Journal of Development Research and Studies, Volume (10) / Issue (2), December 2023, p398-p416

Identification of work-related stress risk factors (SWP): Case from the healthsector

FERNANE Djamila*[1]

[1] Mouloud Mammeri University of Tizi-Ouzou, Algeria, djamila.fernane@ummto.dz

Received :31/10/2023 Accepted :31/12/2023 Published:31/12/2023

Abstract:

Work-related stress is a major problem in many countries and different types of workplace, resulting in illness, psychosomatic and psychosocial disorders and reduced productivity, among other things. Recent BIT surveys (2016) indicate that there are a series of generally applicable checkpoints for studying and reducing stress in the workplace (SWP). In order to detect these stress factors and measure their impact, we adopted this measurement scale in an empirical study of employees at Tizi-Ouzou University Hospital. The results validated the causal relationship between the dimensions of the SWP model, and showed that work-related demands, protection against offensive behavior and recognition at work all significantly distressed CHU staff.

Keywords : Stress in the workplace (SWP); University hospital; Work demands; Offensive behaviors.

JEL Classification Codes: C5

* Correspondent Author

1. Introduction:

Stress is a very commonly used term for difficulties and suffering due to the way we work (Benabou, Tabti, & Bendiabdellah, 2012). Although this concept was initially specific to psychology, it is currently used in the field of management science, notably in human resources management, to explain individual performance by taking into account stress at different levels of the corporate hierarchy. In fact, Mayo's work is the most important work to have dealt with the psychological difficulties encountered by people at work (Daniels, 2000). Since then, the field of research into so-called SWP risks has grown in importance, especially in the wake of the Covid19 health crisis.

In Algeria, stress is a widespread factor in health problems. Proof, if proof were needed, is that 29.3% of those affected are executives and managers, and 23.6% are self-employed. Numerous studies show that work-related stress (SWP) adversely affects the health and productivity of workers in companies (Cesana, Albini, & Bagnara, 2006; Benabou, Tabti, & Bendiabdellah, 2012). To this end, the World Health Organization specifies that high levels of SWP are predictive of an increased risk of psychological disorders, accidents, illness and death. On this occasion, Cox, Griffiths and Rial-González (2002) demonstrated the existence of a correlation between SWP risks and illnesses such as heart disease, headaches, gastrointestinal disorders, and a significant correlation between SWP and the psychic sphere such as anxiety, depression, difficulty concentrating, reduced decision-making, changes in lifestyle and behavior (Mols, Denollet, & Type, 2010). SWP also has negative effects on company organization in terms of staff commitment, performance and productivity, and encourages accidents caused by human error, turnover and early retirement (Benabou, Tabti, & Bendiabdellah, 2012).

In certain sectors of activity, such as healthcare, where we see a fairly heavy workload, excessive or too few responsibilities, forms of work organization such as shift work, night work, repetitiveness or monotony, can be at the root of stressful situations (Tonini, Lanfranco, Costa, & Lumelli, 2011). However, these forms of work established by these health organizations can turn into a vicious circle in which the negative consequences of stress also become causes for the production of further stress.

Faced with these realities, our aim is to understand **which stress risk factors impact the performance of hospital employees**?

In the absence of a regulatory and legislative framework that obliges employers to assess risks to the safety and health of workers, unlike in other countries around the world, where employers are required to assess risk in the workplace and take the necessary measures to ensure the safety and protect the physical andmental health of employees, surveys and scientific studies of occupational risk perception in this sense are needed to better define the concept of SWP and develop assessment methods and tools appropriate to the context of study. To this end, it would be useful to examine recent international experience in this field, and to develop checkpoints that are easy to apply in the healthcare sector. In this sense, the demand for performance and results, meeting deadlines and occupational stress have become an object of research for the social sciences. Numerous models and measurement scales have been developed to study the causes and effects of stress.

In this respect, the International Labour Organization has drawn up a list of checkpoints for the prevention of work-related stress, and has suggested the use of a two-phase method for assessing

the risks associated with work-related stress. The first phase, consists of establishing a list of risk indicators that areas objective as possible (quantifiable), the second consists of assessing workers' perceptions of the factors associated with SWP (OIT, 2014). Several tools can be used at once: objective workload measurements and observations of working conditions, comparisons with information provided by workers and the results of scientific research. This approach aims to map out an evaluative path that focuses on work organization, in order to implement effective measures to reduce the causes of SWP and help prevent or reduce the impact this phenomenon can have on the work environment (Cesana, Albini, & Bagnara, 2006).

2. Research methodology :

Standardized prevalence rates of work-related stress problems by economic activity recorded rates in excess of 2% for education and healthcare (Gintrac, 2011). At first sight, this finding is rather surprising. It has often been pointed out that performance measurement in tertiary activities cannot be as precise as in industrial activities, where the input-output link is known. This reasoning seems correct, since knowledge of the input-output relationship leads to a "more reasonable" limit on the additional productivity efforts requiredof employees (Gintrac, 2011). In the service sector, on the other hand, this relationship is unclear, and the risk of setting productivity targets for employees remains beyond their reach. And the psycho-physiological consequences are often severe. However, this explanation seems ill-suited to the healthcare sector, as the problem is not one of over-ambitious targets, but rather of a qualitative mismatch between demands/resources and the work organization model. In order to verify this finding, we conducted a field study of staff at the UHC de Tizi-Ouzou, using the SWP risk model developed by the BIT (2016).

