



PSYCHOSOCIAL RISKS IN WORKERS AT A SUGAR AND ALCOHOL PLANT IN NORTHEAST BRAZIL

OS RISCOS PSICOSSOCIAIS EM TRABALHADORES DE UMA USINA DO SETOR SUCROALCOOLEIRO DO NORDESTE BRASILEIRO

RIESGOS PSICOSOCIALES EN TRABAJADORES DE UNA PLANTA DE AZÚCAR Y ALCOHOL EN EL NORESTE DE BRASIL



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ABSTRACT

The term psychosocial risk refers to the harm caused to the physical or mental health of workers. Although there is extensive research on the topic across various professional categories, few studies focus on workers in the sugarcane industry. Therefore, this study aimed to investigate psychosocial risks among workers at an ethanol plant in the Brazilian sugarcane industry, located in Rio Grande do Norte. A sample of 167 workers was selected. The instrument used was the PROART (Psychosocial Risk Assessment Protocol at Work) to identify psychosocial risks. The results indicate positive scores on the work organization scale, with 51.93% and 50.45% between points 4 and 5 ("frequently" and "always"), referring to the division of tasks and social division of labor factors, respectively. Regarding management style, 39.58% of respondents marked points 4 and 5 of the "individualistic management style" factor ("often" or "always"). Regarding the factors "lack of meaning in work," "mental exhaustion," and "lack of recognition," the results were positive, with 8.72%, 9.59%, and 9.59%, respectively, between points 4 and 5 ("often" and "always"). Finally, regarding the work-related harm scale, the results were also positive across all items, with very low percentages between "often" and "always": psychological harm (2.57%), social harm (1.49%), and physical harm (5.32%).

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Keywords: Psychosocial Risk. Work. Sugar and Alcohol Secto.

RESUMO

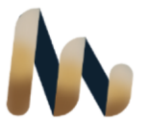
O termo risco psicossocial refere-se ao dano provocado à saúde física ou mental dos trabalhadores. Apesar de termos inúmeras pesquisas sobre o tema, em diversas categorias profissionais, poucos são os estudos que focam nos trabalhadores do setor sucroalcooleiro. Assim, essa pesquisa tem por objetivo foi investigar os riscos psicossociais em trabalhadores de uma usina de fabricação de etanol, pertencente ao setor sucroalcooleiro brasileiro, situada no Rio Grande do Norte. Para isso, foi selecionada uma amostra composta por 167 trabalhadores. O instrumento utilizado foi o PROART (Protocolo de Avaliação de Riscos Psicossociais no Trabalho), para identificar os riscos psicossociais. Os resultados apontam escores positivos na escala de organização do trabalho, com 51,93% e 50,45% entre os pontos 4 e 5 ("frequentemente" e "sempre"), referente aos fatores divisão de tarefas e divisão social do trabalho, respectivamente. Com relação ao estilo gestão, 39,58% dos respondentes assinalaram os pontos 4 e 5 do fator "estilo de gestão individualista" ("frequentemente" ou "sempre"). Já com relação aos fatores "falta de sentido no trabalho", "esgotamento mental" e "falta de reconhecimento" o resultado se mostra positivo, com 8,72%, 9,59% e 9,59%, respectivamente, entre os pontos 4 e 5 ("frequentemente" e "sempre"). Por fim, com relação a escala de danos relacionados ao trabalho, os resultados também se mostram positivos em todos os itens, com percentuais muito baixos entre "frequentemente" e "sempre": danos psicológicos (2,57%), danos sociais (1,49%) e danos físicos (5,32%).

Palavras-chave: Risco Psicossocial. Trabalho. Setor Sucroalcooleiro.

