






Psychosocial factors and risks in work environments: Case study of employees of MSMES in Medellin - Colombia

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Abstract

Purpose: The purpose of this research is to determine which are the elements associated with work environments that generate psychosocial risks in employees. The empirical application considers the case of companies located in the city of Medellín.

Design/methodology: Exploratory, qualitative research based on the review of literature in documentary sources on psychosocial risk factors and dimensions using the evaluation tool "SUSESO/ISTAS21 Questionnaire short version". The data collected are grouped into dimensions and sub-dimensions and then described by means of factor analysis.

Findings: The most relevant findings in relation to general health, mental health, vitality and stress symptoms of workers could be caused by factors such as excessive workload. These factors correspond to psychosocial risks: psychological, cognitive and sensory demands are due to lack of skills and training. Active work and skill development can lead to mechanisation, incompetence and lack of creativity. In the social support dimension lack of direction leads to lack of responsibilities and procedures. In the compensation dimension, risks associated with salary conditions and retention policies are affected, and in the dual presence dimension, risks are consolidated by increased demands and incompatible demands on working time.

Originality/value: Through this research, it was possible to identify psychosocial risk factors that may affect psychological health, which reveals a wide field of knowledge for future research.

Keywords: Psychosocial factors, Psychosocial risks, Psychosocial risk dimensions

Jel Codes: M12, M54

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1. Introduction

The imperative constant of organisations is change, whether it derives from the influence of the environment (where the organisation is inserted and to which it must adapt to guarantee its growth and development), or whether it comes from the will of the corporate leadership that manages it. Change is considered radical when it involves profound new forms in one or more of the various organisational dimensions, such as: technology, processes, structures, infrastructures or organisational culture. This, of course, will have an impact on human behaviour, which demands certain competencies and skills. Thus, the impact of change on the members of the organisation has to do with the understanding of new learning, the assimilation of new and old problems to be solved, adapting to other attitudes and personal habits, and the relationship between the members of the rest of the team, and, in turn, between them and the various external clients (Acosta, 2002).

Responding to these demands can generate some degree of stress in the worker, because from their point of view, their work and economic stability is threatened. However, changes in the organisation are not the only reason that can cause work-related stress (Durán, 2010). Some characteristics of the working conditions such as strict adherence to schedules, the physical conditions of the premises, the location of the company, the transport system, targets and performance indicators are aspects of the work environment that have an effect on the worker (Astorquiza-Bustos, Castillo-Caicedo & Gómez-Mejía, 2021). There are also personal and family reasons that exert pressure on the employee and external competition associated with the graduation of professionals with relevant technological, linguistic and other skills, which can pose a threat to the current worker (Seguel Conejeros, Navarrete Espinosa & Bahamondes Valenzuela, 2017). From the above, it is noted that there are several internal or external causes that generate pressure on employees and may result in some type of psychosocial risk, which compromises in the short term the integrity of the worker's physical, mental, professional and personal health. In such a situation, the risk elements must be identified and addressed by both the employee and the organization, so that both can focus on achieving individual and collective objectives.

The purpose of this research is to demonstrate, through the application of the SUSES/ISTAS21 Questionnaire short version, the elements that generate work-related stress and the relationship between these elements that can lead to potential psychosocial risks for workers in different economic sectors and that is applicable to positions of all organisational hierarchies.

To achieve the purpose of this project, in the first instance, an exploration of the phenomenon is carried out, which allows an approximation to its understanding, for which a group of workers from companies in the city of Medellín-Colombia is analysed. However, the importance of characterising this situation allows for a broad recognition of other organisational contexts, in order to anticipate and address the psychosocial risks that can affect productivity and job stability.

In consequence this document introduces new studies and methodologies for monitoring, evaluation and follow-up of the elements found. Prior bibliographic reviews indicate few academic works with this approach. (Pulido, 2015).

This document is composed of five sections, including the introduction. It then presents the literature review in which a conceptual frame of reference is accessed where the bases on which the project is based are defined. This is followed by the design and methodology, which includes the definition of the study sample and the measurement scales established for the project, as well as the instruments selected, the results constitute the next section and finally the conclusions derived from this research.

2. Literature review

Organisations are transforming as substantial changes occur in society, due to new trends, different aspirations and motivations of people, commercial exchange motivated by the globalisation of markets and political agreements or disagreements (Franco-López & Bedoya-Zapata, 2018). For this reason, some psychosocial risks can also occur that significantly alter and change the physical and psychological behaviour of employees. According to OSHA (Occupational Safety and Health Administration of the United States Department of

Labor), it is convenient and necessary to identify and control psychosocial risks associated with health and safety at work.

However, when talking about psychosocial risks, it is necessary to provide clarity on some relevant issues. "There are probably three prevalent ways of referring to them today: 1) psychosocial factors, 2) psychosocial risk factors or psychosocial stress factors and 3) psychosocial risks" (Moreno Jiménez & Báez León, 2015, p. 4). There are usually a series of situations with staff in which one must be alert, and most importantly, prevention strategies must be generated to avoid inconveniences. The following is a conceptualisation of the factors that affect or cause psychosocial risks of people in their jobs related to general health, mental health, vitality and stress symptoms.

2.1. Psychosocial factors

Psychosocial factors at work represent the set of perceptions and experiences of the worker, some of which are individual in nature, some of which refer to economic or personal development expectations and others to human relations and their emotional aspects (Werter & Davis, 2008a). Generally, when problems occur, it is because there are differences between expectations and outcomes. At times, people may try to ignore various situations that may arise in organisations in order to avoid any discussion, and may even appear to be doing well by being friendly and helpful, when in reality a person disagrees with their physical conditions and pay. Over time, this can cause people to accumulate discomfort that subsequently leads to a state of psychological disturbance that can lead to disorientation and stress in employees.

Quality of life at work can be affected by a set of factors that generate well-being or discomfort in organisations. Some of the most common factors are job satisfaction, future possibilities in the organisation (promotions), recognition for results, salary, social benefits, human relations within the group and the organisation, working and physical working environment, freedom to make decisions, possibilities for participation and other similar points (Bohlander, Snell & Morris, 2018).

Human talent plays a very important role in organisations and their performance in the face of competition. It is therefore necessary to analyse their role in depth from the aspects that affect their satisfaction: in their everyday world they have values, training, education, training and an environment that intervenes in one way or another in their behaviour, in their experiences, in their aspirations and in their holistic vision of the world. In organisations, all this experience is transferred to the world of work, where the person encounters other realities. Much more than the work environment itself, the individual is confronted with physical work conditions; where social and psychological conditions are also part of the work environment (Chiavenato, 2015).