However, the choice of a measurement scale remains a crucial step in management science and management research, especially when it concerns a concept discussed in the literature under conditions that differ from the researcher's application. To elucidate this phenomenon, we have adopted an approach based on the steps advocated by Churchill's paradigm (1979). This paradigm is a methodological approach aimed at"*the construction of multiple scale a posteriori*" (Mansouri, M'zali, & Perettii, 2008, p. 2). The principle of measurement developed by this paradigm is to make a latent variable (Stress in the Workplace) quantifiable by real elements called items. As for the format of the scale used to rate responses, we used a 4-degree scale. We chose this type of scale because it offers many advantages: ease of measurement and equality of intervals (Sabadie, 2001).

The first part of Churchill's (1979) paradigm involves defining the construct domain, generating the items and then testing the tool by consulting experts. We then refine the scales to assess their reliability and validity.

The choice of this approach was extremely useful: on the one hand, it enabled us to increase the validity of our results, thanks to the use of different research tools (observation, interview and questionnaire); on the other hand, it enabled us to develop a measurement scale compatible with the study context. To do this, we followed a four-step process:

1) Analysis of work indicators: In order to obtain an initial estimate of the possible presence of sentinel events, indicators such as sick leave, accident index, staff mobility, chief medical officer reports and disciplinary measures were used as benchmarks.

2) Semi-structured interviews: Identify the risk factors that cause stress in the healthcare sector.

3) Construction of the item battery: Based on the qualitative study and the literature review, we drew up a battery of items comprising 65 SWP risk indicators in 10 dimensions.

4) Extended administration of the checklist to a representative sample of workers in each facility (repaginated in the form of a questionnaire with closed and open-ended questions).

3. Literature review: Specifying the domain of the construct:

"*Organizational stress arises when there is an imbalance between a person's perception of the constraints imposed on him by his environment and his perception of his own resources for coping with them.*" (Gintrac, 2011). In other words, stress at work is the product of the dynamic interaction between the constraints imposed by the individual's tasks and his or her physical and psychological capacity to cope with them (Cooper & Payne, 1988). However, the majority of the working population feels that the level of stress it has to cope with is steadily increasing, and specialist surveys confirm this (Siegrist, Klein, & Voight, 1997). Although the process of evaluating constraints and resources is psychological, the effects of stress areof different kinds.

In the literature, various models and concepts are used to understand and study the factors behind stress in the workplace. To explain this, Karasek (1979) identifies the important elements to be considered in understanding the reasons for a possible excess of work-related stress. To this end, he examined three elements: workload, the worker's room for manoeuvre and the professional support he receives. In addition with the aim of optimizing work conditions and organization, the International Labor Office (2016) has developed a checklist for stress in the workplace. This examines 10 dimensions, namely:

Leadership and justice at work, which consists in developing an organizational culture notably through informal communication between managers and workers and prohibiting all forms of discrimination through fair treatment between workers (BIT, 2016);

Work demands that result in excessive demands that affect employees through unrealistic planningof deadlines, unclear tasks and responsibilities, and over/under-utilization of capabilities;

Work control that promotes stress when employees have no influence over the pace of work and work methods;

Social support provided by managers, supervisors and co-workers helps workers cope with pressures and stress at work;

A safe, healthy and comfortable physical environment is essential for employees. This can be achieved, for example, by providing staff with rest and relaxation rooms;

Work-life balance and working hours, because stress at work is particularly linked to long working hours, irregular schedules and the provision of adequate holidays, paid leave and breaks;

Recognition in the workplace will benefit the company and create a climate of fairness and motivation;

Protection against offensive behavior, including intimidation, bullying, sexual harassment, threats and violence, which have a serious impact on employees and the work environment;

Job security is also a factor in workplace stress. Lack of long-term job security, precarious contracts and changing working conditions are all known to increase stress at work;

Finally, information and communication: Employees who are informed of important decisions play an active role in achieving mutually agreed objectives.

Using the SWP model advanced by BIT (2016), the work sets itself the task of testing the following hypotheses:

H1: Leadership and justice at work have a positive effect on work-related stress in UHC employees;

H2: The work demands factor has a positive effect on work-related stress in UHC employees;

H3: The work control factor has a positive effect on work-related stress in UHC employees;

H4: The social support factor has a positive effect on work-related stress in UHC employees;

H5: The physical environment factor has a positive effect on work-related stress in UHC employees;

H6: Work-life balance and work time have a positive effect on work-related stress among UHCemployees;

H7: Recognition at work has a positive effect on work-related stress among UHC employees;

H8: The protection factor against offensive behavior exerts a positive effect on work-related stress inUHC employees;

H9: The control and decision-making factor has a positive effect on work-related stress in UHCemployees;

H10: The information and communication factor has a positive effect on work-related stress among UHCemployees.

These hypotheses were formulated in line with the work of Karasek (1979), Benabou, Tabeti and Bendiabdellah (2011), Cortese (2012) and BIT (2016).

4. Presentation of the study and sampling method:

The aim of this research is to identify the presence of SWP risk factors in the hospital environment, and to define a measurement scale for quantifying the degree of impact of each risk factor. The research was carried out in the 52 autonomous departments of the Nedir Mohamed Regional University Hospital in Tizi- Ouzou (32 of which are health-related, 12 laboratories and 8 technical and administrative departments).

