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[Review Article] Measurement Tools to Evaluate Psychosocial Factors in a Changing Work Environment: A Rapid Literature Review

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Abstract

This literature review examines the measurement instruments and questionnaires used to assess psychosocial factors in work environments. The focus is on their applicability across diverse professional settings. The review begins with identifying keywords and MeSH/EMTREE terms. Searches were then conducted across multiple databases and grey literature sources. The screening process identified 60 relevant articles. From these, 30 were selected to discuss the validity and reliability of various scales. The Copenhagen Psychosocial Questionnaire (COPSOQ) was found to be the most commonly used instrument, followed by the Job Content Questionnaire (JCQ), the Effort-Reward Imbalance (ERI) model, and the NIOSH General Job Stress Instrument. In Colombia, the evaluation of psychosocial risk factors in organizations is conducted using the *Batería de Instrumentos para la Evaluación de Factores de Riesgo Psicosocial* This assessment provides a detailed evaluation of both intra-laboral and extra-laboral occupational psychosocial risk factors. Regarding reliability, all instruments identified and reviewed in this article had Cronbach's alpha values ranging from 0.7 to 0.9, indicating acceptable to excellent internal consistency, reliability, and validity for evaluating psychosocial risk factors in a representative work environment sample. Although each instrument is useful, adapting to evolving workplace dynamics is necessary for more comprehensive evaluations. The article emphasizes the impact of the COVID-19 pandemic on work arrangements, specifically remote and hybrid work, and highlights the need to evaluate psychosocial risk factors. The review provides insights into the changing landscape of work and the importance of addressing psychosocial factors to promote employee well-being and organizational effectiveness.

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Introduction

A psychosocial factor refers to characteristics that exert an influence on both the psychological and social aspects of an individual. These factors can accurately describe one's support networks and how is their impact on physical and mental health. Psychosocial resources and psychological risk factors are two subcategories. Social networks and social support are included in psychosocial resources in the social environment. The main psychological resources that individuals possess are a sense of coherence and self-esteem. Psychological risk factors, on the other hand, include fatigue, depression, loss of hope, and hostility [1]. According to the ILO/WHO Committee, psychosocial factors refer to the interactions between work, environment, organizational conditions, worker's capacities, needs, culture, and personal situation outside of work. All of these factors, through perceptions and experiences, can influence health, performance, and job satisfaction. [2]

A cross-sectional study conducted in Sweden in 2019, involving 1007 participants, found that multiple psychosocial factors were directly related to life-compromising behaviors. Of the factors assessed, 10 were statistically significant. The strongest associations were noted for vital exhaustion (OR 1.28; CI 1.11-1.46), depression (OR 1.32, CI 1.14-1.52), and trust (OR 0.8, CI 0.70-0.91). [1]

The definition and concept of work have evolved over the years. In ancient societies, work was carried out by peasants and slaves and was not valued. In the

Middle Ages, physical labor acquired moral value. Throughout history, stress and psychosocial factors have been associated with engaging in this activity. Nowadays, work has evolved into new forms of organization and empowerment for the company's productivity [3]. However, methods for quantifying psychosocial stress and screening psychosocial risk factors have evolved alongside the changing nature of work. In the 1980s and 1990s, standardized scales such as the *Psychosocial Factors Guide in Mexico, the Job Content Questionnaire, the NIOSH job instrument, and the Bocanument in Colombia* were introduced. Today, more specific, detailed, and assertive scales are available. [4]

Numerous instruments have been developed globally to evaluate psychosocial factors in various populations. One such instrument is the *Copenhagen Psychosocial Questionnaire (CoPsoQ)* which is widely used and recognized [5][6]. Another instrument is the *Job Content Questionnaire (JCQ)* developed in the United States [7]. However, several other instruments have been developed to study our population and identify risk factors that can lead to various diseases and negative consequences. Each of these tools aims to evaluate various aspects of being a worker, including motivation, psychological demands, job satisfaction, general and mental health, social support, opportunities, job security, and stress symptoms. These dimensions are vital to the role that each person plays in an organization or business. [5]

To give some context in Colombia few instruments have been developed and used for the evaluation of psychosocial risk factors in organizations. For example, the Colombian Ministry of Social Protection developed the *"Batería de Instrumentos para la Evaluación de Factores de Riesgo Psicosocial"* in 2010, which is considered one of the most comprehensive assessments of psychosocial risk factors in Latin America. This was in response to the high levels of stress and exposure to such risk factors revealed in the First National Survey on Health and Working Conditions conducted in 2007. The assessment is now regularly applied to the working population. [8] The battery includes a data sheet for sociodemographic and occupational information, as well as two questionnaires assessing intralaboral psychosocial risk factors across four domains: job demands, control over work, leadership, and social relationships and rewards. a questionnaire of extra-occupational psychosocial risk factors with seven dimensions (time away from work, family relationships, communication and interpersonal relationships, economic situations of the family groups, housing characteristics and the influence of the extra-work environment on the work and commuting from home to work and vice versa; a job analysis guide); a stress assessment questionnaire; a semi-structured interview guide and another one for the realization of focal groups. [4][9]

For our literature review, we found an article by Charria[4] that closely matched our initial search. However, it is important to note that this study was conducted in 2011. Therefore, our primary objective is to analyze and draw conclusions from more recent studies that focus on evaluating psychosocial risk factors. These results will determine which population each instrument is more applicable to, the most commonly used instruments, and the fundamental variables that must be included to develop a profound understanding of the work environment. However, the way work is done has changed due to the increase in remote work, telecommuting, and hybrid work, which has been accelerated by the Covid-19 pandemic. As a result, working conditions have changed, and workers are exposed to different psychosocial factors. There is a lack of information and evaluation of emergent conditions that arise with the change in the workplace. In 2020, Circular 064 was issued to strengthen prevention and intervention actions and measures aimed at protecting the mental health and well-being of workers in different economic sectors. These measures were applied to workers carrying out their activities both remotely and in person. The circular mandates employers to use *Batería de Instrumentos de Evaluación de Factores de Riesgo Psicosocial*. This tool is necessary for compliance with the actions of the occupational health and safety management system [10]. Therefore, this review aims to identify important aspects to consider when developing new instruments that focus on these working conditions. To achieve this, we will identify existing instruments in the literature for measuring psychosocial risk factors.

