




## ASSESSMENT OF THE LEVEL OF BURNOUT SYNDROME DUE TO MULTIPLE ROLES IN UNIVERSITY ENGINEERING PROFESSORS: CASE STUDY

## AVALIAÇÃO DO NÍVEL DE SÍNDROME DE BURNOUT DEVIDO À MÚLTIPLA FUNÇÃO EM PROFESSORES UNIVERSITÁRIOS DE ENGENHARIA: ESTUDO DE CASO

## VALORACIÓN DEL NIVEL SÍNDROME DE BURNOUT POR MULTIPLICIDAD DE ROLES EN DOCENTES UNIVERSITARIOS DE INGENIERÍA: CASO DE ESTUDIO

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### ABSTRACT

Burnout syndrome has been studied since the 1970s and remains as relevant topic of study. The objective of this research was to assess multiplicity of roles- educational, researcher and administrative- related to burnout among faculty engineering members of public university northwest Mexico. This study is a quantitative, non-experimental, cross-sectional method technique. The instrument was applied to a representative sample of 62 full time professors and academic technicians, with a 90% confidence level and 10% margin of error, obtaining 0.952 for the Alpha Cronbach coefficient. The Burnout DOINAD instrument was used focused on multiplicity of roles. Our finding underscores that administrative role induce more burnout syndrome than educational role for the faculty engineering members.

**Keywords:** Burnout. University Professor. Multiple Roles. Administrative Activities.

### RESUMO

A síndrome de burnout tem sido estudada desde a década de 1970 e permanece como um tópico relevante de estudo. O objetivo desta pesquisa foi avaliar a multiplicidade de papéis - educacional, de pesquisa e administrativo - relacionados ao burnout entre membros do corpo docente de engenharia de uma universidade pública do noroeste do México. Este estudo é uma técnica quantitativa, não experimental e transversal. O instrumento foi aplicado a uma amostra representativa de 62 professores e técnicos acadêmicos em tempo integral, com nível de confiança de 90% e margem de erro de

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10%, obtendo 0,952 para o coeficiente Alpha de Cronbach. O instrumento Burnout DOINAD foi usado com foco na multiplicidade de papéis. Nossa descoberta ressalta que o papel administrativo induz mais a síndrome de burnout do que o papel educacional para os membros do corpo docente de engenharia.

**Palavras-chave:** Burnout. Professor Universitário. Múltiplas Funções. Atividades Administrativas.

## RESUMEN

El estudio del síndrome de burnout inició desde 1970, continuando la relevancia del tema en la actualidad. El objetivo de la presente investigación fue valorar la presencia del síndrome de burnout derivado por la multiplicidad de roles- educación, investigación y administración- en docentes universitarios de ingeniería, en una institución pública al Noroeste de México. El presente estudio utiliza una metodología cuantitativa con diseño no experimental de corte transversal. El instrumento fue aplicado a una muestra representativa de 62 docentes de tiempo completo y técnicos académicos, con un nivel de confianza del 90% y margen de error del 10%, obteniendo un coeficiente de alfa de Cronbach de 0.952 para todo el instrumento. El instrumento utilizado fue el Burnout DOINAD enfocado a la multiplicidad de roles. Se identificó que las actividades asociadas al rol administrativo inducen más la presencia de un nivel alto del síndrome de burnout que el rol docente en docentes universitarios de ingeniería.

**Palabras clave:** Burnout. Docente Universitario. Multiplicidad de Roles. Actividades Administrativas.



## 1 INTRODUCTION

Freundenberger began the use of the term burnout in the 70s, referring to the chronic stress generated by the performance of work activities related to service or care for people. His research was focused on health care. Research related to the assessment of burnout has focused mainly on health professionals and teachers. With respect to professionals in the field of teaching, research has considered the basic educational level as the main area of study, so the higher level is an area of opportunity, which requires attention.

On the other hand, Tapia et al. (2023), in their bibliographic review, points out that the COVID-19 contingency period generated abrupt changes in the routines of higher-level teachers, where situations of high labor demands and a situation of confinement, causing an increase in the number of cases of burnout in teachers. Likewise, Azevedo et al. (2023), in their bibliographic review, indicates that there is a growth in the number of cases of burnout in teachers, and as a consequence risks to their health and interference in quality of life. These scenarios can induce the presence of burnout syndrome and, as a consequence, health risks and interference in the quality of life, both personal and work, of teachers.