To test the research hypotheses, we used a mixed approach, segmented into two phases.

4.1 Research methodology for the qualitative study :

Using a semi-structured interview guide, we interviewed 53 heads of different departments at Tizi- Ouzou University Hospital, lasting an average of around 15 minutes, during which they were asked to indicate the potential risk factors present in their structure. We opted for a non-probability sampling method, i.e. a convenience sample. Data processing involved lexical and frequency analysis. The aim of this study was to refine the hypotheses and bring out a battery of items compatible with the study context.

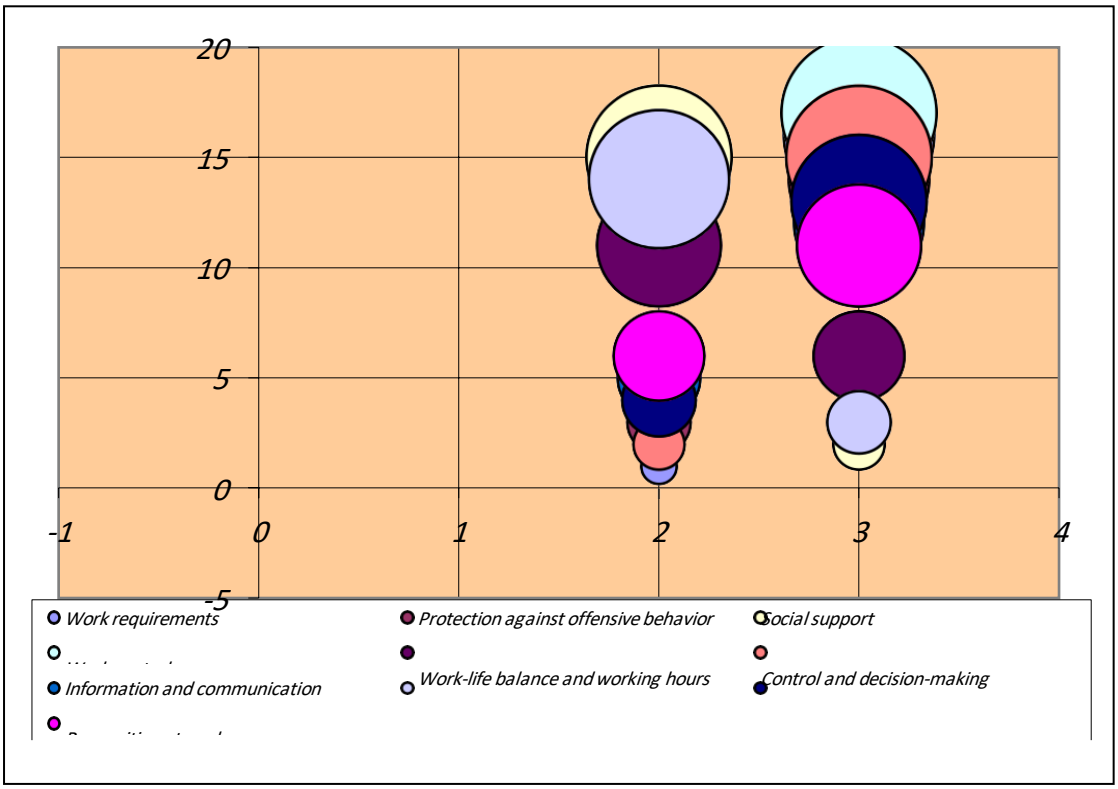
During the qualitative phase, the managers of each structure (department head and coordinator), medical, para-medical and administrative, were interviewed, for a total of 53 interviews, enabling us to create a focus with the ten dimensions of SWP. We chose, in the pre-construction phase of the checklist, to deal with managers and heads of department because, by virtue of the positions they occupy, they have a broad and articulated view of the work context (in its operational, relational, organizational and managerial aspects), and consequently of any SWP factors in which they have pre-felt.

This qualitative approach was supplemented by observations and focus groups. Each facility held a focus group, lasting an average of around two hours, during which participants were asked to indicate whether or not the 10 SWP risk factors were present in their own facility and, if so, to provide concrete examples of their presence. As for observation, at the end of each discussion group, we completed a checklistindicating the type and level of each risk indicator (Taylor & Barling, 2004).

A checklist is a research tool consisting of a set of indicators referring to an object of study, possibly grouped into higher categories (dimensions). Its use in health economics research is of considerable importance, and the main advantage of this tool is that it can be used for data collection in a variety of ways: qualitative, quantitative, self-compiled or compiled by the researcher (Merriam, 2009; Silverman, 2011).

Fig.1. Frequency of occurrence of SWP categories

Source: Compiled by us from interview data



We note that the ten categories of SWP were raised by all respondents to varying degrees.

The measurement scale used in this study comprises 65 indicators (items) divided into ten categories (dimensions). The distribution of items was based on the model of prevention in the workplace suggested by the International Labour Office, and on interviews with the head physicians of the various structures of the Tizi-Ouzou University Hospital. Its conceptual validity was checked by a panel of three experts from the Departments of Psychology, Medicine and Management Sciences at the University of Tizi-Ouzou, who madesuggestions on the formulation of indicators and category labels.

