

TOWARDS ENVIRONMENTAL PROTECTORS OF HOSPITAL WORK STRESS: ENPROS, A PROPOSED MEASUREMENT INSTRUMENT

Paula Rosaisabel Astudillo Díaz

Ph.D. Professor of the Nursing Department,
Faculty of Medicine. Universidad de La
Frontera, Temuco; Chile
ORCID: 0000-0003-0367-3270

Horacio Miranda Vargas

Master Biostatistics. Professor of Agricultural
Production Department, Universidad de La
Frontera, Temuco; Chile
ORCID: 0000-0002-4465-7157

Ximena Osorio Spuler

Ph.D. Director of the Nursing Department,
Faculty of Medicine, Universidad de La
Frontera, Temuco; Chile
ORCID: 0000-0003-1885-8016

Sara Barrios Casas

Ph.D. Professor of the Nursing Department,
Faculty of Medicine, Universidad de La
Frontera, Temuco; Chile
ORCID: 0000-0002-8180-5147

Silmara Meneguim

Ph.D. Professor of the Nursing Department
`Universidade Estadual de São Paulo`
Campus: Botucatu; Medicine course
Botucatu; Brazil
ORCID: 0000-0003-3853-5134

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Tania Alicia Ross Pincheira

Surrogate Nurse in Infection Control
Program; Hospital Dr; Hernán Henríquez
Aravena, Temuco; Chile
ORCID: 0000-0002-7246-8863

Abstract: This article reports the development of the ENPROS instrument (Environmental Protectors against hospital work Stress) that measures environmental protectors of hospital work stress. ENPROS was originally an instrument with five dimensions: Organization, Job, Leadership, Physical Environment and Team work-Psychosocial Environment and 45 items. According to the progress of the study reported in the article, it resulted in an instrument with 5 dimensions and 42 items. Exploring environmental stress protectors is not only relevant because it constitutes a way to promote health from a perspective based on the participation of health personnel in their own internal dynamics, but also because it provides a paradigm shift in relation to the conceptions of the health care, moves the point of view from risk factors to protective factors. The objective was to assess the validity and reliability of the ENPROS measurement instrument with 5 dimensions and 42 items, in health personnel from public and private hospitals in the Araucanía Region, Chile, through confirmatory factor analysis. 276 participants from 2016-2017, medical and nursing health professionals (mean age 35.02 years; SD = 10.5; 62% women). In the analysis, two models were obtained, the second shows acceptable goodness-of fit parameters, ENPROS with 5 dimensions and 40 items. The present study provides empirical evidence that supports the validation of the instrument of environmental protectors of hospital stress and highlights which of these protectors are considered most important by the health personnel themselves who work in hospital centers in the Region of La Araucanía, Chile.

Keywords: Workplace stress protectors; health promotion; Psychological stress; Health personnel; Work stress.

INTRODUCTION

Work stress occurs when the individual's resources are not sufficient to meet the demands of a situation, being the main modern health and safety challenge since it has adverse health and occupational outcomes. Regarding the biological effects of stress, these can be reflected in cardiovascular problems, musculoskeletal problems, mental health problems (such as reduced capacity to regulate negative emotions, nervous breakdowns) or in gastrointestinal pathologies, workplace injuries, affected immune functions., among others (Albaladejo et al., 2004); Bakker, Killmer, Siegrist, & Schaufeli, 2000; Schaufeli, Salanova, González-Romá, & Bakker, 2002; Armita Golkar; Emilia Johansson Maki Kasahara; Walter Osika Alexander Perski Ivanka Savic, 2014). One of the biological effects is the increase in blood pressure, which can contribute to the appearance of chronic hypertension, cerebrovascular diseases, arteriosclerosis and myocardial infarctions, among other pathologies. Increased blood pressure is in itself a risk factor for the development of atherosclerosis, so it is likely that work stress contributes to cardiovascular morbidity and mortality. (Serrano, Moya, & Salvador, 2009). On the other hand, the consequences of work stress not only affect the people who experience it but also family and friends, with effects that can affect the organization. (Lima et al., 2003 Peiró, 2001). It also affects lifestyle, substance abuse, anxiety and depression. (Rodrigue-Rivera, 2018) (Losada-Morales, 2021).

Four perspectives of stress are highlighted: stress as a stimulus, stress as a response, stress as a transaction, and stress as a result of interaction. It must be noted that the important thing about approaching these perspectives to define stress is to lay the foundations that allow determining how to measure work stress and what to measure.

(Patlán Pérez, 2019). From these perspectives, there are models to explain work stress such as the demand-control-social support model: (Van der Doef & Maes, 1999) that poses high demands and low control, there is low well-being. A buffer would be social support.

Besides, the Demands-Resources Model: (Bakker & Demerouti, 2013) It integrates demand-control and effort-reward imbalance models. Introduces Work Commitment (engagement) as a possible mediator that reduces the negative effect. It refers to the balance between work overload, time pressure and control as predictors of psychological stress and illness. Work stress is the result of this imbalance. And the Organizational Justice Model (Jason A. Colquitt, 2001) If the perception of treatment is fair, it is most likely that staff will try to respond by displaying behaviors that benefit their organization. It provides bases to promote value and respect for people with consequences on people's achievements, feelings and attitudes.

In the hospital environment, studies indicate that long work hours, work intensity, and lack of role clarity are associated with anxiety and depression among medical and nursing professionals. (Michie, 2003).

The problem of work stress in healthcare personnel in Chile has been documented in terms of occupational diseases and occupational risk factors, preferably linking it to medical and nursing professionals, in whom high scores are reported on the scales of emotional exhaustion, treatment depersonalized with colleagues and users, and low personal accomplishment, also significant predictors of psychological or physical symptoms of stress such as greater role conflict, less support from peers and superiors. Meanwhile, predictors such as job autonomy and role clarity were only marginally significant. (Astudillo, Losada, Schneeberger, & Coronado, 2018; Avendaño,

Bustos, Espinoza, García, & Pierart, 2009; Avendaño & Leiva, 2011; Bitran et al., 2017; Davidson et al., 2013; D Orders, 2004; Melita Rodríguez, Cruz Pedreros & Merino, 2008; Sánchez D et al., 2009; Ansoleaga, Toro C, Godoy C, Stecher, & Blanch, 2011; Guic S, Mora O, Rey C, & Robles G, 2006). personal characteristics (Work Locus of Control Scale, Ways of Coping Check List

The instruments available in the literature to evaluate the issue of work stress focus on exhaustion at work, health risk, irritability, emotional exhaustion, depersonalization, physical effects, among others. (Weaver, 2006) (Fu, 2015) (Jaracz, 2017) (Dreher, 2019) (Alonso, 2020).

And we can ask ourselves, how do healthcare personnel deal with hospital work stress in the face of the stress inherent to their role?

In order to focus on stress protectors, we focus on the transactional cognitive theoretical model. (Folkman & Lazarus, 1988) based on the interaction between the person and their environment. It is a personal appraisal of the situation as a threat, harm, loss, challenge or benefit. The person carries out a primary evaluation, where he values the stressful demand, as a threat, harm, loss, challenge or benefit. Subsequently, the person carries out a secondary evaluation where the ability to control or confront the threat is assessed. Here the questions arise: What resources do I have?, personal or environmental. Next comes reappraisal, which may involve a reduction or increase in stress.

By knowing the lack of instruments to evaluate environmental protective factors of work stress, progress was made to develop the instrument of this article. The development of the items was based on a qualitative exploration of grounded theory design, which delved into the environmental resources used by health personnel in Temuco to face threatening situations and maintain their

well-being. In 2005-2006, a qualitative study was carried out (Astudillo et al., 2009) based on symbolic interactionism that emphasizes the meanings that the people studied put into practice to build their social world. The analysis was based on the grounded theory technique (Cooney, 2010; De Chesnay and Banner, 2015; Rieger, 2018). Health personnel working in the intensive care unit, anesthetic recovery, emergency, and adult hospitalized services in the public and private areas of the Araucanía Region were interviewed. We sought to deepen and understand what they viewed as protective elements of stress in their work environment. The guiding questions that were used were: What do you use to protect yourself from stress? What elements are distinguished in the work environment considering the physical, organizational, and psychosocial characteristics? What do you rely on to maintain your health so that stress does not harm you? An inductive textual analysis was carried out that allowed each category to be analyzed together, establishing the properties of each one. As a result, the participants' stories revealed five central themes in the construct of stress protectors that are related to: 1) organization, 2) job; 3) leadership; 4) physical environment; 5) team work-psychosocial environment, and a list of 45 items that emerge from the codes.