RESÚMEN

El término riesgo psicosocial se refiere al daño causado a la salud física o mental de los trabajadores. Si bien existe una amplia investigación sobre el tema en diversas categorías profesionales, pocos estudios se centran en los trabajadores de la industria azucarera. Por lo tanto, este estudio tuvo como objetivo investigar los riesgos psicosociales entre los trabajadores de una planta de etanol de la industria azucarera brasileña, ubicada en Rio Grande do Norte. Se seleccionó una muestra de 167 trabajadores. El instrumento utilizado fue el PROART (Protocolo de Evaluación de Riesgos Psicosociales en el Trabajo) para identificar los riesgos psicosociales. Los resultados indican puntuaciones positivas en la escala de organización del trabajo, con un 51,93% y un 50,45% entre los puntos 4 y 5 ("frecuentemente" y "siempre"), en referencia a los factores de división de tareas y división social del trabajo, respectivamente. En cuanto al estilo de gestión, el 39,58% de los encuestados marcó los puntos 4 y 5 del factor "estilo de gestión individualista" ("a menudo" o "siempre"). En cuanto a los factores "falta de sentido en el trabajo", "agotamiento mental" y "falta de reconocimiento", los resultados fueron positivos, con un 8,72 %, un 9,59 % y un 9,59 %, respectivamente, entre los puntos 4 y 5 ("a menudo" y "siempre"). Finalmente, en cuanto a la escala de daños laborales, los resultados también fueron positivos en todos los ítems, con porcentajes muy bajos entre "a menudo" y "siempre": daño psicológico (2,57 %), daño social (1,49 %) y daño físico (5,32 %).

Palabras clave: Riesgo Psicosocial. Trabajo. Sector Azucarero y Alcohólico.



1 INTRODUCTION

The world of work today has significant impacts on the physical and mental health of workers. The many changes caused by financial globalization, technological innovations and new forms and styles of management directly interfere with the well-being of workers and the way they perform their work (Silva; Bernardo; Souza, 2016).

According to Dejours (1992), the pleasure and suffering of workers are closely related to the organization of work, how activities are divided, the content of tasks, the hierarchical system, power relations, issues involving responsibility, and many others. In this way, the pressures arising from the organization of work are potentially harmful to the mental health of workers.

In Brazil, according to data reported by the Ministry of Labor and Social Security (Brasil, 2024), through the monthly monitoring report of the social security and accident sickness benefit granted according to the ICD-10 codes, in 2024 mental and behavioral disorders were the third cause of sick leave among insured workers.

The negative situations of the interaction between the characteristics of work and the characteristics of workers, framed by the social context, are called psychosocial risks at work and can cause various problems to the physical and mental health of workers, including mental and behavioral disorders, suicide, work accidents, and abuse of alcohol and other drugs (Fischer, 2012; Kraemer et al., 2001; Zanelli; Kanan, 2018). According to the International Labor Organization (ILO, 1984), the term psychosocial risk refers to the damage caused to the physical or mental integrity of workers. Such risks are measured by their psychosocial risk factors, which precede and increase the probability of damage occurring (Rodrigues; Faiad; Facas, 2020).

The World Health Organization stated in 2000, in a widely disseminated document⁸, that mental disorders can affect up to 40% of workers, with between 5% and 10% of severe level and 30% considered "minor" disorders or Common Mental Disorders (Silva; Bernardo; Souza, 2016).

The sugar-alcohol sector, also known as the "sugar-energy sector", according to the Ministry of Agriculture and Livestock (MAPA, 2022) is a branch of the agroindustry that is responsible for the production of sugar, alcohol, brandy and other sugarcane derivatives, such as ethanol and solvents and that, according to the Center for Advanced Studies in Applied Economics (Cepea), while generating about eight hundred thousand direct jobs, divided among the 330 mills in operation, it is also a priority focus of inspections against slave

⁸https://apps.who.int/iris/bitstream/handle/10665/42346/WHO_MSD_MPS_00.2.pdf?sequence=12&isAllowed=

labor by the Ministry of Labor and Employment (MTE), according to the non-governmental organization "Repórter Brasil", in the document released in 2014⁹.

In view of the centrality of work in the lives of these workers, and the specificities of the work process in this sector, a question arises: are there psychosocial risks in the daily work of these professionals? What? Based on the questions raised, this research aims to identify the existence of psychosocial risks in the workers of an ethanol production plant in the metropolitan region of Natal/RN.

2 METHOD

The research took place in a sugar and alcohol sector mill, located in the metropolitan region of Natal-RN, which has 409 employees. A total of 294 workers participated in the study. From the surveyed population, 115 seasonal employees (temporary contracts) were disregarded because they had been working for less than 90 days in the company.

