# Analysis of the relationship between the cognitive functions affected by work stress and the psychosocial risk factors of workers in companies in the tourism sector in Colombia: Sincelejo case

***Análisis de la relación entre las funciones cognitivas afectadas por el estrés laboral y los factores de riesgo psicosocial de trabajadores en compañias del sector turístico en Colombia: caso Sincelejo***

Lorena Hoyos-Babilonia[1]
Universidad de Sucre – Sincelejo, Colombia
lorena.hoyos@unisucrevirtual.edu.co

Álvaro Santamaría[2]
Universidad de Sucre – Sincelejo, Colombia
alvaro.santamaria@unisucre.edu.co

William Niebles-Nuñez[3]
Universidad de Sucre – Sincelejo, Colombia
william.niebles@unisucre.edu.co

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## Abstract

One of the biggest issues organizations face today is how work stress affects employees' cognitive abilities. In the Colombian context, these issues coexist with the stress factors that are present. Workers are constantly at risk for psychosocial risks. For this reason, the current study aims to describe the influence of work stress on the cognitive functions

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1 Administradora de Empresas, Magister en Prevención de Riesgos Laborales. Master en Administración de Empresas.

2 Doctor en Ciencias Sociales. Magister en Administración de Empresas. Magister en Educación, Especialista en Gerencia de Producción y Calidad. Ingeniero Industrial. Profesor Titular Facultad de Ciencias Económicas y Administrativas. Universidad de Sucre, Colombia.

3 Doctor en Ciencias Gerenciales, Magister en Dirección Estratégica, Administrador de Empresas. Docente de la Universidad de Sucre.

of employees of hotel companies in the city of Sincelejo, Sucre, and from this, determine whether there is a significant correlation between said variable and the psychosocial risk factors. On a methodological level, a descriptive field study was developed in which a survey on a Likert scale was applied to a sample of 53 managers of companies in the hotel sector, correlating the presence of work stress in cognitive functions such as Annual evaluation and future project, Concentration and attention, Memory, Errors, Immediate reactions, and Logic and organization. The impairment of each of the cognitive functions examined and the psychosocial risk factors described in the present study were then found to be significantly correlated, both generally and specifically, using the Kendall correlation coefficient, which was evaluated indicator by indicator. This conclusion was reached as a result of the analysis. By addressing and minimizing the psychosocial risk factors identified in this study, it was determined that it is important to promote healthier work environments and enhance employees' cognitive resilience.

**Keywords**

Work stress; cognitive functions; risk factors; psychosocial risks; correlation; statistics.

## Resumen

Uno de los principales problemas a los que se enfrentan las organizaciones hoy en día es cómo el estrés laboral afecta las capacidades cognitivas de los empleados. En el contexto colombiano, estas problemáticas coexisten con la exposición permanente de los empleados a factores de riesgo psicosociales. Por tal motivo, el presente estudio tiene como objetivo describir la influencia del estrés laboral en las funciones cognitivas de los empleados de empresas hoteleras de la ciudad de Sincelejo, Sucre, y a partir de ello, determinar si existe una correlación significativa entre dicha variable y el riesgo psicosocial. factores. A nivel metodológico se realizó un estudio de campo descriptivo en el que se aplicó una encuesta en escala Likert a una muestra de 53 directivos de empresas del sector hotelero, corroborando la presencia del estrés laboral en funciones cognitivas como memoria, errores, reacciones inmediatas. y lógica y organización. Se encontró entonces que el deterioro de cada una de las funciones cognitivas estudiadas y los factores de riesgo

psicosocial descritos en el presente estudio estaban significativamente correlacionados, tanto de manera general como específica, como lo indica el coeficiente de correlación de Kendall, que se utilizó para evaluar el indicador del coeficiente de correlación mediante indicador. Con base en los hallazgos, se determinó cuán importante es fomentar entornos de trabajo más saludables y mejorar la resiliencia cognitiva de los empleados abordando y reduciendo los factores de riesgo psicosocial identificados en este estudio.

**Palabras clave**

Estrés laboral; funciones cognitivas; factores de riesgo; riesgos psicosociales; correlación; estadística.

## Introducción

In recent times, the tourism industry in Colombia has been expanding, serving as a symbol of the country's cultural wealth and as a key driver of economic development (Zapata-Aguirre et al., 2020). Colombia has become a popular tourist destination due, among various aspects, to its impressive landscapes and rich cultural heritage (Pérez et al, 2021). However, although the country's attractiveness is evident in the meteoric rise of tourism, important obstacles have arisen on the way to consolidating Colombia's position in this area (Guasca et al., 2022). Among these difficulties, workplace stress and its complex interactions with workers' cognitive processes stand out as crucial issues that require careful examination (Babilonia et al., 2023).