Once the item formulation was completed, the next step was to determine if the number of items of the dimensions that we wanted to evaluate met the content that we wanted to evaluate, called rational validity. (Lagunes-Córdoba, 2017), so expert validation is used. Three expert focus groups were held in which 6 medical professionals, 10 nursing professionals and 11 nursing assistants participated. A qualitative analysis was carried out to evaluate the discriminative capacity of each item based on the frequencies observed in each of the assigned response options. Joint agreements

were reached regarding the systematization of perceptions into items, their wording and the categories or dimensions that make up the model, reaching a common agreement. The experts were in charge of assessing whether the items in the instrument were clear, precise, relevant, coherent and exhaustive. It could be inferred that, with respect to content validity, the qualitative contributions of the experts were considered appropriate for the purpose for which it had been constructed. Only in the observations of an item that refers to the physical environment with the “possibility of leaving the confinement to a patio or the street”, were there differences in the group of medical and nursing professionals, in which the agreement values They were minor. However, they remained in the questionnaire to observe their subsequent behavior according to the quantitative evaluation of professionals.

The benefits derived from the suggestions improved validity since they directly affected the content of the items and some aspects related to their structure. A model of 5 dimensions and 45 items to be evaluated was considered, called Environmental PROtectors against hOspital work Stress (ENPROS).

In the year 2007-2009, validity was sought by projecting towards the health personnel of the Araucanía Region, in hospitals in the province of Malleco, Cautín and a highly complex private hospital in the Region, with validation being carried out in a sample of 444 people. (Astudillo-Díaz, 2021), 14% medical professionals, 25% nurses, 61% nursing assistants, with an average age of 38.2 (SD 11.1) and an average work experience of 14.3 years (11.4 ds). Confirmatory factor analysis and analysis of invariance were carried out according to: female and male gender; the public and private hospital system; nursing professionals (involved nurses and nursing assistants) and medical professionals; Work experience up to 5 years and more than 5

years. For this, the Analysis of the covariance structure was used (Satorra & Bentler, 1994), with the PLS (Partial Least Squares) technique (W. W. Chin, 2000; W. Chin & Marcolin, 2003) in Excel (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005) through the multigroup t test and the permutation test. The hypotheses tested were: Ho: the parameters are not significantly different; H1: the parameters are significantly different (Tenenhaus et al., 2005). The model that emerged maintained the 5 dimensions, but with 42 items. The 95% confidence interval of the RMSEA obtained ranged from 0.068 to 0.076, with a χ^2/df ratio that exceeded the value 2 and the CFI and NFI indices close to the value 0.95 in a sample of more than 250 subjects with an instrument of more than 30 items. In general, the indices indicated an acceptable adjustment of the measurement instrument. In the samples by gender of the participants, it was noted that the dimensions leadership and team work psychosocial environment were more significant for the female gender. It was observed that the internal consistency measures obtained in all cases were equal to or greater than 0.75, considered acceptable as members of the ENPROS instrument.

From the analysis of validity and reliability, with the cases collected from 2007 to 2009, the ENPROS measurement instrument with 5 dimensions and 42 items emerged, with the items “The organization must use email and the Internet for communication” being eliminated, and the item: “In each job there must be the possibility of making decisions according to one’s own criteria.” Taking into consideration that the items: “Have flexible rules,” “The functions and objectives of each job are written and defined,” and “There must be natural light,” were more important items for those who had work experience of more than 5 years.

After describing the progress, the great challenge in the hospital work context consists of identifying and enhancing the factors that protect and benefit health in situations of hospital stress. The creation of organizations or work environments that promote the well-being of workers is a categorical imperative for hospital organizations (Barrios Casas & Paravic Klijn, 2006; PAHO, 2000). In fact, the workplace, where most of the day is spent, provides a setting that offers people a wide range of situations that shape their life experience, experiences that can be modified depending on the nature of the current work environment. (Lindström & Eriksson, 2006).

We are looking for new evidence of validity of the ENPROS instrument, in order to have a greater scope regarding the knowledge of these protectors.

The relevance of the proposal of this report lies in generating useful knowledge to propose health promotion strategies for hospital workers in the La Araucanía Region, through tools that provide positive work life experiences, with direct impact on both health of the healthcare professional and the adequate coping with stress, as well as the quality of care for users.

RESEARCH QUESTION

What is the validity and reliability of the instrument called ENPROS with 5 dimensions and 42 items of environmental protectors of hospital work stress for the Region of La Araucanía, Chile in the year 2016-2017?

General objective: Evaluate validity and reliability of the ENPROS instrument for evaluating protective factors of hospital work stress.

Hypothesis: The ENPROS instrument of five independent and simple factors will be adjusted with data from the year 2016-2017.

METHODOLOGY

Design: Confirmatory factor analysis. Carried out in a Public Regional Hospital of greater complexity, a reference in the southern area of Chile, and in a private Clinic with greater care complexity in the Region of La Araucanía, in the period 2016-2017.

Participants: 276 medical professionals, nursing professionals and nursing assistants.

It was intentionally using the criterion of 6-7 subjects per items (Morales Vallejo, 2017).

A total of 51% coming from a public hospital and 49% from a private hospital.

The average age was 35.02 years (sd=10.45) (min 20-max 68) and average work experience was 9.98 (sd=9.73). (min 0-max 48).

Variables and instrument: ENPROS was used with 42 items distributed in five categories of stress protectors in the hospital work environment according to the dimensions: 1) organization (8 items), 2) job (4 items), 3) management (9 items), 4) physical environment (8 items) and 5) team work psychosocial environment (13 items). They were asked: "How important are the following statements to you?" With responses on a Likert-type scale of no importance (1), to maximum importance (5). The following demographic and work variables were evaluated: sex, age, marital status (single/ married/ divorced/ widowed/ cohabiting), years of work experience, type of activity (doctor/ nurse/ nursing assistant) and role performed (emergency/ recovery/ hospital services).

Data collection: Each hospital management was personally contacted to authorize free access to the hospital centers and reach the participants. There was an interviewer in each hospital who was in charge of administering the questionnaire directly, but due to the shift modality and official needs, it was necessary to opt for self-application and leave some of them to health professionals. Due to the work

systems of the participants, several visits were made to each of the hospitals. The approximate time to complete the questionnaire was 10 minutes.

Data analysis: Confirmatory factor analysis. Demographic and work variables were described with frequencies and percentages. The variables age, work experience and the items of the instrument with the mean, standard deviation and minimum and maximum values. The maximum likelihood method was used to estimate the instrument. (G. Mateos, 2011) (Thompson, 2004). The composite reliability of each subscale was calculated from the standardized loadings obtained through confirmatory factor analysis with a measurement model estimated using the maximum likelihood method. To evaluate the model, the X2 likelihood ratio index, the RMSEA (Root Mean Square Error of Approximation) index and the X2 index divided by the degrees of freedom were used. RMSEA values less than .05 are considered indicative of good fits and values between .05 and .08 are considered reasonable fits. (Browne, M.W. & Cudeck, 1993). Values between 2 and 3 of the X2/df index indicate good fit, with values up to 5 being acceptable. (Escobedo Portillo, Hernández Gómez, Estebané Ortega, & Martínez Moreno, 2016). Additionally, the GFI (Goodness of Fit Index), the AGFI (Adjusted Goodness of Fit Index), the CFI (Comparative Fit Index) and the NFI (Normed Fit Index) were used as goodness of fit indices. The values of these four indices range between 0 and 1 and values greater than 0.9 are indicative of a good model fit. For convergent validity, one of the acceptance criteria was that the average extracted variance of the dimension had to be greater than 0.5, meaning that the dimension shares more than half of its variance with its indicators, the rest being the variance due to measurement error (Fornell & Larcker, 1981) (Joseph F. Hair,

Black, Babin, & Anderson, 2014). The Wald test was used to evaluate the significance of the model parameters.

