



# Prevalence and associated factors of burnout syndrome in health personnel working in pediatrics and neonatology. A single-center observational study

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## Abstract

**Introduction:** The workload and the results of Burnout Syndrome (SB) in personnel working in the areas of pediatrics and neonatology are related to the time spent in the work area. The purpose of the study was to evaluate the association between occupational and sociodemographic factors with Burnout Syndrome in a high-flow pediatric public hospital in Quito, Ecuador.

**Methods:** This cross-sectional study was carried out with the participation of health personnel from the pediatrics and neonatology areas of the Hospital General San Francisco, in Quito-Ecuador, between January and December 2021. The "Maslach Burnout Inventory Human Services" scale was measured. The sample is non-probabilistic. A bivariate analysis compares the personnel with BS against those without BS. A study of risk factors with odds ratio (OR) is presented.

**Results:** 135 workers were surveyed. The prevalence of BS was 3.6% (95% CI: 0.9 – 8.96). The "tendency" to have BS was 90.09% (95% CI: 82.83 – 94.49). 54.05% (95% CI: 44.3 - 63.6), There were no differences between age, sex, marital status, and family burden between the study groups. It was determined that the work of postgraduates had an OR 8.75 (2-38.1) P=0.004 and specialists OR=4.5 (1.24-16.7), P=0.02, the workload from 40 to 60 hours OR= 8.3 (2.81-24.6 ), P<0.0001 and more than 60 hours 12.1 (3.51-42.1) P<0.0001.

**Conclusions:** The prevalence of the tendency to BS was high, and the workload is directly related to the presence of BS in workers in the pediatric and neonatology area.

**Keywords:** MESH: Burnout, Psychological; Health Workforce; Health Personnel; Pediatrics, Neonatology.

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## Introduction

Burnout Syndrome (SB) refers to the progressive professional wear or deterioration of gradual and considerable loss of a person's responsibility in carrying out a task [1].

Maslach published a form taking the results of the participants who were faced with various situations in their lives, be it work or daily, assessing three fundamental dimensions of the syndrome studied; therefore, he obtained as results: the Lack of Personal Realization (FRP) the Depersonalization (D) or Inhumanization and Emotional Exhaustion (AE); that is, being treated as a three-dimensional conglomerate of behaviors; when encountering situations such as decreased academic and physical performance, evasion of responsibility, passive-aggressive behaviors with users of professional services and a significant loss of motivation, which include both internal characteristics (social and individual values and personal attributes of personality) as well as external (work, group, integrative, and organizational) [2].

The professional group that provides services in the areas of Pediatrics / Neonatology also faces situations related to stress, such as shifts that exceed 24 working hours, which can be in critical areas, a workload that prevents appropriate breaks, teaching activities, shortages of personnel, responsibility until completing the work corresponding to each working day, impediments to autonomy, relationship with family members and young patients with severe and life-threatening illnesses, lack of material resources or adequate medications, academic stress, complex economic situation, family responsibilities, on some occasions living away from the family, among others. These conditions may mediate as risk factors for developing BS.

Therefore, this study aims to identify the factors associated with BS in the health professional who provides services in the Pediatrics / Neonatology areas of a public reference hospital in Quito, Ecuador.

## Materials and methods

### Type of study

The present observational study is cross-sectional.

### Scenery

The study was conducted in the pediatric and neonatology service of the San Francisco General Hospital in Quito, Ecuador. The study period was from January 1 to December 31, 2021.

### Universe

The universe was made up of health personnel who work in the pediatric and neonatology service.

### Sample

The sampling was carried out by the discard method, taking into account the inclusion and exclusion criteria. The sample was non-probabilistic, census type where all analyzable cases were included.

### Inclusion and exclusion criteria

Subspecialist medical workers, pediatricians, postgraduate physicians, attending physicians, nurses, and nursing auxiliaries with a contract or agency appointment to the institution were entered into the study. Undergraduate students, personnel who work telecommuting, and non-exclusive personnel from the pediatric area, such as nutritionists, social workers, and physiatrists, were excluded.

### Variables

As dependent variables, the presence of burnout syndrome measured with the "Maslach Burnout Inventory Human Services" scale was recorded; the independent variables were the profession, sociodemographic factors: age, sex, marital status, family burden, labor variables: number of jobs, weekly workload, and activity.

### Instrument

A survey was used: Maslach Burnout Inventory Human Services (MBI-HSS). The MBI-HSS questionnaire was validated for the Spanish language [2]. The 22-question

test, validated using a Likert-type frequency scale, which rates 7 degrees, from 0 (never) to 6 (always), gives a result from 0 to 132 points. It measures the three dimensions of the syndrome: emotional exhaustion (AE), depersonalization (D), and personal fulfillment (RP), classified into three levels: low, medium, and high.