2.2. Stress-related psychosocial risks

There are various situations that contribute to the generation of work-related stress, such as work fatigue, physical conditions, age, among others, which cause the worker to acquire psychological, mental and physical discomfort. Stress is currently considered as an interactive process influenced by two aspects: the situation (demands) and the characteristics of the subject (resources). If the demands of the situation are greater than the individual's resources, a stressful situation may arise in which the individual will try to generate more resources to meet the demands of the situation (Osorio Escobar, 2011). Thus, some of the consequences of psychosocial risk in terms of stress are presented. The psychosocial factors associated with stress in organisations are presented below.

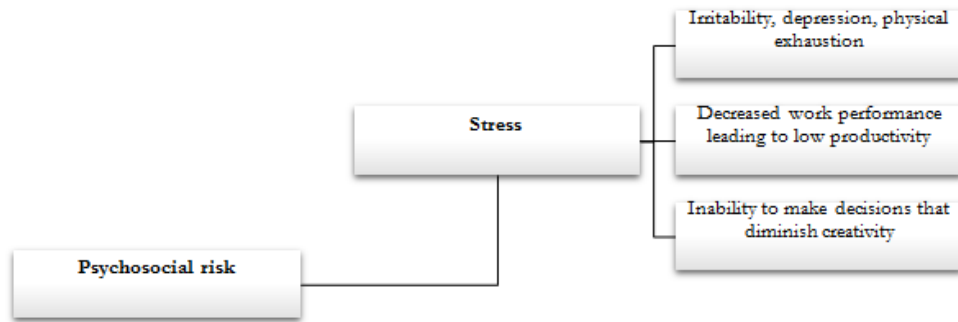


Figure 1. Effects of psychosocial risk (Muñoz Rojas, Orellano & Hernández Palma, 2018)

Operational risk is the possibility of incurring losses due to deficiencies, failures or inadequacies in human resources, processes, technology, infrastructure or the occurrence of external events. Therefore, risk management is defined as the process of identifying, analysing and measuring the probabilities of outcomes and effects arising from implementation or action, as well as the preventive, corrective and corresponding mitigation measures to be undertaken associated with decision making (Departamento Administrativo de la Función Pública, 2011).

Psychosocial risks are facts, events or situations that can affect an individual and are a consequence of the work organisation, and therefore have a high probability of affecting the worker's health (Confederación de empresas de Málaga, 2013). In this regard, why the high incidence of the human element in the generation of risk, is it possible that the personality and the life situation of the worker influence the perception of reality and their response to different work situations?

It is important to differentiate between psychosocial risks and psychosocial factors as stated by the Confederation of Malaga companies (2013). Psychosocial risks, in contrast to psychosocial factors, are organisational conditions, events and situations that can lead with high probability to damage to the health of workers. In this order, companies are confronted with a variety of risks that can represent direct hazards to the health and safety of workers (Werter & Davis, 2008b).

On the other hand, psychosocial factors at work consist of interactions between work, its environment, job satisfaction and organisational conditions on the one hand, and on the other hand, the worker's capabilities, needs, culture and personal situation outside work, all of which, through perceptions and experiences, can influence health, performance and job satisfaction" (Confederación de empresas de Málaga, 2013). Similarly, transformations in economic, social and political dynamics are - an issue to which organisations clearly cannot be oblivious - represented in the establishment of a new development agenda (Du, 2016); which generates not only new demands on companies, but also increased exposure to risks that must be foreseen in order to respond to the demands of the context (Durst & Ferenhof, 2016).

In this sense, it is relevant to analyse the situations that may trigger some kind of risk in the staff, as well as to evaluate those aspects that represent a danger to physical integrity or mental and psychological health, leading to a drop in productivity or a negative event that may affect the stability of the company. On the other hand, if not managed, they can affect both health and work performance in the form of work-related stress, burnout and mobbing.

In Colombia, according to the results of surveys conducted by the Ministry of Labour in 2015 on health and working conditions, two out of three workers reported being exposed to psychosocial factors in their working day, and 20% and 33% felt high levels of stress. On the other hand, 14% of respondents reported not having time to complete their tasks and 43% have to meet their work commitments under tight deadlines (Ministerio del Trabajo, 2015).

In the Second National Survey of Occupational Safety and Health Conditions in the General System of Occupational Risks in Colombia (II ENCSST) carried out in 2013, ergonomic and psychosocial risk factors are maintained as risk factors (Ministerio del Trabajo, 2015). As a result, since 2014, occupational stress and burnout syndrome, among others, have been included in the table of work-related diseases in Decree 1477 of 2014. In order to assess the psychosocial risk factors in those responsible for process management, it is necessary to establish two stages:

- First stage: factors related to the work environment.
 - Environmental conditions: physical, chemical and biological agents.
 - Design of the workplace: ergonomic adaptation of the workplace to the body characteristics of the worker.
- Second stage: factors related to the organisation and management of work
 - Breaks and rest periods, working time, working hours
 - Functions and tasks, work pace, diversity, autonomy, mental workload, training, responsibility, role performance,
 - Communication at work, interpersonal relations,
 - Participation in decision-making, management style,
 - Conditions of employment, career development and preparation for retirement from the company.

Identifying and managing psychosocial risk factors helps to prevent unhealthy environments and to enhance the performance of employees, avoiding stress and negative factors of an intralabour (characteristics of the work and its organisation) and extralabour (aspects of the family, social and economic environment) nature. To this end, it is essential to identify from an internal point of view a series of events that occur due to third parties: negative cash flows, non-compliance of suppliers, unethical relations with competitors, among others. It is important to identify them and study the measures that allow the organisation to manage them, adopting impact strategies that produce the expected results (Werter & Davis, 2008a).

In this way, it is not only a matter of showing that there is some kind of psychosocial risk; it is also important to determine what should be done to prevent or improve the risks that may be generated. In this regard, Berral García, Fernández Arias, Ferrer Puig, Gimeno, LLacuna Morera, Molina Navarrete et al. (2010) argue that the steps to be followed for their assessment and prevention are:

- Identify risk generating factors and define exposed workers.
- Assess risks and prioritise them
- Define appropriate preventive measures to eliminate or control these risks
- Carry out the preventive measures
- Review the consequences of the action.

Psychosocial risk assessment is a process aimed at estimating the magnitude of those risks that could not be avoided, in order to implement the necessary measures (Daza & Nogareda Cuixart, 2007). Some tools used for the assessment of psychosocial risks:

- **Istas method:** this method was adapted from the CoPsoQ method (Copenhagen Psychosocial Questionnaire), developed by the Danish National Institute of Health. It aims to assess psychological demands at work, active work and skill development, social support in the company and the quality of leadership and compensation.