The significance level used in all analyzes was 0.05. The discriminant validity between the subscales was verified according to the criterion of Fornell and Larcker (1981), in which the variance shared by the dimension with its items must be greater than the variance shared with the other dimensions.

Ethical considerations: The application of the instrument was approved by the Ethical-Scientific Committee of the University of La Frontera, Araucanía-Chile, as stated in Minutes No. 036/2016, under informed consent, within the framework of the proposal evaluation project of the Vice-Rector's Office of Research and Postgraduate Studies, Directorate of Research and Development of the University of La Frontera DI16-0047, 2016 competition for DIUFRO scientific research projects.

RESULTS

The table 1 shows the distribution of the participants based on sociodemographic and work variables such as gender, marital status, the activity they carry out, the function they perform at work and the hospital service in which they provide their services. 37.68% live as a couple (married or cohabiting), almost half are nursing assistants and 99.3% perform direct care functions.

	Frequency	Percentage %
Gender		
Male	105	38
Female	171	62
Marital status		
Single	151	54.7
Married	84	30.4
Divorced	20	7.2
Widower	1	0.3
Cohabitant	20	7.2
Activity		
Doctor	62	22.5
Nurse	88	31.9
Nursing assistant	126	45.7
Function		
Executive	2	0.7
Direct attention	258	93.5
Both	16	5.8
hospital service		
ICU-ICU-Emergency	161	58.3
Recovery Pavilion	37	13.4
Hospitalization services	78	28.2

Table 1. Demographic and work characteristics of the participants in the second phase (n=276)

DESCRIPTIVE STATISTICS OF THE ENPROS ITEMS WITH 5 DIMENSIONS AND 42 ITEMS

The mean scores of the 42 items are shown in Table 2. Most of the items obtain average scores greater than 4. In general, the most valued items are item 36: "There must be language without shouting or stridency within the team" (mean=4.789) and item 41: "There must be respect for the work of others" (mean=4.789). The least valued are item 8: "The organization must have flexible rules" (mean=3.74) and item 40: "There must be the possibility of sharing something delicious to eat" (mean= 3.79). When analyzing the items by dimensions, the most valued in the organization dimension is item 4: "The organization must provide the material and technological resources necessary for the

work" (mean=4.75) and the least valued is item 8. : "The organization must have flexible rules" (mean=3.74). In the dimension corresponding to the job, the most valued item is 9: "In each job there must be people who have the skills, attitudes and knowledge required by the work they do, that is, ideal" (mean=4.76) and the least valued is item 11: "In each job the elements that are taken into account to evaluate performance must be made known" (mean=4.53) and item 12: "They must be written and defined the functions and objectives of each job" (mean=4.53).

Regarding the leadership dimension, the item that obtains the highest average score is 17: "The leadership must ensure that officials are permanently trained." (mean=4.75) and the one that obtains the lowest score is 14: "The leadership must trust and rest in the abilities of the officials to carry out the work" (mean=4.07). In relation to the physical environment dimension, what the participants value most is item 26: "There must be equipment that is functioning optimally" (mean=4.85) and the item that they value the least is item 27: "There must be spaces to develop multiple activities such as caring for the family or some group discussion" (mean=4.31). Finally, regarding the team work psychosocial environment dimension, the most valued items are 36: "There must be a language without shouting or stridency within the team" (mean=4.789) and 41: "There must be respect for work of the others" (mean=4.789) and the least valued was item 40: "The possibility of sharing something "delicious" to eat" (mean=3.79).

Item	Variable	Average	Dev. Typ.	Minimum	Maximum
Dimension: Organization					
1	The organization must support the training of its officials with time and flexible hours.	4,561	0.676	1.00	5.00
2	The organization must provide legal support to its workers in conflict situations.	4,630	0.655	1.00	5.00
3	The organization must have its goals defined.	4,583	0.618	2.00	5.00
4	The organization must provide the material and technological resources necessary for the work.	4,757	0.541	1.00	5.00
5	The organization must have a secretary in each unit for administrative tasks.	4,423	0.766	1.00	5.00
6	The organization must solve the problems by implementing changes.	4,391	0.776	1.00	5.00
7	The organization must have the rules defined throughout its scope of action.	4,536	0.699	1.00	5.00
8	The organization must have flexible rules.	3,742	1,052	1.00	5.00
Dimension: Workplace					
9	In each job there must be coherence between the professional role and the activities carried out.	4,655	0.585	2.00	5.00
10	In each job there must be people who have the skills, attitudes and knowledge required by the work they do, that is, ideal.	4,768	0.486	3.00	5.00
11	In each job, the elements that are taken into account to evaluate performance must be made known.	4,536	0.645	2.00	5.00
12	The functions and objectives of each job must be written and defined.	4,536	0.710	2.00	5.00
Dimension: Headquarters					
13	The leadership must be involved in the work of its officials.	4,416	0.784	1.00	5.00
14	The leadership must trust and rest in the capabilities that the officials have to carry out the work.	4,076	0.936	1.00	5.00
15	The leadership must consult the opinion of the officials.	4,489	0.802	1.00	5.00
16	The leadership must respect the decisions made jointly with the officials.	4,612	0.670	1.00	5.00
17	The leadership must ensure that officials are permanently trained.	4,757	0.574	1.00	5.00
18	The leadership must be upright and fair.	4,746	0.572	1.00	5.00
19	The leadership must supervise the work of the officials.	4,442	0.713	1.00	5.00
20	The leadership must have person-to-person communication with officials.	4,525	0.735	1.00	5.00
21	Management must value the contribution of its officials in meeting objectives.	4,666	0.612	1.00	5.00
Dimension: Physical environment					
22	There must be natural light.	4,365	0.786	2.00	5.00
23	There must be windows that allow you to look outside.	4,329	0.788	1.00	5.00
24	It must remain clean and free of unpleasant odors, ventilated.	4,753	0.523	2.00	5.00
25	It must have a pleasant ambient temperature depending on the season of the year.	4,663	0.608	2.00	5.00
26	There must be equipment that is functioning optimally.	4,851	0.413	2.00	5.00
27	There must be spaces to develop multiple activities such as family care or some group discussion.	4,311	0.807	1.00	5.00
28	There must be a space that allows privacy.	4,579	0.658	2.00	5.00
Dimension: Team work psychosocial environment					
29	There must be trust between members of the work team.	4,529	0.678	2.00	5.00
30	There must be a sense of belonging to the team, a team feeling.	4,550	0.633	2.00	5.00
31	Each team member must be committed to meeting the organization's objectives.	4,670	0.515	3.00	5.00

32	Each team member who attends a training or conference must share the knowledge acquired.	4,250	0.781	2.00	5.00
33	Work experiences must be shared.	4,173	0.776	2.00	5.00
34	There must be the possibility of leaning on peers in the face of insecurities or challenges.	4,652	0.548	2.00	5.00
35	Each team member must complete all of their tasks.	4,663	0.564	1.00	5.00
36	There must be a language without shouting or stridency within the team	4,789	0.481	2.00	5.00
37	There must be an entertaining and good-humoured work environment.	4,518	0.673	2.00	5.00
38	There must be a cordial, affectionate and friendly work environment.	4,721	0.544	2.00	5.00
39	There must be the possibility of having moments of camaraderie, intimacy and openness.	4,184	0.808	2.00	5.00
40	There must be the possibility of sharing something delicious to eat.	3,797	1,024	1.00	5.00
41	There must be respect for the work of others.	4,789	0.458	2.00	5.00
42	There must be a family vision of the work team, a family with conflicts, compromises, but united, sentimentally linked.	3,873	0.903	1.00	5.00

