulfilment at work that determines the development of the syndrome.

Theories of social exchange

The second group includes models developed from social exchange theories. These models consider the principles of equity theory (Buunk and Schaufeli's social comparison model or Hobfoll and Fredy's resource conservation theory).

They propose that burnout syndrome has its aetiology mainly in the perceptions of unfairness or lack of gain that subjects develop as a result of the social comparison process when establishing interpersonal relationships. Professionals in helping services establish exchange relationships (e.g., help, appreciation, gratitude, recognition, etc.) with the recipients of their work, with peers, with supervisors, and with the organisation, and in these relationships expectations of fairness or gain in these exchanges play an important role.

When individuals continuously perceive that they give more than they receive in return for their personal involvement and effort, without being able to adequately resolve the situation, they will develop feelings of job burnout.

Organisational theory

Finally, the third group considers models developed from organisational theory. These models include role dysfunctions, organisational ill health, structure, culture and organisational climate as antecedents of the syndrome.

- These models are characterised by an emphasis on the importance of organisational contextual stressors and the coping strategies employed in the experience of burnout. They all include burnout syndrome as a response to work stress. Included in this group are the Golembiewski et al. model, the Cox, Kuk and Leiter model and the Winnubst model.

- The first model emphasises the dysfunctions of role processes, and especially the importance of role overload and role poverty in the development of the syndrome, the Cox et al. model emphasises the importance of organisational health and the Winnubst model emphasises the importance of organisational structure, culture and climate.

- Gil Montes and Peiró's integrated model.

- Currently, Gil-Montes and Peiró outline a new model that can be integrated by the cognitive and transactional models of work stress as a response to perceived work stress that arises after a process of cognitive reappraisal, when the coping strategies employed by professionals are not effective in reducing that perceived work stress. This response is a mediating variable between perceived stress and its consequences and is initiated by the joint development of low self-fulfilment at work and high feelings of emotional exhaustion. The depersonalising attitudes that follow are seen as a coping strategy developed by professionals in the face of the chronic experience of low job self-fulfilment and emotional exhaustion.

- This perspective integrates the role of cognitions and emotions as mediating variables in the relationship between perceived work stress and attitudinal and behavioural responses.

- Evolution of the picture and symptomatology associated with each stage.

- In the aforementioned study, Fernández and collaborators establish a detailed symptomatology according to the stages through which the worker goes through in the development of burnout syndrome.

- First stage. An imbalance is perceived between work demands and material and human resources in such a way that the former exceed the latter. This situation causes a state of acute stress related to situations such as disenchantment at work, over-commitment, responsibility and confrontation with difficult situations and excessive direct contact with other people.

- Second stage. The individual is confronted with a significant number of stressful situations where different coping strategies must be put into action. In this stage, symptoms related to the following may develop:

- Hyperactivity. In this case, the professional begins to work more hours than normal without financial remuneration, manifesting feelings of disillusionment.

- The level of commitment to work decreases, there are alterations in the level of attention, excessive aspirations, feelings of disillusionment, lack of motivation, jealousy and, as a consequence, problems with the work team.

- At this stage it is likely that, depending on the individual, feelings of guilt, depression, aggressiveness, etc. may also appear.

Third stage: Professional burnout syndrome really appears, where the symptoms described in the 2nd stage may appear, to which are added:

Psychosomatic symptoms such as headaches, osteo-muscular pain, gastrointestinal discomfort, ulcers, weight loss, obesity, chronic fatigue, insomnia, high blood pressure, menstrual alterations, etc.

Behavioural symptoms: absenteeism from work, abuse and dependence on drugs, alcohol, coffee and other toxic substances, high cigarette consumption, marital and family problems, high-risk behaviour such as reckless driving.

Emotional symptoms: The most characteristic feature is the affective distancing towards the people he/she has to attend to. Anxiety that reduces concentration and performance, impatience, irritability, suspicious and even paranoid attitudes towards clients, colleagues and bosses. They may become callous, cruel and cynical.

Defensive Symptoms: The "worn out" individual denies the above emotions and behaviours and blames clients, colleagues, bosses, for their situation, and does or cannot do anything to get out of it.

Fourth stage: The psychophysical deterioration of the individual leads to frequent absences, a greater number of absences from work and a lack of efficiency in their work, which makes them more of a danger than a help to the patients they have to attend to.

The most characteristic behaviours at this stage are related to a lack of energy and enthusiasm, a decrease in interest in patients, greater frustration and demotivation than in previous stages. There is a desire to put aside work to do something else, and above all a great demoralisation. They feel that they have exhausted all their emotional human resources and have nothing left to offer to others and become desensitised to problems that require help. Feelings of guilt frequently appear and they are unable to solve problems. The individual feels burned out, is fed up with work, withdraws from family and friends and sometimes sinks into depression, even in advanced cases into suicide, lacks self-control, and acts unpredictably. This tends to occur especially in people who are more dedicated, committed and more willing to help others.

In both the third and fourth phases, it is necessary to treat the subject in all his or her physical and psychological components.

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Which professions are at risk today?

Burnout syndrome is a response to chronic work-related stress that occurs mainly in the work environment of service-oriented professions, where there is direct contact with the people for whom the work is intended. A review by Ortega and López of studies on burnout carried out in Spain and Mexico revealed that the populations on which they have worked, because they constitute a risk factor, are mostly professions linked to care or service work, such as clinical assistants, carers of geriatric patients, specialised, primary and special care doctors, dental surgeons, professionals working with HIV patients, mental health and psychologists, as well as nursing professionals.

However, burnout has also been detected in other professions such as administrative and administrative assistants, sportsmen and women, teachers, special education monitors, workers in occupational and social centres, prison warders and volunteers.

Victims of burnout: Social workers, nurses, teachers and police officers are most vulnerable to being attacked by this problem. They become cynical and negative, and sometimes hostile to their clients. Others prone to burnout are air traffic controllers, as well as those dealing with life and death decisions, cardiologists and those who are required to work extreme hours, for example.

Clinical manifestations of burnout

The clinical manifestations of this syndrome are encompassed within the physical, emotional, cognitive, behavioural and social spheres. The following table summarises the main symptoms associated with burnout.

Physical symptoms	Emotional symptoms
– Tachycardia – Headaches – Gastrointestinal disorders – Hypertension – Chronic fatigue – Respiratory disorders – Sleep disturbances	– Depression – Helplessness – Hopelessness – Irritation – Apathy – Disillusionment – Pessimism – Hostility – Lack of tolerance – Accusations against clients – Suppression of feelings
Cognitive symptoms	**Behavioral symptoms**
– Loss of meaning – Loss of values – Disappearance of expectations – Self-concept modification – Cognitive disorientation – Loss of creativity. – Distraction. – Cynicism – Generalized criticism	– Avoidance of responsibilities. – Absenteeism – Maladaptive behaviors. – Disorganization. – Over-involvement – Decision avoidance – Increased use of caffeine, alcohol, tobacco and drugs
Social symptoms	
– Contact avoidance – Interpersonal conflicts – Family bad mood – Isolation – Formation of critical groups – Professional avoidance	

Table 1 Symptoms associated with Burnout Syndrome

Methodological design for measuring burnout

For the purpose of measuring burnout in this research, the Maslach Brief Burnout Questionnaire (MBI) was used, however, burnout can also be measured with the Maslach Brief Burnout Questionnaire by Moreno, the Copenhagen Burnout Inventory (CBI), the Questionnaire of Medical Professional Burnout (CDPM), Wolfgang's Inventory of Stress for Health Professionals (IEPS) and the Goldberg General Health Questionnaire (GHQ-28) to mention a few.

Maslach's Brief Burnout Questionnaire (MBI)

It consists of 22 items distributed in three scales, emotional exhaustion (9 items), depersonalisation (5 items) and self-fulfilment (8 items) where subjects rate each item of the questionnaire with a likert scale in which they identify the frequency with which they have experienced the situation described. The frequency scale has 7 points ranging from 0 (never) to 6 (every day).

Burnout facilitating variables

Facilitating variables can be socio-demographic, personality and coping variables. Among the former, which are of interest for this project, are gender, age, marital status, whether or not there are children, seniority in the job and in the profession.

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As for gender, men score higher on PD than women, other results are inconclusive and appear to be influenced by study characteristics (samples, instruments, country, culture). Such differences are conditioned by the socialisation processes for male and female roles and by the profiles and requirements of different occupations. Older age seems to be associated with less Burnout, perhaps because these professionals have developed better coping skills and more realistic career expectations.

With respect to marital status, most authors have found that married people experience less Burnout, although it seems to be rather the socio-familial support received by the spouse, and marital satisfaction/dissatisfaction that seems to influence.

Family life may make subjects more adept at dealing with others and their problems. It has been found that subjects with children are older, more mature, have a more stable lifestyle and a different work perspective, those without children use work more as a source of social life, become overly involved with people in the work environment and the risk of Burnout increases.

In relation to seniority in the role and in the profession, the results are similar to those of age: new professionals are younger and inexperienced, so they have a higher risk of Burnout.

Type of research

The research was descriptive and cross-sectional. To achieve the objectives, two self-administered assessment instruments were used and presented in a sealed envelope to the first, second and third year family medicine health workers who voluntarily participated in the research. Anonymity and confidentiality of the data obtained by the research was ensured at all times. Each envelope was assigned a number and was given randomly to each participant. The instruments were administered during November 2022 and January 2023.

Population

The research population consisted of 124 nurse participants working in a public health organisation in the state of Morelos.

Data collection instrument

Two instruments were used: a questionnaire of socio-demographic and work-related aspects and the Maslach Burnout Inventory.

Socio-demographic questionnaire

It contains nine questions that collect sociodemographic and occupational variables that, according to several studies, are relevant in relation to the vulnerability to develop burnout syndrome. The socio-demographic variables collected are: age, sex, marital status and number of children. The work variables are: area of work, length of service, workload, type of contract.

Maslach Burnout Inventory

The Maslach Burnout Inventory is the most widely used to assess the frequency and intensity of work burnout in the healthcare context. Of the different versions of the Maslach Burnout Inventory, the classic version for human services professionals (MBI-HSS) was administered. It measured:

1. Emotional exhaustion. This subscale consists of nine items describing feelings of being overwhelmed and emotionally exhausted at work. According to the Spanish commercial version of the questionnaire, the following maximum reference values are established for interpreting each of the dimensions:

    a. Depersonalisation. This subscale is made up of five items that describe an impersonal response and lack of feelings towards the subjects of attention or service. Maximum score 54, it is directly related to the level of burnout.

    b. Self-fulfilment at work. Eight-item subscale describing feelings of competence and successful accomplishment at work towards others. Maximum score 48 and is inversely related to the level of burnout.

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The twenty-two items are written in the form of statements referring to the attitudes, emotions and feelings that the professional shows towards work and towards the recipients of his or her service (patients). The items can be rated on a Likert-type scale, in which the subject scores the question with which he/she experiences the feelings that make up the syndrome. The frequency range consists of seven adjectives from "never" (0) to "every day" (6).

Subjects with burnout syndrome will be those who score high on Depersonalisation and Emotional Exhaustion and negative on Personal Accomplishment.