- **Test of the lark and the owl:** questionnaire on circadian type (people tend to have a "morning" or "evening" tendency). Developed by the Instituto Nacional de Seguridad e Higiene en el Trabajo (Madrid).
- **Mental workload scale proposed by Cooper-Harper.** It measures mental workload by means of subjective evaluations of the difficulty of different tasks by means of an instrument in the form of a logical tree, obtaining a mental workload score between 0 and 10.
- **Psychosocial factors identification of risk situations:** this questionnaire aims to obtain a global vision of your Organisation with regard to psychosocial risk factors. It was drawn up by the Navarra Institute of Occupational Health.
- **Scale of locus of control on shift work:** this consists of a 20-item scale that assesses sleep, social aspects, health and work. Its application has shown the correlation between a high degree of internal locus and a lower number of complaints and better psychological well-being.

3. Design and methodology

For the methodological development, an applied field research was carried out, of an exploratory, qualitative nature, which is based on the literature review in documentary sources on psychosocial risk, dimensions, factors and effects and the diagnosis of the causes of risk using the evaluation tool (SUSESO/ISTAS21 Questionnaire, short version). The choice of the tool was based on the constructs of interest related to the Resolution 2646 of 2008 and the battery of instruments for the Evaluation of Psychosocial Risk Factors by the Ministry of Social Protection in Colombia, the CoPsoQ-Istas 21 has demonstrated high coefficients of reliability and validity.

The questionnaire was applied by means of a convenience sample to a group of 90 employees from different economic sectors and levels of the organisational hierarchy, i.e. a variety of occupations. From the database provided by the Chamber of Commerce of Medellín, Colombia, companies with more than 50 employees were selected. In the first instance, contact was made with those responsible for human resources management to obtain authorisation for the study. Subsequently, employees were contacted by telephone. Some employees were surveyed in person using physical forms and others were surveyed virtually using a questionnaire designed on the Google Forms platform. The application of surveys and verification of the completeness of the data was carried out over a period of 45 days between August and September 2020.

The SUSESO/ISTAS21 short version questionnaire is a tool that is specially designed for the measurement of psychosocial risks in the work environment and that is focused on the measurement in work groups of less than 25 workers, so it has the characteristics indicated to be able to carry out a study with MSMEs in the city of Medellín. This questionnaire has three characteristic aspects: anonymity, confidentiality and voluntariness, allowing for an objective study with which to make a diagnosis, and to take actions for prevention and training within the 5 dimensions it contains (Superintendencia de Seguridad Social, 2013).

Although this questionnaire is a validated tool for its application in small companies, it should be clarified that it is not a tool to determine the origin of a pathology, but for the prevention of various psychosocial risks (Velázquez Sombra, 2019). According to Pando Moreno, Varillas, Aranda Beltrán and Elizalde Núñez (2016), this questionnaire aims to obtain the level at which workers are exposed to and perceive adverse situations in their work environment and thus analyse the implications it has on their personal lives and the risk to their health. Thus, the dimensions considered by the questionnaire can be seen below in Table 1.

Psychosocial risk factor	Sub-dimensions	Items
Psychological demands	Quantitative Psychological Demands (CU)	7
	Cognitive psychological demands (CO)	8
	Emotional psychological demands (EM)	4
	Psychological demands to hide emotions (EE)	2
	Sensory psychological demands (ES)	2
Active work and development possibilities	Influence (IN)	7
	Control over working time (CT)	4
	Possibilities for development at work (PD)	7
	Sense of work (ST)	3
	Integration in the company (IE)	4
Social support from the company and quality of leadership	Role clarity (RL)	4
	Role conflict (RC)	5
	Quality of leadership (QL)	6
	Quality of relationship with superiors (RS)	5
	Quality of relationships with co-workers (RC)	6
Compensation	Esteem (ET)	5
	Insecurity regarding the employment contract (IC)	5
	Insecurity with regard to job characteristics (IT)	3
Dual presence	Concern about housework (DP)	2
Health	General health (GS)	5
	Mental health (MH)	5
	Vitality (VT)	4
	Stress symptoms (SR)	12

Table 1. Dual presencedimension (Pando Moreno et al., 2016)

To these factors are added respondents' perceptions of their general health (GS), mental health (MH), vitality (VT) and stress symptoms (SR). The range of scores for each of the scales ranged from 0 to 5, with 0 being don't know/no response, 1 never, 2 only a few times, 3 sometimes, 4 most of the time and 5 always. Statistical processing was carried out using IBM SPSS version 22 statistical software for Windows.

An approach is made with the use of the questionnaire in its two versions, having the 20 questions associated with the short version, but including some relevant aspects of the full version, in order to have a better analysis of the participant group. Thus, each participant rated according to the descriptors defined in the tool according to their perception of personal health and well-being, as well as stress-related symptoms, which are part of the full version. In addition, the dimensions: psychological demands, active work and skills development, social support in the company, compensation and dual presence, characteristic of the short version, were rated. This rating was supplemented by arguments of the participants, which are presented in the discussion of results.

4. Results

Following the characteristics of the questionnaire, which is a process where anonymity, confidentiality and voluntariness of the participants are very important. In this way, a total of 90 volunteers, 42% men and 58% women, are employees of different MSMEs in the city of Medellín, which refer to different sectors of the economy; transport, telecommunications, education, commercial, agricultural and financial services companies, thus providing a varied segment of companies. These volunteers are focused on areas within the companies related to administration, driving, sales consultancy, teaching, surveillance and cleaning, which can also give different points of view within the functions they carry out within the company.

Within the demographic information that was collected, there are aspects related to gender and age, as can be seen in Figure 2.