Methodology

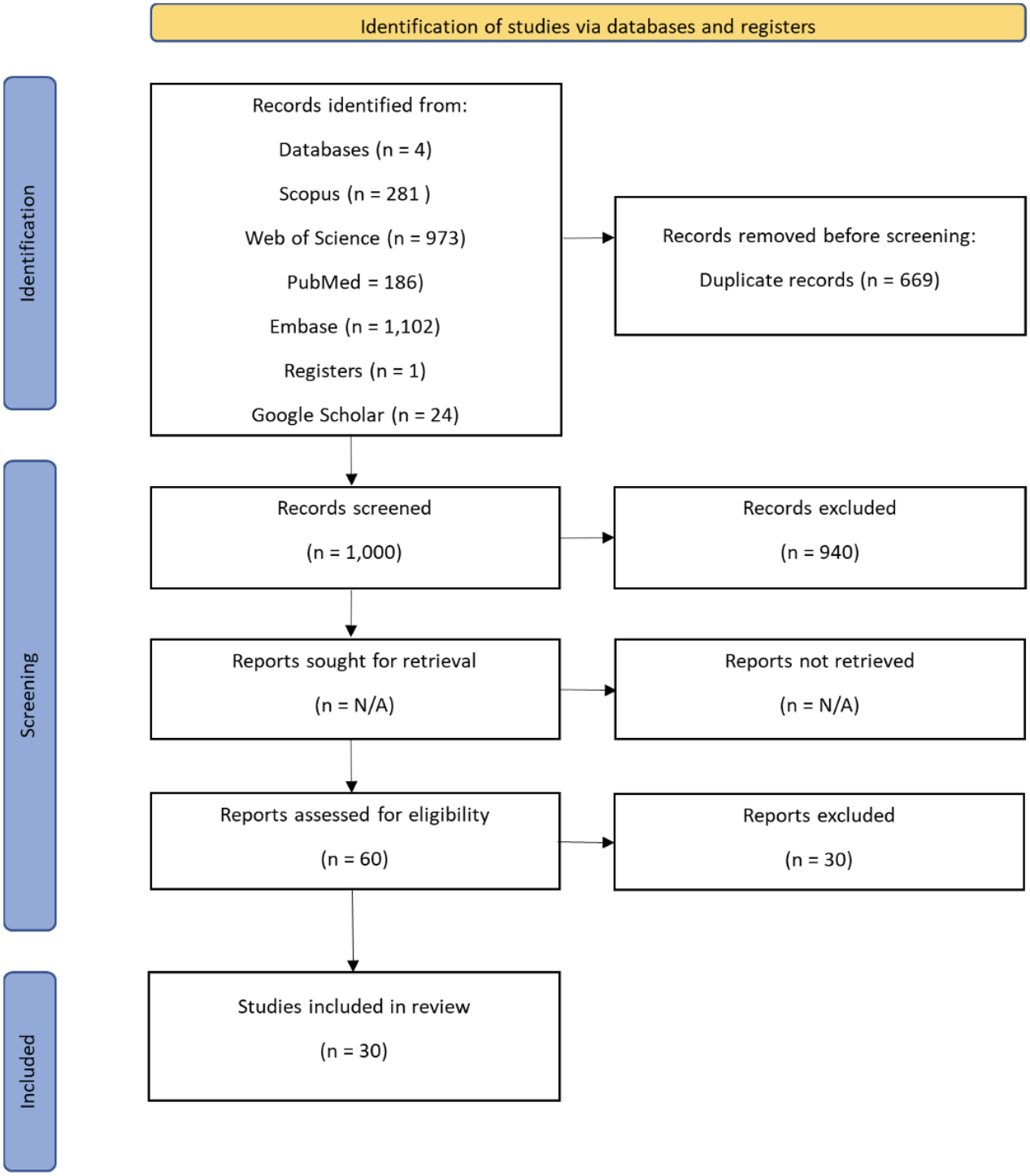
We conducted a rapid literature review to identify and describe the measurement tools and reported questionnaires evaluating psychosocial factors in a work environment that can be applied in a wide range of professional settings to compare each variable and its validity. Initially, we identified the keywords and then defined the MeSH and EMTREE terms ("Psychometric", "Questionnaire", "Psychosocial Factors", "Occupational Stress", "Job satisfaction", "Employment", "Workplace" and "Work environment"). To perform the search method, we used combinations of these terms on different databases such as PubMed, Scopus, Embase, and Web of Science, this resulted in the following search equation (TITLE-ABS-KEY ("Psychometric" OR "Questionnaire")) AND ("Psychological Factor" OR "Occupational Stress" OR "Job satisfaction")) AND ("Employment" OR "Work environment" OR "Workplace"))) AND PUBYEAR > 2019 AND PUBYEAR < 2025 AND (LIMIT-TO (LANGUAGE, "Spanish") OR LIMIT-TO (LANGUAGE, "English")). Additionally, we searched in grey literature (Google Scholar) to find potentially relevant instruments not found in the database.

To narrow down the search results, we limited our search to articles and reviews published between 2019 and 2024 in Spanish and English languages and focused on the adult [11][12][13][14][15][16][17][18][19][20][21][22][23][24][25][26][27][28][29][30][31][32][33][34][35][36][37][38][39][40][41][42][43][44][45][46][47][48][49] and aged (+65) age groups. Subsequently, 2,566 files were identified, consisting mainly of systematic reviews and randomized trials that analyzed the validity of various scales for occupational psychosocial risk factors in different professional contexts. Of these, 281 were from Scopus, 973 from Web of Science, 186 from PubMed, and 1,102 from Embase, with an additional 24 from grey literature. Of the remaining articles, we excluded those that did not align with the review's objectives and only selected studies that

discussed the validity and reliability of each scale. This resulted in a total of 30 fully reviewed articles (see graphic 1). The most used scale (33.3%) was the Copenhagen Psychosocial Questionnaire (COPSOQ) in its various versions. Other scales used internationally and nationally include the NIOSH Job Stress Questionnaire, the Job Content Questionnaire, and the Brief Job Stress Questionnaire.

Results

We included 30 studies that applied an evaluation instrument to identify psychosocial risk factors faced by workers worldwide, regardless of their area of work. To better understand each tool, we provided a summary of every evaluated instrument in our rapid review, including its use in different locations, functionality, and findings (see Table 1).