4.2. Research methodology for the quantitative study:

The qualitative approach was complemented by a quantitative one, through a field survey. The questionnaire was validated with 21 people of different status at Tizi-Ouzou University Hospital. To process the data collected, we used SPSS> and AMOS software respectively for database entry, reliability analysis and the development of our research model.

In this respect, the accuracy of the results obtained will depend on the representativeness of the studysample. The study population consists of all employees of the Tizi-Ouzou University Hospital. In 2023, this was estimated at 3,320 staff, belonging to different hierarchical levels. The sampling technique used to calculate the sample size was stratified probability sampling. To calculate the sample size, we opted for the method of Krejcie and Morgan (1970) with a confidence interval of 5% at a level of 95% (the results obtained were calculated by the "Simple Size Calculator" application available on the website: http://www.surveysystem.com/sscalc.htm).

Table (1): Sample size

Workforce	Nbr	%	Size
University specialists and researchers	224	6.74	23
General practitioners	154	4.6	16
Psychologists	46	1.4	5
Physicists	2	0.0003	1
anesthesia and intensive care technicians	99	3	10
Paramedics	1281	38,58	132
Directors	346	10.42	36
Service agents	853	25.7	88
Other	315	9.56	33
Total	**3320**	**100%**	**344**

Source: Compiled by us

The number of questionnaires accepted and the response rates per survey are shown in the table below.

Table (2): Questionnaires distributed and retained by study

Study	Number of questionnaires distributed	Number of questionnaires received	Number of questionnaires accepted	Response rate
Study 1	344	218	208	63%
Study2	360	283	270	78%

Source: Compiled by us.

To distribute the questionnaires and collect the data, we used the face-to-face method, which wesucceeded in doing thanks to the collaboration of the department heads.

5. Results and tests:

We will first assess the degree of presence and intensity of the stress factors, then analyze the dimensionality, reliability and validity of the model's variables, using Cronbach's alpha coefficient and exploratory and confirmatory factor analysis. This is followed by a structural equation analysis to test the relationships between the dimensions advocated by the research model.

5.1. Analysis of UHC organizational indicators :

Analysis of the hospital's organizational indicators has highlighted factors suggesting criticality in terms of SWP risk situations: all indicators have evolved over time with a level above the norms, exacerbated by the health crisis of 2020.

Table (3): Organizational indicators at CHU for the period 2019- 2022

Organizational indicators	2019	2020	2021	2022
Sick days	1.88%	4.54%	4.61%	3.98%
Accidents/employees	0.47%	3.27%	3.18%	3.14%
Internal transfer request	2.1%	2.6%	3%	3.2%
Disciplinary measures	*3‰*	*4‰*	*6‰*	*6‰*
Occupational illnesses	0.03%	0.17%	1.21%	1.21%

Source: Developed and calculated by ourselves from survey data.

To verify these data, we conducted a field survey of UHC employees.

5.2.Results of the quantitative study :

The stress control model and qualitative study produced, for each structure, a checklist with a score on a 4-degree scale (0 to 3) for each indicator, assigned on the basis of analysis of data collected in the field. A score of 0 indicates a "negligible" level of risk for the indicator, classified as "not present"; score 1 (low risk) indicates occasional presence combined with low intensity; score 2 (medium risk) results from occasional presence combined with high intensity or systematic presence combined with low intensity; score 3 (high risk) is calculated by systematic presence combined with high intensity.

This assessment was carried out with the aim of identifying, as far as possible, the presence of stress indicators in accordance with the literature, and the degree of impact of each indicator. In the case of indicators not found in the literature, the assessment was based on criteria shared by the working group. For example, in the case of the "protection against offensive behavior" indicator, "systematic" was defined as an event equal to or greater than one episode to date, and "high intensity" was defined as discomfort that produced a persistent memory in the operator of the episode and/or the need to report it to the security services (Scherer, 2005).

Table 4 shows that the scores for the categories and indicators taken as a whole, i.e. adding up the 53 structures described above, present very high risk scores. Of the ten categories assessed, only "information and communication", "work-life balance and work time" and "leadership and work justice" present a "medium" level of risk, while the rest of the categories register a high risk score. These three activity indicators, although characterized by a "medium" level of risk if you look at the scores of their items as a whole, showed a "medium" or "high" criticality level in 37 structures where night work is omnipresent.

Table (4): SWP checklist on a scale of 0 to 3

Category (Dimension)	**Items**	**Score**
Category 1_Work requirements	11	3
Category 2_Control and decision-making	7	3
Category 3_Protection against offensive behavior	6	3
Category 4_ Information and communication	7	2
Category 5_ Social support	6	3
Category 6_ Leadership and justice at work	5	2
Category 7_ Work control	5	2
Category 8_Physical environment	9	3
Category 9_ Work-life balance and working hours	5	3
Category 10_Recognition at work	4	3

Source: Compiled by us from quantitative survey data

We note that 7/10 dimensions scored 3 "high risk", while 3/10 scored 2 "medium risk".The "work-related requirements" dimension presented by the following indicators:

EX01 « Shift /night work and/or availability » score 3

EX02- "Realistic working times and rhythms" score 3

EX03 - "Number of employees and activities to be carried out" score 3

EX04 - "Bureaucratic obligations" score 3

EX06- "Ensure that tasks and responsibilities are clearly defined" score2

EX07- "Match between job requirements and diploma obtained" score3

EX09- "Clear definition of responsibilities for the role played in the hospital" score 3

EX10- "Relations within the structure" score 3

Recorded a high level of risk in 48 facilities (90.5%). These include UMC, General Surgery**,** Orthopedics and Traumatology**,** Psychiatry**,** Addiction Center, Cardiovascular**,** Cardiology, Hematology and Blood Transfusion.