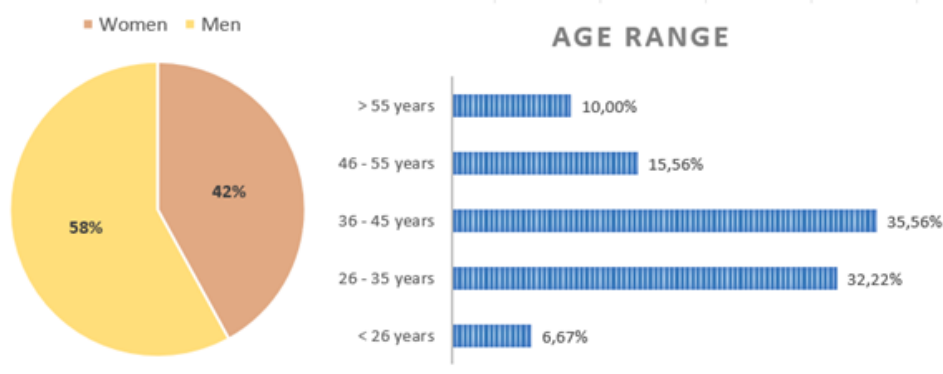


Figure 2. Demographic information of the participants

As can be seen in the participant population, 68% of the participants are in the age range between 26 and 45 years, hinting at a young workforce within the participating MSMEs. As was made clear earlier, some aspects of the full version of the questionnaire were also included, emphasising information such as income and level of education of the participants. This type of information was included in order to be able to have a profile of the individuals in order to analyse different aspects of the employees in MSMEs in Medellín. The results of these aspects can be seen in Figure 3.

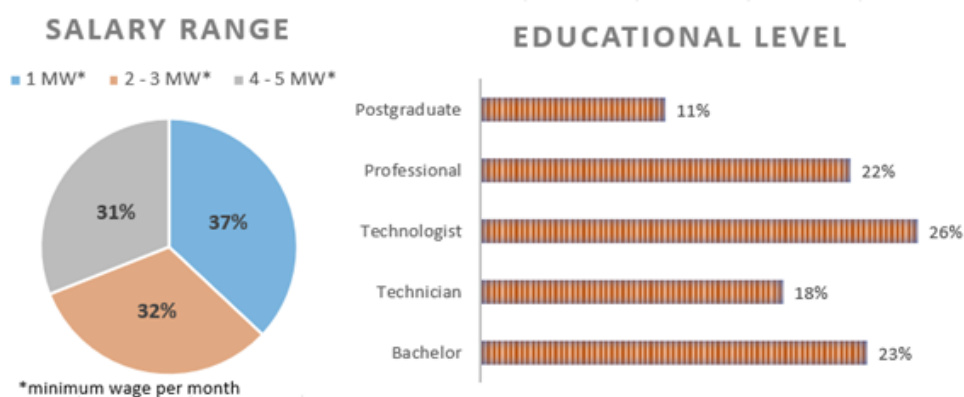


Figure 3. Information on salary range and educational level of participants

4.1. Factor analysis

The statistical analysis was performed using confirmatory factor analysis. The initial analysis looked at factor loadings and convergent validity. The validity of the scale can be assessed in several ways, one of which is construct validity to assess the measurement of the scale and how it conforms to the theoretical expectation. The convergent validity of the questionnaire was assessed in terms of the statistical significance of the factor loadings of the indicators of each psychosocial risk factor (Cerda-Silva & Porrás-Tapia, 2018). To do so, the factor loadings of the questionnaire were evaluated by determining that the items belong to each dimension of the factors, establishing, as indicated in the literature, that the indices whose value is greater than or equal to 0.5 meet the criterion of acceptance of the factor loadings and thus proceed with the validity of the construct (Frías-Navarro & Pascual Soler, 2012). Table 2 presents each of the constructs assessed and their item numbers; however, not all of them met the criterion, so those items with a factor loading < 0.5 were eliminated.

Dimensions	Item	Factor loadings	Average
General Health (GS)	SG1	0.897	0.897
	SG5	0.897	
Mental Health (MH)	SM1	0.761	0.826
	SM2	0.859	
	SM4	0.859	
Vitality (VT)	VT3	0.943	0.943
	VT4	0,943	
Stress Symptoms (SR)	SR1	0.626	0.735
	SR2	0.616	
	SR3	0.763	
	SR4	0.823	
	SR5	0.785	
	SR6	0.677	
	SR7	0.63	
	SR9	0.853	
	SR10	0.77	
	SR11	0.746	
Quantitative Psychological Demands (CU)	CU1	0.79	0.802
	CU2	0.898	
	CU4	0.657	
	CU7	0.861	
Cognitive psychological demands (CO)	CO1	0.682	0.786
	CO3	0.782	
	CO4	0.881	
	CO5	0.911	
	CO6	0.831	
Emotional psychological demands (EM)	EM1	0.953	0.953
	EM2	0.953	
Emotional psychological demands to hide emotions (EE)	EE1	0.951	0.951
	EE2	0.951	
Sensor ypsychological demands (ES)	ES1	0.817	0.836
	ES2	0.899	
	ES3	0.853	
	ES4	0.774	
Influence (IN)	IN3	0.744	0.715
	IN4	0.801	
	IN5	0.688	
	IN6	0.714	
	IN7	0.628	
Control over working time (CT)	CT1	0.871	0.832
	CT2	0.682	
	CT3	0.899	
	CT4	0.874	
Development possibilities at work (PD)	PD1	0.595	0.718
	PD2	0.564	
	PD4	0.672	
	PD5	0.831	
	PD6	0.812	
	PD7	0.832	
Sense of work (ST)	ST1	0.902	0.884
	ST2	0.938	
	ST3	0.811	

Dimensions	Item	Factor loadings	Average
Integration in the company (IE)	IE1	0.739	0.773
	IE2	0.847	
	IE3	0.690	
	IE4	0.814	
Role clarity (RL)	RL1	0.644	0.761
	RL2	0.822	
	RL3	0.740	
	RL4	0.836	
Role Conflict (RC)	CR1	0.743	0.751
	CR2	0.836	
	CR3	0.706	
	CR4	0.740	
	CR5	0.728	
Quality of leadership (CL)	CL1	0.851	0.907
	CL2	0.917	
	CL3	0.833	
	CL4	0.938	
	CL5	0.941	
	CL6	0.959	
Quality of the relationship with superiors (RS)	RS1	0.864	0.879
	RS2	0.887	
	RS3	0.803	
	RS4	0.925	
	RS5	0.918	
Quality of the relationship with co-workers (RC)	RC1	0.837	0.858
	RC2	0.840	
	RC3	0.915	
	RC5	0.841	
Esteem (ET)	ET1	0.897	0.827
	ET2	0.796	
	ET3	0.802	
	ET5	0.812	
Insecurity regarding the general conditions of the contract (IC)	IC1	0.81	0.831
	IC2	0.876	
	IC3	0.763	
	IC4	0.874	
Insecurity about the specifics of the job (IT)	IT1	0.885	0.879
	IT2	0.835	
	IT3	0.916	
Concern about domestic chores (DP)	DP1	0.927	0.927
	DP2	0.927	

Table 2. Factorial loadings

Construct validity is considered the most sophisticated and difficult validation to establish, because if construct validity is tested it is necessary to establish the scale being used by means of convergent validity and discriminant validity tests (Benício de Mello & Collins, 2001). What convergent validity involves is related to independent measurement techniques, seeking to demonstrate a high correlation between variables (Escobero Portillo, Hernández Gómez, Estebané Ortega & Martínez Moreno, 2016). In this sense, the relevance of the factor analysis in terms of correlation was carried out considering the Kaiser-Meyer-Olkin (KMO) sample adequacy criteria and Bartlett's sphericity value (Pando Moreno et al., 2016), which establishes that a high correlation is present when the KMO index < 0.5 and Bartlett's sphericity value tends to 0 (López-Aguado & Gutiérrez-Provecho, 2019). As can be seen in Table 3, each of the constructs have KMO values equal to or greater than 0.5. Bartlett's values are not reported as they are all < 0.000 .