The city of Sincelejo, which constitutes a major bastion of Colombia's tourism industry (Benjumea et al., 2023), serves as an instructive case study, revealing insights into the intricate connection between work-related stress, psychosocial risk and cognitive abilities of workers in the tourism industry. Sincelejo is the main focus of this article's exhaustive analysis of the statistical correlation between these variables. The main objective of the present work is to unravel the complex dynamics involved in the work environment, illuminating the difficulties faced by workers in the Colombian tourism industry and at the same time looking for possible directions for improvement.

A remarkable story of rebirth is the rise of Colombia as one of the top tourist destinations on the planet. The Colombian government has made significant investments over the last ten years promoting the country's many attractions, working with industry stakeholders (Peña-Miranda et al., 2023). These efforts have ultimately resulted in a global positioning as a tourist destination for a country that used to be associated with misconceptions and security concerns (Gonzalez-Rodríguez et al., 2023). This revival has resulted in reliable economic expansion. More than 4.5 million foreign tourists visited Colombia in 2019, resulting in a significant increase in tourism-related income and job opportunities (MinCIT, 2020). Without a doubt, Colombia's economic diversification and prosperity have been greatly influenced by the growth of the tourism industry.

Despite this, difficulties persist beneath the surface of success. Long working hours, high customer expectations and the need to adapt to seasonal variations in demand are factors that make tourism an economic activity where workers are subjected to considerable levels of stress (Chung et al. ., 2021). Additionally, the cognitive demands of this industry, such as having to make quick decisions, communicate effectively with others, and manage a variety of customer expectations, make employees particularly vulnerable to the cognitive side effects of stress (Abubakar et al. , 2022). People from all industries and professions are affected by the widespread phenomenon of work stress in today's workplaces (Rouhanizadeh and Kermanschachi, 2021). However, the cognitive effects of work stress take on particular importance in the context of the Colombian tourism industry, which is distinguished by its distinctive challenges and opportunities. Understanding how job stress affects cognitive functions is crucial due to the nature of work in this field, which often requires quick thinking, language proficiency, and the ability to handle emotionally charged situations (Said and Tanova, 2021).

Workers' cognitive health is further complicated by psychosocial risk factors, which encompass a variety of workplace elements. For the purposes of this research, and in accordance with the literature found, those risk factors linked to personal relationships, role ambiguity, role conflicts, work overload, duration and distribution of work have been considered psychosocial. working hours and social support at work (Alyahya and AboGazalah, 2021). Such risk factors are amplified by the dynamic nature of work in Colombia's tourism industry, where employees frequently act as brand ambassadors for their destinations (Chancellor and Townson, 2021).

It is based on the arguments expressed previously that understanding the relationship between work stress, psychosocial risk factors and cognitive functions becomes an irrevocable necessity (Schulz, 2020). In addition to this, it would allow us to understand the nuances of the challenges that employees face within the Colombian tourism sector, fostering empathy and knowledge of their experiences, and would also help to develop specific interventions and policies aimed at mitigating work stress and improving cognitive well-being. By proactively addressing these issues, companies could improve employee satisfaction, productivity, and ultimately the sustainability of the tourism industry (Berastégui, 2021).

In order to materialize the aforementioned generation of knowledge, this study has been carried out within the limits of the municipality of Sincelejo, located in the heart of the department of Sucre, offering a microcosmic vision of the broader challenges facing the sector. Colombian tourist. With the center of this work located in said town, a field study and a subsequent analysis of the statistical correlation between the influence of work stress on cognitive functions and the psychosocial risk factors to which hotel companies workers are exposed has been carried out.

The main objective of this study is to determine if it is reasonable to affirm that there is a significant relationship between the two variables investigated from a statistical perspective and to measure the magnitude of said relationship, with which postulates have been established that support the results obtained. By delving into the experiences of people employed in hotels, restaurants, travel agencies and related businesses, the aim is to identify common patterns and statistical relationships that can shed light on the dynamics at play, and through the analysis developed in this work, it is intended also shed light for future studies related to workforce well-being at local, regional, national and even global levels.