Similarly, "protection against offensive behavior", which represents conflict management mechanisms, litigation and action procedures to combat violence, abuse and harassment in the workplace, recorded a high level of risk within 44 structures.

In the next step, on the checklists compiled by the items belonging to each dimension, a statistical frequency analysis was carried out across the respondents' answers (through the YES response). If the indicator had not been considered present by any subjects, were assigned Score 0. If the indicator had been considered present by less than 25% of subjects, were assigned Score 1. If the indicator had been considered present by between 25% and 50% of subjects, were assigned Score 2. If the indicator was deemed present by more than 50% of subjects were assigned Score 3.

From the quantitative study, we derived four checklists with a score for each indicator expressed on ascale of 0 to 3, indicating the level of risk associated with each Structure.

Table (5): Stress risk results by service on a scale of 0 to 3

0	1	2	3	3
	-Pain relief -Pharmacy -Thrombolysis -Hospitalisation à domicile (HAD), - First aid SAMU-15	Functional re-education and rehabilitation -Kidney transplantation -Maxillofacial surgery -service des co1nsultations spécialisées -Bacteriology laboratory -Cytology Laboratory -Toxicology laboratory -Admissions office, -Dermatology Department -Diabeto-endocrinology department -Occupational medicine	-General surgery -Orthopedics and traumatology -Psychiatry -Drug addiction center -Cardiovascular -Cardiology; -Hematology; -Hematology-pediatrics -blood transfusion -gastroenterology and digestive endoscopy -Internal medicine -Pediatrics -Dental Clinic -Children's surgery -Thoracic surgery -Urology - Anapath -Neurosurgery -ophthalmology -Central laboratory -neonatal - Nephrology -Forensic medicine	-Pediatric emergency -Central radiology -Oncology, pneumology -**Hemodialysis** -Infectious diseases; -Respiratory -**Surgical emergencies** -Gynecology - Burns and plastic surgery department -Medical emergencies -Resuscitation -Hematology -Reactive anaesthesia - medical intensive care unit -surgical resuscitation department, -Service personnel

Source: Compiled by us from quantitative survey data

We found that 2/3 of UHC departments had a score of 3, meaning that stress indicators were considered to have been present by more than 50% of subjects. These results explain why the organizational indicators at UHC have become so critical in recent years.

5.2.1. Reliability and factor analysis :

Exploratory factor analysis revealed 34 items (out of 65 items) of a multidimensional scale made up of 8 factors which, according to the Varimax principle and the eigenvalue, explain 91.36% of the variance. Factoranalysis was carried out for each factor to comply with the recommendations of Rochrich (1993) and those of Gerbing and Anderson (1988), Steenkamp and Van Trijp (1991), where we retained only those items with a loading ≥0.6 and saturating the factor space. The table below shows the structural coefficients for each item.

Table (6): Factor structure of the 34 items of the SWP model after oblique rotation

Code	Job requirements	Controle and decision making	Protection againt offensive behavior	social support	Leadership and justice at work	physical environnement	Work-life balance	Recogniti on at work
EX1	,897							
EX2	,901							
EX3	,927							
EX4	,798							
EX6	‘879							
EX7	,845							

EX9	,987							
CTL3		,729						
CTL4		,877						
CTL7		,934						
PR1			,671					
PR3			,610					
PR5			,998					
PR6			,812					
SOT1				,911				
SOT2				,708				
SOT6				,693				
LEA2					,911			
LEA4					,957			
LEA5					,899			
ENV2						,698		
ENV7						,847		
ENV7						,784		
ENV8						,932		
ENV9						,964		
CON2							,681	
CON3							,879	
CON4							,755	
CON5							,699	
REC1								,947
REC2								,833
REC3								,876
REC4								,921

Source: Calculated from survey data using SPSS software.

To test the psychometric quality of the scale measuring the various dimensions of the model in question, we used Cronbach's Alpha, the KMO and Bartlett test.

Table (7): KMO, Bartlett test and SWP scale reliability

Dimensions	**Items**	**After rotation**	**KMO**	**Sig**	**Cronbach's Alpha**
Job requirements	11	8	,824	,000	,909
Control and decision-making	7	3	,711	,000	,745
Protection against offensive behavior	6	4	,758	,000	,911
Information and communication	7	0	,614	,122	,501
Social support	6	3	,836	,001	,700
Leadership and justice at work	5	3	,897	,000	,966
work control	5	0	,619	,301	,443
Physical environment	9	5	,769	,000	,903
Work-life balance and working hours	5	4	,837	,000	,799
Recognition at work	4	4	,802	,000	,874
SWP	**65**	**34**	**,889**	**,000**	**,899**

Source: Calculated from survey data using SPSS software.

We note that the correlation is significant with KMO >0.7 (Aouidad, 2021). The Cronbach's Alpha obtained per dimension (0.909; 0.745; 0.911; 0.700; 0.966; 0.903; 0.799; 0.874; 0.899) and for

the scale as a whole (0.889) is sufficiently high, as it exceeds the most stringent threshold of (0.7). The "information and communication" and "work control" dimensions had a lower level of reliability than the norm, and their removal improved the reliability of the overall measurement scale.