Graphic 1. PRISMA flowchart diagram

Copenhagen Psychosocial Questionnaire (COPSOQ)

In 2005, Tage S. Kristensen et al. presented the Copenhagen Psychosocial Questionnaire (COPSOQ), a tool designed to identify psychosocial factors in the workplace, including stress, employee health, and personality factors. The questionnaire was developed based on a survey of 1858 Danish employees, representing a diverse sample. It evaluated two major categories, each subdivided into subcategories: Workplace (including type of production tasks, work organization and job content, interpersonal relations and leadership, and work individual interface) and Individual (including health and wellbeing, and personality). Workplace (including type of production tasks, work organization and job content, interpersonal relations and leadership, and work individual interface) and Individual (including health and wellbeing, and personality). Workplace (including type of production tasks, work organization and job content, interpersonal relations and leadership, and work individual interface) and Individual (including health and wellbeing, and personality). The COPSOQ was found to be a valid and reliable tool. (The Copenhagen Psychosocial Questionnaire is a tool used to assess and improve the psychosocial work environment.)

The COPSOQ instrument is a questionnaire available in three versions: a long version for research purposes, a medium version for professionals in occupational work and work environment, and a short version used in organizations to evaluate workers. The creation, validation, and implementation of this questionnaire aimed to develop a valid and relevant instrument for assessing psychosocial factors at work while enabling national and international comparisons. [9]

One version of the COPSOQ is the *Escala de Evaluación de Riesgos Psicosociales* (SUCESO/ISTAS 21), which has been adopted in Chile. It includes dimensions such as psychological demands, active work and development possibilities, social support in the company, quality of leadership, and dual presence. [50] The SUCESO/ISTAS 21 instrument was adapted for use in Colombia. The study identified dimensions related to psychological demands, lack of social support, and quality of leadership. [51]

There was another application of this instrument in Mexico, in which the dimensions evaluated were related to job satisfaction, mental health, vitality, behavioral symptoms of stress, cognitive symptoms of stress, psychological demands on emotional aspects, leadership quality, and social support. [51] A validation made in Switzerland of the COPSOQ showed negative effects regarding role conflicts, stress, quality of work, quantitative demands, work-life conflicts, and high administrative workload all generating an inadequate psychological work environment, nevertheless a positive aspect was the impact working had on their personal lives. [52]

In 2014, Moncada et al. developed an adaptation of the CoPsoQ for use in Catalonia, Spain. The CoPsoQ-istas21 is designed to identify psychosocial risks in companies with 25 or more employees and implement preventive measures to eliminate or reduce these risks. It consists of 109 short questions that evaluate working conditions, psychosocial factors, and personal health and well-being. [53] In 2019, a cross-sectional study was conducted in Brunei to assess the impact of psychosocial factors in the workplace on healthcare professionals at the largest referral hospital in the country. The study included 219 participants who completed self-administered questionnaires using COPSOQ II to measure thirteen variables. The main findings showed that psychosocial work stressors accounted for over 50% of the variance in healthcare personnel productivity. Therefore, it is essential to address and attempt to eradicate these factors in order to create a conducive work environment and enhance productivity in the healthcare sector. [54] In 2022, a study was conducted in Portugal with 196 workers from the National Network for Victim Support of Domestic Violence, where women were the majority. The study aimed to determine psychosocial risk factors during the COVID-19 pandemic using the Portuguese version of COPSOQ II. The results showed that individuals over 38 years old scored higher in job insecurity, burnout, and offensive behaviors. The study highlights the importance of characterizing psychosocial risk factors by gender in future research. [54]

In 2023, Pimenta et al. conducted a study titled “Characterization of Psychosocial Factors among Teachers from European Public and Private Schools”. The study used a cross-sectional design and assessed 340 teachers in Portugal and England using the COPSOQ II instrument. The research revealed that teachers in both countries face significant psychosocial risk factors, including cognitive, quantitative, and emotional demands, pace of work, exhaustion, and conflicts between work and family. The study highlights the importance of customized interventions to address these risks and promote the well-being of teachers in the changing educational environment. [11]

The third version of the COPSOQ (III) has been validated and used in various countries, including France, Spain, Canada, Germany, Switzerland, and Turkey. It measures dimensions related to emotional demands, demands to hide emotions, influence at work, development opportunities, and control over work time, as well as recognition. The study examined various factors that affect employees' well-being, including role conflicts, illegitimate tasks, leadership quality, social support from colleagues and supervisors, sense of community at work, work engagement, job insecurity, job satisfaction, horizontal trust, organizational justice, social inclusiveness, cyberbullying, bullying, self-rated health, and stress. The study reported a Cronbach's alpha greater than 0.7. [12]

The Job Content Questionnaire (JCQ)

In 1998, R. Karasek et al. introduced the Job Content Questionnaire (JCQ) at the University of Massachusetts. The JCQ is a tool for psychosocial job assessment that evaluates five categories: decision latitude, psychological demands and mental workload, social support, physical demands, and job insecurity. It consists of 49 questions. To demonstrate consistency in the reliability and validity of the JCQ, R. Karasek et al. conducted a study comparing mean values of the JCQ scales across six studies conducted in four different countries (United States, Quebec-Canada, the Netherlands, and Japan), with 16,601 participants (38% women and 62% men). The instrument was self-administered or administered face-to-face. The study concluded that the internal consistency of the scales is similar across populations and that the JCQ has acceptable validity and reliability [13]. In 2021, a study was conducted in Turkey to investigate the relationship between burnout and work-related stress among occupational therapists. The study used a cross-sectional design and included a sample of 50 therapists who completed the Minnesota Job Satisfaction Questionnaire and the Utrecht Work Engagement Scale. The results showed that 26% of the participants exhibited symptoms of burnout, with 38% reporting physical, emotional, and mental exhaustion. It was found that higher levels of burnout were associated with poor working conditions. The most significant factors were working conditions and dedication, which accounted for 43% of the variation in burnout prevalence. To prevent burnout in this population, it is recommended to implement a facilitative management approach, as well as mentoring or counseling, and provide education to supervisors. [14]

NIOSH – National Institute for Occupational Safety and Health

In 1988, the National Institute for Occupational Safety and Health (NIOSH) aimed to create a reliable and valid instrument that could identify psychosocial stressors in the work environment for various workers. To guide the development of the instrument, they conducted a systematic review of job stress. The instrument was administered to 700 nurses in Canada to evaluate six categories: illness, acute reactions, individual factors, job stressors, non-work factors, and buffer factors. The factor-based scales demonstrated acceptable reliability coefficients (alpha) ranging from 0.65 to 0.90 (mean = 0.81). [15].