Table 2. Scores and standard deviations of each item of the ENPROS measurement instrument

χ^2	gl	p	χ^2/df	CFI	GFI	NFI	AGFI	RMSEA
1930.12	809	<0.001	23	0.94	0.75	0.89	0.72	0.071

Table 3. ENPROS goodness-of-fit parameters

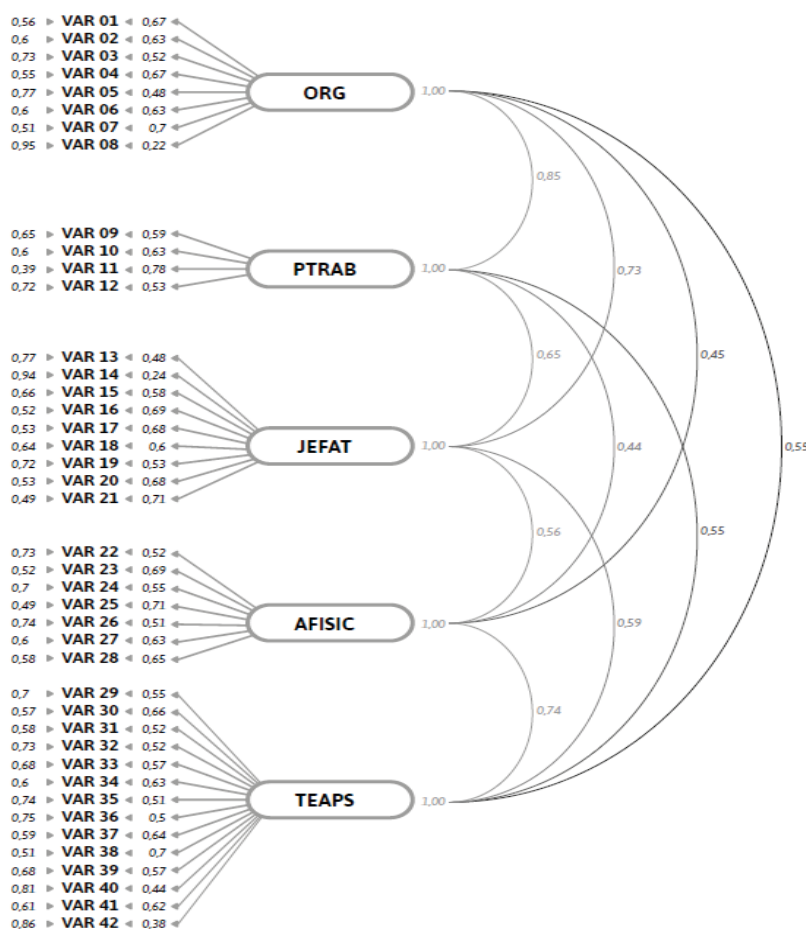


Figure 1. Estimated model with standardized values of the ENPROS 2 items

Note: Source: Own elaboration from Lisrel diagram.

Construct	Item	Manifest variables	Stand	Alfa Comp	Var. Ext.			
Organization	O1	Support with time and flexibility in training	0.67	0.811	0.320			
	O2	Provide legal support in conflicts	0.63					
	O3	Have defined goals	0.52					
	O4	Provide material and technological resources	0.67					
	O5	Secretary available in unit	0.48					
	O6	Solve problems by implementing changes	0.63					
	O7	Defined standards	0.7					
	O8	Flexible rules	0.22					
			4,520					
			20,430					
position of job	P9	Coherence professional role and activities	0.59	0.730	0.408			
	P10	Suitable people	0.63					
	P11	Know performance evaluation elements	0.78					
	P12	Functions and objectives of each position	0.53					
			2,530					
			6,400					
Leadership	J13	Get involved in civil servant work	0.48	0.822	0.352			
	J14	Trust in official abilities	0.24					
	J15	Consult official opinion	0.58					
	J16	Respect decisions made together	0.69					
	J17	Permanently trained officials	0.68					
	J18	Straight and fair	0.6					
	J19	Supervise work officials	0.53					
	J20	Person to person communication	0.68					
	J21	Assess the contribution of officials	0.71					
						5,190		
						26,936		
Physical environment	A22	natural light	0.52	0.806	0.376			
	A23	Windows to look outside	0.69					
	A24	Clean, no bad smells, ventilated	0.55					
	A25	Pleasant temperature	0.71					
	A26	Equipment working	0.51					
	A27	Space to meet family or group discussion	0.63					
	A28	Space for privacy	0.65					
						4,260		
			18,147					
Team work _atmosphere psychosocial	T29	Trust between team members	0.55	0.870	0.329			
	T30	Sense of belonging to the team	0.66					
	T31	Commitment to organizational objectives	0.65					
	T32	Share knowledge	0.52					
	T33	Share work experiences	0.57					
	T34	Lean on peers in the face of insecurities	0.63					
	T35	Complete tasks	0.51					
	T36	Language without shouting	0.5					
	T37	Entertaining and good humor	0.64					
	T38	Cordial, affectionate and friendly	0.7					
	T39	Moments of camaraderie	0.57					
	T40	Share something delicious to eat	0.44					

T41	I respect the work of others	0.62
T42	Family vision	0.38
		7,940
		63,043

Table 4. Standardized factor loadings, composite alpha and variance extracted from the 42 items grouped into five ENPROS dimensions

χ^2	gl	p	χ^2/df	CFI	GFI	NFI	AGFI	RMSEA
1775.28	730	<0.001	2.4	0.94	0.6	0.90	0.73	0.072

Table 5. Goodness-of-fit parameters of the ENPROS 3 measuring instrument

ENPROS CONFIRMATORY FACTOR ANALYSIS 5 DIMENSIONS, 42 ITEMS

Tables 3 and Figure 1 present the results of the confirmatory factor analysis of the ENPROS instrument. Table 3 includes the goodness-of-fit indices of the instrument. The 90% confidence interval of the RMSEA obtained ranged from 0.067 to 0.075, which is higher than the limit considered acceptable. However, the χ^2/df ratio exceeded the value 2 and the CFI and NFI indices close to the value 0.95 are indicative of an acceptable fit.

Figure 1 shows the estimated model with the manifest variables, their standardized values and the latent variables of the instrument.

Table 4 shows the standardized factor loadings, the composite alpha values and the variance extracted from the five factors: organization, job, leadership, physical environment, team work psychosocial environment. The composite alpha values are all greater than 0.7. The extracted variance values do not exceed the value 0.5.

In turn, in Table 4 it can be seen that the variables were grouped into the five identified factors and the discriminant validity is met. The standardized factor loadings of items 8: "The organization must have flexible rules" and item 14: "the leadership must trust and rest in the abilities of officials to carry out the work" are less than the variance extracted from the construct.

A frequently used criterion to select the item is that the standardized factor loading is greater than the variance extracted from

each factor. For these reasons, it was decided to exclude items 8 and 14 from subsequent analyses.

REDESIGN OF THE INSTRUMENT: ENPROS CONFIRMATORY FACTOR ANALYSIS 5 DIMENSIONS, 40 ITEMS

The ENPROS measurement instrument, with 5 dimensions and 40 items, constitutes a redesign of the ENPROS instrument. Regarding the goodness of fit indices: the 95% confidence interval of the RMSEA obtained ranged from 0.068 to 0.076, with a χ^2/df ratio that exceeded the value 2 and the CFI and NFI indices close to the value 0.95 in a sample of more than 250 subjects with an instrument of more than 30 items. In general, the indices indicated an acceptable adjustment of the measurement instrument. (TABLE 5)

Figure 2 shows the estimated model with the manifest variables, their standardized values and the latent variables.

Table 6 shows the standardized factor loadings, the composite Alpha values and variance extracted from the ENPROS measurement instrument of the items corresponding to the five grouped factors: organization, job, management, physical environment, team work psychosocial environment, with values of alpha composed about 0.7. The standardized factor loadings are high and the variances extracted from the factors remain at a value less than 0.5.