### Analysis statistical

The group is divided into workers who present a score less than or equal to the 70th percentile and a group more significant than the 70th percentile. Risk and protection factors are compared with the risk ratio (OR), 95% confidence interval. To carry out the statistical analysis, the Statistical Package for the Social Sciences SPSS 26.0 program (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp) was used.

### Procedure to guarantee bioethical aspects

Once the purpose of the research was disclosed and with prior authorization, the information collected was used solely for analysis and development. The surveys were obtained confidentially and were not disclosed to people outside of this project, and the results were communicated to the workers with an explanation of their results.

### Biases

To avoid possible interviewer, information, and memory biases, the principal investigator kept the data at all times with a guide and records approved in the research protocol. Observation and selection bias was avoided by applying the participant selection criteria. Two researchers independently analyzed each record in

duplicate, and the variables were recorded in the database once their concordance was verified.

## Results

### Participants

78 workers with < or equal to P70 and 33 workers with > P70 were registered.

### General characteristics of the population

There were no differences between age, sex, marital status, and family burden between the study groups. Table 1. It was found that the prevalence of BS in the health personnel of these areas was 93.7% (95% CI: 82.96 - 94.94), with a percentage of 3.6% (95% CI: 0.9 - 8.96) as people with High Burnout Risk and with 90.09% (95% CI: 82.96 - 94.94) as a Tendency to it or Medium Risk.

### Risk factor's

It was determined that the work of postgraduates and specialists constituted risk factors for BS. Another associated factor was the workload of more than 40 hours and more than 60 hours per week as risk factors. These results are presented in Table 2.

### Confounding-controlled multivariate analysis

The Multivariate Analysis was carried out, obtaining that the Workload is the only statistical factor and independently associated with the higher scores of the 70th percentile of Burnout both for people who work between 41 and 60 hours a week and those who work more than 60 hours a week. The other variables, as can be seen in Table 3, were not statistically associated independently.

**Table 1** . Univariate analysis of BS and sociodemographic aspects

Variable	≤ 70th percentile (MBI-HSS) No.=78	> 70th percentile (MBI-HSS) No.=33	P -value	OR (95% CI)	P -value (OR)
Age					
25 to 35 years	22 (28.21%)	15 (45.45%)		1	
36 to 45 years	34 (43.59%)	10 (30.30%)	0.19	0.43 (0.16-1.13)	0.09
46 to 65 years	22 (28.21%)	8 (24.24%)		0.53 (0.19-1.5)	0.24

Sex					
Women	69 (88.46%)	25 (75.76%)		1	
Man	9 (11.54%)	8 (24.24%)	0.09	2.45 (0.85-7.06)	0.09
Civil status					
Single or Divorced	27 (34.61%)	13 (39.39%)		1	
Married or Free Union	51 (65.39%)	20 (60.61%)	0.63	0.81 (0.35-1.9)	0.63
Family burden					
Yes	15 (19.23%)	10 (30.30%)		1	
No	63 (80.77%)	23 (69.70%)	0.20	0.55 (0.21-1.4)	0.21

**Table 2.** Univariate analysis of SB and labor aspects.

	≤ 70th percentile (MBI-HSS) No.=78	> 70th percentile (MBI-HSS) No.=33	P-value	OR (95% CI)	P-value (OR)
Profession					
Postgraduate	21 (84)	4 (16)		1	
Nursing	36 (85.71)	6 (14.29)	<0.0001	0.87 (0.22-3.5)	0.85
Assistant	6 (37.5)	10 (62.5)		8.75 (2-38.1)	0.004
Specialist	15 (53.57)	13 (46.43)		4.5 (1.24-16.7)	0.02
Service in which you work					
neonatology	34 (66.67)	17 (33.33)		1	
Pediatrics	44 (73.33)	16 (26.67)	0.44	0.73 (0.32-1.65)	0.45
Extra work					
None	58 (77.33)	17 (22.67)		1	
One	17 (58.62)	12 (41.38)	0.045	2.4 (0.96-6.01)	0.06
Two or more extra jobs	3 (42.86)	4 (57.14)		4.6 (0.93-22.3)	0.06
Workload					
<40 hours/week	53 (89.83)	6 (10.17)		1	
40 to 60 hours/week	17 (51.52)	16 (48.48)	<0.0001	8.3 (2.81-24.6)	<0.0001
> 60 hours/week	8 (42.21)	11 (57.89)		12.1 (3.51-42.1)	<0.0001
hospital function					
Administrative	3 (75)	1 (25)		1	
Operating Technician	72 (74.23)	25 (25.77)	0.01	1.04 (0.1-10.5)	0.97
Administrative and	3 (30)	7 (70)		7 (0.5-97.8)	0.15
Technical					
Attention to pces covid-19					
Yes	20 (64.52)	11 (35.48)		1	
No	58 (72.5)	22 (27.5)	0.41	1.4 (0.53-3.4)	0.53
covid 19 diagnosis					
Yes	61 (71.76)	24 (28.24)		1	
No	17 (65.38)	9 (34.62)	0.53	1.34 (0.53-3.43)	0.53
history of emotional disorder					
Yes	66 (68.04)	31 (31.96)		1	
No	12 (85.71)	2 (14.29)	0.18	0.35 (0.07-1.7)	0.2