A survey was developed to assess changes in work characteristics, socioeconomic status inequalities in changes in work characteristics, and whether workplaces in the United States are becoming more stressful, by studying and analyzing data from 5361 employed participants from 2002, 2006, 2010, and 2014 NIOSH Quality of Work Life Surveys. Statistically significant increases in job strain (+0.09 standard deviations (SD), P = 0.02), low job control (+0.10 SD, P = 0.03), and work-family conflict (+0.15 SD, P = 0.001). In contrast, it was found that high job demand, low social support, and low reward have not had significant changes [16].

Unipsico Battery

The Unipsico battery was developed and validated between 2000 and 2005 at the Psychosocial Research Unit of Organizational Behavior at the Universitat de Valencia. It has been considered valid and reliable in two studies, assessing dimensions such as resource availability, social support at work, feedback, and autonomy. The validation process reports a Cronbach's alpha of 0.80 [17]. In a study by Gil-[18] dimensions such as interpersonal conflicts, inequity in social exchanges, role conflict, role ambiguity, and workload were highlighted, demonstrating reliability with Cronbach's alpha of 0.86. Both studies by Gil-Monte agree that this battery can be used to evaluate psychosocial risk factors [9].

The Michigan organizational assessment questionnaire

In this study conducted in 2019 in Canada, the main objective was to identify predictors of job satisfaction among directors of long-term care homes. The study included 168 directors from 76 long-term care homes, and job satisfaction was assessed using the Michigan Organizational Assessment Questionnaire. The study found that higher scores on the burnout efficacy subscale were associated with increased satisfaction. At the organizational level, the study found positive associations with leadership, social capital, and adequate resources [19].

Instrumento de *Evaluación de Medidas para la Prevención de Riesgos Psicosociales en el Trabajo*

In Chile, Marchant et al. developed this instrument based on the 'Identification of Psychosocial Risks in the Work Matriz,' an external instrument created by the National Institute of Health Public of Quebec, Canada. The Institute of Public Health of Chile adapted it in 2012 for use in businesses with more than 25 workers and for application by a wide range of occupational health professionals. The instrument is intended for use in organizations and companies, with a focus on promoting the well-being of the workforce. It includes dimensions such as organizational communication, job demands, control, workload, social support, and work-life balance. Confidentiality and voluntary participation are emphasized to ensure that individual responses are only known to the interviewer and coordinating team. The process of data analysis requires the formation of a responsible committee to plan the application, disseminate the activity, ensure anonymity, and propose preventive interventions and problem-solving measures. Furthermore, it emphasizes the importance of adapting information when applying the instrument in public institutions and allows for decentralized application in organizations with multiple work sites [19].

SERENAT study

The main objective of the SERENAT study was to construct and validate the SERENAT scale, which is designed to assess workplace well-being. The 40-item scale addresses various work-related aspects. The findings, based on 193 participants, indicated excellent item quality and adequate external validity, as it significantly correlated with established measures of anxiety and depression. This scale is valuable for occupational physicians to systematically assess employee well-being [20].

Another international instrument that has been developed to globally assess psychosocial risk factors, in the workplace of them are: the CEFAP, used in South America, originated in Argentina and evaluates eleven dimensions, including psychological job demands, social support, and working motivation, proving suitable for risk assessment [22].The Prima-EF that identifies key aspects of psychosocial risk prevention, measuring dimensions like job demands, work control, and social support in Norway, showed a reliability of Cronbach's alpha 0.7 [23]. In Europe, the MCMutual-UB Battery is used to measure factors such as work organization and communication. It has been validated through confirmatory factor analysis [24].

Batería de instrumentos para la evaluación de factores de riesgo psicosociales

The main objective of the *"cuestionario de factores de riesgo psicosocial intralaborales"*, developed by the Ministry of Health and Social Protection of Colombia, is to assess workers' perception of aspects of their work environment that may impact their psychosocial well-being. Additionally, the questionnaire aims to gather information confidentially so that organizations responsible for occupational well-being can promote a healthy, pleasant, and productive work environment. The study addressed several psychosocial factors including leadership, social relationships, workload, job control, role clarity, rewards, and communication. [8]. In 2018, a study was conducted in Peru to adapt and validate this scale, with the aim of to tailoring, validating, and extrapolating the data to the context of this Latin American country. The statistical analysis provided empirical evidence of the validity and convergent content of the scale, demonstrating consistent measurements in the psychosocial risk construct. [25]

In 2022, a five-year prospective analysis of psychosocial working conditions was published using the Copenhagen Psychosocial Questionnaire (COPSOQ) and the Effort-Reward-Imbalance (ERI) questionnaire. The study evaluated a large population of 15,010 participants at baseline, focusing on the impact of psychosocial working conditions on work satisfaction, general health, and burnout. It is important to highlight the use of both instruments because each one of them can identify, certain aspects the other might not take into account, providing a wider view of the conditions in which workers are immersed in. Both the COPSOQ and ERI instruments have shown good criterion validity and adequately predicted contemporaneously measured self-reported measurements of health and (occupational) well-being. Overall, the study's findings indicate that enhancing psychosocial working conditions can have a significant positive impact on employee well-being and productivity. This highlights the importance of workplace policies and interventions that prioritize these factors [26].

Pressure Management Indicator

In England, an instrument named "Pressure management indicator (PMI)" was developed by Cary L. Cooper et. Al, the PMI is a 120-item self-report questionnaire developed from the Occupational Stress Indicator (OSI). The PMI evaluates major dimensions of occupational stress, like stressors, moderator variables, and outcome variables. The PMI is effective in assessing and managing occupational stress in individuals, providing a trustful tool for understanding and managing stress in the workplace [27].