Variables and categories

The variables and categories used in the study are listed below.

Variables	Categorías
Age	Young people 25-30 years Middle age 31-40 years Mature 41-50 years Seniors 51-60 years
Sex	Female Male
Civil status	Single woman Married Divorcee Free Union
Number of children	Zero One Two Three Four Five or more
Work area	Emergencies External consultation Others
Hiring type	federal square state square Contract Intern substitute Stripe list
Antiquity	Under 10 years old From 10 to 20 years Over 20 years
Extra workload	Yes No
Maslach Inventory Dimensions	emotional exhaustion Depersonalization Personal fulfillment at work
Burnout level	High Half Low

Table 2 Variables and categories used in the study

Statistical treatment

The data analysis was carried out using the SPSS version 26 statistical package. A descriptive statistical study was carried out, consisting mainly of the calculation of percentages, means and standard deviation for each of the variables. As for the inferential analysis, contrast studies were carried out between the different groups of variables, depending on the nature of the variables and the characteristics of the contrast groups. The statistical treatment was carried out at the 95% confidence level. Pearson's correlation test was used to determine the relationship between two quantitative variables to find significant relationships between the variables for the following purpose:

a) To determine whether the two variables are correlated, i.e. whether values of one variable tend to be higher or lower for higher or lower values of the other variable.

b) To be able to predict the value of one variable given a given value of the other variable.

c) To assess the level of agreement between the values of the two variables.

Results

Descriptive analysis

Socio-demographic characteristics

The results of the statistical analyses carried out on the variables Age, Sex, Marital status and Number of children are detailed below.

Age

The sample was divided into age ranges according to four dimensions:

Label	Age range	Frequency
Youths	21-30 years	36
Middle age	31-40 years	46
Mature	41-50 years	27
Greater	51-60 years	15

Table 3 Age ranges

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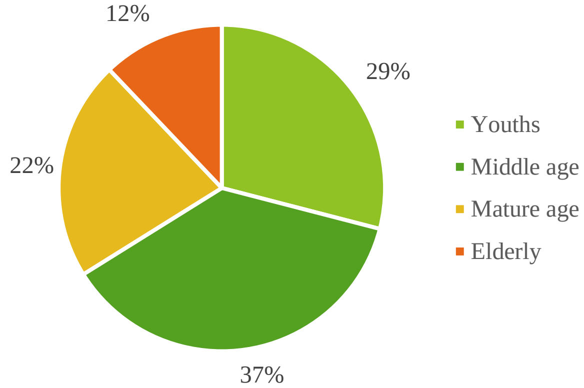

Figure 1 Percentage frequency of age ranges

The percentage age distribution was as follows: young people aged 21-30 years constitute 29% of the sample, middle-aged people aged 31-40 years represent 37% of the sample, mature people aged 41-50 years represent 22% of the sample, while older people aged 51-60 years represent only 12% of the sample.

Marital status

It is represented by 4 categories as can be seen in the following table.

Civil status	Frequency
Single	27
married	76
divorced	7
free Union	14

Table 4 Relative frequency by marital status

Regarding marital status, the results tell us that single women constitute 22% of the sample, married, 61%, who constitute the majority, divorced, 6% and common law, 11%.

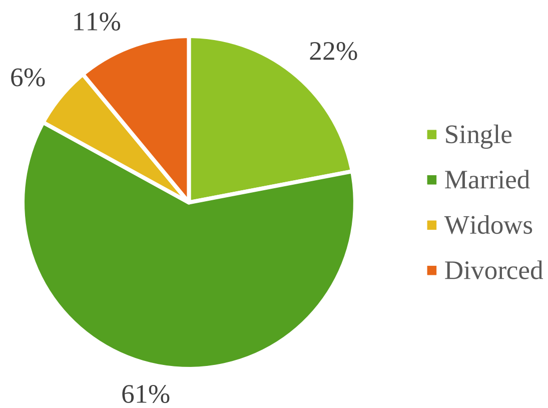

Figure 2 Percentage frequency of civil status

Job characteristics

The results of the statistical analyzes carried out on the variables Work area, Type of hiring, Seniority in position and Workload are detailed below.

Work area

Regarding the percentages obtained in terms of the work area in which the nurses participating in the research worked at the time of application of the instrument.

Work area	Frequency
External consultation	104
Emergencies	17
another area	3

Table 5 Relative frequency of the work area

We have that 84% belong to the outpatient area, 14% in the emergency area and 2% in another area.

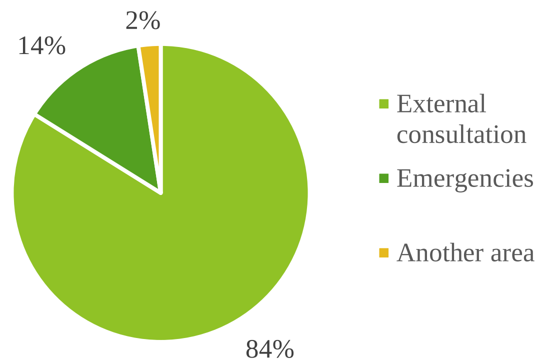

Figure 3 Percentage frequency of the work area

Hiring type

Regarding the type of hiring, which speaks to us at a given moment about job stability.

Hiring type	Frequency
federal square	45
state square	26
By contract	53

Table 6 Relative frequency by type of contract

We found that 36% have federal positions, 21% have state positions, and 43% work under contract.

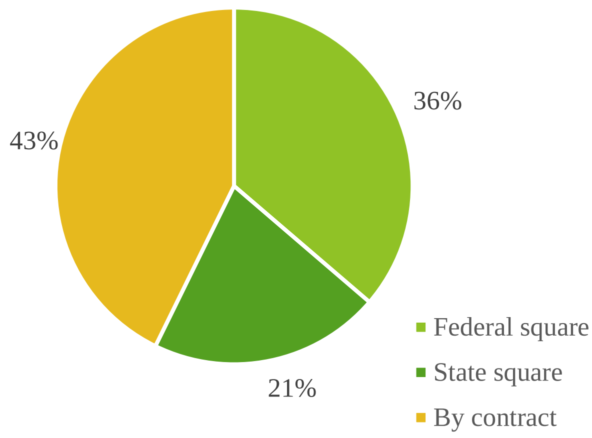

Figure 4 Percentage frequency by type of contract

Length of service

Regarding the years of seniority in the position, they are shown in ranges from less than 10, from 10 to 20 and more than 20.

Length of service	Frequency
Less than 10	83
from 10 to 20	40
More than 20	1

Table 7 Relative frequency by seniority in the position

We have that 67% of the nurses have been working for less than 10 years, while 32% have been working in the same position for 10 to 20 years, only 1% answered that they have been in service for more than 20 years.

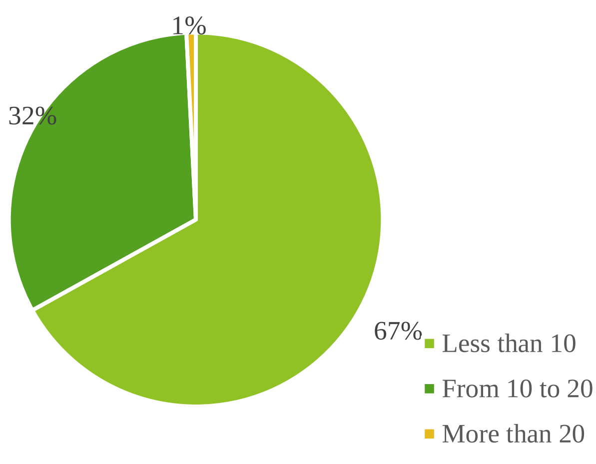

Figure 5 Percentage frequency of seniority in the job

Extra workload

When nurses were asked if they have an additional job to what they do in the current organization, 85% answered yes and 15% said no.

Maslach Burnout Inventory (M.B.I.)

In this section, the three possible ways of interpreting burnout syndrome are studied: for each dimension of the inventory (averages), in a more globalized way (degrees) and by pattern analysis (levels).

Degrees of burnout	emotional exhaustion	Depersonalization	Personal fulfillment at work
Low	<18 punts	<5 punts	>40 punts
Half	19-26 punts	6-9 punts	34-39 punts
High	>27 punts	>10 punts	<33 punts

Table 8 Rating of the three dimensions of Burnout[21]

Maslach inventory dimensions

The averages obtained by the nurses in the three dimensions of the Maslach Inventory are presented below.

Dimensions of Burnout	Scores n=124
emotional exhaustion	9.62
Depersonalization	3.31
Personal fulfillment at work	41.87
Burnout level	Alto

Table 9 Scores obtained in the three dimensions of the Maslach Inventory

Regarding the work-related variables, it was found that there are no significant differences between the three dimensions of burnout and the work area variable.

Burnout levels

According to the results found and taking the previous table as a reference, we have that the average of the sample corresponds to a low level of burnout, because in the three dimensions of burnout they scored low in the three percentiles.

Percentiles	emotional exhaustion	Depersonalization	Personal fulfillment at work	Burnout level
25	4	0	40	Low
50	7	1.5	44	Low
75	14	6	48	Low

Table 10 Scores for the three dimensions of the Maslach Inventory and level of burnout according to the three main percentiles

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In all percentiles we notice low levels in the dimensions of emotional exhaustion, depersonalization and personal fulfillment at work, except in the 75th percentile in which depersonalization has a low level, however, the sum of the three scores of said percentile of Either mode indicates a level of burnout that ranges from low to medium.

Prevalence of Burnout in the population studied

77 nurses do not present any burnout, 16 a little, 11 medium and 20 a lot, none of them being extremely burnout.

Labor variables

Below, the results obtained in the average scores are presented according to the dimensions of emotional exhaustion, depersonalization and personal fulfillment at work, correlated with the labor variables work area, type of hiring, seniority and extra workload.

Work area

Regarding the work area, the results indicate that there are no significant variations in the results obtained in the three dimensions of burnout due to working in the emergency department, outpatient clinic or another.

Variable	Emergenciesn =17	External consultationn= 104	Others =3	Pearson correlation
emotional exhaustion	10.75	9.44	9.50	-.049
Depersonalization	3.84	3.25	2.00	-.060
Personal fulfillment at work	42.65	41.88	35.25	-.072

Table 11 Results of the Mean Correlations between Burnout Dimensions and Work Area

Hiring type

The type of hiring, which is related to job stability, according to the results obtained, was not significant for the scores in the three dimensions of burnout.

Variable	State SquareN=26	Federal Plazan=45	Contract n=52	Pearson correlation
emotional exhaustion	8.89	8.35	11.05	.099
Depersonalization	2.65	3.70	3.76	.089
Personal fulfillment at work	41.54	42.45	42.21	-.006

Table 12 Results of the Mean Correlations between Burnout Dimensions and Type of Hiring

Antiquity

The number of years they have worked as nurses was inversely significant, in a bilateral correlation at the 0.05 level, which indicates that there is an inverse relationship between the number of years worked and the levels of emotional exhaustion, that is, the more years have been worked on, the lower level of burnout occurs in the aspect of emotional exhaustion.