With regard to the instruments used to collect data on psychosocial risks, the PROART (Protocol for the Assessment of Psychosocial Risks at Work) questionnaire was applied, proposed by Facas (2021), which seeks to investigate four dimensions that involve the relationship between the worker and the organization of work, namely: prescribed organization of work; management styles; suffering at work and work-related harm.

The Protocol is composed of four scales: Prescribed Work Organization Scale (EOT); Management Styles Scale (EEG); Work Distress Index Scale (EIST); and Work-Related Damage Scale (TDS), with scales to the concepts discussed by the psychodynamic theory of work. The scales present grading of results (low risk/medium risk/high risk). The four PROART scales account for 91 statements, whose possibility of response follows the Likert frequency scale, varying between points 1 which means <never> and 5 which means <always>.

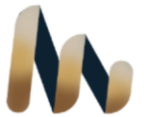
3 RESULTS AND DISCUSSION

3.1 PROFILE OF THE PARTICIPANTS

All participants are male, having mostly attended high school (89.8%). With ages ranging from 21 to 67 years, where the age groups are distributed as follows: between 31-40 years (41.32%), followed by 21-30 years (24.55%), 41-50 (21.56%), 51-60 (11.38%) and 61-67 (1.20%).

All participants work in the CLT modality and have been in service for between 0 and 22 years ($M=5.90$; $SD=5.21$), distributed as follows: (55.09%) of the participants within the 1

⁹ https://escravonempensar.org.br/wp-content/uploads/2014/10/Fasciculo_Sucroalcooleiro_web_baixa.pdf



to 5 years age group, followed by (19.16%) from 6 to 10 years, (19.16%) from 11 to 20 years, (5.99%) under 1 year and (0.60%) from 21 to 22 years. Most participants are married or in a stable union (74.3%), followed by single (21%), divorced (4.2%) and widowed (0.60%). The sectors consulted were: field with (40.72%) of participants, mill with (40.72%), administration with (11.38%) and fleet with (7.19%).

In order to present the results in a clearer and more objective way, this session is divided into topics related to the mapping of psychosocial risks at work.

3.2 PSYCHOSOCIAL RISKS

Psychosocial risks were measured by PROART, where descriptive quantitative data were presented based on frequencies. The results obtained in each of the scales that make up this instrument will be presented below.

3.3 WORK ORGANIZATION SCALE (EOT)

Prescribed work organization refers to how tasks are structured, distributed, and controlled. Work Organization is a predictor of management style, experiences of pleasure-suffering, strategies for mediating suffering at work and psychosocial damage, so this scale deals with a fundamental and mandatory dimension in investigations about the subject-work-health relationship (Facas, 2021).

The Work Organization Scale is evaluated based on a Likert frequency scale, composed of 5 points: 1 = Never, 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Always.

Considering the standard deviation in relation to the midpoint, the parameters for the evaluation of the mean and frequencies of the factor will be as follows: a) values between 1.00 and 2.29 represent high psychosocial risks, demonstrating a negative result for the organization, which requires immediate interventions in the causes, aiming to eliminate and/or attenuate them; b) values between 2.30 and 3.69 represent a median result, generating a state of alert/borderline situation for psychosocial risks at work, requiring interventions in the short and medium term; c) values between 3.70 and 5.00 represent low psychosocial risks, i.e., aspects to be maintained, consolidated and enhanced in the organization of work (Facas; Mendes, 2018).

Below we can see in percentage the results obtained regarding the first factor of this scale, which deals with the division of tasks, followed by the second factor, which deals with the social division of labor.

Table 1

Work Organization Scale (EOT) - Factor: Division of Tasks

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
7,86%	9,67%	30,54%	18,48%	33,45%

Source: Authors

This scale seeks to evaluate the pace, deadlines and conditions offered by the organization for the execution of tasks. Meaningful tasks are more favorable to the worker's mental health, that is, those perceived as important and necessary bring more benefits and consequently lower risk of illness (Mendes, 2008).