Table 1. Synthesis of the evidence

Name	Authors	Origin	Objective	Target population	Variables measured	Validity and reliability	Reference
Job Content Questionnaire (JCQ) Year: 1998	Karasek, R.A., Pieper C. and Schwartz, J.	USA	Measure various psychosocial aspects of job characteristics for understanding the psychosocial aspects of work environments and their	Workers from diverse occupational backgrounds, such as white-collar and blue-collar workers, professionals, managers, and employees in	Recommended (49-item); long (112-item); original (brief, 27-item). Psychological demands, decision latitude, social support,	The questionnaire has been found to have good internal consistency, test-retest reliability, and construct validity showed in the Cronbach's alpha	Karasek R, Brisson C, Kawakami N, Houtman I, Bongers P, Amick B. The Job Content Questionnaire (JCQ): an instrument for internationally comparative assessments of psychosocial job characteristics. J Occup Health Psychol [Internet]. 1998 [cited 2024 Jan 28];3(4):322-55. Available from: https://pubmed.ncbi.nlm.nih.gov/9805280/

			potential impact on employee well-being and health outcomes.	different industry branches.	physical demands, and job insecurity.	coefficients (overall average alpha for women is.73 and for men is.74).	
Effort Reward Imbalance Questionnaire (ERI) Year: 1996	Siegrist, J.	Germany	Instrument that measures a psychosocial work environment characterized by high efforts and low rewards that can have negative effects on health and well-being.	The general population with an occupation.	Short version (23-item), and long version (46-item) Effort (6 items), Reward (11 items), Overcommitment (6 or 29 items).	Both the long and short versions have shown internal consistency, with the long version having a Cronbach's alpha > 0.70 and the short version > 0.80.	Siegrist J, Li J, Montano D. Psychometric properties of the Effort-Reward Imbalance Questionnaire.
Método de Evaluación de Factores Psicosociales (FPSICO) Year: 1997	Instituto Nacional de Seguridad e Higiene en el Trabajo	Spain	To provide information that allows the psychosocial diagnosis of a company or partial areas of it.	The general population with an occupation.	Consists on 22 questions based on mental load, temporary autonomy, work content, supervision and participation, role definition, interest in the worker, relationships.	Cronbach's alpha of 0.895 indicating excellent reliability on an overall level.	FPSICO del INSST - Next Prevención [Internet]. [cited 2024 Jan 29]. Available from: https://nextprevencion.com/metodos/psicosociologia/fpsico-del-insst/
Copenhagen Psychosocial Questionnaire (CoPsoQ) Year: 2005	National Institute of Occupational Health of Denmark	Denmark	The objective is to assess psychosocial factors at work, stress, and the well-being of employees and some personality factors to improve and facilitate research, and practical interventions at workplaces.	Applicable in all sectors of the labor market, including industry, the service sector, human service work, and communication.	Long version (141-item) for researchers; medium version (95-item) for work-environment professionals; brief version (44-item) for workplace. Evaluates 2 major categories subdivided into subcategories - 1. Workplace 1.1.Type of production tasks 1.2 Work organization and job content 1.3 Interpersonal relations and leadership 1.4 Work individual interface 2. Individual 2.1 Health and wellbeing 2.2 Personality.	The COPSOQ questionnaire has a Cronbach's alpha for internal reliability of 0.70 indicating that is a valid and reliable tool for workplace surveys, analytic research, interventions, and international comparisons.	Kristensen TS, Hannerz H, Høgh A, Borg V. The Copenhagen Psychosocial Questionnaire - A tool for the assessment and improvement of the psychosocial work environment. Scand J Work Environ Health [Internet]. 2005;31(6):438-49. Available from: https://www.scopus.com/inward/record.uri?eid=2-s2.0-30744433670&doi=10.5271%2Fsjweh.948&partnerID=40&md5=5e4dcb9826f814f861c3a4f9e7330f9c
					Long version (for research), medium version (for companies with more than 30 workers) and		

					short version (for companies with less than 30 workers).		
Cuestionario Psicosocial de Copenhague (CoPsoQ – Istas 21) Year: 2014	Instituto Nacional de Salud Laboral de Dinamarca – Adaptada a España por Instituto Sindical de Trabajo, Ambiente y Salud (ISTAS)	Catalunya	Identify, locate and measure all those working conditions related to the organization of work that may represent a health risk.	Companies with a staff of 25 or more workers in any type of employment.	Psychological demands (cognitive, emotional, sensory and quantitative), active work and skill development (control over time, influence at work, possibilities of development, meaning of work, integration in the company), social relations (conflict, role, leadership reinforcement, social support, group feeling), and lack of compensation (job insecurity and esteem).	All scales, in any of their versions, had values ranged from 0.65 to 0.92 for Cronbach's alpha, which ensures their internal coherence of the different version scales.	Manual del método CoPsoQ-istas21. [cited 2024 Jan 28]; Available from: http://www.copsoq.istas21.net/ficheros/documentosmanual
NIOSH general job stress instrument Year: 1998	National Institute for Occupational Safety and Health.	United States	Provide a generic questionnaire instrument with a valid and reliable core set of scales that can be applied across occupational situations to assess job stressors in the psychosocial work environment.	The general population with an occupation.	Evaluates 246 items related to psychosocial exposure (workload, responsibility, role demands, mental demands, employment opportunities, types of job); individual strain (depression, somatic complaints, job dissatisfaction, illnesses); and stress-strain mediators (social support, self-esteem).	The NIOSH instrument had acceptable reliability (alpha) coefficients ranging from 0.65 to 0.90 (mean = 0.81) and validity.	Hurrell JJ, McLaney MA. Exposure to job stress--a new psychometric instrument. Scand J Work Environ Health. 1988;14(1):27-8.
Cuestionario de Evaluación de Riesgos Psicosociales	Instituto Navarro de		Psychosocial risk assessment questionnaire that allows a general vision of a company	Aimed to any	Evaluates 30 items based on participation, involvement and responsibility (autonomy, teamwork, initiative, control over the task, control over the worker, rotation, supervision, task enrichment). worker, rotation, supervision, task enrichment). Training, information and communication (communication flows, job description, isolation).	Cronbach's	De Navarra G. DOCUMENTACIÓN BÁSICA. [cited 2024 Jan 29]; Available from:

Psicosociales Year: 2002	Salud Laboral en España.	Spain	of a company regarding group cohesion, communication, management and responsibilities.	sector or size of company.	job description, isolation). Time management (pace of work, time pressure, workload, time autonomy, fatigue). Group cohesion (social climate, conflict management, cooperation, conflict management, cooperation, work environment).	alpha of 0.71	http://www.navarra.es
Batería MCMutual-UB Year: 2005-2006	Universidad de Barcelona - Corporación MC Mutual.	Spain	Allows to consider, in the data collection necessary to carry out the psychosocial assessment, the different sources of information in the company combining qualitative tools with other quantitative tools.	The general population with an occupation.	Evaluates 46 items related to organization of work time, communication, training and development, social and group effects, participation, work content, demands of the task and the work environment.	Cronbach's alpha of 0.95 indicating excellent reliability and validity.	Batería MC-UB Método de evaluación de riesgos psicosociales - PDF Descargar libre [Internet]. [cited 2024 Jan 29]. Available from: https://docplayer.es/14018061-Bateria-mc-ub-metodo-de-evaluacion-de-riesgos-psicosociales.html
Escala de Evaluación de Riesgos Psicosociales SUCESO/ ISTAS 21 Year: 2009	Instituto Sindical de Trabajo, Ambiente y Salud.	Chile	Mental health surveillance protocol in organizations.	Any institution affiliated to the social security system.	Complete version 91 items, intermediate version 72 items, and short version 20 items. Evaluates psychological demands, active work, development possibilities, social support in the company, quality of leadership, and dual presence.	Cronbach's alpha > 0.71	SUSESO: Atención de usuarios - Cuestionario de Evaluación de Riesgos Psicosociales en el Trabajo SUSESO/ISTAS21 [Internet]. [cited 2024 Jan 29]. Available from: https://www.suseso.cl/606/w3-article-19640.html
Instrumento de Evaluación de Medidas para la Prevención de Riesgos Psicosociales en el Trabajo Year: 2012	Marchant et Al. Adapted from the National Institute of Health Public of Quebec.	Chile	Contribute to the evaluation and detection of measures taken or management by companies in risk factors.	Organizations and companies including more than 25 workers.	Includes 16 dimensions: organizational communication, job demands, control, workload, social support and work-life balance.	This rigorous validation process ensures that the instrument is robust and effective in assessing and addressing psychosocial risks in the workplace.	Caroca Marchant L, Parra Garrido M, Ludwig Maximilians U, Elisa Ansoleaga Moren M, Diego Portales Celina Carrasco Oñate U, del Trabajo Rodrigo Cornejo Chávez D, et al. EDITOR RESPONSABLE. [cited 2024 Jan 30]; Available from: http://www.ispch.cl/oirs/index.html

Cuestionario de Evaluación de Factores Psicosociales (CEFAP) Year: 2017	Ferrari; Filippi; Córdoba; Napoli & Trotta	Argentina	Specific tool for the evaluation and research of psychosocial risk factors in the workplace.	Employees of public organizations of Argentina.	Includes 12 items: psychological demands, social support, selfsteem, symptomatology, active work, working conditions, insecurity, autonomy, dual presence, job security, health-work relationship, and working motivation.	As it was applied in different parts of South America it was proved suitable for risk assessment. Cronbach's alpha from 0.49 (health-work relationship) to 0.92 (social support and esteem).	Ferrari LE, Filippi GL, Cordoba EH, Cebey MC, Napoli ML, Trotta MF, et al. Cuestionario de evaluación de factores psicosociales (CEFAP): estructura y propiedades psicométricas. 2019 [cited 2024 Jan 29]; Available from: https://ri.conicet.gov.ar/handle/11336/76094
Psychological Risk Management Approach – European Framework (Prima – EF) Year: 2011	Leka S., Cox T., Zwetsloot Gerald I.J.M	Norway	To accommodate all existing psychosocial risk management approaches across Europe.	The general population with an occupation.	Includes 12 categories: Job demands, control, social support, innovation, productivity and quality of work, workers' health, and societal outcome.	Reliability of Cronbach's alpha 0.7.	Psychosocial Risk Management Excellence Framework - Home [Internet]. [cited 2024 Jan 29]. Available from: http://www.prima-ef.org/
Pressure Management Indicator (PMI) Year: 1998	Cary L. Cooper, Stephen Williams.	United Kingdom	The objective of the PMI is to provide a standardized, reliable, compact, and comprehensive tool for measuring occupational stress at both the individual and organizational levels. Aims to help identify individuals who may need remedial help, provide information for the design of appropriate interventions, and better understand occupational stress.	Wide range of working populations, including employees in different industries, sectors, and job types.	Evaluates 120 items: 1. Outcome scales: Job satisfaction, organizational satisfaction, organizational security, organizational commitment, anxiety-depression, resilience, worry, physical symptoms, and exhaustion. 2. Stressor scales: Pressure from workload, relationships, career development, managerial responsibility, personal responsibility, home demands, and daily hassles. 3. Moderator variables: Drive, impatience, control, decision latitude, and the coping strategies of problem focus, life work balance, and social support.	Cronbach's alpha 0.78 reliability and validity as a measure of occupational stress.	APA PsycNet Buy Page [Internet]. [cited 2024 Jan 29]. Available from: https://psycnet.apa.org/buy/1998-12418-003
			To evaluate	The questionnaire	Includes 52 items evaluating:	Cronbach alpha of.876,	