In 2015, at the United Nations Summit on Sustainable Development in New York, the plan called the 2030 Agenda for Sustainable Development was formally approved, which consists of 17 Sustainable Development Goals (SDGs) (United Nations [UN], 2015), of which goal 4 "Quality Education", indicates the need for quality higher education. On the other hand, the International Labor Organization (ILO, 2020) points out in its 2019 report that changes in work practices, technology, as well as in the environment can induce insecurity and concerns in workers related to their safety and health at work, leading to the presence of stress and diseases, such as respiratory, and cancer. Likewise, in 2019, the World Health Organization (WHO) included burnout syndrome in the "International Classification of Diseases" (ICD-11) (Alvarado-Peña et al., 2023).

A definition of work-related stress is the one described by the Mexican Institute of Social Security (IMSS), as stress where the growing work pressure can induce a physical and/or mental saturation of the worker, generating consequences that affect their health and their environment, causing an imbalance between personal and work; it also reports that 75% of Mexicans suffer from fatigue due to work stress, surpassing countries such as China and the United States (IMSS, 2024). Teaching can be one of the professions



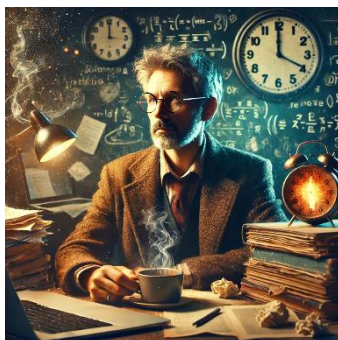
with the greatest demand and incidence for the generation of work stress, derived from the quantity, diversity, ideologies presented by students and co-workers (Pérez, 2018), in addition to this, information and knowledge changes rapidly and education must adapt, positioning the teacher at the center, who must carry out their activities with a high level of pressure due to the urgency of authorities, students or work peers (Alvites-Huamaní, 2019), adapting to technological and generational changes.

In 1981, Maslach and Jackson published their instrument, called Maslach Burnout Inventory (MBI), which considers only activities related to teaching for assessment. Years later, Arquero and Donoso (2013) generated an instrument to measure the presence of burnout syndrome in teachers, considering teaching and research activities (MBI-I). At the beginning of 2021, an instrument was published that allows the general assessment of burnout syndrome by multiplicity of roles, called Burnout DOINAD, (Olivares et al., 2021). This instrument considers as a reference for its design and development the MBI, published by Maslach and Jackson, as well as the MBI-I, published by Arquero and Donoso. With this instrument, the level of presence of the syndrome (low, medium or high) can be assessed in a general way, as well as by each dimension for each role (teaching, research, administration). The dimensions of emotional exhaustion, depersonalization and personal fulfillment define burnout syndrome and were considered for this research.

It is important to keep in mind that the generation of conditions that lead to the presence of work-related stress in teachers can cause damage to the nervous system, causing possible negative changes in behavior, such as reduced patience in front of their students and/or co-workers, low interest in carrying out new projects, among others (Olivares et al., 2021), as well as conditions on the health of the teacher, thus affecting the comprehensive training of students and interaction with colleagues in their different work areas (Figure 1). Not knowing the situation of the presence of burnout in the human capital that works in higher education institutions can lead to the loss of their most experienced members, placing the new generations adrift. It is an important challenge faced by higher education institutions in this area.

## Figure 1

*Image depicting burnout in teachers (OpenAI, 2025)*



## 2 METHODOLOGY

A quantitative methodology with a non-experimental cross-sectional design and a non-probabilistic intentional sampling was followed in the present research. Full-time professors and academic technicians with an employment contract for 40 hours a week, who carry out teaching, research and administration activities were considered as a population. For the calculation of the sample, a confidence level of 90% and a margin of error of 10% were considered, obtaining a minimum sample of 44 teachers to be considered for this research. The instrument applied was the Burnout-DOINAD (Olivares et al., 2021), which assesses the presence of burnout syndrome by multiplicity of roles, in general or by role, in its publication in Spanish.

For the application of the instrument, an online platform was used, where the items were captured, with the aim of providing freedom to the participating teachers when answering the instrument, as well as facilitating the distribution of the instrument among them. The anonymity of the answers was taken care of, where the section for a descriptive analysis did not have the condition of being mandatory to answer. The responses collected on the platform were processed using software designed specifically for this type of research, with the aim of reducing time and facilitating subsequent processing.