**Table 3.** Multivariate Analysis of factors associated with scores above p 70 on the Burnout Syndrome Scale.

Variable	Odds Ratio	95% CI	P >  z
Nursing	0.692	0.1577 – 3.038	0.626
postgraduate	2,271	0.327 – 15.733	0.406
Specialist/subspecialist	1,432	0.246 – 8.341	0.689
Extra work	1,346	0.352 – 5.141	0.664
2 extra jobs	1,457	0.189 – 11.194	0.717
41 to 60 hours/week	5,516	1,582 – 19,226	0.007
More than 60 hours/week	5,779	1,041 – 32,066	0.045

## Discussion

The prevalence found in this study according to the original Maslach scale (93.7%) contrasts with that obtained in some investigations from 25 to 70%, interrelated with a specific field of pediatrics; that is, higher prevalences are found in older people in the unit pediatric intensive care or pediatric emergency. In specialized units such as pediatric nephrology, the majority of BS is 21.6% to 39.2% [3]. These differences, compared to the results of this study, can be justified due to differences in labor legislation. For example, in Spain in 2019, Spanish workers reported having worked an average of 36.6 hours per week; in Mexico, it was 43. weekly hours, and in Colombia, 48 weekly hours. In Ecuador, the working day is 40 hours.

A study in Paraguay measured the prevalence of BS in 90 Pediatric workers, which was 36.3% in 2015 and 37% in 2016. Another multicenter, cross-sectional study conducted by the same author on 116 Pediatric residents in 4 training centers in Asunción and the Central Department found a global prevalence of BS of 33.6% (Martínez et al.; 2017) [4].

Vinueza et al. carried out a cross-sectional analytical investigation in Ecuador in Units belonging to the Ministry of Public Health, Units of the Ecuadorian Social Security Institute, and Health Units corresponding to the Comprehensive Health Network, not only referring to a pediatric service. With a sample of 224 people, which was made up of doctors and nurses, 151 people corresponded to the medical union (67.4%), and 73 belonged to the Nursing group

(32.59%); it was reported that more than 90% of the participants suffered from moderate and severe Burnout (Vinueza et al., 2020) [5].

The similarity of the result found with this study about the role performed by the participants can be attributed to the fact that both doctors and nurses are vulnerable to the deleterious consequences caused by carrying out the health profession in Ecuador under conditions of work overload and hours, which are exceeded by health personnel in both public and private entities, added to the role performed by medical professionals, the same that entails greater responsibility if the complexity of the Health Unit in decision-making is greater, excess of work to complete these responsibilities, which causes the percentage of Burnout in these workers to appear at higher levels in our country.

In this same study by Vinueza, the male gender presented 4.04 points less than the female gender (95% CI: -9.29 – -0.134; p: 0.045). However, this variable was not statistically associated with the present study. Age and attention level were also not statistically associated in the survey by Vinueza, similar to the results found in the current investigation [5].

Taking into account the areas of Burnout in this study, 27.02% of participants obtained a "high" level of Emotional Exhaustion; these results could be related to the possible presence of pessimistic attitudes towards work and themselves, accompanied by decreased interest in caring for children and a decline in self-esteem, components of the sphere of Emotional Exhaustion [6].

In this study, the variables of age, marital status, presence of family responsibilities, service in which they work, having presented Covid-19 during the period of 2021, providing care to patients diagnosed with Covid-19, or presenting any Previous Psychological Diagnosis, there were no risk factors for the development of BS.

Regarding occupational factors, it was found that the medical profession (postgraduate physician, specialist/subspecialist) presented a positive association with scores above the 70th percentile of the MBI-HSS, being statistically significant only in the univariate analysis, results that are analogous to those found by Ramírez et al., who point out that the probability of presenting a high level of Emotional Exhaustion is lower in the Nursing profession than in the Medical profession. This could be because, in the San Francisco de Quito Hospital, a Second Level hospital with greater complexity compared to essential hospitals or health centers and sub-centers, the Postgraduate Physician, Specialist/Subspecialist presents greater responsibility of a Service that likewise handles clinical cases of greater complexity and severity, therefore, greater risk of pressure in the care activity and work overload due to the type of patients [5].