Variable	Ten or less yearsn=83	From 10 to 20 yearsn=40	Pearson correlation
emotional exhaustion	10.33	9.00	-.140*
Depersonalization	3.65	3.00	-.089
Personal fulfillment at work	41.60	42.10	-.023
* The correlation is significant at the 0.05 level (two-sided)			

Table 13 Results of the Mean Correlations between Burnout Dimensions and seniority

Extra workload

The fact that the majority of nurses have another job in addition to the one they carry out at the Ministry of Health does not constitute a significant variable for the scores obtained in the three dimensions of burnout.

Variable	He has no other job n=19	He has another job n=105	Pearson correlation
emotional exhaustion	9.37	11.00	.067
Depersonalization	3.22	3.77	.045
Personal fulfillment at work	41.89	41.77	-.005

Table 14 Results of the Mean Correlations between Burnout Dimensions and the existence or not of an extra workload

Conclusions

The results obtained in this study allow us to reach the following conclusions:

1. 77% of the nursing population did not present burnout at any of its levels.

2. Regarding the burnout dimensions, we found that, in emotional exhaustion, the average was (9.62), depersonalization (3.31) and personal fulfillment at work (41.87), which implies that the levels burnout obtained in each dimension are within the low range.

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a) There are no significant relationships between the three dimensions of burnout and the age variable, they do not have a significant relationship in this regard.

b) There are no significant differences between the three dimensions of burnout and the sex variable, which tells us that being a woman does not directly impact the prevalence of burnout syndrome, given that they are exposed to the same risk conditions for developing the syndrome. .

c) There are no significant relationships between the three dimensions of burnout and the marital status variable, that is, they present the same risk of developing burnout syndrome in single, married, divorced or cohabiting nurses.

d) Regarding the work-related variables, it was found that there are no significant relationships between the three dimensions of burnout and the work area variable, that is, the fact that the nurses are working in the emergency department, consultation area. external or in any other, does not have a significant relationship to present or not the syndrome.

e) The job stability that in the registered sociodemographic variables was worked on as the type of hiring of the nurses: nurse with a state position, with a federal position, by contract, as a substitute for an intern or on a line list, were not significant for the levels. of burnout that occurred.

f) Seniority, that is, the number of years that nurses have worked, classifying it as less than five years or more than five years, was not a significant factor in developing the syndrome.

g) The fact that the nurses had one or more than one job was significant in developing the syndrome.

The research reveals the scant relationship between sociodemographic variables and the prevalence of burnout syndrome in nurses and requires further analysis of the data to form the epidemiological profile of the 23% of nurses who did present some level of burnout. burnout and more due to the double position factor or 3 jobs times the number of work hours.

Suggestions

The fact that the results of this study indicate that just under a quarter of nurses present some level of burnout does not mean that they no longer constitute a population with a high risk of developing the syndrome, as demonstrated by studies carried out in other latitudes.

Similar studies must be carried out in other populations of nurses in the entity, to detect cases of vulnerability to suffering from said syndrome and in this way, take the necessary measures at the individual, organizational and social level to confront it.

It is important that as preventive measures the characteristics of the syndrome, its causes and consequences are disseminated among the population dedicated to health-related tasks, given that, paradoxically, they are one of the most vulnerable to suffering from it.

The above to avoid conditions such as:

- tension headache
- muscle cramps and spasms back
- neck and shoulder
- pain
- jaw
- tension
- chronic pain
- migraine
- cold hands and feet
- high pressure
- skin problems
- allergies
- asthma
- arthritis
- digestive disorders
- stomach pains and cramps
- constipation

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- diarrhea
- frequent colds
- infectious diseases
- cancer
- metabolic dysfunctions
- heart attacks and circulatory problems
- irregular heart rhythm
- insomnia
- fatigue
- respiratory irregularities
- rapid breathing
- overfeeding
- alcohol or drug abuse
- sexual problems
- anxiety
- depression
- Just to mention a few.

Gratitude

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Proposal for measuring the impact of the quality of work life on business competitiveness: expert panel method

Propuesta de medición sobre incidencia de la calidad de vida laboral en la competitividad empresarial: método de panel de expertos

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Abstract

Objetive. Validate an instrument for determining the quality of work life factors that affect business competitiveness, taking several companies in the industrial sector as a case study through the Content Expert Panel method.

Methodology. The research approach is quantitative, the aim is to contrast the theory found with the empirical evidence in the field. As the research developed, 3 research techniques were used in order to comply with methodological rigor: 1) Documentary technique. Reference materials: books, database, techniques and studies. 2) Bibliographic technique. Those used as support were: bibliographic and electronic files. 3) Field Technique, structured interviews for the Expert Panel.

Contribution. In the literary review, it was found that there is statistically significant evidence on how improving the quality of life of the members of the organization has a direct impact on its performance, which is why, the better the quality of life, the employees can become more competitive. For future research, other validation techniques of the proposed instrument could be implemented, as well as the analysis of other theories related to quality of life and competitiveness.

Measurement, Quality of life, Competitiveness

Resumen

Objetivos. Validar un instrumento para la determinación de los factores de calidad de vida laboral que inciden en la competitividad empresarial, tomando como caso de estudio empresas del sector industrial a través del método de Panel de Expertos de Contenido.

Metodología. El enfoque de la investigación es cuantitativo, se desea contraponer la teoría encontrada con la evidencia empírica en el campo. Conforme se desarrolló la investigación, se utilizaron 3 técnicas de investigación con el fin de cumplir con rigor metodológico: 1) Técnica documental. Materiales de consulta: libros, base de datos, técnicas y estudios. 2) Técnica bibliográfica. Las utilizadas como apoyo fueron: fichas bibliográficas y electrónicas. 3) Técnica de Campo, entrevistas estructuradas para el Panel de Expertos.

Contribución. En la revisión literaria se encontró que existe evidencia estadísticamente significativa sobre como el mejorar la calidad de vida de los miembros de la organización tiene una incidencia directa sobre los rendimientos de la misma, es por ello que, a mejor calidad de vida, los empleados pueden lograr ser más competitivos. Para futuras investigaciones se pudiera implementar otras técnicas de validación del instrumento propuesto, así como el análisis de otras teorías relacionadas con la calidad de vida y la competitividad.

Medición, Calidad de vida, Competitividad

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Introduction

Background

Work is an important aspect of an individual's life, not only because a large part of the time is devoted to work activities, but also because thanks to it, the person obtains a series of material, economic, psychological and social compensations, and manages to develop his or her own identity and roles in society, contributing to the creation of goods and services (Peiró and Salvador, 1993).

Work activity usually takes place in formal organisations, with a defined structure, which assigns roles to people, distinguishes hierarchical levels, establishes timetables and the activities to be carried out, the conditions in which they are to be carried out, the technologies and resources available for this purpose, in such a way that the objectives pursued are achieved in the most effective and efficient way (García et al., 1993).

Therefore, the reality of work (Peiró and Salvador, 1993) is very diversified and while in some jobs there are opportunities for personal and professional development, in others, the conditions are such that the satisfaction of the needs for self-esteem, security or fulfilment is not assured. This is why it is said that jobs, depending on these circumstances, offer a higher or lower quality of working life and people, depending on their own work experiences, perceive a higher or lower quality of life in their working environment.

The concept of quality of working life, in its broadest meaning, includes all those conditions related to work, such as pay, working hours, career opportunities, working environment, benefits and services, and human relations, which may be relevant to job satisfaction and motivation. It also includes one's own experiences of work in terms of the opportunities it provides (Delamotte and Takezawa, 1986). In short, as some authors (Jenkins, 1983; Larouche and Trude, 1983, cited by Peiró, 1993) point out, it is about reconciling the aspects of work that have to do with human experiences and with organisational objectives.

On the other hand, as a result of globalisation and a whole series of transforming elements such as new technologies, changes in consumption patterns and a greater awareness of the preservation of natural resources, a re-conceptualisation of the term competitiveness emerges, where comparative advantages as pillars of development move towards competitive advantages. These are created through product differentiation and cost reduction, where technology, innovation capacity and specialised factors are vital.

Bejarano (1998) also argues that competitive advantages are unique and are difficult for competitors in other regions to replicate or gain access to, as they are not only driven by the unique needs of a particular industry, but also require considerable and continuous investment to preserve and renew them. The analysis of the quality of working life is a basic and differentiating element that can be leveraged as a very valuable competitive advantage.

Purely economistic concepts begin to be mixed with other social concepts, such as: quality of human resources, culture, quality of the product or service, bargaining power, politics, conservation of natural resources and characteristics of the spatial location. In this way, these factors add to the determination of competitiveness and tend to associate the concept with issues such as social efficiency, economic performance and environmental sustainability.

The Royal Spanish Academy (2001) defines competitiveness as "ability to compete" and also as "rivalry for the achievement of an end". Solleiro and Castañón (2005) state that it is the ability of an organisation to maintain its market share based on new business strategies, sustained productivity growth and the ability to engage in negotiations with different institutions.

The resources and capabilities theory argues that a firm's profitability is closely linked to the type, quantity and nature of its resources and capabilities. Amit and Schoemaker (1993) refer to these components as strategic assets, which must be protected and developed to achieve competitive advantage.

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In this idea, Prahalad and Hamel (1990) state that it is a fundamental requirement for top executives to possess the ability to identify, cultivate and exploit the firm's resources and capabilities that represent profitability and growth.

The competitive development that takes place in institutions and organisations favours individuals in the creative field by making their way of relating dynamic (Strand, 2011). This phenomenon generates appropriate working environments that influence the economic, commercial, academic and professional competitiveness of employees and workers. That is why the organisation needs to foster an entrepreneurial spirit among its members as a means of personal competitive development that will ultimately also influence organisational competitiveness (Mahdavi et al., 2013).

In studies conducted by Charles and Ochieng (2023) found that there is a relationship between strategic outsourcing and organisational performance. In the study they posed a model where it was found that the variables affecting firm performance are: customer satisfaction, employee productivity, efficiency, profitability and comparative advantage, the last variable being the subject of study of the present research.

Problem statement

The first problem that arises when attempting to evaluate quality of life is the precise and operational definition of what is to be evaluated. Terms such as happiness, state of health, satisfaction and well-being, which are well defined, have become interchangeable in the process of evaluating quality of life. Most work on quality of life assessment uses instruments that attempt to measure one or more of these variables interchangeably, and most existing instruments specifically measure quality of life in relation to health (Sison, 1994). Similarly, in publications by Germán et al. (2018), they mention that employees who have a better quality of life in their work environments can also achieve differentiators in terms of the competitiveness of the organisation, thereby promoting comparative advantages.

Quality of life is a subjective concept, which is related to the perception that people have of their life, in the sense of whether they feel fulfilled with their own expectations and projects. As well as being related to individual perception, it tends to change depending on whether the conceptualisation is economic, philosophical, political or health-related (Espinosa and Morris, 2002).