Dimension	Kaiser-Meyer-Olkin	Alfa de Cronbach
General health (GS)	0.500	0.898
Mental health (SM)	0.672	0.886
Vitality (VT)	0.500	0.956
Stress symptoms (SR)	0.896	0.925
Quantitative demands (CU)	0.743	0.885
Cognitive demands (CO)	0.866	0.910
Sensory demands (ES)	0.500	0.962
Emotional demands (EM)	0.500	0.963
Emotional hiding demands (EE)	0.746	0.904
Influence (IN)	0.715	0.841
Control over working time (CT)	0.803	0.908
Possibilities for development at work (PD)	0.784	0.856
Sense of work (ST)	0.661	0.898
Integration in the company (IE)	0.765	0.826
Role clarity (RL)	0.698	0.828
Role conflict (RC)	0.817	0.865
Quality of leadership (QL)	0.925	0.965
Quality of the relationship with superiors (RS)	0.848	0.943
Quality of the relationship with co-workers (CR)	0.739	0.914
Esteem (ET)	0.748	0.921
Insecurity about the employment contract (IC)	0.750	0.901
Insecurity about job characteristics (IT)	0.700	0.909
Concern about housework (DP)	0.500	0.923

Table 3. Convergent validity and reliability

Meanwhile, discriminant validity, as opposed to convergent validity, seeks to demonstrate a low correlation between the different constructs (Pando Moreno et al., 2016). In this way, the technique of 95% confidence intervals was used to distinguish the precision of the correlations using Fisher's method (Anderson & Gerbing, 1988), a method that suggests that discriminant validity can be affirmed if the confidence interval does not adopt the value 1 (Martínez-García & Martínez-Caro, 2009). The results indicate that the constructs discriminate between each other, so the correlation is quite low.

After analysing the construct validity, reliability was assessed, which determines the degree to which the items measure the true value of the constructs (dimensions) and are free of errors (Hair, Black, Babin & Anderson, 2009), using Cronbach's alpha internal consistency index, obtaining indices greater than 0.8 as recommended in the literature (Luceño-Moreno, Talavera-Velasco, Martín-García & Martín, 2017). The last column of Table 3 presents the reliability indices of the SUSESO/ISTAS 21 questionnaire scales.

To determine the existing associations between the constructs and identify which have a greater influence on the dependent variables, an analysis was carried out using Cramer's V index to calculate the intensities of the dependency relationships (Nunes, Nascimento, Catarino & Martins, 2020) and Somers' D index to determine the dependencies of the ordinal variables, as well as the association of the dependent and independent variables (psychosocial risk factors) (Remenova, Skorkova & Jankelova, 2018). The relationships assessed were the constructs of the SUSESO/ISTAS 21 questionnaire with the factors of general health (GS), mental health (MH), vitality (VT) and stress symptoms (SR). Thus, those relationships were considered important whose Cramer's V value exceeded 0.3 and Somers' D value was far from -1 and 0. The relationships of the psychosocial risk factors applied to the context of the city of Medellín are presented in Table 4.

Psychosocial risk factors	D for Somers				V for Cramer			
	SG	SM	VT	SR	SG	SM	VT	SR
Quantitative requirements	0.083	0.087	0.079	0.077	0.308*	0.304*	0.354*	0.411*
Cognitive demands	0.089	0.095	0.095	0.088	0.259	0.177	0.256	0.293
Sensory demands	0.080	0.080	0.069	0.058	0.310*	0,60	0.364*	0.318*
Emotional demands	0.094	0.089	0.091	0,091	0.316*	0.212	0.379*	0.345*
Demands to hideemotions	0.109	0.100	0.101	0.101	0.383*	0.279	0.421*	0.355*
Influence	0.085	0.088	0.103	0.089	0.219	0.232	0.290	0.220
Control overworking time	0.082	0.088	0.094	0.084	0.242	0.205	0.299	0.227
Possibilities for development at work	0.113	0.116	0.115	0.114	0.436*	0.235	0.252	0.309*
Sense of work	0.144	0.144	0.125	0.137	0.131	0.260	0.360*	0.491*
Integration in the company	0,102	0.098	0.093	0.092	0.205	0.299	0.274	0.396*
Role clarity	0.108	0.115	0.112	0.095	0,50*	0.351*	0.382*	0.434*
Role conflict	0.086	0.091	0.082	0.076	0.261	0.282	0.342*	0.335*
Quality of leadership	0.096	0.100	0.085	0.087	0.252	0.333*	0.361*	0.368*
Quality of the relationship with superiors	0.106	0.109	0.091	0.092	0.329*	0.287	0.371*	0.337*
Quality of relationship with co-workers	0.092	0.094	0.096	0.091	0.170	0.259	0.322*	0.245
Esteem	0.096	0.095	0.087	0.086	0.166	0.267	0.346*	0.302*
Insecurity regarding the employment contract	0.094	0.093	0.098	0.087	0.218	0.257	0.228	0.269
Insecurity about the characteristics of the of the job	0.103	0.092	0.082	0.088	0.361*	0.296	0.342*	0.294
Concern about household chores	0.091	0.202	0.072	0.085	0.168	0.304*	0.361*	0.288

Note: * relevant relationships

Table 4. Hypothesis testing

Those variables whose associations were relevant are presented in Table 4 together with those that were not relevant. Among the most notable relationships were that of quantitative demands with perceived general health, the demand to hide emotions with perceived vitality, development possibilities at work with perceived general health, sense of work with stress symptoms, role clarity with perceived general health and stress symptoms.

