

# Prevalence of stress in health workers in the context hospital

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## Abstract

Working in the health area is one of the most stressful jobs you can have, because the professional must act in situations of risk of life dealing with imminent death in environments considered unhealthy. In view of the above, the aim of the present study was to evaluate the prevalence of stress level and symptom manifestation in a sample of workers of the Metropolitan Hospital of Varzea Grande (MHVG/MT). The Lipp's Inventory of Stress Symptoms

for Adults (ISSL) and sociodemographic questionnaire were used. The data showed prevalence of stress in the resistance phase, with a predominance of psychological symptoms. It is concluded that the female gender was more affected by stress, as well as showed association between stress and health problem in the family, as well as having a family relationship considered regular or poor predisposes to stress.

**Keywords:** stress, gender, occupational health, hospital environment

## Introduction

Living in an accelerated capitalist society creates the expectation in some people of being always looking for knowledge, improvement and growth which translates as consumerism and income increase desire with the intention of satisfying basic needs, which favors low quality of life and stress increase in people's life. According to the research conducted by the International Stress Management Association (ISMA/BR), about 70% of all Brazilians are victims of stress, considered the XXI century illness by the ISMA. Brazil is the second most stressed country in the world in a ten-country ranking, being behind only the Japanese population (Barreto, 2015). One of the main factors pointed as stressors is work (69%), in other words, long work journeys, work overload and tensions inside the corporative environment.<sup>1</sup>

Stress originated from work has been a problem associated to the high health costs for individuals and for organizations.<sup>2</sup>

Lately the demands of working appear as an important stress source, being considered a challenge which needs to be overcome by workers for them to stay active and competitive in the corporate life, always stressed with searching for results. This can create a large emotional distress in all thing related to work (Santana et al., 2017).<sup>3</sup>

People are more unsatisfied and demotivated with their jobs and with other factors such as: work distress, tiredness, work overload and long work journey, that can cause work mistakes and fatigue which directly influences in the quality of service and personal life quality.<sup>4,5</sup>

Stress in all its forms reaches about 90% of global population, according to the World Health Organization (WHO). This condition is related to diseases such as diabetes, hypertension, cancer and depression. The reason why stroke rates are influenced by stress is still uncertain, but by itself can be a stroke risk.<sup>6</sup>

These symptoms can get worse in health professionals, a preliminary study by the Nation Institute for Occupational Safety and Health (NIOSH) points that in a group of the 10 most stressful professions the ranking is as follows: 1<sup>st</sup> place Healthcare Technicians, 3<sup>rd</sup> place Nurses, 7<sup>th</sup> place Laboratory Technicians and 10<sup>th</sup> place Nursery assistants. All the health professionals and profiles can be found at Nursery Management.<sup>7</sup>

Another research compiled by the website Business Insides, using data from ONET (Occupational Information Network), a government-based program that gathers information about workforce inside the USA relates the most stressful professions in the USA, and again the ranking is filled with health work careers. In 1<sup>st</sup> place is urologist doctors, 2<sup>nd</sup> place is distress call worker for ambulances, police and firefighters, 3<sup>rd</sup> place is anesthesiology assistant, 4<sup>th</sup> is anesthesiology nurse, 6<sup>th</sup> is ICU nurses, 8<sup>th</sup> is gynecologist, 12<sup>th</sup> critical cases nurse, 13<sup>th</sup> social assistant in health and 14<sup>th</sup> is phlebotomy specialist. This list has 10 out of 15 professions in the health field.<sup>8</sup>

The word "stress" was utilized for the first time in the XIV century by Lazarus and meant "Adversity and affliction". Back in the 30's the word was utilized by the Austrian endocrinologist of Montreal's University, Dr. Hans Selye whom borrowed from physics the meaning "The weight that a bridge holds until it breaks" to define the General Adaptation Syndrome (GAS), as the group of reactions that an organism develops when being put through a situation that demands effort of adaptation. The terminology syndrome comes from the fact the manifestations are interlaced with each other. General, because it conditions generalized defensive phenomenon whereas the adaptation suggests acquisition and maintenance of the resistance or equilibrium state.<sup>9,10</sup>

Stress can be defined as a psychological reaction from the organism, deeply complex, which has in its genesis the necessity the organism

must deal with something that threatens your homeostasis or internal equilibrium. It is an attempt to overcome a challenge, of surviving against a threat or of dealing with a necessary momentary adaptation, even if it is something intended.<sup>11</sup> People maintain a deficient confrontation towards personal, social or even global changes during their lifespan.<sup>12</sup>

Stress is divided in four phases. The first, known as alert, refers to positive stress; where the individual secretes adrenaline and has energy to deal with routine situations. The most common symptoms are tension, nausea, skin lesions, irritability without apparent reasoning, anxiety, etc. When the stress cause disappears, the person gets out of the process without traumas although it can persist and evolve to the second phase, named Resistance, where new symptoms show like memory struggles and constant fatigue. To deal and get away from this process it is necessary an effort and if the individual can not resist, the body starts to suffer and enters a phase of almost exhaustion, with symptoms like tumors, gastritis, weight loss or gain, herpes, gynecological infections, high blood pressure, panic attacks, etc.