The confusion between quality of life and state of health has given rise to ethical, technical and conceptual dilemmas; in fact, some critics of the concept have considered that the concept cannot in any way be independent of cultural norms, behaviour patterns and expectations of each individual; it is clear that it is an eminently human notion, which relates to the degree of satisfaction that the person has with their physical situation, their emotional state, their family, love and social life, as well as the meaning they attribute to their life, among other things (Schwartzmann, 2003).

With a philosophical stance, Nussbaum examines the quality of life by presenting it in terms of a list of basic human needs, based on the Aristotelian approach. The list coincides with the proposals of Sen, Erickson and Allardt, despite the fact that they come from different intellectual traditions (Nussbaum and Sen, 1993).

Another problem is the nature of the measures used; social indicators that are based on data or facts linked to what is objectively supposed to cause well-being in the population and that do not necessarily reflect the degree of satisfaction, subjective well-being and happiness that this population can enjoy. They are necessary, but not sufficient, to assess the quality of life of peoples, social groups and individuals. This sociological meaning makes it possible to identify a certain relationship with work, and although quality of life is not defined in terms of quality of working life, the significance of employment is recognised (Sison, 1994).

Iñaki de Miguel mentions that we should not forget the wider sociological significance of employment, which is the key to the organisation of the household, since most of the income is derived from labour income.

Employment is the most common means of personal fulfilment, of integration into the group of friends and, paradoxically, work facilitates the form of leisure management (De Miguel and De Miguel, 2002).

The analysis of the quality of working life is of growing importance given the new forms of business and work organisation that generate high levels of pressure and work stress in individuals, which impacts on performance and consequently on productive results. Based on these considerations, it is thought that the analysis of the quality of working life constitutes a basic and differentiating element that can be promoted as a very valuable competitive advantage.

A number of studies have shown that quality of work life influences organisational performance. Lau and May (1998); Harter, et al., (2002), establish that the quality of work life offered by an organisation and perceived as satisfactory by employees, has a positive impact on the physical, psychological and emotional health of the worker, having a favourable impact on organisational performance and results.

Competitiveness is related to the capacity to increase the standard of living of the inhabitants, to generate sustained increases in productivity, to successfully enter international markets, among others (Padilla, 2006). The meaningful study of personal and/or professional competitiveness is developed in the application of the dimensions of being competent in three different spheres: 1) desired situation, 2) development process, 3) training context, which are supported by competitive development (Climént, 2012). These dimensions drive the individual to make use of his or her abilities and skills, such as adapting and modelling for the resolution of conflicts to which he or she is exposed. It is appropriate to consider that competitiveness is an innate part of individuals and the idea is to develop this capacity by interacting with each other, individually and in groups, and at all times considering the environment in which they operate. This holistic view increases the necessary stimulus to consider appropriate skills, knowledge and aptitudes in different social contexts (Climént, 2014).

An increase in the perception of competence occurs mainly in people and in their relationships, as it is in them that they develop to fulfil some vision or goal, sharing experiences that favour individual performance and opening the way for the efficiency of group processes (Mantilla and García, 2010).

Likewise, Amini and Rahmani (2023) found statistically significant evidence on how adaptation to dynamic changes in the environment (also understood as strategic agility) have an impact on the competitiveness of private companies, highlighting the vision of managers. Therefore, the competitiveness variable should be analysed from different contexts, to have a more concrete approach of how it affects the performance of organisations.

The competitive field where companies are able to create win-win situations; show social astuteness, understanding social situations; socialise; develop, maintain and use effective networks to interpret situations through active listening in all contexts in which they are involved in achieving their goals and objectives (Chatenier et al., 2010), give a progressive result in all areas of work, stimulating an appropriate culture for the members of the organisation to develop their capabilities and skills allowing them to achieve both personal and work objectives for mutual benefit.

In publications by Aydin et al., (2023), they found evidence on how meeting customer demands, considering different aspects such as social and economic aspects, favours organisations in their performance, since managers with sufficient knowledge about customer requirements will have a greater impact on the competitiveness of the company, regardless of the sector where it is carried out.

Given the above, the following research question is established: What are the factors of quality of working life that affect business competitiveness?

Objective

To validate the instrument that serves to determine the factors of quality of working life that have an impact on industrial business competitiveness, through the Content Expert Panel method.

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Justification

In this sense, the most important contribution (intellectual merit) is obtained by fulfilling the objective of the research, with the intention of improving the quality of life of workers, it is possible to narrow the gap and thus guarantee the productivity of companies, given that an increasing number of companies opt for structures and forms of management based on the dehumanisation of labour relations in search of higher levels of competitiveness, productivity and market positioning. In addition to promoting education and dissemination, through the generation and application of knowledge along the lines of quality of life and business competitiveness, as a new learning strategy for students and teachers involved in the project, generating high-level publications with the use of statistical methods.

Limitations and limitations of the study

It is necessary to indicate that, in the search for information for the approach of this project, few studies were found that relate the variable quality of working life with the variable business competitiveness from the approach of the theory of resources and capabilities, this would generate an important contribution to the incipient literature of the same.

Methodology to be developed

The approach of this research is quantitative, divided into two stages; the first, whose results are reported in this paper, is the design of the instrument, which requires contrasting the theory found with the empirical evidence in the field. The process for the state of the art of the research starts from an idea that is gradually narrowed down and, once delimited, research objectives and questions are derived, the literature is reviewed and a framework or theoretical perspective is constructed. The instrument is developed and the assessment methodology is used through expert judgement (Dalkey and Helmer, 1963, cited by Rodríguez-Prieto (2017) based on obtaining and efficiently processing the knowledge and information that experts possess on specific topics, and from there, achieving a useful group result to be used as input in decision-making.

In the second stage, from the variables already determined and validated in the instrument, a plan is drawn up to test them; the variables are measured in a given context; the measurements obtained are analysed using statistical methods, and a series of conclusions are drawn regarding the hypothesis or hypotheses.

The research design is explanatory, since explanatory or analytical studies answer why or the cause of the presentation of a certain phenomenon or behaviour, and in turn, try to explain relationships between independent and dependent variables.

Research is based on observational studies where no independent variable is altered, it is based on the use of techniques that allow the researcher to acquire information through direct observation and the recording of phenomena, but without any intervention (leaving the observed free). It is based on categories, concepts, variables, events, communities or contexts that have already occurred or occurred without the direct intervention of the researcher. This is why it is also known as ex post fact research (events and variables that have already occurred), as it observes variables and relationships between them in context.

As the research was developed, 3 research techniques were used in order to comply with the methodological rigour required in scientific documents: 1.- Documentary technique. Through different graphic documents published by various authors. Consultation materials: books, databases, techniques and studies. Bibliographic technique. Exploration of the source of description of the scientific community on a given problem or event. Those used as support were: bibliographic and electronic files. 3.- Field Technique, carried out through or directly in the environment in which a study phenomenon is presented. The support tools used for this research were: opinion interviews.

The instrument used for data collection was elaborated on the basis of the literature reviewed on the variables that influence the phenomenon, in function of which the dimensions of the study were structured, resulting in five sections:

1). Objective by way of introduction to the interviewee; 2). General data on the person; 3). The measurement scale that is requested to be followed for the contribution of their answers; 4). Questions related to each variable, with a definition of each variable at the beginning. In its content, rating scale questions were included, where the respondent selects a single rating for the question in an equally spaced continuum of possible options. In addition, the opinion of three researchers regarding the design of the instrument was used.

Results

In order to check the content validity of the measurement instrument, in its initial phase, the template containing the instrument and the indications for its evaluation were sent by e-mail to five experts. The response of the five experts was awaited for a certain period of time; however, only three responded, two of them belonging to the Technological Institute of Sonora and one more from the business sector.

The first version of the questionnaire, applied for content validation by the experts, consisted of a total of 82 items corresponding to 2 variables, each variable was made up of various constructs.

Steps followed for the evaluation of the instrument:

(a) preparation and elaboration of the instructions and forms, (b) selection of the 5 experts, (c) explanation of the context, (d) the instrument was sent via email with all the relevant indications for its evaluation, (e) finally, doubts were answered on questions that some experts found repeated or poorly worded.

Based on the responses obtained, Table 1 was drawn up, which shows the modifications suggested by the content experts.

Expert 1:	Expert 2:	Expert 3:
"Question 4 needs improvement in the way it is worded, as it could lead to confusion. "Question 11 I recommend that the wording be improved, as I find the way the question is phrased inadequate. "Questions 38, 39 and 40 need more context". "Question number 65 could be duplicated with question number 61".	“You could ask more than about the product, about customer complaints and the level of response/coordination of the organisation, because it is up to them to receive all that". "About the image of the company (79), you could ask if the image that customers have of the company matches the vision of the company (aligned and coherent)". "On publicity (59), the result is "how well known the company is in its sector and beyond" - that generates pride of ownership and raises the rate of talent attraction and retention." "In business competitiveness "Resources". One issue that could be interesting is, how much impact the research and development efforts have generated in the organisation, if it has really impacted on customer complaints (or indicators that measure them) (employee perception, because sometimes it is perceived as more workload)".	"Questions 1 and 2 are duplicated". "It needs to be explained to whom the instrument is addressed. "Question 20 is worded very similarly to question 18. "The variable entitled integration into the work environment could be very similar to the variable personal development of the worker". "Questions 33 and 34 are very similar and could cause confusion. "Questions 39 and 40 are duplicated". "I consider that question 41 lacks correlation with the instrument". "Improve the wording of question 48, I find the way it is worded inadequate". "Question 69 lacks relevance to the instrument". "The capabilities variable in terms of business competitiveness needs to be reworded".

Table 1 Opinion of panel of content experts
Source: Own elaboration, 2023.

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With the results obtained through the panel of content experts, the instrument was modified as follows: duplicate questions were eliminated, the wording of the questions was improved, more context was given to the questions that could generate confusion, questions that lacked relevance for the instrument were eliminated, the variable of integration into the work environment was eliminated and only the variable of personal development of the worker was left, and the questions indicated by expert number 2 that could make the instrument more effective were also added.

Conclusions

Benavente (2016) says that nowadays, to have a competitive company and not worry about the people who work in it, or because the environment in which it operates has a better quality of life, is to condemn it to failure. In fact, when the quality of life in society is better, consumption is higher and, therefore, companies will have better results. In order for employees to be involved, and for companies to differentiate themselves from others and, therefore, be more competitive, it is vital to focus on this quality of life.

Argüelles et al., (2017) have found evidence on how improving the quality of life of the members of the organisation has a direct impact on the performance of the same, which is why, the better the quality of life, the more competitive employees can become and increase differentiating measures for the organisation.

The very concept of firm success is polysemic and difficult to measure, so that some researchers have associated this concept with the achievement of extraordinary profits (Rumelt, 1991; Fong, 2003) and tend to express firm efficiency in terms of profit maximisation associated with the provision of competitive advantage.

Since the 1990s, there has been a growing trend in the use of the resources and capabilities theory, since it has been empirically proven in the international literature that internal firm factors explain business performance to a greater extent.

In this context, the aforementioned theory bases its explanation of the firm's success on the characteristics of the resources and capabilities that the firm controls, and on its capacity to generate rents; and it emphasises how an efficient combination of its resources and capabilities allows it to obtain and maintain its competitive advantage (Teece, 1997).