These results show a strong relationship between the dimensions of psychological demands and how these have a strong impact on the perception of general health, vitality and stress symptoms of the workers, particularly the construct quantitative demands (task delivery time, delays and overtime) proved to be quite influential. In this case, the latent variable development possibilities at work (different and diverse tasks, specific skills or knowledge, initiatives, new learning, application of knowledge and opportunities to improve technical skills) showed a strong influence on the perception of the general health of the surveyed workers. The meaning of work construct (the meaning of the tasks, the importance attached to them and the commitment to the job) was strongly related to stress symptoms. The most representative relationships can be seen in Figure 3.

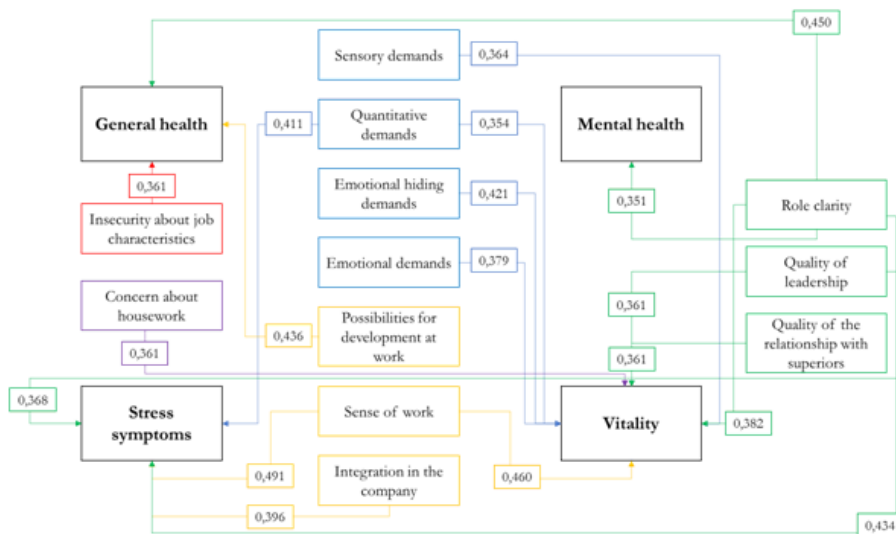


Figure 3. Relationships between the most relevant variables

5. Discussion of results

This study makes use of the SUSESO/ISTAS 21 questionnaire in its brief version, which was adapted and validated in Chile by the School of Public Health of the University of Chile. This questionnaire allows identifying and measuring the existence of psychosocial risk, and has been used in multiple studies in the health sector (Rivera-Rojas, Ceballos-Vásquez & González-Palacios, 2021). It has proven to be globally reliable, inexpensive to apply, and promising, although its validity in various populations is unknown (Mendoza-Llanos & Moyano-Díaz, 2019), as is the case in Colombia.

Additionally, it is important to consider that most studies using the SUSESO/ISTAS 21 questionnaire do not consider the factors of general health, mental health, vitality and stress symptoms. These studies usually relate the dimensions of psychosocial risk factors to sub-dimensions and socio-demographic information (Marcilla-Truyenque & Ugarte-Gil, 2020). Therefore, the added value of this study lies in the relationship of psychosocial risks with the health status of patients. In this way, they are identified as relevant factors in the general health of workers, as well as in their mental health, vitality and stress.

Psychosocial risks as a result of economic and demographic changes are increasingly being explored in the scientific literature. This reveals the need for change in organisations, focusing on the development of the individual's skills and abilities as a driver of development (Bublyk & Shakhno, 2018). Therefore, when analysing the dimensions, it is necessary to establish the behavioural patterns that can generate risk conditions and that may violate the psychological health of workers.

With regard to the dimension of quantitative psychological demands, the risks could be caused by some factors such as excessive workload, incorrect estimation of the times of each work process, lack of personnel, poor planning, remuneration by variable salaries higher than the fixed remuneration, inefficient work tools and work routines that force to permanently perform extra work. Similarly, the psychological, cognitive and sensory demands are due to the lack of skills and training that allow the worker to arrange and organise his work in a favourable environment and in suitable environmental conditions. These aspects, which are also related to emotional psychological demands, must be permanently monitored, identifying negative behaviours and conduct such as mood swings and lack of motivation for work, especially in workers who must continuously attend to the public.

On the dimension of active work and skills development, the little control that workers can have over their tasks and the little diversity limits the possibilities of learning, which can lead to mechanisation, incompetence and lack of creativity, and therefore to low productivity and organisational competitiveness. Similarly, observance of the importance of work in the face of realistic objectives that facilitate the worker's own interests in order to meet the demands and requirements of the organisation and the environment.

In the dimension of social support in the company, the lack of definition of responsibilities, duplication of tasks, poorly designed procedures and the absence of unity of command and direction can generate organisational conflicts and affect the working environment. In this respect, establishing adequate communication channels and creating participation and support groups for problem solving could allow for greater assimilation and adaptation to changes. Similarly, activities to raise awareness of cultural values and principles would encourage cooperation and support between superiors, subordinates and colleagues.

In relation to the compensation dimension, the prevalence of illegal, unstable and inequitable wage conditions, the absence of staff welfare and retention policies, and physical and environmental conditions that undermine the health of workers can lead to high levels of turnover, absenteeism and operational unproductiveness.

Finally, the double presence dimension that is increasingly consolidated with the new work configurations (on-call-work, freelance, outsourcing and teleworking), added to the remote working conditions caused by the COVID 19 pandemic, increase the incompatible demands/demands of working time, which is more frequently observed in women due to gender inequality, causing a double workload and greater exposure to psychosocial risks.

The analysis of the dimensions provides a picture of the reality that directly impacts on the day-to-day operations of the organisation. The lack of leadership coupled with the inability to cope with uncertainty and a certain degree of interdependence of individuals can change if priority is given to policies aimed at strengthening knowledge and information as an instrument to intervene in problems and minimise their effects on the organisation as a whole. Similarly, job satisfaction and its effective relationship with the environment, as previously analysed, can be subjective and will depend on one's personal view of one's work. However, it is also dependent on the actions that organisations take with respect to their employees and the awareness raising strategies, training and occupational health and wellbeing programmes that they provide to achieve this.

Workers represent the most important resource in the organisation, and keeping them is made more complex by the economic pressure exerted by the market and leads organisations to implement cost-saving policies such as staff cuts, wage freezes or budget cuts in the human resources area, which directly impacts employee morale and leads to an increase in psychosocial risks. In this regard, it is important to recognise the costs associated with psychosocial risks. 1) Staff turnover costs: recruitment and selection costs, registration and documentation costs, integration costs, separation costs; 2) Productivity costs: impact on production, impact on staff attitude and extra operational costs; and 3) Profitability costs: loss of investment and loss of business.