Bateria de Instrumentos para la evaluación de factores de riesgo psicosocial Year: 2010	Ministerio de protección social de la República de Colombia	Colombia	psychosocial risk factors in the work environment, to identify areas for improvement and promote a healthy and productive work environment.	can be applied in a variety of work settings to assess and address specific psychosocial risk factors that may be present in each work context.	leadership, social relationships at work, workload, control over work, role Clarity, rewards, and communication.	which indicates adequate reliability and internal consistency, meeting the suggested minimum levels for research purposes.	Orden L. Batería de instrumentos para la evaluación de factores de riesgo psicosocial.
Cuestionario de Factores Psicosociales Intralaborales (CFP-IL) Year: 2017	Alexis La Cruz, Anayda Gutiérrez, Gisela Blanco, Velis Rodríguez	Venezuela	Validate an instrument to evaluate intra-workplace psychosocial factors, the content of the job and the conditions of the individual that influence the health and performance of Venezuelan workers.	Venezuelan workers.	Evaluates 112 items related to psychological experiences, active work and skill development, social support in the company, and compensation.	The questionnaire is a valid and reliable instrument to evaluate intra-work psychosocial factors in Venezuelan workers with a Cronbach's alpha coefficient greater than 0.60.	De U, Venezuela C, Cruz L, Gutiérrez A;, Blanco A;, Rodríguez G; Salud de los Trabajadores. [cited 2024 Jan 29]; Available from: http://www.redalyc.org/articulo.oa?id=375855579002
Work Stress Questionnaire (WSQ) Year: 2009	Kristina Holmgren, Anna Frantz	Sweden	Early identification of people at risk for sick leave due to work-related stress in the context of primary health care.	Employed Swedish women.	Includes 21 questions related to requirements at work, workload, decision making, conflicts at work, solving conflicts, work assignments, and recreational activities.	Cronbach's Coefficient 0.91.	Holmgren K, Hensing G, Dahlin-Ivanoff S. Development of a questionnaire assessing work-related stress in women – identifying individuals who risk being put on sick leave. Disabil Rehabil [Internet]. 2009 [cited 2024 Jan 29];31(4):284-92. Available from: https://www.tandfonline.com/doi/abs/10.1080/09638280801931287
Brief Job Stress Questionnaire (BJSQ) Year: 2016	Shimomitsu T., Haratani T., Nakamura K., Kawakami N., Hyashi T., Hiro H., Arai M., Miyazaki S., Furuki K., Ohya Y	Japan	To reduce the number of workers with mental health problems due to prevention of mental health problems is a high priority for employers as well as employees. The Brief Job Stress Questionnaire (BJSQ-4) was developed to assess work environment in Japan.	Japanese employees.	Includes 23 items (short version) related to job demands, tasks, workgroup, and organizational outcomes (job resources).	Acceptable levels of internal consistency according to Cronbach's alpha (0.7 - 0.94) and test-retest reliability over one year.	Inoue A, Kawakami N, Shimomitsu T, Tsutsumi A, Haratani T, Yoshikawa T, et al. Development of the new brief job stress questionnaire. Psychosocial Factors at Work in the Asia Pacific: From Theory to Practice. 2016 Jan 1;225-47.
Psychosocial safety climate (PSC-12) Year: 2010	Garry B. Hall, Maureen F. Dollard, and Jane Coward	Australia	Provides a reliable and valid instrument for assessing the organizational climate regarding psychological health and safety in the workplace to capture elements and address the issues of psychosocial related problems in the	General working population in Australia.	Includes 12 items related to management commitment, management priority, organizational communication, and organizational participation or involvement.	Cronbach's Alpha 0.97 which indicates its reliability and was validated in a representative sample of Australian workers.	Hall GB, Dollard MF, Coward J. Psychosocial Safety Climate: Development of the PSC-12. Int J Stress Manag. 2010 Nov;17(4):353-83.

			workplace.				

Table 2. Advantages and disadvantages of the instruments

Instrument	Advantages	Disadvantages
Copenhagen Psychosocial Questionnaire (CoPsoQ)	• Provides a comprehensive assessment of various psychosocial workplace factors • Offers a detailed and adaptable picture of working conditions • Allows for the assessment of multiple outcomes, including job satisfaction, general health, burnout and satisfaction with life	• May require more time and resources for administration and analysis
Effort – Reward – Imbalance (ERI)	• Focuses specifically on effort-reward imbalance, providing targeted insights into this aspect of psychosocial working conditions.	• May provide a more limited assessment compared to the comprehensive coverage of COPSOQ • May not capture the full spectrum of psychosocial workplace factors.
Work Stress Questionnaire (WSQ)	• The grouping of items in different categories of work-related stress was based on empirical findings in a qualitative study • The design combines environmental and personal work characteristics and perceived stress in relation to each item.	• It has high reliability and validity, but further research is required to ensure its validity. • Some of the items had low prevalence and should perhaps have been considered for omission. • The education level was higher in the study population than in general population of women. • The study population is not completely comparable with the general population since only employed women were included.
Brief Job Stress Questionnaire (BJSQ)	• Assess Psychosocial factors at work comprehensively and briefly. • It has a limited burden for respondents and would be useful to occupational health staff and researchers interested in improvement of psychosocial work environment.	• It should be cautious given limited generalizability.
Psychosocial safety climate (PSC-12)	• The questionnaire demonstrated significant levels of variance in each factor, indicating reliability. • The PSC-12 has a unique contribution to assessing organizational climate. • It manages group-level properties and was associated with individual-level psychological distress and work engagement, demonstrating its applicability at different levels within organizations.	• It may be challenging for some individuals to comprehend. • The studies using the questionnaire were limited by their cross-sectional nature which limits the ability to build causality conclusions.
Bateria de Instrumentos para la evaluación de factores de riesgo psicosocial	• Facilitates compliance and management of psychosocial risks in the workplace for employee well-being. • By addressing identified psychosocial risk factors, the questionnaire can contribute to improving the workplace climate, promoting a healthier, more productive, and satisfying environment for employees. • Facilitates early identification of potential psychosocial risk factors, allowing organizations to implement preventive strategies before affecting workers' health and well-being. • Collects worker perceptions, providing valuable insight for understanding staff needs and concerns.	• The questionnaire lacks contextual information, making it challenging to implement effective strategies for addressing identified psychosocial risks. • The questionnaire application may require significant time and resources, especially for large organizations, which can be a limitation for some companies. • The questionnaire has not undergone rigorous validation processes, leading to doubts about its validity and reliability.
Job Content Questionnaire (JCQ)	• The JCQ provided a common set of scales used consistently throughout numerous studies, meaning this consistency allows for comparative assessment capability across databases. • All scales of the JCQ can be used for microlevel, and for assessing the relative risks of individuals' exposures to different settings to predict job-related illness development, psychological distress, and other health outcomes.	• The use of participants' own questionnaire reports about their jobs lead to self-perceptions, which has been a major critique of the validity of instruments such as the JCQ. • The psychological demand scale has been criticized for its sensitivity related to health status and its less consistent ability to predict disease.
NIOSH general job stress instrument	• The NIOSH questionnaire provides a standardized approach and a valid and reliable set of scales for assessing occupational stress across different occupational • The questionnaire allows a comparative analysis of stressor variables among different occupational groups, leading to the identification of probable stressors in specific work environments.	• The set of scales is designed to be valid and reliable across various occupational situations, it may be needed create scales to specific particular occupations. • There is a questionnaire confounding measures of job stressors with responses to stressful conditions.