The results of the exploratory analysis were subjected to confirmatory analysis, and the goodness of fit of the data was assessed using validity indices.

5.2.2 Adjustment indices:

From the confirmatory analysis, we obtained the following results:

Table (8): SWP model fit indicators

Adjustment index	Results	Recommended value
X^2	31,71 (p<0,00)	
X^2/dl	2,08	≤3
CMA	0,004	≤1
RMSEA	0,019	≤0,08
CFI	0,989	≥0,9
GFI	0,973	≥0,9

Source: Calculated from survey data using AMOS software.

As shown in the table above, the results indicate a good quality of fit, enabling us to carry out our confirmatory factor analysis. A new factorial analysis was then conducted using SPSS on the 34 items retained from the exploratory analysis. This resulted in a scale structure comprising 8 dimensions and 32 items. The construct validity of the SWP factors shared 89%, 78%, 91%, 88%, 74%, 81%, 77% and 86% variance respectively with their measures.

The reliability test> 0.7, confirms the objectivity of UHC staff perceptions. In this regard, 62.7% of respondents were dissatisfied with the hospital's physical environment, and considered that the buildings needed renovation and remained inadequate for the demands of the work, causing stress. 57.99% reported difficulty due to frequent interruptions, inappropriate requests from patients, visitors and relatives, previously unplanned communications with work colleagues, the compilation of practices and forms, and equipmentand services that have to be used frequently. With regard to the "Shift work" indicator, in all 25 facilities the perception of risk was stronger than that the causes of discomfort may be due to errors in shift management by coordinators, for characteristics intrinsic to the type of activity pierced (ICU, psychiatry, medical and surgical emergencies) and/or insufficient staffing.

Analysis of the different structures examined, reported in Table 5, showed that eleven out of 52 structures had a "medium" SWP risk level. In the remaining five facilities, the risk was considered "low".

For none of the structures emerged a "negligible" level of risk. In line with what was observed with the analysis of the UHC indicators, considered as a whole, presented a "high" level of risk. Among the most interesting results that emerged in reference to the 48 structures presenting a high level of risk, we highlight that, alongside the cross-cutting issues described above, other specific questions were raised with regard to the fear of contamination and the after-effects of Covid 19.

This analysis allows us to move on to testing the various research hypotheses.

6. Testing the research hypotheses :

To test the research hypotheses, we carried out a structural equation analysis to estimate the causal links between the dimensions and items of the model. The results of the structural coefficients and their significance are shown in the table below**.**

Table (9): Hypothesis testing

Hypothesis	Relations	Beta	Sig
H1	Leadership and fairness at work have a positive effect on SWP	,744	,000
H2	Work demands have a positive effect on SWP	,856	,000
H3	Control at work has a positive effect on SWP	,438	,072
H4	Social support has a positive effect on SWP	,894	,000
H5	The physical environment factor has a positive effect on SWP	,393	,119
H6	Work-life balance and working hours have a positive effect on SWP	,798	,000
H7	Recognition at work has a positive effect on SWP	,879	,000
H8	Protection against offensive behaviour has a positive effect on SWP	,987	,000
H9	Control and decision-making have a positive effect on SWP	,788	,000
H10	The information and communication factor has a positive effect on SWP	,578	,222

Source: Calculated from survey data using AMOS software.

Hypotheses H01, H02, H03, H04, H06, H07, H08 and H09 are verified, while hypotheses H05 and H10 are not validated.

7. Discussion :

In the first phase of the research path, the elements provided by the guidelines highlighted the existence of critical problems associated with the SWP indicators (sick leave, accidents, absenteeism, etc.). For these reasons, the assessment was deepened through additional moments of investigation, based on observing and listening to the perceptions reported by hospital employees involved in different capacities**.** A research methodology of this type, cast in several stages, was preferred to the more traditional casting through the administration of a questionnaire in order to define a model of SWP compatible with the study context. In particular, in the qualitative phase, the 53 people interviewed enabled us to build a checklist that was subsequently used in the quantitative phase, from which 350 people were called to complete the questionnaire.

To explain and verify what was found in phase 1, the subsequent phases of the research pathway highlighted, overall, a "high" risk level of SWP in the Tizi-Ouzou University Hospital.
With reference to the first type of data, a "high" SWP risk layer was found for 34 indicators, to which "night work" can be added. Eight of these indicators belong to the category of "work-related demands", so shift and night work can be considered more specific to UHC. The other two indicators, "protection against offensive behaviour" and "recognition at work", also showed a high level of risk, with a significant presence in the various departments of the UHC. Conflict management with patients and family members, and the legal disputes that arise from these situations, generate tension and

disrupt the smooth running of the establishment. Similarly, the lack of consideration for employees leads to a feeling of discrimination and demotivation. Critical issues related to "shift work" aim to: reconcile existing production needs in the field with potential negative repercussions on the health of hospital staff. Interventions aim to reorganize shift work cycles, taking into account shift length, frequency, speed and direction of rotations, number of consecutive nights, night work, weekends, breaks, shift start and end times, shift regularity and predictability. The adoption of rational shiftwork criteria borrowed from the literature, will enable a reorganization of activity by task intensity, and can be a useful contribution to the control of shiftwork- related SWP risks.