On the other hand, one of the most common difficulties in instrument design is the validity and reliability of traditional assessment methods, often scales and questionnaires. Validity also depends on the operational definition of variables. Many researchers report difficulties in establishing criterion validation items or construct validations, the development of new instruments to measure quality of life has become more complex and only satisfactory for the clinical goals of indicating what clinicians and patients perceive as such (Badia and Tudela, 2003).

The concept of quality of working life proposed in this study for the development of the instrument is based on Neopositivism (González, 2007) because it chooses as its logic that of categories, and includes as objects of study all those that can be described in their structure by means of their parts. This theory also emphasises the validity criteria, pointing out objectivity and relevance as criteria, and seeks objectivity from the moment in which the conceptual construction of each of the variables and their indicators is made, in order to try to demonstrate that these parameters are really the ones that will reflect the quality of working life.

In order to carry out this research, the steps of the scientific method have been respected, such as the development of certain stages to be followed for the ordering of ideas. Performing this type of action is important because, as Ventura-León et al. (2017) cite, the application of the scientific method allows users of the information to be able to replicate the methodologies employed, thereby being able to develop patterns of behaviour consistent with the theory analysed.

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In consideration of the above, it is established that the objective of the research was met by validating the instrument that will serve to determine the factors of the quality of working life that affect industrial business competitiveness, through the content expert panel method.

Having constructed a valid instrument to measure quality of work life in a local context will decrease the variability inherent in the measurement method. To ensure the strength of the instrument, feasibility and validity are determined; feasibility is ensured through the use of a questionnaire where care is taken in the simplicity and amenity of the format, the interest, brevity and clarity of the questions, as well as the correctness, interpretation and presentation of the results. Validity refers to the degree to which a measurement or study reaches a correct conclusion, because in reality, all diagnostic tests and/or measurement instruments can be fallible. The situation is not so simple when dealing with variables with a high subjective content (Hernández et al., 2014).

One of the most important advantages is that by obtaining a versatile instrument, valid for any worker in the industrial sector and, possibly, of general application in the local workplace, it will be of great scientific use due to its simplicity and easy administration.

For future research, other validation techniques of the proposed instrument could be implemented, as well as the analysis of other theories related to quality of life that could have an impact on the work competence variable. For example, according to studies Nguyen et al. (2023) mention that one way in which foreign direct investment in a region could be improved could be through replicating success stories from other regions, for example, by implementing transparent public policies and practical solutions. Applying this to the present research, it could be a variable that could be analysed in future research to measure its impact on competitiveness.

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Commercial model to optimize supply chains in local markets

Modelo mercantil para optimizar cadenas de suministro en mercados locales

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Abstract

Today, inventory management is a highly studied and interesting topic to optimize the cost of managing them. Traditional inventory models generally tend to block inventory optimization, but the more the years have passed, the concept of "supply chain" has been implemented, where the satisfaction of the needs of the final customer is achieved through material flows, information and financial, which are established from the original suppliers to the last consumer, requiring a certain level of cooperation and integration between the participants in the chain. That is why through the present the design of a sustainable model to optimize supply chains in local businesses in Jerez, Zacatecas is investigated, proposed, and exposed.In this paper, the optimization of inventories is studied, creating an effective model that combines the traditional with the current and that reflects the advantages of this approach in the total inventory costs in the chain, that is, the optimization.

Supply chain, Optimization, Business

Resumen

Hoy en día la administración de inventarios es un tema muy estudiado e interesante para optimizar el costo de la gestión de estos. Los modelos de inventario tradicionales generalmente suelen trabar la optimización de inventarios , pero entre más han pasado los años se ha implementado el concepto de "cadena de suministro", donde la satisfacción de las necesidades del cliente final se logra mediante los flujos material, de información y financiero, que se establecen desde los proveedores originales hasta el último consumidor, requiriendo esto de un determinado nivel de cooperación e integración entre los participantes en la cadena. Es por ello que a través del presente se indaga, plantea y expone el diseño de un modelo sostenible para optimizar cadenas de suministro en los negocios locales de Jerez, Zacatecas. En este trabajo se estudia la optimización de los inventarios creando un modelo eficaz que combine lo tradicional con lo actual y que se reflejen las ventajas de este enfoque en los costos totales de inventario en la cadena es decir la optimización.

Cadena de suministros, Optimización, Negocios

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Introduction

In recent years the growth of global trade has evolved greatly and with it the competition, as well as the need to find ways to avoid being displaced by another business offering the same product.

Today, offering the best product at the best price and using information technology is essential. Although it is true that for many businesses it is difficult or even impossible to confront this phenomenon, since information is unknown, there is a lack of training or resources to achieve it, this is why the initiative to investigate and come up with a proposal that is useful to the companies in the municipality under study arises; not forgetting that this research can contribute to businesses in other geographical areas.

In general terms, we will talk about the supply chain in the businesses of the municipality of Jerez, Zacatecas, which will be our population and will be stratified by business sectors for their analysis. We know that there are different sectors and they all have different characteristics, but the most important characteristics that relate to these sectors are "selling" and "satisfying the needs of the client". A supply chain is considered a fundamental unit for business competitiveness, as it integrates and exchanges information, technology, coordination, collaboration and management that together will carry out the process of transformation and distribution of raw materials to the final customer.

This paper develops the general objective of the research that aims to propose a business model to optimise supply chains in local markets, in addition to the specific objectives, hypotheses, research framework, justification, statistical analysis, as well as the method by which the hypothesis will be tested, followed by conclusions and additional comments.

Finally, apart from testing the hypothesis and to
complement and support the research, a model will be proposed to optimise supply chains in businesses in the municipality of Jerez, Zac., attending to their most common needs and problems in order to strengthen their internal and external processes, which could be useful in other contexts.

Evolution of the supply chain concept

Frederick Taylor (1911), the founder of industrial engineering, who wrote The Principles of Scientific Management, focused on improving the manual loading process in his work.

The mechanisation of pallet lifts was the focus of logistics research around 1940 and 1950 to obtain more storage and distribution space (Aguila, 2015).

The concept of unit load and the use of pallets became popular, extending in 1950 to transport management through the use of intermodal containers, bringing together ships, trains and trucks to transport them. This set the stage for the globalisation of the supply chain (Aguila, 2015).

As mentioned by ASCM Mexico (2023) in the late 1970s when Keith Olivier was working with clients such as Heineken and Philips, he first developed his vision to break down the functional silos that separated production, marketing, distribution, sales and finance, to generate a reduction in inventory and a simultaneous improvement in customer service and called it Supply Chain.

It took time to take hold and remain in the business lexicon, but by the mid-1990s a large number of publications on the subject began to appear and it became a regular term in some officials' job titles (Jacoby, 2009).

According to Lambert (1996), supply chain management (SCM) was originally introduced by consultants in the early 1980s and has subsequently gained much attention (LaLonde, 1998).

Since the early 1990s, scholars have attempted to structure it (Stevens, 1989) and have conducted an extensive retrospective review of the literature and research on it.

Finally, Mentzer (2001) defines a Supply Chain as: the set of three or more entities (organisations or individuals) directly involved in the downstream and upstream flows of products, services, finance and information from the primary source of production to the final customer.

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To make the above more concrete, we must consider that the "Supply Chain" is not limited to manufacturing companies, but has expanded to include both "tangible products" and "intangible services" that reach the consumer and require inputs of products and services.

With this in mind, several definitions or thoughts that various authors have on the concept are given below:

The supply chain is defined as the set of practical activities that are repetitive throughout the product flow channel through which raw materials are transformed into finished products and value is added to the customer. That is why, to manage the processes of the supply chain, one must take into account internal and external aspects that are in charge of planning and managing the information flows of all the actors where the money and products that take place within the company infers (Ballou, 2004).

The supply chain is a network of connected and interdependent organisations that work together cooperatively to control, manage and improve the flow of either materials or information from suppliers to end users (Santander, 2014).

However, it is also of interest to define the concept of "optimisation" in such a way that it is established concretely what we are referring to and how it is related to the supply chain. According to Westreicher (2020), optimisation is the action of developing an activity as efficiently as possible, with the least amount of resources and the least possible time; in other words, optimisation means carrying out a task in the best possible way, which can be applied to different fields such as business administration, economics and IT.

Nowadays, organisations are in a constant search for alternatives that allow them to find solutions to the ever-increasing challenges they face in a highly competitive environment. There are many problems to face, globalisation and technological advances are some of them.

Problem description

The description of a problem determines that its presentation goes from the general to the specific. For this reason, our approach to the subject to be developed is presented below through a questionnaire:

How to optimise supply chains in local markets?

In order to give more context to our approach, Cooke (1997) mentions that the supply chain is the coordination and integration of all activities associated with the movement of goods, from raw materials to the end user, to create a sustainable competitive advantage. This includes systems management, sourcing, production scheduling, order processing, inventory management, transportation, warehousing and customer service.

Objectives

The objectives are of great importance for the research, since they constitute the guide, the path along which the research is going to go, erroneous formulations of the aforementioned would lead us irremediably to failure.

According to Monje Álvarez, C. (2011), the research objectives define the degree of knowledge to be achieved, guide the research process and determine the path to be followed to achieve it.

The formulation of the objectives is essential for the success of a research project. The following is the general objective: To create a business model to optimise supply chains in local markets.

When establishing a general objective in automatic we must establish specific objectives that will help us to achieve the general objective, these must be precise, evaluable and feasible, in the case of the topic presented they are stated in the following way: To identify the main problems and needs of supply chains in local markets; to classify businesses into micro, small and medium enterprises; to identify the most common errors in business supply chains; to create a hierarchical system of the basic essential elements that the business must have in order to operate responsibly and comply with all the activities and responsibilities of the business.

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Hypothesis

A hypothesis is an idea that may or may not be true, based on prior information. Its value lies in its ability to establish further relationships between facts and explain why they occur, for this research the following is proposed:

H_0 = A well-established business model is not the means to an end for optimising a supply chain in local markets.

H_1 = A well-established business model is the ideal means to an end to optimise a supply chain in local markets.

Variable	Tipo de variable	Constitutive Definition	Operational Definition
1) Commercial Model	Independent	It is a simplified representation of business logic and is basically what a business offers its customers from how it reaches them, how it relates to them and how the company makes and makes money.	It is considered that a commercial model could be measured qualitatively and quantitatively. It is considered that it depends on the methodology to be used.
2) Supply chain	Dependiente	A supply or supply chain is a set of elements that allow companies to have the necessary organization to carry out the development of a product or service and for it to meet the main objective, which is to satisfy the needs of the end customer.	This variable is quantitative since the elements that will be studied are accounting such as level of customer satisfaction, suppliers, cost comparisons, prices, profits, income, etc.

Table 1 Definition of variables
Source: Own elaboration

Justification

Nowadays, in the globalized market, businesses are forced to generate new ideas to enter the environment and obtain a competitive advantage. Due to this, the interest of companies is focused on good and correct management of the supply chain, creating value for the business and the customer, focusing primarily on satisfying customer needs. That is why when analyzing the various situations that the world is going through and the constant changes mainly in the market, it was considered that currently "selling" is the essential activity that moves and maintains the world.