## Materials and methods

The present study, which is a field investigation, was created from the positivist paradigm using a quantitative approach and correlational level, while adhering to a logical order of goals. In order to measure two variables, a collection instrument was used on the sample subjects: 1) the effect of work stress on hotel workers' cognitive abilities, and 2) the presence of psychosocial risk factors in workplaces of workers from the city of Sincelejo in the Department of Sucre, Colombia; data collection was carried out in 2022 in the aforementioned city in Colombia. Secondly, a statistical analysis of the correlation between the two variables described

above was carried out, that is, it was determined from a statistical point of view how strong the correlation is between the influence of work stress on the cognitive functions of the personal and their level of exposure to psychosocial risk factors.

The tertiary sector of the economy was taken as the study population, specifically the hotels that at the date of the study were legally registered with the Sincelejo Chamber of Commerce. In this way, the study subjects were the operational and administrative staff of said hotels. Then, the variables included in the study were measured using a survey as a data collection method. The Chamber of Commerce's database on commercial establishments in the tourism industry helped locate 89 hotel businesses, and it was from these that the sampling used to inform this research was conducted. This sampling was intentional given the size of the universe it represented. The selection criteria in this instance were as follows: (a) Size of the hotel (Micro, Small, and Large); (b) Formalized as a company; and (c) Hotels with more than five (05) years of operation.

According to what was stated above, a sample of twenty (20) hotels was chosen from among eighty-nine (89) hotels. In addition, fifty-three (53) employees from the twenty hotels selected for the study were designated as survey participants, all of them with more than five years of experience in the sector. The survey designed for this research, composed of a total of 18 questions, was used once the sample was chosen. The questionnaire was developed using a Likert-type scale, with five (5) response options and their corresponding weights: Always (A), Almost Always (AA), Sometimes (S), Almost Never (AN) and Never (N), as shown in Table 2.

**Table 1.**
*Answer Alternatives.*

| Alternatives | Acronym | Weighing |
|---|---|---|
| Always | A | 5 |
| Almost Always | AA | 4 |
| Sometimes | S | 3 |
| Almost Never | AN | 2 |
| Never | N | 1 |

Source: authors (2023).

Once the information was collected from the survey subjects, the data were entered into the Cronbach's Alpha coefficient formula, with which the instrument used was validated by determining its reliability. It was concluded that the instru-

ment was appropriate for the objectives of this study because the data obtained by applying the instrument yielded a result of $r = 0.6747$, which gives enough evidence to consider this instrument highly reliable in social science research. Contrarily, the mean or arithmetic average interpretation scale was developed, where the various categories were indicated with the ranges to position the variables, dimensions, and indicators in the research.

In this way, descriptive statistics were used to process the results of the scale along using indicators for frequency, absolute frequency, and arithmetic mean, we can analyze the study variables and arrive at the relationship shown in the analysis below:

**Table 2.**
*Scale of interpretation of the Arithmetic Mean or Average*

| ALTERNATIVES | RANGE | CATEGORIES |
|---|---|---|
| Always | 4.21 – 5.00 | Very present |
| Almost Always | 3.41 – 4.20 | Present |
| Sometimes | 2.61 – 3.40 | Moderately present |
| Almost Never | 1.81 – 2.60 | Little present |
| Never | 1.00 – 1.80 | Absent |

Source: authors (2023).

Once the two variables included in the study were analyzed from descriptive statistics, the correlation between them was determined. It is important to emphasize that, since one variable is the presence of work stress on cognitive functions and the other is the psychosocial risk factors existing in the hotel companies studied, both were considered as qualitative variables. This type of variable lacks a normal or ordinal distribution, so Kendall's rank correlation coefficient, also known as Kendall's tau, had to be used (Kendall, 1938; Pitoura et al., 2022). To determine the degree of linear association between two quantitative variables that do not behave normally, the values of the ordinal variable must be converted into ranges because the Kendall coefficient is based on ranges rather than its original data (Valencia et al., 2019).

**Table 3.**
*Formulas for calculating the Kendall correlation coefficient*

| | |
|---|---|
| **Case 1:** No tied observations | |
| $T_{XY} = \frac{2 \cdot S}{n(n-1)}$ | Where:<br>**S = P – M**<br>P = Number of times that Y increases its value each time X increases, or the value of $y_i < y_j$ for every i < j.<br>M = Number of times that Y reduces its value each time X increases, or the value of $y_i > y_j$ for every i < j.<br>For every i = 1, ..., (n – 1) y j = (i + 1), ..., n. |
| **Case 2:** With tied observations | |
| $T_{XY} = \frac{2 \cdot S}{\sqrt{n(n-1) - T_X} \cdot \sqrt{n(n-1) - T_Y}}$ | Where:<br>$T_X = \sum_{t=1}^{t} t(t-1)$, where t is the number of values equal to another in each group of values equal to another of the variable X.<br>$T_Y = \sum_{t=1}^{t} t(t-1)$, where t is the number of equals to another in each group of values equal to another of the variable Y. |

Source: Kendall (1938).