With the support of Microsoft Office Excel, results were graphed, individual reports were generated for teachers who requested them and a general report delivered to the authorities of the institution. In addition, to measure reliability, Cronbach's alpha coefficient was considered an acceptable value of 0.70 or higher (Corral, 2009; Sierra Bravo, 2001). SPSS version 22 software was used to calculate the coefficient.

The DOINAD Burnout instrument considers three levels, low, medium and high, to assess the presence of the burnout syndrome, by dimension and by role performed by the teacher, likewise, it uses a color code for a quick visualization of results, where the green color indicates the non-presence of the syndrome, a yellow color a medium level and a red color a high level of burnout in teachers. Ideally, the three dimensions in their three roles should report a green color.

For the delivery of individual results, a summary table was designed that includes the three dimensions and the three roles considered in the instrument (Figure 2). The results obtained with this instrument allow us to clearly identify areas of opportunity and facilitate decision-making for managers.

**Figure 2**

*Summary table format: individual results*

Rol-actividad/ Dimensión	Resultado		
	Cansancio Emocional	Despersonalización	Baja realización personal
Docencia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Investigación	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Administrativas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Código*  
■ No presencia del síndrome  
■ Presencia media del síndrome  
■ Presencia alta del síndrome

### 3 RESULTS

The results obtained in this research are presented below. Of the minimum sample of 44 teachers, 62 were involved, of which 44% were female and 56% male. 63% of them do not have definitiveness and 37% do. 40.3% are between 36 and 45 years old, the same percentage reports the range of over 45 years old, 19.4% indicates being 35 years old or younger. The participating professors report a bachelor's degree with 5%, a master's degree with 29% and a doctorate degree with 66%.

For the analysis of internal consistency, Cronbach's alpha coefficient was used, obtaining a general value of the entire instrument of 0.952. Table 1 shows the results of this coefficient by dimension. In addition, a comparison is made with the results reported in a research carried out focused on full-time professors in universities in Northwest

Mexico, in which the same instrument was applied (Olivares, 2021), observing similarity between the results:

**Table 1**

*Cronbach's alpha coefficient comparison*

Dimension	Cronbach's Alpha Coefficient by Dimension	
	Present research	Northwestern Universities
Emotional exhaustion	0.949	0.940
Depersonalization	0.887	0.858
Personal fulfillment	0.871	0.867

In addition to Cronbach's alpha coefficient, McDonald's omega coefficient was calculated, obtaining a result of 0.952 for the dimension of emotional exhaustion, 0.893 for the dimension of depersonalization and 0.872 for the dimension of personal fulfillment. For the general instrument, the result of the Omega coefficient was 0.954.

Table 2 shows a summary of the results by dimension, both in general and by role of activities, according to the color code used by the DOINAD Burnout instrument:

**Table 2**

*Summary results by dimension and overall*

Dimension	Teaching role	Research role	Administrative role	General
Emotional exhaustion	Red	Red	Red	Red
Depersonalization	Yellow	Green	Red	Red
Personal fulfillment	Green	Red	Red	Yellow

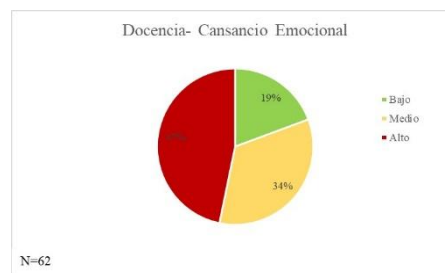
In the above table, it is observed that the teachers participating in the research report that the activities related to the administrative role induce a high level of the

syndrome in the three dimensions, two of the three dimensions for the research role and one of the three for the teaching role, being the dimension of emotional exhaustion where a high level of the presence of the syndrome is observed.

Figures (3-11) present the results in detail of the three dimensions for each of the three roles, teaching, research and administrative:

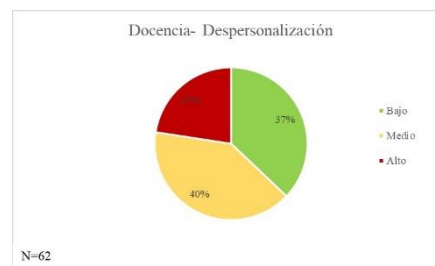
**Figure 3**

*Results dimension emotional fatigue teaching role*



**Figure 4**

*Results dimension depersonalization of the teaching role*



**Figure 5**

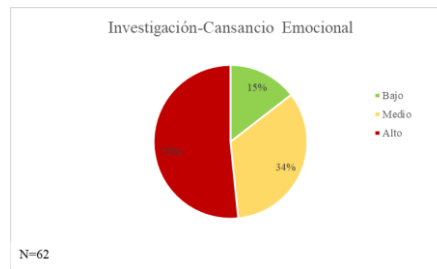
*Results dimension personal realization teaching role*