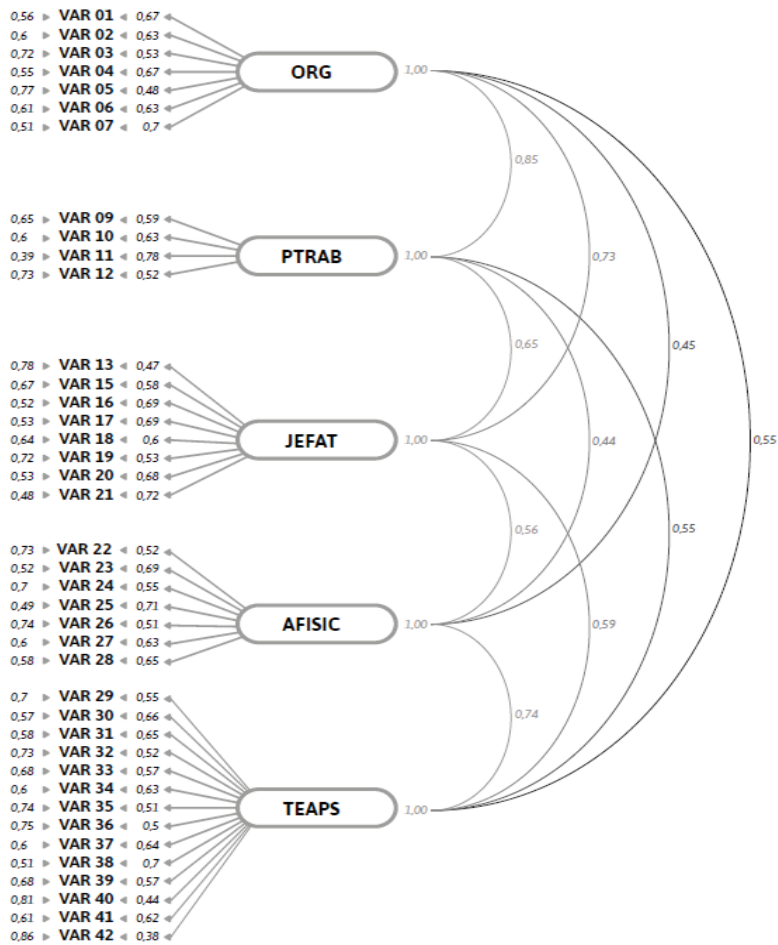


Figure 2 Estimated model with standardized values of the ENPROS items

Note: Source: Own elaboration from Lisrel diagram.

Dimension	Item	Manifest variables	Std factor loading	Alfa Comp.	Var. Ext.
Organization	O1	Support with time and flexibility in training	0.67	0.8303	0.3672
	O2	Provide legal support in conflicts	0.63		
	O3	Have defined goals	0.53		
	O4	Provide material and technological resources	0.67		
	O5	Secretary available in unit	0.48		
	O6	Solve problems by implementing changes	0.63		
	O7	Defined standards	0.7		
			4.3100		
			18,576		
position of job	P9	Coherence professional role and activities	0.59	0.7277	0.4060
	P10	Suitable people	0.63		
	P11	Know performance evaluation elements	0.78		
	P12	Functions and objectives of each position	0.52		
			2.5200		
			6,350		
Leadership	J13	Get involved in civil servant work	0.47	0.8348	0.3914
	J15	Trust in official abilities	0.58		

	J16	Respect decisions made together	0.69		
	J17	Permanently trained officials	0.69		
	J18	Straight and fair	0.6		
	J19	Supervise work officials	0.53		
	J20	Person to person communication	0.68		
	J21	Assess the contribution of officials	0.72		
			4.9600		
			24,601		
Physical environment	A22	natural light	0.52	0.8060	0.3761
	A23	Windows to look outside	0.69		
	A24	Clean, no bad smells, ventilated	0.55		
	A25	Pleasant temperature	0.71		
	A26	Equipment working	0.51		
	A27	Space to meet family or group discussion	0.63		
	A28	Space for privacy	0.65		
			4.2600		
			18,147		
Team work_ psychosocial environment	T29	Trust between team members	0.55	0.8704	0.3293
	T30	Sense of belonging to the team	0.66		
	T31	Commitment to organizational objectives	0.65		
	T32	Share knowledge	0.52		
	T33	Share work experiences	0.57		
	T34	Lean on peers in the face of insecurities	0.63		
	T35	Complete tasks	0.51		
	T36	Language without shouting	0.5		
	T37	Entertaining and good humor	0.64		
	T38	Cordial, affectionate and friendly	0.7		
	T39	Moments of camaraderie	0.57		
	T40	Share something delicious to eat	0.44		
	T41	I respect the work of others	0.62		
	T42	Family vision	0.38		
			7,940		
			63,043		

Table 6. Standardized factor loadings, composite alpha and variance extracted from the 40 items grouped into five ENPROS factors

NAME	Organization	Workstation	Leadership	Physical environment	Team work -Psychosocial environment
Organization	1.0				
Workstation	0.86	1.0			
Leadership	0.73	0.68	1.0		
Physical environment	0.49	0.44	0.56	1.0	
Team work - psychosocial environment	0.56	0.55	0.58	0.74	1.0

Table 7. Correlations between the dimensions of the ENPROS 3 measuring instrument
PHI Lisrel

Table 7 shows the correlations between the latent variables of the instrument: organization, job, leadership, physical environment, team work-psychosocial environment.

Regarding discriminant validity, Table 8 shows the squared correlations between the dimensions and the variances extracted from each dimension. Six of these values are less than the variance extracted.

Figure 3 shows the statistical significance of the parameters of the estimated solution for the five-dimensional ENPROS instrument, in other words the measuring instrument estimated with the manifest variables, the T-value values and the latent variables. Values greater than 1.96 are statistically significant at a 95% confidence level.

All parameters are statistically significant according to the Wald test.

ENPROS RELIABILITY ACCORDING TO CRONBACH'S ALPHA

Regarding the ENPROS Cronbach's Alpha reliability measures, we can say that it presents acceptable values, as can be seen in Table 9.

Subscales	Item	Alpha	95% CI
Organization	7	0.80	0.76 - 0.83
Workstation	4	0.72	0.67 - 0.77
Leadership	8	0.82	0.79 - 0.85
Physical environment	7	0.79	0.75 - 0.83
Team work psychosocial environment	14	0.85	0.82 - 0.87
Full scale	40	0.92	0.91 - 0.93

Table 9. ENPROS Cronbach's Alpha reliability measure

DISCUSSION

When contrasting the redesign of the ENPROS measurement instrument, the 40 items were shown in the five identified factors: organization, job, leadership, physical environment and team work psychosocial environment. The χ^2 likelihood ratio test for instrument adjustment was not acceptable, however this could be explained due to the sample size (more than 250 subjects) with an instrument of more than 30 items. When working with large samples, the proposed theoretical instrument tends to be rejected given the sensitivity of χ^2 to the sample size, and under these conditions the χ^2 index is rejected in approximately 80% of the test models. (Calvo-Porrall, 2017; Hair and Black, 2010). However, the χ^2/df ratio exceeded the value 2 and the CFI and NFI indices exceeded the value 0.9. The RMSEA index showed a reasonable fit (Browne and Cudeck, 1993). In this regard, it must be noted that RMSEA is an adjustment index that, with greater asymmetry, worsens its behavior. (MacCallum, Browne and Sugawara, 1996; Morata-Ramirez, Holgado Tello, Barbero-García and Mendez, 2015).

In short, taking into account that the models are an approximation to reality, as Box says "it is only necessary that they are not grossly wrong" (Box, 1979, p.2), the ENPROS measurement instrument had a reasonable fit to the data.