Discussion

Multiple questionnaires were used to determine psychosocial risks in workers with the objective of protecting occupational health and understanding the social and psychological aspects of work that may impact employees. This information can be used to diagnose, improve, and create practical interventions in the workplace [42]. To this day scales are maintained and used with a validity and reliability that has increased over the years which strongly supports their applicability and encourages studies to evaluate extrapolation capacity like the JCQ first developed in 1998 [12], the ERI first evaluated in 1996[43], the FPSICO arose in 1997 [9] and the NIOSH general job stress instrument emerged in 1998[14] which are being constantly updated according to multiple target populations. On the other hand, there are most recent questionnaires that have tried to refresh and add items that can benefit work experience.

We noted that concerning NIOSH, two studies were conducted; the first analyzed nurses, and the second involved the general population, both in the United States [15][16]. The JCQ was applied to the general population in the United States[13] and was extrapolated to the Spanish context, where it was used on professional drivers [44]. COPSOQ, both versions one and two, has been validated for use in the general population. Studies were conducted in Denmark[30], and its use was endorsed in Venezuela [45]. The second generation of COPSOQ is validated for use in the general population. Specifically, a study for teachers was conducted in England and Portugal [11], and another in Portugal applied to victim support workers[46]. The *Batería de instrumentos para la evaluación de factores de riesgo psicosociales* was endorsed for use in the general population in Colombia, Perú, and Venezuela[8][45][47]. Consequently, it is important to be clear about the studied population for the validation of questionnaires to be applied in our country, especially being conscious that there are different urban and rural areas with inequitable opportunities, therefore it must follow the economy, cultural beliefs, the prevalence of physical and mental illnesses, quality of life and education [8]. Based on our findings, the questionnaires we located were primarily from developed nations. As a result, implementing and validating them in developing nations can be challenging due to contextual differences. The variables identified in this study include psychological demands, social support, workload, leadership, supervision and participation, interpersonal relationships, organizational conflicts, and recreational activities. These variables are based on the demand-control-social support model [7] and the imbalance-effort-reward model [48].

Regarding reliability, all instruments identified and reviewed in this article had Cronbach's alpha values ranging from 0.7 to 0.9, indicating acceptable to excellent internal consistency, reliability, and validity for each instrument used to evaluate psychosocial factors in the work environment of a representative sample. Shorter versions of the scales were better received by workers and had higher Cronbach's alpha coefficients, providing congruent evidence. Implementing various questionnaires can be challenging due to their length and complexity. For example, the 'Bateria de Instrumentos para la evaluación de factores de riesgo psicosocial', COPSOQ, and Job Content Questionnaire have short versions, but they may still be lengthy for workers to complete. In Colombia, evaluating psychosocial aspects in the workplace is not a priority for most people. The periodicity of the instrument has not been consistently applied.

The COPSOQ, Job Content Questionnaire, and the 'Bateria de Instrumentos para la evaluación de factores de riesgo psicosocial' are the most widely used questionnaires due to their demonstrated international validity. They have been adapted for use in various countries.

In 2011, a study was conducted in Colombia[4] to compare different questionnaires used to evaluated psychosocial factors. Since then, newer instruments have been developed and improved in other Latin American countries, such as Chile [10], Peru [24], and Venezuela [38] where *Baterías* have been implemented and gained greater importance in the last decade, particularly after the 2020 pandemic and the rise of remote works. One of the main purposes of this brief literature review was to approach how the COVID-19 pandemic precipitated an enormous shift in the landscape of work modalities, generating a rapid transition towards remote and flexible working arrangements considering the role psychosocial risk factors played in this transition. This transformation has been rough for some companies and workers due to the changes it involves, it also has required a reevaluation of traditional workplace norms and practices, encouraging organizations to adapt to new realities. There have been some considerations which include the implementation of policies to safeguard employees' well-being in virtual environments, ensuring robust technological infrastructure to support remote collaboration, and redefining performance metrics to account for remote work dynamics [49].

However, few studies have been carried out to evaluate the effect this change of work modality has on the employees and on the psychosocial risk factors they are faced with. In 2023, Buonomo et al wanted to investigate the impact of remote working on job satisfaction, with a specific focus on the role of a sense of community and perceived structural support, their study involved 635 participants aged 21 to 70 with 33% having remote working experiences before the first Italian lockdown in March 2020. The research protocol included scales taken from COPSOQ III (job demands, sense of community, job satisfaction) and a questionnaire to evaluate how these variables interacted with each other. They found out that the sense of community at work was identified to play a crucial role in mediating the relationship between job demands and job satisfaction for remote working, making workers experience positive emotions. Also, a feeling of belonging and trust among remote employees is fundamental in the online context, which is why organizations should focus on promoting trust-building activities and creating a supportive work culture, especially for remote workers. [49].

This consideration is crucial to understand the need for more investigation on this scenario, considering that there are no instruments designed to specifically evaluate the psychosocial risk factors working in remote conditions or a hybrid manner. Nevertheless, having reviewed the available instruments some of them can be applied to have some modifications, the ones that could be useful in this particular situation could be the COPSOQ, which has been validated nearly all around the world, and also the *Batería de Instrumentos para la evaluación de factores de riesgo psicosocial* for our context including aspects such as job isolation, loss of corporative identity, informatically fatigue, permanent digital connectivity and the social interactions between workers and their superiors, among others.

Conclusion

Numerous validated questionnaires are available worldwide to reduce the incidence of psychosocial risk factors in workers. These questionnaires evaluate various

variables related to job demands, rewards, social relationships, control over work, job insecurity, and organizational conflicts. It is important to note that these evaluations should be objective and avoid subjective evaluations unless clearly marked as such. When evaluating a population, it is crucial to select a questionnaire that is suitable for their specific needs. This includes considering factors such as validity, application time, and the governmental, organizational, and individual context. However, due to the lack of research on remote and combined workers post-pandemic, completing questionnaires has been uncertain. Despite this, COPSOQ has proven to be a useful tool in this context and is recommended for evaluating this type of worker.

Limitations

The study's limitation was the researchers' inability to access non-open access databases.

Conflicts of interest

The authors declare that they have no conflict of interest.

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