As shown in the table, the percentage of greatest relevance was concentrated between points 3 and 5 of the Likert scale, which means that the positive result for the organization prevailed. It is worth noting that the fact that we have 30.54% of respondents who checked the option "sometimes" may signal problems in the management of the division of tasks, deadlines and conditions available for the achievement of activities. Studies indicate that rigidity in the prescription of tasks, associated with the scarcity of resources and tight deadlines, contributes to the increase in occupational stress and mental fatigue (Mendes; Araújo, 2010). In addition, the lack of flexibility can compromise the worker's engagement and feeling of usefulness, generating feelings of alienation and devaluation (idem).

Table 2

Work Organization Scale (EOT) - Factor: Social Division of Labor

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
9,23%	9,58%	30,74%	19,21%	31,24%

Source: Authors

As it was demonstrated, the percentages obtained were also concentrated between points 3 and 5, thus presenting again a positive result for the organization, that is, considering the theoretical formulations already described, we can conclude that the work in this company, from the point of view of the Prescribed Organization of Work, helps in the construction of the subject's identity, just as the environment allows the development of social relations based on the division of tasks and the social division of labor (Pacheco; Silva, 2018).

It is worth noting that the fact that we had a large part of the respondents (30.54% for the division of tasks factor and 30.74% for the social division of labor factor) who checked the option "sometimes" may signal problems in the management of the division of tasks,

deadlines and conditions available for the accomplishment of activities. Studies indicate that rigidity in the prescription of tasks, associated with the scarcity of resources and tight deadlines, contributes to the increase in occupational stress and mental fatigue (Mendes; Araújo, 2010). In addition, the lack of flexibility can compromise the worker's engagement and feeling of usefulness, generating feelings of alienation and devaluation (Mendes; Araújo, 2010; Pacheco; Silva, 2018).

Facas (2021) states that organizations marked by an excessive division of tasks, too much control and norms, with little room for negotiating rhythms and times to carry out work, characterized by rigid management models, tend to generate psychosocial risk. Such management models are based on the principles of economic rationality and constitute a great challenge for the prevention of occupational illness, since their principles are responsible for occupational risks.

3.4 MANAGEMENT STYLE SCALE (EEG)

Management style is a predictor of the risks of pathogenic suffering and risks of psychosocial harm. Since the patterns of behavior in organizations define the way in which social work relations take place, the possibilities that the worker has in his work, and the symbolic relationships established between him and the organization of which he is part (Facas, 2021).

The Management Styles Scale is evaluated based on a Likert scale of frequency, composed of 5 points: 1 = Never, 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Always. As it is a 5-point scale, with a range from 1 to 5, the average point to be considered is 3.00. Averages close to the midpoint of the scale mean a moderate presence of a certain style, while above 3.50 the standard is predominant, below 2.50 it is considered uncharacteristic (Facas; Mendes, 2018).

Table 3

Management Style Scale (EEG) - Factor: Individualistic Management Style

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
20,90%	10,96%	28,56%	14,73%	24,85%

Source: Authors

Analyzing the data found, we can see that the highest percentage (28.56%) is found at the midpoint of the Likert scale (sometimes), that is, the result found establishes a moderate presence of the individualistic management style, but the other two points (Often

and Always) located between 4 and 5 of the scale, together form a percentage of 38.59%, demonstrating that there is a strong predisposition for this style to become predominant in the organization, which is a worrying result, since this management style is currently not desired, as clarified by Facas and Mendes (2018), when they state that this style can be formed by people with difficulty recognizing the other, in addition to not considering the limits of reality. Organizations where this pattern predominates are usually charismatic, imbued with collective beliefs of concentration of power. The behaviors of its members are focused on concern for their own well-being (Facas, 2021).

Table 4

Management Style Scale (EEG) - Factor: Collectivist Management Style

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
11,11%	14,17%	29,01%	13,51%	32,20%

Source: Authors

The percentage that stands out the most (32.20%) is found at point 5 of the Likert scale, which leads us to affirm that this management style is what predominates in this organization, which is a positive aspect because, according to Facas and Mendes (2018), it helps professional interaction and the promotion of greater well-being of people in the workplace. However, it should be noted that there is an ascending line for the collectivist style to go from the predominant to the moderate (sometimes), corroborating with the result of the previous management factor/style, which takes the opposite path, that is, at this point we can glimpse that the management styles can easily take the place of each other.