Regarding this, companies should promote strategies aimed at minimising psychosocial risk, along with the introduction of programmes aimed at strengthening motivation: recognition programmes for achievements, personal and professional development programmes, internal promotions, prevention and care of physical and emotional aspects, improvement of work spaces and acquisition of ergonomic elements, work and remuneration benefits for individuals and teams, socialisation of legal benefits, clear administrative policies, creation of career and development lines, communication and interpersonal relations programmes, support plans for co-workers. Relations with the authorities, regular meetings to report objectives and achievements reached and socialised by the leaders, among others.

This study proposes a statistical follow-up of the psychosocial factors that have been found and that allow to establish a general picture of employees in MSMEs in the city of Medellín. Both the questionnaire and the interpretation of the results become a valuable tool and input as a starting point for organisations to carry out a relational analysis between the dimensions of psychosocial risk and the conditions of the work environment that will influence the development of skills, productivity and sense of permanence and relevance of workers. To the extent that these analyses are carried out, particularly in the business contexts of emerging countries in need of strengthening their productive fabric, the aspects linked to the well-being of the worker can be addressed in a timely manner for the benefit of the worker and therefore of his or her family and the organisation.

The results of this study, as a starting point, constitute a methodology to open up and explore the field of psychosocial risks in the Latin American context, which currently has little depth, and also seems to have little interest due to the lack of legislation that seeks detailed measurements in this area. Therefore, the present document leaves a wide field for the study and discussion of the strategies that organisations should undertake to identify, analyse, measure and intervene psychosocial risks, which opens a new perspective for future research that will serve to build an academic and documentary collection that supports this organisational practice as a mechanism for the achievement of common objectives for workers and companies.

6. Limitations and tendencies

Among the limitations found in the study is the fact of not being able to count on a larger sample that could give us a more global idea within the different sectors of the industry, which would allow us to make a better analysis where a greater number of variables are related. Similarly, in terms of scientific publications, there is a lack of knowledge in the use of tools such as the SUSESO ISTAS 21 questionnaire (short and extended version) in the context of various sectors other than the health sector in order to have more references and be able to make comparisons and progress in this aspect.

This study opens the way for the development of analyses using the questionnaire as a free tool that is available to recognise the importance of psychosocial factors and risks within the business dynamics of MSMEs in the

region and the country. In this sense, future work can be developed with an emphasis on specific sectors of Colombian industry, such as the textile and customer service sectors, which are associated with a considerable level of work-related stress and market growth. It should be noted that this tool can be used to analyse the effects of the COVID-19 pandemic on labour dynamics, with another variable to consider.

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References

- Acosta, C. (2002). Cuatro preguntas para iniciarse en cambio organizacional. *Revista colombiana de psicología*, 11, 9-24. <https://revistas.unal.edu.co/index.php/psicologia/article/view/1194>
- Anderson, J.C., & Gerbing, D.W. (1988). Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach. *Psychological Bulletin*, 103(3), 411-423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Astorquiza-Bustos, B.A., Castillo-Caicedo, M., & Gómez-Mejía, A. (2020). Job stress in the labor market: An application of the fuzzy set measurement method for the Colombian case. *Lecturas de Economía*, (93), 189-224. <https://doi.org/10.17533/udea.le.n93a339564>
- Benício de Mello, S.C., & Collins, M. (2001). Convergent and Discriminant Validity of the Perceived Risk Scale in Business-to-Business Context Risk Scale in Business-to-Business Context Using the Multitrait-Multimethod Approach. *Revista de Administração Contemporânea*, 5(3), 167-186. <https://doi.org/10.1590/S1415-6552001000300009>
- Berral García, E., Fernández Arias, J.C., Ferrer Puig, R., Gimeno, M.Á., LLacuna Morera, J., Molina Navarrete, C. et al. (2010). La evaluación de riesgospsicosociales. Guía de buenas prácticas métodos de evaluación y sistemas de gestión de riesgospsicosociales: Un balance de utilidades y limitaciones. *Observatorio Permanente de Riesgos Psicosociales UGT-CEC*. <https://saludlaboralydiscapacidad.org/wp-content/uploads/2019/05/La-evaluacion-riesgos-psicosociales-2010-UGT-CEC.pdf>
- Bohlander, G.W., Snell, S.A., & Morris, S.S. (2018). *Administración de recursos humanos* (17 ed.). México: Cengage Learning.
- Bublyk, M., & Shakhno, A. (2018). The role of socialization of human capital development in global competition conditions. *Економічний аналіз, Тернопіль*, 28(4), 295-304. <https://doi.org/10.35774/econa2018.04.295>
- Cerda-Silva, G., & Porrás-Tapia, F. (2018). Revisión de las Propiedades de Psicométricas de la Escala de Evaluación de Riesgos Psicosociales en el Trabajo SUCESO/ISTAS 21 en el Contexto Chileno. *Ciencia & Trabajo*, 20(63), 121-125. <https://doi.org/10.4067/S0718-24492018000300121>
- Chiavenato, I. (2015). *Administración de Recursos Humanos* (Décima ed.). México: McGrawHill.
- Daza, F.M., & Nogareda Cuixart, C. (2007). *NTP 438: Prevención del estrés: Intervención sobre la organización*. Instituto Nacional de Seguridad e Higiene en el Trabajo. https://www.insst.es/documents/94886/326853/ntp_438.pdf
- Departamento Administrativo de la Función Pública (2011). Guía Para la Administración del Riesgo. Bogotá: D.C. <https://www.funcionpublica.gov.co/documents/418537/506911/1592.pdf/73e5a159-2d8f-41aa-8182-eb99e8c4f3ba>
- Du, X. (2016). Responding to global changes as a community of common destiny. *Engineering*, 2(1), 52-54. <https://doi.org/10.1016/J.ENG.2016.01.016>