In light of the above, it is essential to keep in mind that all correlation coefficient values are between -1 and 1, where extreme values indicate the strongest correlation and 0 indicates no correlation; the sign of the coefficient denotes the direction of the relationship (Hernandez, Fernandez and Baptista, 2014). For the purposes of this study, a positive sign was assumed to indicate a direct relationship (the variables change in the same direction), while a negative sign indicated an inverse relationship (as one increases, the other increases). For this case, the scale shown below was used:

**Table 4.**
*Correlation interpretation scale.*

| VALUE | MEANING |
|---|---|
| -1,00 | Perfect negative correlation |
| -0,90 | Very strong negative correlation |
| -0,75 | Significant negative correlation |
| -0,50 | Medium negative correlation |
| -0,25 | Weak negative correlation |
| -0,10 | Very weak negative correlation |
| 0,00 | There is no correlation between the variables |

| | |
|---|---|
| 0,10 | Very weak positive correlation |
| 0,25 | Weak positive correlation |
| 0,50 | Medium positive correlation |
| 0,75 | Significant positive correlation |
| 0,90 | Very strong positive correlation |
| 1,00 | Perfect positive correlation |

Source: Hernández, Fernández and Baptista (2014).

## Results and discussion

Below are the findings from this study's field data collection process. The summary table that follows shows the indicators that make up the variable titled, for the purposes of this study, "Influence of work stress on cognitive functions," which illustrates the presence of work stress in each of the cognitive functions examined:

**Table 5.**
*Influence of work stress on cognitive functions*

| | Indicators | | Concentration and attention | Memory | Immediate reactions | Mistakes | Current evaluation and future project | Logic and organization | Arithmetic average | Category |
|---|---|---|---|---|---|---|---|---|---|---|
| | Items | | 1-3 | 4-6 | 7-9 | 10-12 | 13-15 | 16-18 | | |
| ANSWER ALTERNATIVES | A | Af | 26 | 28 | 17 | 20 | 16 | 24 | | |
| | | Rf | 49.06 | 52.83 | 32.08 | 37.74 | 30.19 | 45.28 | | |
| | AA | Af | 5 | 11 | 10 | 11 | 8 | 10 | | |
| | | Rf | 9.43 | 20.75 | 18.87 | 20.75 | 15.09 | 18.87 | | |
| | S | Af | 10 | 9 | 17 | 13 | 14 | 12 | | |
| | | Rf | 18.87 | 16.98 | 32.08 | 24.53 | 26.42 | 22.64 | | |
| | AN | Af | 5 | 4 | 5 | 6 | 7 | 4 | 3.70 | Present |
| | | Rf | 9.43 | 7.55 | 9.43 | 11.32 | 13.21 | 7.55 | | |
| | N | Af | 7 | 1 | 4 | 3 | 8 | 3 | | |
| | | Rf | 13.21 | 1.89 | 7.55 | 5.66 | 15.09 | 5.66 | | |
| | Total AF | | 53 | 53 | 53 | 53 | 53 | 53 | | |
| | Total RF | | 100.00 | 100 | 100 | 100 | 100 | 100 | | |
| | Average | | 3.71 | 4.13 | 3.6 | 3.8 | 3.3 | 4 | | |

Source: authors (2023).

An average score of 3.70 has been determined by analyzing the survey's results globally along with each indicator's results (concentration and attention, memory, immediate reactions, errors, current evaluation and future project, logic and organization). In general, this indicates that work stress is "Present" in its effects on the cognitive abilities of employees in the city of Sincelejo, Colombia. After this, an identical exercise was carried out using the variable "Psychosocial risk factors", the results of which are expressed in the following summary table:

**Table 6.**

*Psychosocial risk factors*

| | Indicators | | Personal relationships | Role ambiguity | Role conflict | Work overload | Duration and distribution of the working day | Social support at work | Arithmetic average | Category |
|---|---|---|---|---|---|---|---|---|---|---|
| | Items | | 19-21 | 22-24 | 25-27 | 28-30 | 31-33 | 34-36 | | |
| ANSWER ALTERNATIVES | A | Af | 23 | 21 | 17 | 24 | 28 | 28 | | |
| | | Rf | 43.4 | 39.62 | 32.08 | 45.28 | 52.83 | 52.83 | | |
| | AA | Af | 7 | 3 | 8 | 7 | 9 | 3 | | |
| | | Rf | 13.21 | 5.66 | 15.09 | 13.21 | 16.98 | 5.66 | | |
| | S | Af | 14 | 14 | 12 | 13 | 13 | 14 | | |
| | | Rf | 26.42 | 26.42 | 22.64 | 24.53 | 24.53 | 26.42 | | |
| | AN | Af | 7 | 7 | 6 | 3 | 2 | 6 | 3.70 | Present |
| | | Rf | 13.21 | 13.21 | 11.32 | 5.66 | 3.77 | 11.32 | | |
| | N | Af | 2 | 8 | 10 | 6 | 1 | 2 | | |
| | | Rf | 3.77 | 15.09 | 18.87 | 11.32 | 1.89 | 3.77 | | |
| | Total AF | | 53 | 53 | 53 | 53 | 53 | 53 | | |
| | Total RF | | 100 | 100 | 100 | 100 | 100 | 100 | | |
| | Average | | 3.7 | 3.4 | 3.3 | 3.8 | 4.1 | 3.9 | | |

Source: authors (2023).

As in the case of stress in cognitive functions, according to the information collected, employees of the Sincelejo hotel industry also "present" psychosocial risk factors. The correlation analysis between the variables under study was carried out after specifying the descriptive statistics of each variable, first calculating the correlation coefficients for the two variables in general, and then taking each of the indicators into which they are subdivided as separated variables.

That is, for practical purposes of this study, the correlation analysis with the Kendall coefficient consisted of two phases: 1) estimation of the level of correlation between the variables "Influence of work stress on cognitive functions" and "Psychosocial risk factors", and 2) estimation of the level of correlation between the group of variables Concentration and attention, Memory, Immediate reactions, Errors, Current evaluation and future project and Logic and organization (all cognitive functions affected by work stress) and the group of variables Personal relationships, Role ambiguity, Role conflict, Work overload, Duration and distribution of the working day and Social support at work (all psychosocial risk factors).

Once the first phase has been executed, as indicated in the previous lines, for a level of significance = 0.05 the correlation analysis obtained was as follows:

**Table 7.**
*Correlation analysis between variables*

| ***Correlation between variables*** | | | |
|---|---|---|---|
| ***Hypothesis*** | *$H_0$: There is no correlation between the variables Influence of work stress on cognitive functions and psychosocial risk factors.* | | |
| | *$H_1$: There is a correlation between the variables Influence of work stress on cognitive functions and psychosocial risk factors.* | | |
| | ***Kendall Tau*** | | ***Variable*** *Psychosocial risk factors* |
| ***Variable:*** *Influence of work stress on cognitive functions* | *Correlation coefficient* | | *0.419* |
| | *P-value* | | *0,001* |
| | *N* | | *53* |

Source: own elaboration (2023)

Under the P Value = 0.001, which is less than the significance level = 0.05 used in the study, there is sufficient evidence to affirm that there is a significant relationship between the impairment of the worker's cognitive functions due to work stress and exposure to psychosocial risk factors. In turn, the Kendall correlation coefficient obtained = 0.419 indicates that there is a weak correlation between the two variables studied, as the coefficient obtained is within the interval 0.25 < < 0.5, as shown previously in table 8. In simple terms, it can be inferred that, whenever psychosocial risk factors occur in hotel companies, it is plausible to affirm that some impact of work stress on the cognitive functions of the worker is related to these factors.

According to the statistical evidence collected by the first phase of the correlation analysis between the variables "Influence of work stress on cognitive functions" and "Psychosocial risk factors", it is also plausible to issue one of the following conclusions: 1) each time If a worker in a hotel company is exposed to psychosocial risk factors, he or she may see his or her cognitive functions affected by work stress, or 2) each time a worker in the tourism sector sees his or her cognitive functions affected by work stress, he/she could be exposed to psychosocial risk factors. When stress affects cognitive functions, it affects reasoning functions or conscious and intentional memory. In turn, psychosocial risks affect the physical, psychological and social in the context of organizations (Oblitas, 2004). From this, it could be explained that when hotel workers see their psychological and social well-being affected, generating risks that affect the context of the organization (Chirico et al., 2019). Subsequently, once the second phase of the correlation analysis was carried out, the following results were obtained for each of the indicators of both variables studied:

**Table 8.**

*Associative elements between psychosocial risks and cognitive functions of work stress*

| CORRELATION BETWEEN THE DIMENSIONS THAT ARE RELATED | | | PSYCHOSOCIAL RISK FACTOR DIMENSION | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Personal relationships | Role ambiguity | Role conflict | Work overload | Duration and distribution of the working day | Social support at work |
| COGNITIVE FUNCTIONS | Memory | Correlation coefficient | 0.362 | | 0.302 | 0.280 | 0.260 | 0.267 |
| | | P-value | 0.003 | >0.05 | 0.018 | 0.024 | 0.035 | 0.031 |
| | | N | 53 | 53 | 53 | 53 | 53 | 53 |
| | Immediate reactions | Correlation coefficient | | 0.314 | 0.285 | 0.350 | 0.426 | 0.367 |
| | | P-value | >0.05 | 0,013 | 0,026 | 0,005 | 0,001 | 0,003 |
| | | N | 53 | 53 | 53 | 53 | 53 | 53 |
| | Current evaluation and future project | Correlation coefficient | 0.312 | | | 0.299 | 0.305 | |
| | | P-value | 0,013 | >0.05 | >0.05 | 0,018 | 0,015 | >0.05 |
| | | N | 53 | 53 | 53 | 53 | 53 | 53 |
| | Logic and organization | Correlation coefficient | | | | | 0.334 | |
| | | P-value | >0.05 | >0.05 | >0.05 | >0.05 | 0,008 | >0.05 |
| | | N | 53 | 53 | 53 | 53 | 53 | 53 |

Source: own elaboration (2023)

Focusing the analysis on the indicators whose P Value has been lower than the significance level = 0.05 used within this research, from a statistical point of view there is sufficient evidence to establish the following: 1) the impact of work stress on memory has a significant relationship with psychosocial risks related to personal relationships, role conflict, work overload, the duration and distribution of the working day and social support at work; In all cases it is a weak positive correlation; 2) the effects on immediate reactions have a significant relationship classified as weak positive with the psychosocial risks associated with role ambiguity, role conflict, work overload, the duration and distribution of the working day and social support in the job; 3) the alteration of the current evaluation and future project is significantly related to the psychosocial risks associated with personal relationships, work overload and the duration and distribution of the working day, having a weak positive correlation with each of them, and finally, 4) the damage to logic and organization due to the influence of work stress has a significant relationship with the psychosocial risks associated with the duration and distribution of the working day, with a weak positive correlation.

From the correlational analysis of each of the indicators described for each of the variables studied in the study, it is possible to understand which specific elements of the psychosocial risk factors are significantly related to the effects of work stress on cognitive functions. From this analysis, and based on the statistical evidence obtained from it, the conclusions of this research are their starting point.

Because there is a positive correlation between psychosocial risk factors and the impairment of cognitive functions due to work stress, when workers are exposed to psychosocial risk factors, it is possible, as shown in table 8, that the cognitive functions associated with work stress are affected in the following way: 1) in the case that the psychosocial risk is due to personal relationships, it may be related to the occurrence of stress due to memory and current evaluations, as well as future projects, 2 ) in the case that the psychosocial risk is due to role ambiguity, it may be related to the occurrence of stress due to immediate reactions; 3) in the case that the psychosocial risk is due to role conflict in workers, it may be related to the occurrence of stress due to memory and immediate reactions; 4) in the case that the psychosocial risks are due to work overload in the collaborators, it may be related to the occurrence of memory stress, immediate reactions and current evaluation and future project; 5) in the case that the psychosocial risks are due to the duration and distribution of the working day among collaborators, it may be related to the occurrence of stress due to memory, logic and organization, immediate reactions

and due to current evaluation and future project; and finally, 6) in the case that psychosocial risks exist due to social support at work in collaborators, it may be related to the occurrence of stress due to memory and immediate reactions.

From the opposite perspective, it can be interpreted that every time hotel workers suffer from impairments in their cognitive functions as a result of work stress, it can be deduced from a statistical point of view that they are being exposed to psychosocial risk factors. Based on what is shown in Table 8, this correlation would be explained as follows: 1) every time a worker is stressed and has a disturbance in his or her memory, the possible cause could be the existence of psychosocial risk factors associated with support. social in your work; 2) whenever a worker is stressed and presents disturbance in his immediate reactions, the possible cause could be the existence of some or all of the psychosocial risk factors associated with role ambiguity, role conflict, work overload, duration and distribution of the working day and social support at work; 3) whenever a worker is stressed or presents disturbance in his current evaluation and future projects, the possible cause could be the existence of some or all of the psychosocial risk factors associated with personal relationships, work overload, duration and distribution of the working day and social support at work; and finally, 4) every time a worker is stressed or presents disturbances in his logic and organization, the possible cause could be the existence of some or all of the elements associated with workday distribution factors.