After what has been mentioned, we can realize that this research is relevant, since currently due to the changing demands and needs of the client, as well as the competition, it is essential to create a commercial model that allows and guides us to carry out those activities associated with the movement. of goods from the supply of raw materials to the final consumer. This includes selection, purchasing, production scheduling, order processing, inventory control, transportation, storage and customer service. But, the most important thing is that it also includes the information systems required to monitor all these activities, but in a practical and efficient way that allows us to optimize processes and expenses.

The contributions that will be made can help local businesses to organize themselves in a better way and generate better profits, to be more specific when following a commercial model and, as already mentioned, profits will be maximized, costs, times, freight expenses will decrease, and expenses will increase. customers, customer loyalty with the product will be created, and a status to remain in the market.

Methodology

The objective of this section is to describe the procedure developed during the investigation. In the demographic framework, our population is located in the municipality of Jerez de García Salinas, specifically they are companies of any type and size that are dedicated to commerce that therefore need to acquire inputs and that is where a model is applied for the management of these and called "Supply Chain". The following table is shown below, showing the companies taken into account as population, as well as the number of each of them and their category.

Activity	Amount
Construction	12
Manufacturing industries	468
Wholesale trade	72
Retail trade	1438
Total:	1990 comercios

Table 2 Activities of the municipality contemplated as population
Source: INEGI (2020)

Analyzing and adapting to the objectives of this research, the survey with a Likert measurement scale was selected as a means of collecting information in which the opinion of the topic to be investigated was obtained through a probabilistic sample, since as a population it was considered to all businesses in the municipality in general and from there a stratified sample was taken, that is, the population was divided into different business sectors.

The formula applied to determine the research sample is the following:

$$n = \frac{\mathrm{N}.\mathrm{Z}\alpha^2.P.q}{d^2.(N-1)+\mathrm{Z}\alpha^2.P.q}$$

Where each element is expressed as follows in the table:

Date	Value
N	Value to be determined (sample)
N	1990 shops
$Z\alpha^2$	95% equivalent to 1.96
P	0.5
Q	0.5
D	0.05

Table 3 Data to calculate the sample
Source: Own elaboration

Substituting these values, the sample obtained is 322. Likewise, to reduce the number of the sample, the sample sample is calculated, that is, now our population will be the result obtained previously, resulting in 175 businesses to which the instrument was applied. designed to collect the necessary information and be able to draw conclusions, since it should be emphasized that for it to be a representative sample it must be more than 100 people, which is verified if said factor is met.

In the case of this research, we chose use the "Cronbach's alpha" indicator, which is defined as the indicator that gives us a measure of the internal consistency of the items that make up a scale. If this measure is high, we assume that we have evidence of the homogeneity of the scale, i.e., that the items are "pointing" in the same direction and was developed by J.L. Cronbach in 1951.

According to Oviedo, C. & Campos-Arias, A. (2005) it is an index used to measure the internal consistency reliability of a scale, i.e. to assess the extent to which the items of an instrument are correlated. In other words, Cronbach's alpha is the average of the correlations between the items that make up an instrument.

Validity within research indicates whether a study is able to draw conclusions that are in accordance with statistical and scientific laws (Kalla, 2010).

Tristan López (2008) refers to the fact that, in an article published in 1975, Lawshe proposes a model for determining a quantitative index for the content validity of an objective instrument. In the case of the present research, a content evaluation panel made up of specialists was organised, as suggested by the model. In the case of the designed instrument, a reliability coefficient of 0.74447824 was obtained.

Subsequently, the data obtained were statistically analysed by means of measures of central tendency (mean, median and mode) and measures of variability (standard deviation and variance), providing the following results:

EXTENT	Value
Arithmetic average	3.53
Median	4
Fashion	5

Table 4 *Values of measures of central tendency in research*
Source: Own elaboration

Muestra total	Valor máximo	Valor mínimo	∑ de la muestra	Muestra µ		σ^2
175	5	1	10507	3.53	2.04	92.71

Table 5 Variability measures from a general research perspective
Source: Own elaboration

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The correlation established between the variables considered, the classification of the variables was examined according to the measurement scale used based on different calculations carried out. Keeping in mind that the variables in the research are the constructs, properties or characteristics that acquire various values, the variables X and Y were analyzed, separating from the 17 items what corresponds to each of them, this to know how they behave around to another, to know if they can be merged and thus verify the hypothesis, therefore, meet the objectives set at the beginning of this research

Independent variable	Dependent variable Y (supply chain)
(commercial model)	I. Do you know what a supply chain is and what it consists of?
VII. Does your business have the phases established by the administrative process? (Planning, organization, direction and control)	II. You consider it important to supply inputs or raw materials to produce your product or sell as appropriate wholesale.
X. The business has a periodic cost and profit analysis of its product.	III. Is the number of suppliers you currently have greater than 10?
XI. Within its sales process, it offers the customer the confidence or way to express their like or dislike regarding what they have purchased.	IV. Your suppliers who supply you with merchandise are internal (municipality).
XII. It considers that it uses the most viable and appropriate way to distribute and offer its product to the customer.	V. Have you ever performed a cost analysis with a provider outside of your state?
XIII. Do problems constantly arise in your company regarding product quality problems, price distribution, among other factors?	SAW. Do you consider that the location of a supplier intervenes in the cost of the product, as well as the time to have it where it is required?
XIV. Do you consider the infrastructure and technology you use in your company to be a key factor in attracting customers?	VIII. Are your input purchases retail?
	IX. Do you think that buying in wholesale would reduce your costs and therefore the cost of the product?
	XV. Do you consider the adequate supply of inputs vital for the company?
	XVI. Suppose you regularly lack raw materials to produce your product or offer your service, do you think you could lose the customer?

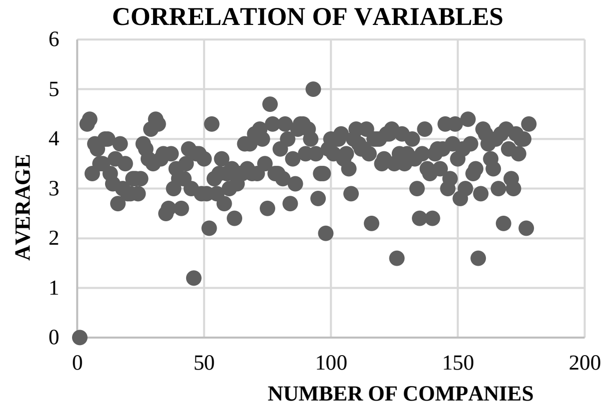
Table 6 Classification of variables X and Y
Source: Own elaboration

It can be examined in the previous table that our variable On the other hand, the variable Y made up of 10 items gives us data about the supply chain of the businesses surveyed.

In addition, the correlation analysis between variables was carried out, resulting in a moderate correlation.

Regression Statistics	
Multiple correlation coefficient	**0.566613166**
Determination coefficient R^2	0.32105048
Adjusted R^2	0.317125916
Typical error	0.505337267
Observations	175

Table 7 Regression statistics and correlation of variables, *Source: Own elaboration*



Graphic 1 Correlation of analyzed variables
Source: Own elaboration

In turn, in the case of verifying the hypothesis or hypotheses and as mentioned by Hernández Sampieri (2014) they are the precise guides towards the research problem or phenomenon being studied, the CH-Square distribution method was considered. since this statistical test is used in the analysis of two or more groups and two or more variables.

Results

Bearing in mind that the independent variable in this research refers to the “Commercial Model”, seven reagents focused on said variable were proposed in the developed instrument that gathered the information that is required to be known, therefore through the results obtained from the main questions we can analyze through graphs its behavior in our researched population, as well as what it contributed and how it impacts the study. Considering for each question a Likert scale where 5 = totally agree, 4 = somewhat agree, 3 = neither agree/nor disagree, 2 = quite disagree and 1 = totally disagree..

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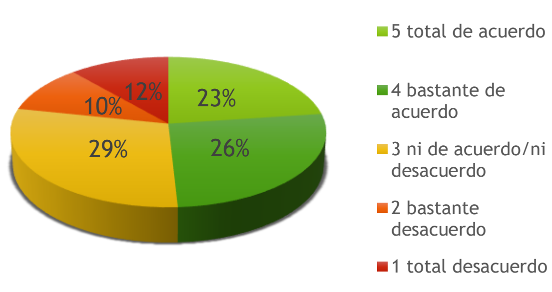
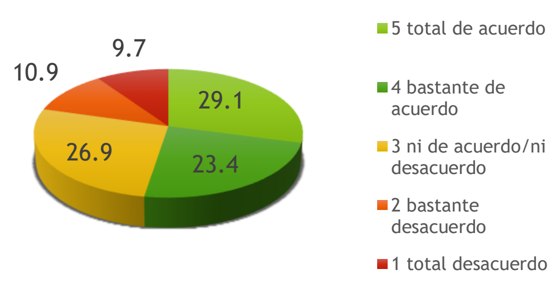


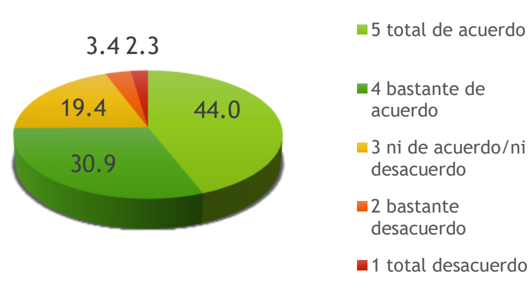
Graphic 2 Question VII "Apply the phases of the administrative process",
Source: Own elaboration

As can be seen in the graph presented, the majority of us find that the businesses in the municipality of Jerez are unaware of the administrative process that every economic entity must have, regardless of size, essential for proper functioning, although it can be seen that 23% actually counts on it and is considered to be really undertaking correctly.



Graphic 3 Question X "Periodic cost and profit analysis"
Source: Own elaboration

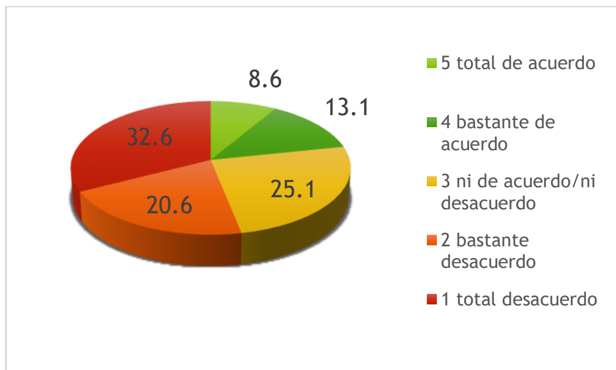
It is obtained that 29% of the companies surveyed do record and analyze costs and profits in the activity carried out.



Graphic 4 Question XI "Express your feelings during the care process"
Source: Own elaboration

Customer feedback will always help determine whether they are satisfied or not, and detect areas where you can work to improve. Chopra and Meindl (2008) state that "A supply chain is made up of all those parties involved directly or indirectly in satisfying a customer request."