- Durst, S., & Ferenhof, H.A. (2016). Knowledge Risk Management in Turbulent Times. In: North K., Varvakis G. (eds), *Competitive Strategies for Small and Medium Enterprises*. Springer, Cham. https://doi.org/10.1007/978-3-319-27303-7_13
- Durán, M.M. (2010). Bienestar Psicológico: El estrés laboral y la calidad de vida en el contexto laboral. *Revista Nacional de Administración*, 1(1), 71-84. <https://doi.org/10.22458/rna.v1i1.285>
- Escobero Portillo, M.T., Hernández Gómez, J.A., Estebané Ortega, V., & Martínez Moreno, G. (2016). Modelos de Ecuaciones Estructurales: Características, Fases, Construcción, Aplicación y Resultados. *Ciencia & Trabajo*, 18(55), 16-22. <https://doi.org/10.4067/S0718-24492016000100004>
- Franco-López, J.A., & Bedoya-Zapata, J. (2018). Análisis de modelos del talento humano aplicados en organizaciones pymes. *Revista CEA*, 4(7), 85-101. <https://doi.org/10.22430/24223182.761>
- Frías-Navarro, D., & Pascual Soler, M. (2012). Prácticas del análisis factorial exploratorio (AFE) en la investigación sobre conducta del consumidor y marketing. *Suma Psicológica*, 19(1), 47-58. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0121-43812012000100004
- Confederación de empresas de Málaga (2013). *Guía de prevención de riesgos psicosociales en el Trabajo*. Unidad de prevención de riesgos laborales – CEM. https://www.cem-malaga.es/portalcem/novedades/2013/CEM_guia_riesgos_psicosociales_interactivo.pdf
- Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2009). *Multivariate Data Analysis* (7th ed). Prentice Hall.
- López-Aguado, M., & Gutiérrez-Provecho, L. (2019). Com dur a terme i interpretar una anàlisi factorial exploratòria utilitzant SPSS. *REIRE Revista d'Innovació i Recerca en Educació*, 12(2), 1-4. <https://doi.org/10.1344/reire2019.12.227057>
- Luceño-Moreno, L., Talavera-Velasco, B., Martín-García, J., & Martín, S.E. (2017). Psychosocial risk factors as predictors of occupational well-being: A SEM analysis. *Ansiedad y Estrés*, 23(2-3), 66-70. <https://doi.org/10.1016/j.anyes.2017.09.001>
- Marcilla-Truyenque, R.L., & Ugarte-Gil, M.F. (2020). Factores de riesgo psicosociales en médicos especialistas en hospital de nivel terciario de Lima-Perú. *Revista de la Facultad de Ciencias Médicas de Córdoba*, 77(4), 240-248. <https://doi.org/10.31053/1853.0605.v77.n4.25122>
- Martínez-García, J.A., & Martínez-Caro, L. (2009). La validez discriminante como criterio de evaluación de escalas: ¿Teoría o estadística?. *Universitas Psychologica*, 8(1), 27-36. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S1657-92672009000100002
- Mendoza-Llanos, R., & Moyano-Díaz, E. (2019). Hacia la validación del SUSESO ISTAS 21 versión breve en trabajadores de hospitales públicos. *Terapia psicológica*, 37(1), 15-23. <https://doi.org/10.4067/S0718-48082019000100015>
- Ministerio del Trabajo (2015). *Decreto 1072 de 2015: Por medio del cual se expide el Decreto Único Reglamentario del Sector Trabajo*. Bogotá: D.C.
- Moreno Jiménez, B., & Báez León, C. (2015). Factores y Riesgos Psicosociales, formas, consecuencias, medidas y buenas prácticas. Instituto Nacional de Seguridad y Salud en el Trabajo. <https://www.insst.es/documentacion/catalogo-de-publicaciones/factores-y-riesgos-psicosociales-formas-consecuencias-medidas-y-buenas-practicas>
- Muñoz Rojas, D., Orellano, N., & Hernández Palma, H. (2018). Riesgo psicosocial: Tendencias y nuevas orientaciones laborales. *Psicogente*, 21(40), 532-544. <https://doi.org/10.17081/psico.21.40.3090>
- Nunes, P.S., Nascimento, M.M., Catarino, P., & Martins, P. (2020). Factors that influence the use of educational software III mathematics teaching. *REICE, Revista Iberoamericana sobre Calidad, Eficacia y Cambio en Educación*, 18(3), 113-129, <https://doi.org/10.15366/reice2020.18.3.006>
- Osorio Escobar, M.P. (2011). El trabajo y los factores de riesgo psicosocial: Qué son y cómo se evalúan. *CES Salud Pública*, 2(1), 74-79. https://revistas.ces.edu.co/index.php/ces_salud_publica/article/view/1450

- Pando Moreno, M., Varillas, W., Aranda Beltrán, C., & Elizalde Núñez, F. (2016). Análisis factorial exploratorio del 'Cuestionario de factores psicosociales en el trabajo' en Perú. *Anales de La Facultad de Medicina*, 77(4), 365-371. <https://doi.org/10.15381/anales.v77i4.12649>
- Pulido, E.G. (2015). Investigaciones en Factores Psicosociales en el trabajo en Colombia, una revisión. *Inclusión y Desarrollo*, 3(1), 83-95. <https://doi.org/10.26620/uniminuto.inclusion.3.1.2016.83-95>
- Remenova, K., Skorkova, Z., & Jankelova, N. (2018). Span of control in teamwork and organization structure. *Montenegrin Journal of Economics*, 14(2), 155-165. <https://doi.org/10.14254/1800-5845/2018.14-2.10>
- Rivera-Rojas, F., Ceballos-Vásquez, P., & González-Palacios, Y. (2021). Riesgos Psicosociales y Satisfacción Laboral: Una Relación Significativa para los Trabajadores de Oncología. *Aquichan*, 21(1), e2114. <https://doi.org/10.5294/aqui.2021.21.1.4>
- Seguel Conejeros, K., Navarrete Espinoza, E., Bahamondes Valenzuela, G. (2017). Explicación de la Accidentabilidad Laboral Basada en Factores de Riesgo Psicosocial y Rasgos de Personalidad en el Transporte Forestal. *Ciencia & Trabajo*, 19(60), 157-165. <https://doi.org/10.4067/S0718-24492017000300157>
- Superintendencia de Seguridad Social (2013). *Manual de uso del Cuestionario SUSESO-ISTAS 21. Unidad de Riesgo Psicosocial*. https://www.suseso.cl/606/articulos-19640_archivo_01.pdf
- Velázquez Sambra, D.A. (2019). *Estudio de los factores psicosociales a través del cuestionario SUSESO/ISTAS21 a trabajadores de la empresa de transporte Pullman* [Tesis de pregrado, Universidad Técnica Federico Santa María] Dirección de Información y Documentación Bibliográfica Institucional. <https://repositorio.usm.cl/handle/11673/47895>
- Werter, W.B., & Davis, K. (2008a). *Administración de Recursos Humanos* (Séptima ed.) (M. Guzmán, Trad.). Mexico: McGraw Hill.
- Werter, W.B., & Davis, K. (2008b). *Administración de Recursos Humanos* (Sexta edición) (J. Mejía Gómez, Trad.). Mexico: McGraw Hill.

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