## Conclusions

Through the analysis of the results of this research, valuable information has been provided about the intricate relationship between psychosocial risk factors and the influence of work stress on the cognitive functions of workers in the Colombian tourism sector, with the intention that the The specific case of Sincelejo serves as an investigative scheme to be extrapolated to other larger populations, on a regional, national and even global scale. The analysis developed from the correlation coefficients between the indicators with a P value lower than the significance level of  = 0,05, highlights significant correlations between the two variables studied, which has important implications both for the well-being of employees and for organizational practices within the sector.

It has been found that there is a weak but statistically significant positive correlation between some psychosocial risk factors, such as interpersonal relation-

ships, role conflict, work overload, length and distribution of the workday, social support at work, and the effect of work stress on memory. This finding suggests that when employees in the Colombian tourism sector experience stress related to these factors, their memory functions may be compromised. These cognitive impairments can have detrimental effects on job performance, decision making, and overall well-being.

Moving forward in the analysis, a weak positive relationship has also been revealed between the influence of work stress on immediate reactions and psychosocial risk factors. These risk factors include role ambiguity, role conflict, work overload, length and distribution of the work day, and social support at work. This correlation implies that when workers are exposed to these risk factors, they may experience impaired immediate reactions, which could impact their ability to respond quickly and effectively in dynamic work environments.

In the context of alteration of current evaluation and future project due to work stress, a weak positive correlation has been found with psychosocial risk factors. These factors include personal relationships, work overload, and the length and distribution of the work day. This indicates that when employees face stress related to these risk factors, their cognitive functions associated with evaluating current situations and planning for the future may be negatively affected.

On the other hand, a marginally positive correlation stands out between the damage to logic and organization caused by work stress and psychosocial risk factors related to the duration and distribution of the working day. This implies that when employees are exposed to elements related to the duration and distribution of their workday, they may experience cognitive impairments that impair their logical thinking capacity and organizational skills.

These statistical correlations underscore the importance of addressing psychosocial risk factors within the Colombian tourism sector. When employees face challenges related to personal relationships, role ambiguity, role conflict, work overload, length of work day, and social support, they are more likely to experience cognitive impairments due to work stress. These findings should serve as a wake-up call for both employers and policymakers to implement measures aimed at mitigating these risk factors.

From a practical point of view, it is essential to recognize the bidirectional nature of these relationships studied. When cognitive functions deteriorate, it may also indicate exposure to psychosocial risk factors. For example, memory impairments may be related to inadequate social support at work, while impaired immediate reactions could be the result of role ambiguity, role conflict, work overload, length of the workday, and factors. related to social support.

In conclusion, this research provides evidence from a statistical point of view of the correlation between the influence of work stress on cognitive functions and the psychosocial risk factors to which workers in the Colombian tourism sector are exposed. Although the study collects its data within the municipality of Sincelejo, Sucre, as established at the beginning of this section, it is intended to set a precedent that will serve as a guide for future research in other locations and even at population scales greater than the studied one. The results obtained have significant implications for employee well-being and the sustainability of the tourism industry. To promote healthier work environments and improve employees' cognitive resilience, it is imperative that stakeholders address and resolve the psychosocial risk factors identified in this study. In doing so, it would be truly plausible to ensure the continued growth of the Colombian tourism sector while prioritizing the mental and cognitive health of its workforce.

## References

Zapata-Aguirre, S., López-Zapata, L., & Mejía-Alzate, M. L. (2020). Tourism development in Colombia: between conflict and peace. In Tourism planning and development in Latin America (pp. 49-65). Wallingford UK: CABI. DOI: https://dx.doi.org/10.1079/9781789243048.0049

Pérez, N. Y. I., Carrascal, M. P., & Duarte, J. A. D. (2021). Preliminary Diagnostic of the Tourist Potential of a Heritage Town in Colombia. Tourism Planning & Development, 18(6), 595-613. DOI: https://doi.org/10.1080/21568316.2020.1837227

Guasca, M., Vanneste, D., & Van Broeck, A. M. (2022). Peacebuilding and post-conflict tourism: addressing structural violence in Colombia. Journal of Sustainable Tourism, 30(2-3), 427-443. DOI: https://doi.org/10.1080/09669582.2020.1869242

Babilonia, L. H., Santamaría, Á., Ruiz, C. P., Nuñez, W. N., & Ramírez, J. A. (2023). Effects Of Work Stress On Workers In The Tourism Sector In The Post-Pandemic: Sincelejo Case–Colombia. Journal of Positive School Psychology, 251-261. Available: https://www.journalppw.com/index.php/jpsp/article/view/16003/10229