The "control and decision-making" and "physical environment" dimensions, concerning professional autonomy and regular participation in meetings to address workplace problems and their solutions, contemplating the construction and management of work activity, with the intention of making the work environment and accommodation appropriate from the point of view of structural/building characteristicsand organizational structures, also record very high levels of risk. Research findings highlight that the perception of workers employed in new areas or recent structures, and therefore set up according to criteria linked to the availability and modernity of equipment, and vice versa, the resulting discomfort is a contributing cause of SWP of the need to adapt to archaic environments and, in many cases, unsuited to the codified needs of today's clinical canons.

An element of very considerable importance is communication, which is traditionally considered, forthe healthcare environment, to be decisive and critical, much of which is needed to communicate urgent information, and interruptions have multiple consequences, due to their frequency and intrinsic characteristics, making activity fragmented, contributing to a high level of inefficiency.

Similarly, the "shift work" indicator, especially if it includes night shifts, is considered by the literature to be an objective condition of stress for the body, with significant potential for negative repercussions on the biological sphere, on work efficiency and on the individual's family and social life conditions. What's more, hospitals have not defined a more appropriate shift pattern to reconcile the needs of the organization with the individual needs of workers, which makes work more stressful.

8. Conclusion :

In this article, we have attempted to adapt a scale for measuring work-related stress in a hospital setting in line with Churchill's (1979) paradigm. To this end, the SWP model developed by the BIT (2016), defines a series of control points made up of 10 basic indicators, and is considered a valid tool for studying work-related risk factors in the hospital environment. The results obtained partly validate the hypotheses of our work and show that the dimensions work-related demands, protection against offensive behavior and recognition at work are the indicators that have a very negative impact on employee performance.

So, for effective employee performance, the hospital needs to incorporate change management into its incentive and motivation techniques. Nevertheless, the SWP model, as presented, is never acquired once and for all, as it is part of a dynamic approach. It is constantly called into question by changing work situations, individual and job requirements. Work-related stress risk factors are part of a multidimensional approach, which means that their analysis in real-life situations requires the integration of various factors.

However, this article does have its limitations. A first limitation of the research concerns its duration,which, taking all phases into account, turned out to be equivalent to about one year. During this time, many changes have taken place (e.g. the closure of certain services in the case of pain relief, and the opening of new structures in the case of maxillofacial surgery), and the results of these changes have only been partially considered. Also, at staff level we have witnessed changes due to the retirement of some, transfers and recruitment, which certainly have effects on the research results.

In terms of future prospects, these research findings need to be monitored. This monitoring will provide an opportunity to create a "dashboard" enabling key SWP risk indicators to be monitored by UHC managers. Carrying out a follow-up of this kind is not only an act that meets management needs tounderstand the effectiveness of the interventions carried out, but it will also be an opportunity to confirm the structure of the measurement scale we have validated through confirmatory analysis. This will enable us to obtain a more sensitive measure of objective perception of stress than the frequency count carried out in this research, and also to make comparisons between Tizi-Ouzou University Hospital and other hospital centers.

7. References:

Books :

BIT. (2016, Mai). la prévention du stress au travail: liste des points de contrôle. Rapport international sur les facteurs du stress au travail , 119. Genève, Suisse.

Cooper, C., & Payne, R. (1988). Causes, coping and consequences of stress at work. New York: John Wiley & Sons.

Evrard, Y., Pras, B., & Roux, E. (1996). Market, etudes et recherches en marketing: fondements, méthodes. Paris: Nathan.

Merriam, S. (2009). Qualitative Research. A Guide to Design and Implementation. San Francisco: John Wiley and Sons.

OIT. (2014). La prévention du stress au travail: liste des points de contrôle. Genéve: BIT.

ONS. (2022). secteur touristqiue en Algérie. Alger.

Roussel, P. (1996). Rémuniration, motivation et satisfaction au travail. Paris: Economica.

Silverman, D. (2011). Qualitative Research (éd. 3rd ed). Thousand Oaks: Sage Publications.

Theses :

Sabadie, W. (2001). Contribution à la mesure de la qualité perçue d'une service public. Thése de doctorat université des sciences sociales, institut d'administration des entreprises . Toulouse, Paris.

Journal Articl :

Benabou, D., Tabti, H., & Bendiabdellah, A. (2012). les determinants du stress au travail: Illustration par le modéle de Karasek Isur un échantillon de fonctionnaires publics algériens. revue Organisation et travail , 1 (1), pp. 5-16.

Cesana, G., Albini, E., & Bagnara, S. (2006). Evaluation, prevention et la correction des effets néfastes du stress au travail. Pavie: Pi-ME Editrice , 21, pp. 87-96.

Churchill, G. A. (1979). A paradigm for developing better measures of marketing constructs. Journal of Marketing Research , 14 (1), pp. 64-73.

Daniels, K. (2000). Measures of five aspects off affective well-being at work. Human Relations , 53 (2), pp. 275-294.

Gintrac, A. (2011). Le stress au travail, un état des lieux. Management et Avenir (41), pp. 89-106.

Mansouri, N., M'zali, B., & Perettii, J.-M. (2008). la construction d'une échelle de mesure des problématiques de l'environnement tetranomalisé de l'entreprise. Application du paradigme Churchill. l'entreprise à l'aune de ses responsabilités vis-à-vis de l'homme, de l'environnement et du profit?, (pp. 1-28). Grenoble.