According to the reliability and validity criteria, the individual reliability of the items and factor loadings were acceptable, although not within the values recommended by Chin. (1998) who recommends eliminating those indicators whose factor loadings are less than 0.7. Given that it was an initial instrument, it was decided not to eliminate weak items and, this way, not lose valid information for the model. Regarding the reliability of the dimensions, the composite reliability was

NAME	Organization	Workstation	Leadership	Physical environment	Team work-Psychosocial environment
Organization	0.37*	0.73	0.53	0.24	0.31
Workstation		0.41*	0.46	0.19	0.30
Leadership			0.39*	0.31	0.33
Physical Environment				0.38*	0.54
Team work - psychosocial environment					0.33*

Table 8. Comparison of squared correlations between the dimensions with the variance extracted from the ENPROS 3 measurement instrument

*Variance extracted

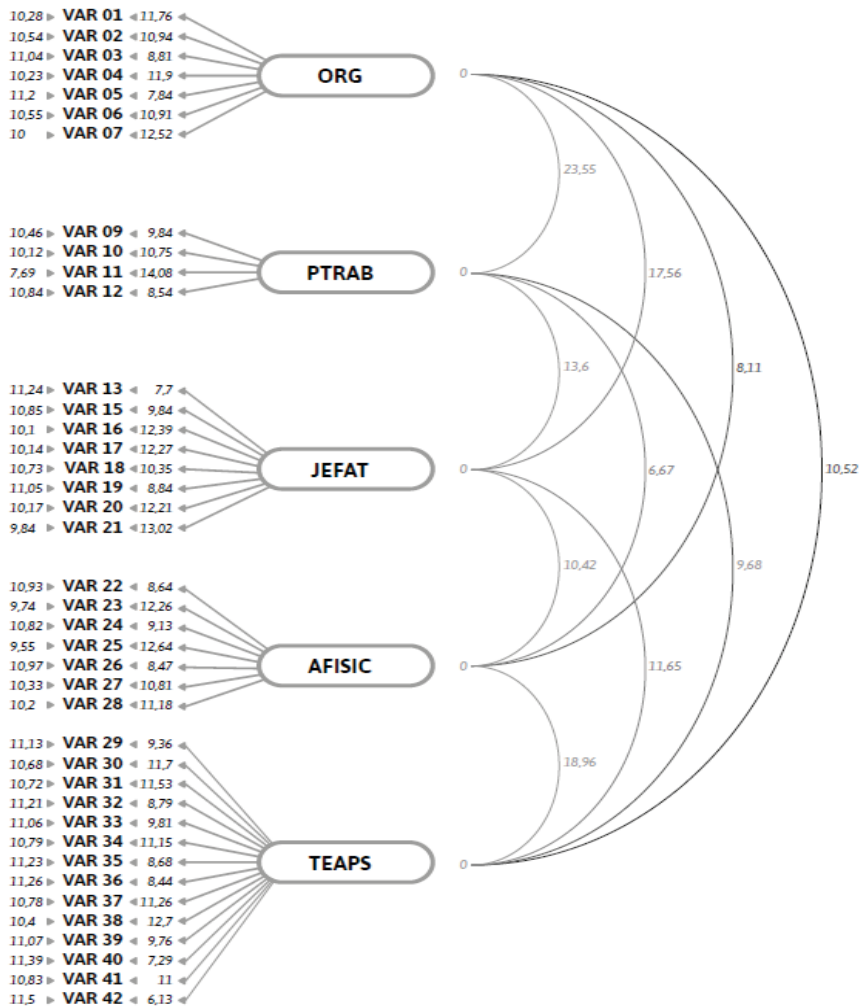


Figure 3. Statistical significance of the parameters of the estimated solution for the ENPROS 3 five-factor model

Note: Source: Own elaboration from Lisrel diagram

not influenced by the number of items of the latent variable. The minimum acceptance rule according to Nunally (1995) It has a reliability of 0.7, therefore, evidence was provided of the reliability of the dimensions or their capacity as a measuring instrument. Regarding convergent validity, the variance extracted from the dimensions ranged between 0.32 and 0.41, not exceeding the value of 0.5 that various authors consider acceptable. (Fornell & Larcker, 1981). These results suggest that each dimension shares less than half of the variance with the items that compose it. This problem has been highlighted by authors such as (Seva and Ferrando, 2000) who propose that this may be due to an accumulation of specification errors. Most of the items that are analyzed in practice do not act as markers or indicators (factorially simple), and therefore, they present lower cross loadings in the other dimensions that they do not supposedly measure. The residuals accumulate with each specification error and the deterioration of the fit is greater, there are more accumulated errors the longer the instrument lasts. (Lloret-Segura, Ferreres-Traver, Hernández-Baeza and Tomás-Marco, 2014; Herbert W. Marsh, Morin, Parker, & Kaur, 2014) path analysis, and structural equation modeling (SEM. However, when the significance of the parameters of each item was evaluated, all of them had a significant contribution.

On the other hand, the discriminant validity is met between the dimensions organization and physical environment, organization and team work-psychosocial environment, job and physical environment, job and team work/psychosocial environment, leadership and physical environment, leadership and team work-psychosocial environment, since among these dimensions of the ENPROS measurement instrument the criterion proposed by Fornell and Larcker was verified (1981) according to the variance that the

dimension shares with its items must be greater than the variance that it shares with the other dimensions. Among the dimensions organization and job, organization and leadership, job and leadership, physical environment and team work psychosocial environment, discriminant validity is not guaranteed, since the variance extracted was less than the square of the correlations between dimensions. (Farrell, 2008).

LIMITATIONS

These are related to both the sample of participants and the study design used. Specifically, a convenience sample was used, which despite having considered variables such as origin of the health personnel, organizational level and jobs of the participants, evidently restricts the possibilities of generalization and applicability of the results. For this reason, the results obtained here and the aspects discussed must be considered with caution and taking into account the particular characteristics of the sample used. Although there seems to be no agreement on what is the appropriate sample size to estimate a model (Bentler, 1990; Blacksmith, 2010; Hu and Bentler, 1999; Jackson, 2003 O'Boyle and Williams, 2011; Yuan, 2005), there are those who raise a minimum of 200 observations (Lévy and Varela, 2006; Marsh, Balla and McDonald, 1988; Streiner and Norman, 2008) to have confidence in the estimate. Another limitation was the use of a cross-sectional design, from which the directionality of the relationships can not be established. For this reason, and despite establishing explanatory patterns of the relationship between dimensions and items, this research does not allow establishing cause and effect relationships.

Likewise, the research was developed at a first level of complexity in confirmatory factor analysis, which implies that we are dealing with a measurement instrument made up

of dimensions (latent variables) with their respective items (observable variable), that is, a model that shows only an approach to the reality of environmental protectors of hospital stress in the Araucanía Region. Notwithstanding the above, the fit indices provide some guarantee of model acceptability.

CONCLUSIONS

We can affirm that empirical evidence was obtained for the hypothesis of the ENPROS measurement instrument of 5 dimensions and 40 items for the Araucanía Region, Chile. The goodness-of-fit indices were reasonable with the data from the year 2016-2017.

An interesting area to explore in future research would be the evaluation of the usefulness of the instrument through its application in hospital units in the Region and in other Regions. Specifically, explore the consequences that arise from the application of the instrument on people and in hospital institutions. The analysis of the usefulness of the use of the instrument would help determine its strengths and

weaknesses to identify protectors, and would also constitute a contribution to the triangulation of information sources (other hospital institutions in other Regions). This line of research would be based on qualitative methodology, with observation strategies, in-depth interviews and focus groups; with scope in health personnel, leadership and managers. It would also be interesting to check the invariance of the instrument adjusted according to demographic and work variables, evaluate in subsamples defined by these variables, tests for independent groups such as female, male, by professionals. Since this research was carried out in the Araucanía Region, Chile, it would be interesting not only to expand the research to other regions but also to consider its development through a random sampling of the participants, a condition that would enable greater applicability of the findings and improve the generalization of results, including exploring its translation to other languages to investigate its validity and reliability in other cultural contexts.