**Figure 6**

*Results dimension emotional fatigue research role*



**Figure 7**

*Results dimension depersonalization research role*



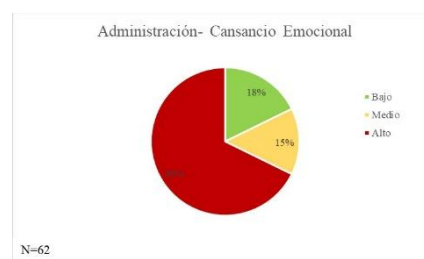
**Figure 8**

*Results dimension personal realization research role*



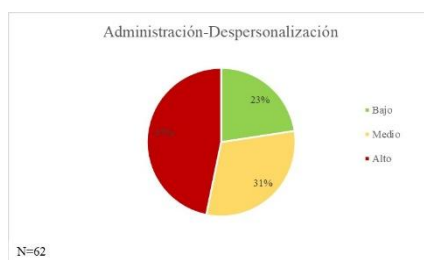
**Figure 9**

*Results dimension emotional fatigue administrative role*



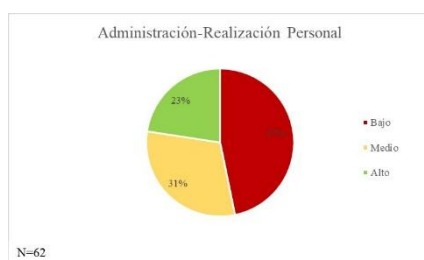
**Figure 10**

*Results dimension depersonalization administrative role*



**Figure 11**

*Results dimension personal realization administrative role*



#### 4 ANALYSIS

The reliability test of the data obtained was performed, resulting in a Cronbach's alpha coefficient of 0.952, higher than the minimum 0.70. The results of the research show the incidence of administrative activities with the presence of burnout syndrome at a medium to high level in the participating teachers, where the dimension of emotional exhaustion obtained 68% at a high level, the dimension of depersonalization and personal fulfillment 47% at a high level. therefore, there is a need for attention in this type of activity.

For the research role, the dimension that reports a high percentage of the presence of burnout is that of emotional exhaustion, with 52%, followed by 44% for the dimension of personal fulfillment, however, for the dimension of depersonalization for this role, the absence of burnout reports 40%, but 35% at a medium level and 24% at a high level.

On the other hand, it is observed that, for the teaching role, the dimension of emotional exhaustion is the one that reports a high level of burnout, with 47% of the



teachers, however, for the dimension of depersonalization it is at a medium level, with 37% of the teachers and the dimension of personal fulfillment at a low level of the presence of the syndrome. with 42% in green. It should be noted that the instrument was applied one year after the return to face-to-face activities, after contingency, so the high percentage of emotional fatigue related to the teaching role could have impacted this result. Emotional exhaustion can lead to low motivation and, therefore, a decrease in the performance of their work. Only 9% of the teachers reported a green color for the three dimensions, that is, the absence of burnout syndrome.

## **5 CONCLUSIONS**

The Ministry of Public Education (2008) mentions that the substantial work of a teacher is focused on the training of students, with the aim of generating changes and positive contributions to society. Likewise, the SDG agenda indicates the need for quality higher education, so it is important to take care that this work is not negatively impacted by work stress suffered by the teacher for a prolonged time, causing the presence of burnout syndrome, possible effects on health and low productivity. The results of the study show that the activities associated with the administrative role induce the presence of this syndrome to a greater extent, and with this they could negatively impact the training of students, reduce their productivity, as well as contribute to a negative organizational climate due to the interaction they have with co-workers, both from their work team and members of the educational institution where they work. That is why the multiplicity of roles is not the ideal way for a teacher to carry out his or her substantial work.

## **6 LIMITATIONS**

The instrument is validated in Spanish, and it is currently in the process of being validated in English.

## **7 RECOMMENDATIONS**

The research can be replicated in any other Spanish-speaking national or international higher education organization that has professors who carry out teaching, research, and administrative activities. Once the English version has been validated, the number of educational organizations can be increased.



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