Regarding the extra work variable, it was observed that one additional job increased 2.4 times more to present Burnout, and maintaining two or more different positions increased up to 4.6 times more; however, in the univariate analysis, it turned out to be statistically weak, or their association was significantly weak, unable to rule out this association completely. The association between having one, two, or more extra jobs with Burnout can be considered about the workload, which was statistically significant. However, it was believed that a factor related to Burnout turned out to be being a "postgraduate," who does not necessarily have extra work but rather a workload that completes 256 hours per month, therefore; Although extra work was considered about the workload, it is justified that the relationship was weak between Burnout and extra work

due to the precedent of work in a single place by the postgraduate community.

Although it can also be considered that a bias could have occurred during the survey carried out in this study as a consequence of the group of postgraduates who did not answer the time spent teaching as "Extra Work," and in this way, could alter the final result, possibly increasing the positive percentage to this variable, which could affect the results of the sample and its association with Burnout. However, when performing the Multivariate Analysis, it was obtained as a result that only the Workload is the only factor independently associated with higher Burnout scores since it was found in our study that a more increased weekly workload (40 - 60 hours and  $\geq$  60 hours ) presented a positive association, 8.3 and 12.1 times more respectively, of giving MBI-HSS scores above the 70th percentile. This was found in a multicenter cross-sectional study carried out in more than 20 hospitals in China in the city of Shanghai, with 457 participants, evidencing that the medical personnel who worked more than 60 hours a week presented 4.54 times more probability of suffering from Burnout compared to the participants who reported working less than 40 hours a week, this is similar to our study since it is evidenced that working more weekly hours increases the risk of presenting Burnout. However, in our research, this value doubled compared to the survey carried out in Shanghai [7].

Regarding the limitations of the study, it was given the relatively small sample being carried out in a single study center, which prevented carrying out extended analyzes to find various statistical associations between the variables studied. Another significant limitation was the result initially obtained under the categories established by the Maslach Burnout Inventory, with which a tiny percentage of workers with a Low Burnout score was obtained, which did not allow statistical associations to be made, which is why it was decided to take The 70th percentile of the Maslach scale was used as the cut-off point to obtain the results analyzed.

We can also mention as a limitation that, when choosing the sociodemographic variables of this study, those considered appropriate to trigger a Burnout Syndrome were chosen based on studies in the literature. However, some variables were not analyzed in this study. Population such as years of work experience of each person in this Institution and several patients attended per day, among others; therefore, the results reported here may be affected by residual confusion of these variables not studied.

Among the strengths of the study, it can be considered that by reconsidering the results initially obtained from the Maslach scale for Burnout and changing the methodology to a measurement cutoff with a percentile, the Burnout association study could be carried out independently, despite that the research was carried out with a relatively small universe. Likewise, the scale used is widely validated as a study instrument in Burnout.

## Conclusions

The prevalence described in this study, according to the concept developed by Maslach for Burnout Syndrome, in the health personnel of the Pediatrics and Neonatology of the San Francisco General Hospital was high. A Tendency to suffer from the Syndrome of 90.09% and 3.6% as a high level of Burnout was found, with greater involvement, of more than half, in the Dimension of Lack of Personal Fulfillment. The analysis was also carried out based on the high scores of the Maslach Burnout scale as a second analysis, taking scores above the 70th percentile as a cutoff. It was found that there is a statistical association between the scores above this percentile only with the variable " Hourly Load" independently, the same that increases progressively according to the number of hours worked per week.

## References

### Abbreviations

SA: exhaustion of Emotional  
 D: Depersonalization  
 SD: standard deviation  
 MBI: Maslach Burnout Inventory  
 MBI-HSS: Maslach Burnout Inventory Human Services Survey  
 MSP: Ministry of Public Health  
 OLB: The Oldenburg Burnout Inventory WHO: World Health Organization.  
 OR: odds ratio  
 p: p-value  
 RP: Personal Realization.  
 HR: Human Resources.  
 BS: Burnout Syndrome  
 SBS-HP: The staff burnout scale for Health professional

### Supplementary information

No supplementary materials are declared.

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We thank the study participants and workers at the San Francisco de Quito Hospital.

### Author contributions

Samia Andrea Anbousi Calderón: Conceptualization, data curation, formal analysis, fundraising, research, writing - original draft.

Jorge Hernán Chalco: Methodology, project administration, resources, Software, supervision, validation, visualization, writing - revision and edition.

Pablo Francisco Endara Dávila: Methodology, project administration, resources, software, supervision.

All authors read and approved the final version of the manuscript.

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### Availability of data and materials

The data is not publicly available due to the confidentiality of the participants but is available through the corresponding author under a justified academic request.

## Statements

### Ethics committee approval and consent to participate

The Research Committee and the Ethics Committee of the Faculty of Medicine of the Pontificia Universidad Católica del Ecuador approved it.

### Publication Consent

Not required when patient-specific images, radiographs, and studies are not published.

### Conflicts of interest

The authors declare they have no conflicts of interest.

### Author Information

Not declared.

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