In this sense, the company needs to intervene with actions that strengthen the desired style. When it comes to the collectivist management style, it is possible to affirm that there is an engagement of people in the daily work routine, considering that groups/collectives tend to be valued and recognized (Paz; Mendes, 2008).

In the collectivist management style, the organization is seen as a perfect group, reflecting organizational pride, confidence, and self-esteem. The image of the organization is a deity to which the members make an offering as if it had an important and special mission to be fulfilled. Workers have a strong feeling of loyalty, dependence and belonging to the organization. Directly or indirectly, great personal efforts are stimulated and members act in favor of the organization, even if the return received is negligible. The predominance of this style characterizes a management mode that values idealization, cohesion and union (Facas, 2021).

According to Facas (2021), situations that bring workers closer to management processes are important in the creation of agreements, rules, and norms, which is fundamental for coping with psychosocial risks. For this, it is necessary to be open to managers and supervisors, that is, the management style needs to be aligned with the organization of work.

Despite the aforementioned data, it is worth mentioning the points "never" and "rarely", which together add up to 25.28%, signaling the possibility of the presence of individualistic management styles, which tend to trigger environments of organizational fear and silence, while more participatory styles favor social support and well-being at work (Limongi-França, 2011).

3.5 WORK DISTRESS INDEX SCALE (EIST)

Suffering at work is understood as a result of the tension between the demands of the organization and the capacities or values of the subject. The Scale of Indicators of Suffering at Work refers to the experiences of workers in relation to their current work. The items are related to the ways of feeling, thinking and acting shared in the organization.

It is evaluated based on a 5-point Likert frequency scale. Considering the standard deviation in relation to the midpoint, the parameters for the evaluation of the mean and frequencies of the factor will be as follows: a) values between 3.70 and 5.00 - High Risk: Negative Result; b) values between 2.30 and 3.69 - Medium Risk: Median result; c) values between 1.00 and 2.29 - Low Risk: Positive result (Knives; Mendes, 2018).

Table 5

Work Distress Index (EIST) Scale - Factor: Meaninglessness at Work

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
68,00%	8,18%	15,10%	3,06%	5,66%

Source: Authors

The percentages obtained show that 68% of the answers were concentrated on point 1, therefore, we conclude that there is a low risk of predominance of this factor, which determines a positive result for the organization, since, according to Oliveira (2003), when the task presents a significant content for the worker, he tends to be motivated and becomes less prone to illness, In addition to being more productive for the organization, this organization needs to observe the points that generate these results, in order to maintain and strengthen them.

Table 6

Work Distress Index (EIST) Scale - Factor: Mental Exhaustion

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
54,57%	11,15%	24,70%	4,87%	4,72%

Source: Authors

As we can see, 54.57% of the results are in point 1 of the Likert scale, that is, the mental exhaustion factor does not represent a considerable psychosocial risk for the organization, which is a very positive fact, since the Burnout syndrome has this factor as its main characteristic, which is often caused by excessive pressure at work (WHO, 2022) and by established goals, sometimes almost unattainable (Mendes, 2008).

Table 7

Work Distress Index (EIST) Scale - Factor: Lack of Recognition

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
54,57%	11,15%	24,70%	4,87%	4,72%

Source: authors

Once again, the results obtained were fixed at point 1 of the scale, confirming that the lack of recognition is also not a worrying factor for the organization. The issue of recognition at work increases in importance in organizations due to the growth of the globalized economy. Studies show that lack of recognition is a critical component of EIST, with a significant impact on workers' distress and mental health (Marinho et al., 2025).

3.6 WORK-RELATED INJURY SCALE (EDT)

The fourth and last is the Work-Related Damage Scale, which refers to the physical, psychological and social dysfunctions caused by the employee's clash with a certain work organization and its predominant management styles, in addition to experiences of suffering. It is formed by three factors: Psychological Damage, Social Damage and Physical Damage.