Mols, F., Denollet, J., & Type, D. (2010). Personality in the general population: a systematic review of health status, mechanisms of disease, and work-related problems. Health Qual Life Outcomes , 8, pp. 1-10.

Rossiter, J.-R. (2002). The COARSE procedure for scale devlopment in marketing. International Journal of Research in Marketing , 4 (19), pp. 305-335.

Scherer, K. (2005). What are emotions? And how can they be measured? Soc Sc Inform (44), pp. 695-729.

Siegrist, J., Klein, D., & Voight, K. (1997). Linking sociological with physiological data. The model of effort-rewardimbalance at work. . Acta Physiol Scand (161), pp. 112-116.

Taylor, B., & Barling, J. (2004). Identifying sources and effects of carer fatigue and burnout for mental health nurses: a qualitative approach. Int J of Ment Health Nurs. Journal of Ment Health Nurs , 13, pp. 117-125.

Tonini, S., Lanfranco, A., Costa, M., & Lumelli, D. (2011). lavoro correlato e mobbing: casistica clinica e differenze di genere. Ital Med Lav Erg (33), pp. 409-413.

Turner, B. (1983). The use of grounded theory for the qualitative analysis of organizational behaviour. J Manage Stud , 20, pp. 333-348.

9. Appendices:

Category 1_Work requirements 3

1.1- Shift/night work and/or availability **3**
1.2- Realistic working times and rhythms **3**
1.3- Number of employees and activities to be carried out **3**
1.4- Bureaucratic obligations **3**
1.5-Reorganize the distribution of tasks to prevent excessive demands on the worker **3**
1.6- Ensure that tasks and responsibilities are clearly defined **2**
1.7- Match between job requirements and degree obtained **3**
1.8- Definition of the content and limits of responsibilities **3**

1.9- Clear definition of responsibilities for the role played in hospital **3**
1.10- Relationships within structure **3**
1.11- Relations with other structures **1**

Category 2_Control and decision-making 3

2.1- Adequate participation in patient care decisions **1**
2.2- Adequate participation in organizational decisions **3**
2.3- Professional autonomy **3**
2.4- Regular participation in meetings to discuss workplace problems and solutions **2**
2.5- Control in activity planning 3
2.6- Relevance of patients to the specificity of Structure **1**
2.7-Management methods that enable staff to be creative and innovative **3**

Category 3_Protection against offensive behavior 3

3.1- Establish procedures and action models to combat violence, abuse and harassment in the workplace **3**
3.2- Rapid intervention by management and on-site care of the worker who has been the victim of violence **2**
3.3- Managing conflicts with patients and family members **3**
3.4- Company's perception of protecting its own safety **2**
3.5-Perception of the risk of working with potentially violent patients **2**
3.6- Potential legal disputes **3**

Category 4_ Information and communication 2

4.1- Availability of information on patients' clinical condition **1**
4.2- Availability of information on how to do the job **2**
4.3- Corporate communications for operators **3**
4.4- Appropriateness of meetings to work requirements (in terms of frequency and effectiveness) **2**
4.5- Interference with business activities **2**
4.6- Communication with patients and family members regarding professional aspects **2**
4.7-Relations with superiors **3**

Category 5_ Social support 3

5.1- Contact your superiors **3**
5.2- Professional support from colleagues **2**
5.3- Emotional support **2**
5.4- Training in professional and cross-disciplinary skills **3**
5.5- Promote mutual support and the sharing of knowledge and experience between workers **2**
5.5-Application of and compliance with reregulations **3**

Category 6. Leadership and justice at work 2

6.1- Establish and communicate workplace stress policy and strategy **2**
6.2 -Establish procedures to prohibit discrimination and treat workers fairly **2**
6.3- Encourage informal communication between management and workers and among workers **2**
6.4- Respect the privacy and confidentiality of employee concerns **1**
6.5-Resolve workplace problems as soon as they arise **3**

Category 7. Work control 3

7.1-Involve workers in decisions concerning the organization of their work **3**
7.2-Improve workers' freedom of action and control over the way they do their work **3**

7.3-Organize work so that new skills, abilities and knowledge are developed **3**
7.4-Encourage employee participation in improving working conditions and productivity **3**
7.5-Organize regular meetings to discuss workplace problems and solutions **3**

Category 8- Physical environment 3

8.1-Establish clear procedures for the assessment and control of hazards and risks, building on existingoccupational health and safety management systems **3**
8.2-Provide a comfortable work environment conducive to physical and mental health **3**
8.3-Eliminate or reduce at source hazards and risks to health and safety **2**
8.4-Provide appropriate rest rooms **3**
8.5-Establish emergency plans to facilitate rescue operations and rapid evacuation **1**
8.6- Favorable climatic conditions **3**
8.7 -Fear of contamination **3**
8.8- Covid-19 sequel 3
8.9 Care for the emotional needs of patients and relatives **2**

Category 9- Work-life balance and working hours 2

9.1-Participate workers in drawing up work schedules **2**
9.2-Plan work schedules to take account of specific company and employee needs **2**
9.3-Establish measures and ceilings to avoid excessively long working hours **1**
9.4-Optimize work schedules to enable workers to meet their family responsibilities **2**
9.5-Adjust duration and frequency of breaks and rest periods according to workload **3**

Category 10- Recognition at work 3

10.1-Openly congratulate workers and teams on a job well done **3**
10.2- Incentives and motivation **3**