The reagent shows that approximately 44% of those surveyed offer the opportunity and adequate way for the customer to express their feelings about their consumption in the establishment, which allows the company to receive feedback on the customer's experience and is also important to help to discover information that was not known.



Graphic 5 Question XIII "Problems arise in the company regarding product quality, price, distribution"
Source: Own elaboration

Problems will always be present in business, but they can become areas for improvement, an excess of problems in an entity is a risk for it, in the same way a company without problems is impossible, which is why this reagent indicates that 25% of the investigated sample presents problems related to various aspects mentioned, so this indicates that it is necessary to have a well-established commercial model, because Sierra, Moreno and Silva (2015) point out that a distribution channel is the set of organizational participants that execute all the functions necessary to achieve the arrival of a product to the final buyer, and as such due importance must be given to this aspect.

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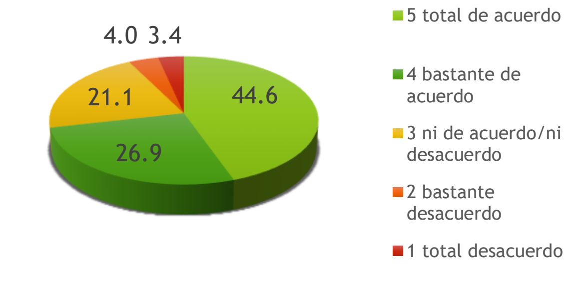
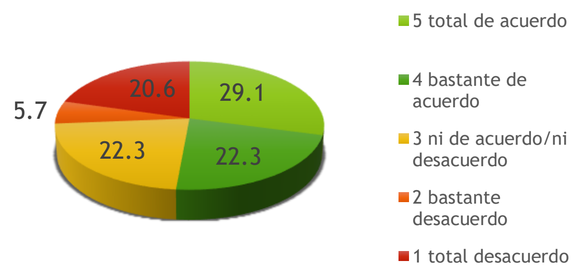


Graphic 6 Question XVII "Agree that the company's activity requires a commercial model"
Source: Own elaboration

A commercial model is a prior step to the business plan and answers questions related to the objectives, the public and the generation of value in order to optimize its supply chain and is important because it allows you to establish the foundations of your venture, therefore the 44.6% of respondents say they completely agree that it should be an indispensable part of a business.

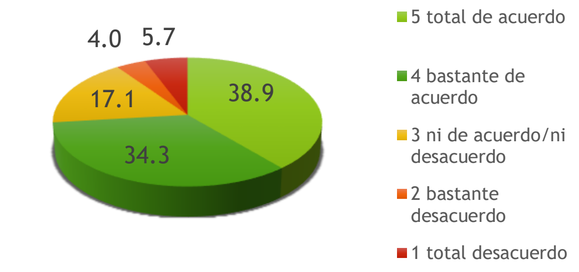
For an investigation to reach the approval of its hypothesis, we know that its variables must be related and work hand in hand with each other. In this case, we know that the dependent variable is the one whose value depends on the value adopted by the independent variable. , and within the designed instrument, ten reagents were formulated that encompass said variable, which explain the results of the most important questions in the following illustrations.



Graphic 7 Question I "Do you know what a supply chain is and what it consists of?"
Source: Own elaboration

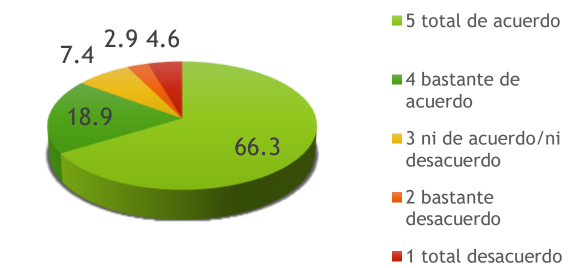
Pulido (2014) indicates that the supply chain is a link that is responsible for providing the necessary inputs to satisfy production needs (raw materials and materials), taking care of supplier delivery times and levels. input inventory.

51% of those surveyed know the term or have heard of it, even so, there is an area of opportunity to reinforce this topic.



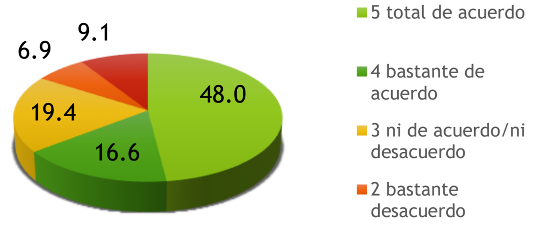
Graphic 8 Question VI "The location of a supplier influences the cost and delivery time of a product"
Own elaboration

In this reagent it can be analyzed that the location of the suppliers really is a factor that the producer finds important, since it can help reduce transportation costs or use raw materials in better conditions and also in the end, a better price can be offered. price to the final consumer, 39% in this reagent consider this aspect very important, since as Vargas (2023) mentions, starting in 2021 the supply chain crisis caused by COVID 19 is reflected in exports, then a more punctual and close interaction between company-supplier becomes necessary.



Graphic 9 Question XV "Do you consider the adequate supply of inputs vital for the company"
Own elaboration

Of the total number of respondents, 66% agree that the supply chain must be executed to guarantee customer satisfaction and the success of the company, thus ensuring the delivery of the right quantity and product at the time. prompt.



Graphic 10 Question XVI "Do you consider the adequate supply of inputs vital for the company"
Source: Own elaboration

Loyalty to a brand or business will always be a constant struggle between the customer and the company since the company must work daily to offer the best product with the best service so that the consumer needs to constantly purchase it as long as the product always remains in stock. the same and does not go beyond the standards or guidelines.

For this reason, in this question, 48% of those interviewed confirm that when a brand stops supplying a product or lacks it, customers leave and do not consume in that place again.

Hypothesis testing

Hypothesis testing is considered one of the most important sections of research since it is the statistical procedure that allows us to decide whether the results of a research are the product of random or real effects.

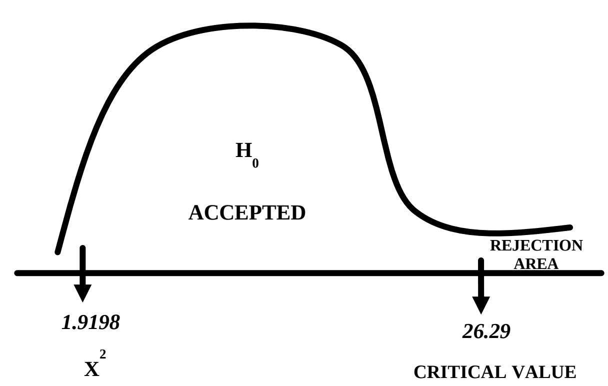
That is, through this test businesses can make data-based decisions and solve problems, and it will also help avoid high costs in experimental efforts by using existing data.

As stated in previous chapters, the Chi-square (x^2) or Chi-square test was chosen to demonstrate whether the proposed hypothesis is accepted or rejected since with this test we obtain the divergence between the distribution of the data and an expected distribution. or selected hypothetical.

Category (# ítem)	Fo (Observed Frequency)	Fe (Expected Frequenc y)	Development		Result
1	3.33	3.53	**-0.21**	**0.04**	
2	4.25	3.53	**0.72**	**0.52**	
3	2.87	3.53	**-0.66**	**0.44**	
4	2.45	3.53	**-1.09**	**1.18**	
5	3.32	3.53	**-0.21**	**0.04**	
6	3.97	3.53	**0.43**	**0.19**	
7	3.39	3.53	**-0.14**	**0.02**	
8	2.46	3.53	**-1.07**	**1.15**	**1.9198629**
9	4.29	3.53	**0.75**	**0.57**	
10	3.49	3.53	**-0.04**	**0.00**	
11	3.96	3.53	**0.43**	**0.18**	
12	3.8	3.53	**0.27**	**0.07**	
13	2.45	3.53	**-1.09**	**1.18**	
14	3.66	3.53	**0.13**	**0.02**	
15	4.40	3.53	**0.87**	**0.75**	
16	3.91	3.53	**0.38**	**0.14**	
17	4.06	3.53	**0.53**	**0.28**	
Total:	**60.04**	**60.04**	**6.78**		

Table 7 Data for hypothesis testing
Source: Own elaboration

In the previous table we can analyze that the calculation carried out to verify the hypothesis is developed, as well as the data used, first, the sum of all the observed frequencies minus the expected frequencies was carried out and each result was squared, then the figure obtained It is divided by the expected frequency and returns the result. An important fact to mention is the level of significance, which was taken as 0.05 as well as the degrees of freedom were calculated with: 17-1= 16, so our critical value is 26.2962, which means that if our result exceeds this value the hypothesis would be rejected, otherwise if it is within it it is accepted, therefore, we can see in the graph what the result was, as well as the behavior of our hypothesis:



Graphic 11 Hypothesis testing
Source: Own elaboration

It is concluded that since X2 is within the acceptance area then our hypothesis H0 is accepted.

Conclusions

Through this research it was determined that there is a moderate correlation between the variables analyzed and that the commercial model is a function of the supply chain, therefore:

A well-established business model is the ideal means to optimize a supply chain in local markets.

The comparison between observed and expected frequencies, together with the calculation of divergences, provided a solid basis for making informed decisions. With a significance level set at 0.05 and 16 degrees of freedom, a critical value of 26.2962 was obtained, which served as a reference to determine the acceptance or rejection of the hypothesis.

Coinciding with what was expressed by Manrique et al (2019) that the correct management of the supply chain, without a doubt, will favor the quality of the goods or services, optimize the distribution channels and adapt the points of sale to the needs and customer expectations.

Ultimately, this study demonstrates the importance of hypothesis testing as a valuable tool for data-driven decision making in research and management.

That is, through this test, businesses can make data-based decisions and solve problems, and it will also help avoid high costs in experimental efforts by using existing data.

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Study of psychosocial risk factors in companies in Cd. Obregón, Son. Mexico

Estudio de factores de riesgos psicosociales en empresas de Cd. Obregón, Son. México

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Abstract

The study of organizational and psychosocial aspects and their relationship with occupational health is not new, although it has acquired importance and recognition in recent years (Houdmont and Leka 2010; Näswall, Hellgren, Sverke, 2008). The objective of the study was to determine the level of exposure to severe traumatic events and psychosocial risks in local workers. The methodology is based on (Herrara, Medina, & Naranjo, 2010) and the Prevention Technical Note 702 (INSST, 2005). As a result, it was obtained that medium-sized companies present a low risk level with 43.48% and 39.13% medium risk, on the other hand, large-sized companies obtained mostly low risk with 30.51% and medium risk with 25.42%. Of the people surveyed, 14.29% present severe traumatic factors and require clinical evaluation (8.99% men and 5.29% women). The conclusion of the study is that the size of the company does not have a direct influence and that the factors with the greatest influence and highest level of risk in both cases are related to the workload and the organization of time to carry out the work.