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REFERENCES

- Albaladejo, R., Villanueva, R., Ortega, P., Astasio, P., Calle, M., & Domínguez, V. (2004). **Síndrome de Burnout en el personal de enfermería de un hospital de Madrid.** *Revista Española de Salud Pública*, 78 (4), 505–516. <https://doi.org/10.1590/S1135-57272004000400008>
- Alonso, F. E.-M. (2020). **Job stress and emotional exhaustion at work in Spanish workers: Does unhealthy work affect the decision to drive?.** *PLoS one*, 15 (1), e0227328.
- Ansoleaga, E., Toro C, J. P., Godoy C, L., Stecher, A., & Blanch, J. M. (2011). **Malestar psicofisiológico en profesionales de la salud pública de la Región Metropolitana.** *Revista Médica de Chile*, 139 (9), 1185–1191. <https://doi.org/10.4067/S0034-98872011000900011>
- Armita Golkar; Emilia Johansson ; Maki Kasahara; Walter Osika ; Aleksander Perski ; Ivanka Savic. (2014). **The Influence of Work-Related Chronic Stress on the Regulation of Emotion and on Functional Connectivity in the Brain.** *PLOS ONE/Www.Plosone.Org*, 9 (9), e104550.
- Astudillo Díaz, P. R., Alarcón Muñoz, A. M., & Lema García, M. L. (2009). **Protectores de estrés laboral : percepción del personal de enfermería y médicos, Temuco, Chile.** *Ciencia y Enfermería*, 15 (3), 111–122. <https://doi.org/10.4067/S0717-95532009000300012>

- Astudillo-Díaz, P. (2021). *Protectores ambientales de estrés laboral hospitalario*. Girona, España: Doctoral dissertation, Universitat de Girona. dugi-doc.udg.edu.
- Astudillo, P., Losada, H., Schneeberger, P., & Coronado, M. (2018). **Prevalencia de Síndrome de Burnout en un Centro de Cirugía Académico-Asistencial Público en Chile**. *Revista Chilena de Cirugía*, 70 (2). Retrieved from <http://www.revistacirugia.cl/index.php/revistacirugia/article/view/166>
- Avendaño, C., Bustos, P., Espinoza, P., García, F., & Pierart, T. (2009). **Burnout y apoyo social en personal del servicio de psiquiatría de un hospital público**. *Ciencia y Enfermería*, 15 (2), 55–68. <https://doi.org/10.4067/S0717-95532009000200007>
- Avendaño, C., & Leiva, P. (2011). **Cuestionario de Riesgos para la Salud Psicológica en Enfermeras**. *Psykhé*, 7 (2), 53–61.
- Bakker, A. B., & Demerouti, E. (2013). **La teoría de las demandas y los recursos laborales**. *Revista de Psicología Del Trabajo y de Las Organizaciones*, 29 (3), 107–115. <https://doi.org/10.5093/tr2013a16>
- Bakker, A. B., Killmer, C. H., Siegrist, J., & Schaufeli, W. B. (2000). **Effort-reward imbalance and burnout among nurses**. *Journal of Advanced Nursing*, 31 (4), 884–891. <https://doi.org/10.1046/j.1365-2648.2000.01361.x>
- Barrios Casas, S., & Paravic Klijn, T. (2006). **Promoción de la salud y un entorno laboral saludable**. *Revista Latino-Americana de Enfermagem*, 14 (1), 136–141. <https://doi.org/10.1590/S0104-11692006000100019>
- Bentler, P. M. (1990). **Comparative fit indexes in structural models**. *Psychological Bulletin*, 107 (2), 238–246. <https://doi.org/10.1037/0033-2909.107.2.238>
- Bitran, M., González, M., Nitsche, P., Zúñiga, D., Riquelme, A., Bitran, M., Riquelme, A. (2017). **Preocupación por el bienestar de residentes, un tema presente en la Conferencia Latinoamericana en Educación de Residentes (LACRE) 2017**. *Revista Médica de Chile*, 145 (10), 1330–1335. <https://doi.org/10.4067/S0034-98872017001001330>
- Box, G. (1979). **Some Problems of Statistics and Everyday Life**. *Journal of the American Statistical Association*, 74 (365), 1–4. <https://doi.org/10.1080/01621459.1979.10481600>
- Browne, M. W. & Cudeck, R. (1993). **Alternative ways of assessing model fit**. In K. A. B. & J. S. Long (Ed.), *structural equation models, Testing*. (pp. 136–162). Newbury Park, CA: Sage Publications.
- Chin, W. (1998). The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*, 295 (2), 295–336.
- Chin, W., & Marcolin, B. (2003). **A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail**. *Information Systems Research*, 14 (2), 189–217. Retrieved from <https://pubsonline.informs.org/doi/abs/10.1287/isre.14.2.189.16018>
- Chin, W. W. (2000). **Frequently Asked Questions – Partial Least Squares & PLS-Graph**. Retrieved from <http://disc-nt.cba.uh.edu/chin/plsfaq.htm>
- Cooney, A. (2010). **Grounded theory. Choosing between Glaser and Strauss: an example**. *Nurse Researcher*, 17 (4), 18–28.
- Davidson, R., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S., ... Sheridan, J. (2013). **Alterations in brain and immune function produced by mindfulness meditation**. *Psychosomatic Medicine*, 65 (4), 564–570.
- De Chesnay, M., & Banner, D. (2015). *Nursing research using grounded theory: qualitative designs and methods*. New York: Springer Publishing Company.
- Dreher, A. T. (2019). **Prevalence of burnout among German general practitioners: comparison of physicians working in solo and group practices..** *PloS one*, e0211223.

Escobedo Portillo, M. T., Hernández Gómez, J. A., Estebané Ortega, V., & Martínez Moreno, G. (2016). **Modelos de ecuaciones estructurales: Características, fases, construcción, aplicación y resultados.** *Ciencia & Trabajo*, 18 (55), 16–22. <https://doi.org/10.4067/S0718-24492016000100004>

Farrell, A. M. (2008). **Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009) Insufficient discriminant validity: A comment on Bove.**

Folkman, S., & Lazarus, R. S. (1988). **Coping as a mediator of emotion.** *J Pers Soc Psychol.*, 54 (3), 466–475.

Fornell, C., & Larcker, D. F. (1981). **Evaluating Structural Equation Models with Unobservable Variables and Measurement Error.** *Journal of Marketing Research*, 18 (1), 39–50. <https://doi.org/10.1177/002224378101800104>

Fu, X. X. (2015). **Validation of the Chinese version of the quality of nursing work life scale.** *PloS one*, 10 (5), e0121150.

G, Mateos. (2011). **Relaciones de causalidad entre variables : origen y evaluación histórica del análisis path.** *Universidad Complutense de Madrid. Dpto. de Estadística e Investigación Operativa, II* (7).

Guic S, E., Mora O, P., Rey C, R., & Robles G, A. (2006). **Estrés organizacional y salud en funcionarios de centros de atención primaria de una comuna de Santiago.** *Revista Medica de Chile*, 134 (4), 447–455. <https://doi.org/10.4067/S0034-98872006000400007>

Hair, Black, B. & A. (2010). **Multivariate Data Analysis. V,CFA.** Pearson. Retrieved from <https://www.pearson.com/us/higher-education/program/Hair-Multivariate-Data-Analysis-7th-Edition/PGM263675.html>

Herrero, J. (2010). **El Análisis Factorial Confirmatorio en el estudio de la Estructura y Estabilidad de los Instrumentos de Evaluación: Un ejemplo con el Cuestionario de Autoestima CA-14.** *Psychosocial Intervention*, 19 (3), 289–300. Retrieved from http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1132-05592010000300009&lng=es&nrm=iso&tlng=es

Hu, L. T., & Bentler, P. M. (1999). **Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives.** *Structural Equation Modeling*, 6 (1), 1–55. <https://doi.org/10.1080/10705519909540118>

Jackson, D. L. (2003). **Revisiting sample size and number of parameter estimates: Some support for the N: q hypothesis.** *Structural Equation Modeling*, 10 (1), 128–141. https://doi.org/10.1207/S15328007SEM1001_6

Jaracz, M. R.-B. (2017). **Affective temperament, job stress and professional burnout in nurses and civil servants.** *PloS one*, *PloS one*, 12 (6), e0176698.