Benjumea Gómez, D., Gómez Rodríguez, C. M., & Pérez Sánchez, J. S. (2023). Atributos de la identidad cultural de Sincelejo que perciben los visitantes e inversionistas para potencializar el desarrollo turístico. DOI: https://repositorio.cecar.edu.co/handle/cecar/8581

Peña Miranda, D. D., Guevara Plaza, A., Fraiz Brea, J. A., & Camilleri, M. A. (2022). Corporate social responsibility model for a competitive and resilient hospitality industry. Sustainable Development, 30(3), 433-446. DOI: https://doi.org/10.1002/sd.2259

González-Rodríguez, M. R., Díaz-Fernández, M. C., & Pulido-Pavón, N. (2023). Tourist destination competitiveness: An international approach through the travel and tourism competitiveness index. Tourism Management Perspectives, 47, 101127. DOI: https://doi.org/10.1016/j.tmp.2023.101127

Ministerio de Industria, Comercio y Turismo de la República de Colombia (2020). En 2019, comercio y turismo, motores del crecimiento económico: ministro José Manuel Restrepo. Available: https://www.mincit.gov.co/prensa/noticias/industria/comercio-y-turismo-motorescrecimiento-economico

Chung, H., Quan, W., Koo, B., Ariza-Montes, A., Vega-Muñoz, A., Giorgi, G., & Han, H. (2021). A threat of customer incivility and job stress to hotel employee retention: do supervisor and co-worker supports reduce turnover rates?. International Journal of Environmental Research and Public Health, 18(12), 6616. DOI: https://doi.org/10.3390/ijerph18126616

Abubakar, A. M., Rezapouraghdam, H., Behravesh, E., & Megeirhi, H. A. (2022). Burnout or boreout: A meta-analytic review and synthesis of burnout and boreout literature in hospitality and tourism. Journal of Hospitality Marketing & Management, 31(4), 458-503. DOI: https://doi.org/10.1080/19368623.2022.1996304

Rouhanizadeh, B., & Kermanshachi, S. (2021). Causes of the mental health challenges in construction workers and their impact on labor productivity. In Tran-SET 2021 (pp. 16-26). Reston, VA: American Society of Civil Engineers. DOI: https://doi.org/10.1061/9780784483787.003

Said, H., & Tanova, C. (2021). Workplace bullying in the hospitality industry: A hindrance to the employee mindfulness state and a source of emotional exhaustion. International Journal of Hospitality Management, 96, 102961. DOI: https://doi.org/10.1016/j.ijhm.2021.102961

Alyahya, S., & AboGazalah, F. (2021, May). Work-related stressors among the healthcare professionals in the fever clinic centers for individuals with symptoms of COVID-19. In Healthcare (Vol. 9, No. 5, p. 548). MDPI. DOI: https://doi.org/10.3390/healthcare9050548

Chancellor, C., Townson, L., & Duffy, L. (2021). Destination ambassador programs: Building informed tourist friendly destinations. Journal of Destination Marketing & Management, 21, 100639. DOI: https://doi.org/10.1016/j.jdmm.2021.100639

Schulz, P. (2020). Understanding Resilience: Investigating the Relationship between Risk Factors, Resilience, and Psychological Well-Being. DOI: https://doi.org/10.58809/YMVD1466

Bérastégui, P. (2021). Exposure to psychosocial risk factors in the gig economy: a systematic review. ETUI Research Paper-Report. DOI: http://dx.doi.org/10.2139/ssrn.3770016

Pitoura, E., Stefanidis, K., & Koutrika, G. (2022). Fairness in rankings and recommendations: an overview. The VLDB Journal, 1-28. DOI: https://doi.org/10.1007/s00778-021-00697-y

Kendall, M. G. (1938). A new measure of rank correlation. Biometrika, 30(1/2), 81-93. DOI: https://doi.org/10.2307/2332226

Valencia, D., Lillo, R. E., & Romo, J. (2019). A Kendall correlation coefficient between functional data. Advances in Data Analysis and Classification, 13, 1083-1103. DOI: https://doi.org/10.1007/s11634-019-00360-z

Hernández, R., Fernández, C., & Baptista, P. (2014). Metodología de la investigación (Vol. 6, pp. 102-256). Mc Graw-Hill: México.

Oblitas, L. (2004). Psicología de la salud y calidad de vida. Australia. International Thomson Editores.

Chirico, F., Heponiemi, T., Pavlova, M., Zaffina, S., & Magnavita, N. (2019). Psychosocial risk prevention in a global occupational health perspective. A descriptive analysis. International journal of environmental research and public health, 16(14), 2470. DOI: https://doi.org/10.3390/ijerph16142470