Psychosocial, Safety, Health

Resumen

El estudio de los aspectos organizacionales y psicosociales y su relación con la salud laboral, no es nuevo, aunque sí la importancia y reconocimiento que ha adquirido en los últimos años (Houdmont y Leka 2010; Näswall, Hellgren, Sverke, 2008). El objetivo del estudio fue determinar el nivel de exposición a acontecimientos traumáticos severos y riesgos psicosociales en trabajadores de la localidad. La metodología se sustenta en (Herrara, Medina, & Naranjo, 2010) y (INSST, 2005). Como resultado, se obtuvo que las empresas de tamaño mediano presentan un nivel de riesgo bajo con 43.48% y 39.13% de riesgo medio, por otro lado, las empresas de tamaño grande obtuvieron riesgo mayormente bajo con 30.51% y riesgo medio con 25.42%. De las personas encuestadas, el 14.29% presentan factores traumáticos severos y requieren de valoración clínica (8.99% hombres y 5.29% mujeres). La conclusión del estudio es que el tamaño de la empresa no influye directamente y que los factores de mayor influencia y mayor nivel de riesgo en ambos casos, se relacionan a la carga de trabajo y la organización del tiempo para realizar el trabajo.

Psicosciales, Seguridad, Salud

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Introduction

Psychosocial risks and work-related stress are among the most challenging issues in the field of occupational safety and health; they significantly affect the health of individuals, organisations and national economies (European Agency for Safety and Health at Work, 2021).

According to the International Labour Organisation (ILO, 2013), psychosocial risk factors are those characteristics of working conditions that affect people's health, these risk factors continue to remain invisible or secondarily in the interests of employers, even to the workers concerned. These risk factors are present in all workplaces and in all sectors of activity, although they may appear with greater incidence and frequency in certain activities.

Psychosocial risks, unlike psychosocial factors, are not organisational conditions but facts, situations or states of the organism with a high probability of damaging the health of workers in a significant way. The important elements of this concept are: the probability and the severity of their consequences. The probability/harm ratio of psychosocial risks is a function of the double gradation of the value of the probability and the severity of its consequences, which means that the psychosocial risk can range from trivial to serious or intolerable (Patlán, 2019).

The same author states that stress is the most important psychosocial risk and acts as a general response to psychosocial risk factors, as it is a pattern of emotional, cognitive, physiological and behavioural reactions to certain harmful aspects of work content, organisation and environment.

According to Sodexo Benefits and Incentives Mexico (2019), productivity losses related to psychosocial risk factors are estimated at up to 16 billion pesos per year. For this reason, it detailed some figures regarding these ailments originating in the work environment:

- 75% of Mexican employees suffer from work-related stress.

- A worker misses up to 25 days of work per year when suffering from depression, 20 days if suffering from panic attacks or anxiety and 14 days if suffering from post-traumatic stress.

- It impacts 7.3% of payroll costs and 20% per year in lost productivity.

In addition, he noted that the National Institute of Geography and Statistics (INEGI) estimates that 58.1% of commuting to work lasts from 30 minutes to two hours, which generates fatigue and stress in people.

As a consequence of major changes in organisations and current globalisation processes, exposure to psychosocial risks has become more frequent and intense, making it convenient and necessary to identify, evaluate and control them in order to avoid the associated risks to health and safety at work.

According to the Ministry of Labour and Social Welfare (STPS) as of November 2021, cited by (Greentology, 2022), in Mexico there were more than 25,200 workplace accidents in companies, detailing that around 16 billion pesos are lost due to emotional disorders related to workplace accidents, anxiety and stress.

According to (México, uno de los países con más fatiga por estrés laboral, n.d.), 75% of Mexicans suffer from fatigue due to work-related stress, surpassing countries with the world's leading economies, such as China (73%) or the United States (59%). Approximately 65% of the population of the Mexican Region is part of the labour force, and the average worker spends about two-thirds of his or her life at work. Work is not only a source of income, but also a fundamental element of health, status, social relations and life opportunities.

The working environment has evolved over the last few decades, moving away from the traditional organisation characterised by operational tasks, line work, centralised decision-making, as today's market competition requires organised, dynamic and high quality companies that can easily adapt to a changing and demanding environment. Today, mental effort is required in tasks that traditionally required muscular strength. The pace of work has been increasing, because better results have to be achieved with fewer workers. And technological innovation is a determining factor in the socio-economic evolution of our society, and of business competitiveness. (Mansilla, 2010).

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Thus, today's working conditions demand high levels of attention and concentration, responsibility, work overload, long or disorderly working hours and shifts, which makes psychosocial and economic risks a reality in today's world of work (Sánchez, 2006).

Moreno and Báez (2012) define psychosocial risks at work as work situations that have a high probability of seriously damaging the health of workers, physically, socially or mentally. Psychosocial risks at work are situations that usually have a significant and serious impact on health. While psychosocial risk factors are usually factors with different levels of probability of causing harm of all kinds, psychosocial risks have a high probability of generating mainly serious consequences.

Derived from the above context, the aim of the present study was to determine the level of exposure to severe traumatic events and psychosocial risks in local workers in order to promote a favourable organisational environment in workplaces.

The study is of utmost relevance as it aims to find out the situation of local workers with regard to their working environment and its comfort. Companies should be concerned because it is their workers who make it possible for the company to function and produce correctly.

Description of the method

The methodology used is based on (Herrara, Medina, & Naranjo, 2010) and (INSST, 2005). The stages were as follows: (1) Research approach: It consisted of determining the type of research according to the facts to be studied in a descriptive way. (2) Methodology, techniques and instruments to be applied, being the methodology and instrument for data collection. (3) Planning and carrying out the fieldwork: It consisted of obtaining the data through the application of the instrument recommended by the Mexican Official Standard NOM-035-STPS-2018 Psychosocial Risk Factors at Work: Identification, analysis and prevention. (4) Analysis of the results: At this stage, the data was processed to determine the level of exposure to severe traumatic events and psychosocial risks in local workers.

Results

The results are presented below in order of importance. To determine the level of exposure to severe traumatic events and psychosocial risks. A total of 187 workers in Ciudad Obregón, Sonora, were evaluated, based on the provisions of the Mexican Official Standard NOM-035-STPS-2018 Psychosocial Risk Factors at Work: Identification, Analysis and Prevention. Severe traumatic events identified by gender are presented below.

Gender	Have severe traumatic events	Medical assessment required
Female	33.33%	5.29%
Male	52.38%	8.99%

Table 1 Severe traumatic events by gender
Source: Own elaboration

Table 1 shows the proportion of people surveyed who have suffered some type of severe traumatic event, with only 14.28% of the total requiring clinical assessment, 8.99% being men and 5.29% women.

With respect to the relationship between gender and the type of work in the companies, the information presented in table 2 is as follows.

Gender	Business activity	Quantity Individual	Total Number of Individuals Assessed
Female	Service	25% (3)	12
	Manufacturing	41.66% (5)	
	Trade	33.33% (4)	
Male	Service	54.54% (6)	11
	Manufacturing	36.36% (4)	
	Trade	9.09% (1)	

Table 2 Relationship of gender and type of company with psychosocial risk factors
Source: Own elaboration

Table 2 shows that 25% of the female gender works in the Service sector, 41.66% in Manufacturing and 33.33% in the Commerce sector; while on the other hand, 54.54% work in the Service sector, 36.36% in Manufacturing and only 9.09% in the Commerce sector. The size of the company where the individuals under study work is shown below:

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Gender	Company Size	Quantity Individual
Female	Medium (16 to 50 Employees)	10
	Large (50 to more employees)	2
Male	Medium (16 to 50 employees)	10
	Large (50 to more employees)	1

Table 3 Relationship of gender and company size with psychosocial risk factors
Source: Own elaboration

Table 3 indicates that female and male individuals work more in medium-sized companies (10 and 10, respectively), i.e. organisations with a number of employees in the range of 16 to 50.

The findings regarding the level of psychosocial risk by gender are presented in table 4.:

Gender	Psychosocial Risk Level	*Cantidad individual*
Female	Very High	1
	High	0
	Medium	5
	Low	5
	None	1
Male	Very High	0
	High	1
	Medium	4
	Low	5
	None	1

Table 4 Relationship between gender and level of psychosocial risk
Source: Own elaboration

Table 4 shows that the psychosocial risk in both genders is similar, except for very high and high risk, respectively. The following table relates the type of company and the level of psychosocial risk that occurred in each of them.

Business activity	Psychosocial Risk Level	Quantity Individua
Service	Very High	1
	High	1
	Medium	3
	Low	4
	Nil	0
Manufacturing	Very High	0
	High	0
	Medium	3
	Low	4
	Nil	2
Trade	Very High	0
	High	0
	Medium	3
	Low	2
	Nil	0

Table 5 Relationship between the type of company and the level of psychosocial risk
Source: Own elaboration

Table 5 shows that the level of psychosocial risk is medium in commerce and manufacturing companies, and low in service companies. The level of risk according to the size of the company where the individuals under study work is presented below.

Company size	Psychosocial Risk Level	Individual quantity
Medium	Very High	1
	High	1
	Medium	8
	Low	9
	None	1
Large	Very High	0
	High	0
	Medium	1
	Low	1
	Nil	1

Table 6 Relationship between company size and level of psychosocial risk
Source: Own elaboration

Table 6 shows that the level of psychosocial risk is mostly found in medium-sized companies.

Conclusions

The results allow us to conclude that a medium and low risk level is present in 41% of the individuals in both cases of female individuals, on the other hand, with 36% in the medium level and 45% in the low risk level on the part of male individuals.

Likewise, medium-sized companies obtained mostly low risk level with 43.48% of the total sample, and 39.13% medium risk, on the other hand, large-sized companies obtained mostly low risk with 30.51% and medium risk with 25.42% of the total sample.

In the results of the different risk factors of the organisations classified as medium and large, it was determined that size is not directly influential, as they remained proportional to the sample size of their respective classification.

On the other hand, it was determined that the factors with the greatest influence and the highest level of risk in both cases were those related to the activity itself, and the work time involved, i.e. the workload, the organisation of the time in which the work is carried out, etc.

The factors to be taken into account in both cases were those related to the activity itself and the work time involved, i.e. the workload, the organisation of the time in which the work is carried out. The factors to be taken into account as the most risky for their employees, and to be solved, in order to have a healthier and more productive environment, became evident.

When evaluating the companies in the locality of Ciudad Obregón, Sonora, it was concluded that most organisations generally focus only on physical risk factors, and although psychosocial risks are not left aside, they are not taken into account or perhaps put in the background. However, psychosocial risks are an important part, as they can affect the worker in a way that can have repercussions on his or her health.

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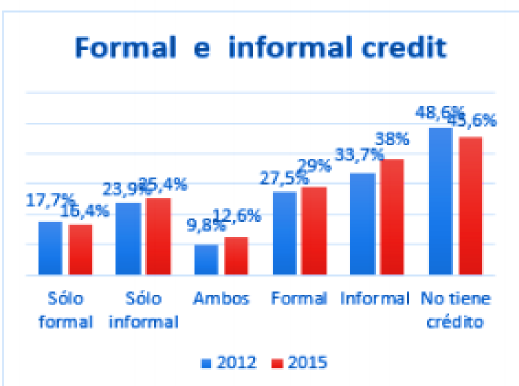

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