Jason A. Colquitt. (2001). **On the dimensionality of organizational justice: a construct validation of a measure.** *Journal of Applied Psychology*, 86 (3), 386–400. Retrieved from <https://media.terry.uga.edu/socrates/publications/2013/06/Colquitt2001.pdf>

Joseph F. Hair, J., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). **Confirmatory Factor Analysis. In Multivariate Data Analysis** (Seventh Ed, pp. 599–638). London.UK: © Pearson Education Limited.

Lagunes-Córdoba, R. (2017). **Recomendaciones sobre los procedimientos de construcción y validación de instrumentos y escalas de medición en la psicología de la salud.** *Psicología y Salud*, 27 (1), 5-18.

Lévy, J. P., & Varela, J. (2006). **Capítulo V. Análisis Factorial Confirmatorio. In Modelización con estructuras de covarianzas en Ciencias Sociales.** (p. 124).

Lima, G., Aldana, L., Casanova Sotolongo, P., Casanova Carrillo, P., Casanova Carrillo, C., & García, E. (2003). **Influencia del estrés ocupacional en el proceso salud-enfermedad.** *Revista Cubana de Medicina Militar*, 8 (2), 149–154. Retrieved from <http://scielo.sld.cu/pdf/mil/v32n2/mil11203.pdf>

Lindström, B., & Eriksson, M. (2006). **Contextualizing salutogenesis and Antonovsky in public health development.** *Health Promotion International*.

- Lloret-Segura, S., Ferreres-Traver, A., Hernández-Baeza, A., & Tomás-Marco, I. (2014). **El análisis factorial exploratorio de los ítems: Una guía práctica, revisada y actualizada.** *Anales de Psicología*, 30 (3), 1151–1169. <https://doi.org/10.6018/analesps.30.3.199361>
- Losada-Morales, H. (2021). **Prevalencia de síndrome de burnout en anestesiología y cirugía ortopédica en un centro en Chile.** *Revista de Cirugía*, 73 (5), 547-555.
- MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, 1 (2), 130–149. <https://doi.org/10.1037/1082-989X.1.2.130>
- Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). **Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size.** *Psychological Bulletin*, 103 (3), 391. Retrieved from <https://files.eric.ed.gov/fulltext/ED267091.pdf>
- Marsh, Herbert W., Morin, A. J. S., Parker, P. D., & Kaur, G. (2014). **Exploratory Structural Equation Modeling: An Integration of the Best Features of Exploratory and Confirmatory Factor Analysis.** *Annual Review of Clinical Psychology*, 10 (1), 85–110. <https://doi.org/10.1146/annurev-clinpsy-032813-153700>
- Melita Rodríguez, A. Cruz Pedreros, M. & MERINO, J. M. (2008). **Burnout en profesionales de enfermería que trabajan en centros asistenciales de la octava Región, Chile.** *Ciencia y Enfermería*, 14 (2), 75–85. <https://doi.org/10.4067/S0717-95532008000200010>
- Michie, S. & (2003). **Reducing work related psychological ill health and sickness absence: a systematic literature review.** *Occupational and environmental medicine*, 60 (1), 3-9.
- Morales Vallejo, P. (2017). **Estadística Aplicada a las Ciencias Sociales, La fiabilidad de los tests y escalas.** Madrid: Universidad Pontificia Comillas.
- Morata-Ramirez, M. Á., Holgado Tello, F. P., Barbero-García, M. I., & Mendez, G. (2015). **Análisis factorial confirmatorio. Recomendaciones sobre mínimos cuadrados no ponderados en función del error Tipo I de Ji-Cuadrado y RMSEA [Confirmatory factor analysis. Recommendations for unweighted least squares method related to Chi-Square and RMSEA].** *Acción Psicológica*, 12 (1), 79. <https://doi.org/10.5944/ap.12.1.14362>
- Nunnally, J.C., & Bernstein, I. J. (1995). **Teoría Psicométrica.** México: McGraw- Hill Interamericana.
- OPS. (2000). **Estrategia de promoción de la salud en los lugares de trabajo de América Latina y el Caribe.** (6), 1–23. Retrieved from http://www.who.int/occupational_health/regions/en/oehpromocionsalud.pdf
- Ordóñez D, N. (2004). **Prevalencia de Burnout en trabajadores del hospital Roberto del Río.** *Revista Chilena de Pediatría*, 75 (5), 449–454. <https://doi.org/10.4067/S0370-41062004000500006>
- Patlán Pérez, J. (2019). ¿Qué es el estrés laboral y cómo medirlo?.. *Revista Salud Uninorte*, 35 (1), 156-184.
- Peiró, J. M. (2001). **El Estrés Laboral: Una perspectiva individual y colectiva.** *Web Del INSHT. Psicología Social y de Las Organizaciones Facultad de Psicología. Universidad de Valencia.*, (13), 18–38. Retrieved from http://www.oect.es/InshtWeb/Contenidos/Documentacion/TextosOnline/Rev_INSHT/2001/13/seccionTecTextComp2.pdf
- Rieger, K. L. (2018). **Discriminating among grounded theory approaches.** *Nursing Inquiry*, e12261. <https://doi.org/10.1111/nin.12261>
- Rodríguez-Rivera, H. (2018). **Revisión sistemática de la investigación en psicología de la salud ocupacional en Iberoamérica 2013-2018.** Maestría en Psicología: Universidad de Antioquía. Medellín. Colombia.
- Sánchez D, I., Airola G, G., Cayazzo A, T., Pedrals G, N., Rodríguez M, M., & Villarroel D, L. (2009). **Clima laboral en una escuela de medicina. Estudio de seguimiento.** *Revista Médica de Chile*, 137 (11), 1427–1436. <https://doi.org/10.4067/S0034-98872009001100003>

- Satorra, A., & Bentler, P. M. (1994). Corrections to test statistic and standard errors in covariance structure analysis. In Alexander von Eye and Clifford C. Clogg (Ed.), *latent variables Analysis: Applications to developmental research* (Thousand Oaks, CA, pp. 399–419). SAGE Publications, Inc. Retrieved from <http://www.econ.upf.edu/~satorra/CourseSEMVVienna2010/SatorraBentler1994.pdf>
- Schaufeli, W., Salanova, M., González-Romá, V., & Bakker, A. (2002). **The measurement and burnout: a two sample confirmatory factor analytic approach.** *Journal of Happiness Studies*, 3, 71–92. Retrieved from <https://link.springer.com/content/pdf/10.1023/A:1015630930326.pdf>
- Serrano, M. A., Moya, L., & Salvador, A. (2009). **Estrés laboral y salud: Indicadores cardiovasculares y endocrinos.** *Anales de Psicología*, 25 (1), 150–159.
- Seva, U. L., & Ferrando, P. (2000). **Unrestricted versus restricted factor analysis of multidimensional test items: Some aspects of the problem and some suggestions.** *Psicológica: Revista de Metodología y Psicología Experimental*, 21 (2), 301–323. Retrieved from <http://dialnet.unirioja.es/servlet/articulo?codigo=72304>
- Streiner, D. L., & Norman, G. R. (2008). Selected of items. In D. L. Streiner (Ed.), *Health measurement scales. A practical guide to they development and use.* (p. 194). New York: Oxford University Press
- Tenenhaus, M., Vinzi, V. E., Chatelin, Y.-M., & Lauro, C. (2005). **PLS path modeling.** *Computational Statistics & Data Analysis*, 48, 159–205. <https://doi.org/10.1016/j.csda.2004.03.005>
- Thompson, B. (2004). **Exploratory and confirmatory factor analysis: Understanding concepts and applications.** *Testing Model Invariance. Psychological Association*, 153–162.
- Van der Doef, M., & Maes, S. (1999). **The Job Demand-Control (Support) Model and psychological well-being: A review of 20 years of empirical research.** *Work & Stress*, 13 (2), 87–114. <https://doi.org/10.1080/026783799296084>
- Yuan, K. H. (2005). **Fit indices versus test statistics.** *Multivariate Behavioral Research*, 40 (1), 115–148. https://doi.org/10.1207/s15327906mbr4001_5