Considering the standard deviation in relation to the midpoint, the parameters for the evaluation of the mean and frequencies of the factor will be as follows: a) values between 3.70 and 5.00 - High Risk: Negative Result; b) values between 2.30 and 3.69 - Medium Risk: Median result; c) values between 1.00 and 2.29 - Low Risk: Positive result (Knives; Mendes, 2018).

Table 8

Work-Related Harm (TDS) Scale - Factor: Psychological Harm

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
57,40%	8,81%	31,22%	2,05%	0,52%

Source: Authors

Analyzing the percentages found, we found a positive result for the organization, since it has a low risk of damage, considering that 57.40% of the answers were concentrated on point 1 (never). Psychological damage is a dysfunction, a disorder that affects the sphere of will, considerably limiting the worker's capacity, affecting their mental well-being, interfering in personal, professional and social life (Guedes, 2008). In order to characterize it, it is necessary to mention the factor that causes the damage, the subject who suffers this damage and the causal link that unites the two (Guedes, 2008).

Table 9

Work-Related Harm (TDS) Scale - Factor: Social Harms

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
74,85%	13,94%	9,75%	0,94%	0,52%

Source: Authors

According to Gonçalves (2014), social damages are those that cause a deficit in the standard of living of the community and that result from socially negative behaviors. In the table above, we can see that the organization has a low psychosocial risk related to social damage, as 74.85% of the total is concentrated in point 1 of the Likert scale.

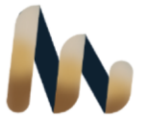
Table 10

Work-Related Injury (TDS) Scale - Factor: Physical Injuries

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always
58,03%	16,07%	20,58%	2,39%	2,93%

Source: Authors

The Work-Related Damage Assessment Scale (TDS) allows the identification of early signs of mental illness, highlighting the importance of continuous monitoring and implementation of organizational health promotion policies. According to data found, Physical



Damage (58.03% flagged as "never") corroborates the results of the previous factors in terms of a positive result for the organization.

It should be noted that, despite the positive result in the three factors, the predominant percentages of psychological and physical damage were followed by point 3 (31.22% and 20.58%, respectively, marked as "sometimes"), that is, there are workers who present a moderate risk. In this way, we can envision that, if the organization does not invest in attitudes to maintain the predominant level of risk (low risk), it may suffer a negative change over time, producing psychosocial damage. Psychosocial damage is a physical, emotional or social consequence of prolonged exposure to adverse work environments. Among the main damages identified are: sleep disorders, irritability, depression, muscle pain, use of psychotropic drugs, and social isolation (Andrade et al., 2024).

4 FINAL CONSIDERATIONS

This study aimed to investigate the psychosocial risks in workers of a sugar and alcohol mill, through the application of PROART (Protocol for the Assessment of Psychosocial Risks at Work).

According to the results obtained, we conclude that in all the scales proposed by the instrument, the researched company presented a positive result with regard to the general percentages found: The Work Organization Scale (EOT), both the division of tasks and the social division of labor presented low psychosocial risks; The Management Style Scale (EEG) demonstrated a management style more focused on the Collectivist Style, although the results also present data that show a certain fragility of this management model, making room for the individualistic style, if the organization does not program actions to maintain the desired style; The Work Distress Index Scale (EIST) showed a positive result (with most factors between "never" and "rarely"); and, finally, the Work-Related Damage Scale (TDS) also showed a positive result for the organization, demonstrating low risk for the presence of psychological, social and physical damage.

Regarding the positive results of this study, which sometimes contradict the existing literature on the subject, a possible explanation is due to the fact that in 2016 the organization opted for a significant change in management, in addition to the implementation of several projects related to quality of life at work (QWL) and endomarketing actions. which caused a strong change in the organizational culture and, consequently, an improvement in the organizational climate.

Among the possible gaps in the study, it is important to highlight that temporary workers were excluded, which, due to the importance of the group in question, indicates the

need to include them in future studies. Finally, we understand that this research enabled reflections on the theme in the sugarcane sector, a sector that is little researched and of fundamental importance for the country's economy. The results of this study may provide subsidies for the creation of intervention models and practices, linked to the identification, assessment and management of psychosocial risks, with a focus on prevention and promotion of workers' mental health.

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