If the person cannot reduce stress or learn how to deal with the stress factors it can become the exhaustion phase, or pathological phase, with elevated internal disequilibrium. The person can become depressed, with a lot of troubles to work, developing diseases like psoriasis, vitiligo, etc.<sup>10,13</sup>

Considering the importance and high indicators of damage done by stress in the general population, identifying stress and delimitating its prevalence and harms is a must; specifically, at the Metropolitan Hospital of Varzea Grande (MHVG), subsidizing development of strategies of approach, prophylaxis and workers communication.

## Objective

In a try to offer actions and reduce stress problems, a recurring theme among health workers, this research had as objective analyze stress prevalence within the workers at Varzea Grande's Metropolitan Hospital, identifying the predominant phase, and the main stressful factors.

## Methodological procedure

### Study type

This study is a transversal epidemiologic study with professionals who work at MHVG which was conducted from June/2017 to October/2017.

### Study environment

The MHVG was built in 2004 using municipal resources and a partnership between Minas Gerais State Government and the University Center of Varzea Grande (UNIVAG). The hospital is located beside UNIVAG and it was inaugurated on 08/01/2011. It started being administrated by the Pernambuco Institute of Assistance and Health (IPAS), but in 2014 the State Health Office (SHO) took charge of the hospital.

### Participants

The participants of this study were all 376 workers at HMVG, where 259 were hired by the HMVG, 87 third party workers from various companies and 30 workers from the State Health Office.

The participants were the professionals hired by the State Health Office in the sectors directly related to the Directorial Assistance of the MHVG and that accepted to participate in the study.

The Directorial Assistance of the MHVG consists of professionals that work in the ambulatory (physiotherapy, psychology, social assistants, nutritionists, doctors, endocrinologists of the SHO) and it was directly connected at the time of the study to the hospital's directors. In addition to that, the Directorial was divided in two managements, the Nursery and the Operational Management. The first including nurses, technicians, assistants, transporters and cast technicians from the sectors of endoscopy, surgery center, ICU and nurseries. In the Operational Management includes the following profiles: Maintenance, laundry, cleaning, nutritionists, cooks, general services assistant. Including both managements there is about 150 workers.

All doctors, dentists and security related to third party companies did not make part of the study, even though they worked in many sectors of the MHVG.

## Instruments

Two instruments were employed: A survey with 10 open answer and multiple-choice answers elaborated by the researcher to discover a wide range of social demo graphs and aspects that could help identify the sources of stress; the second instrument is the Lipp's Inventory of Stress Symptoms for Adults (ISSL), developed by Lipp, standardized and approved in 2000 by the Federal Council of Psychology, which measures levels, phases of stress (Alert, Resistance, Almost Exhaustion and Exhaustion) and symptoms predominance (physical and/or psychological).<sup>14</sup>

The ISSL takes around 10 minutes to be administrated, its usage is fast and simple and provides an objective measure of the symptomology of stress in people over 15years-old. The procedure was conducted in group at the HMVG's meeting room.

## Procedures

The procedure form was applied collectively by an authorized psychologist from the SHO, that conducted numerous meetings in different schedules with the workers at the meeting room of the hospital. During these encounters, it was informed the objective of the survey and all workers were invited to participated. All the workers that did participate signed a consent term.

## Data analysis

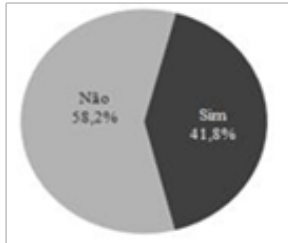
All the filled survey forms were evaluated by the main researcher to identify possible mistakes or lack of information in the answers. Following this review, all data was inserted in a data base for further analysis. The statistical analysis was conducted using Statistical Package for the Social Sciences (SPSS) for Windows, version 15. Afterwards the average, median, bivariate and multivariate analysis were calculated.

## Ethical considerations

This study was evaluated and approved by the Ethical Commission in Research with Human beings of the School of Public Healthcare from the State of Mato Grosso (number 2.121.666 e CAAE 61006316.4.0000.5164).

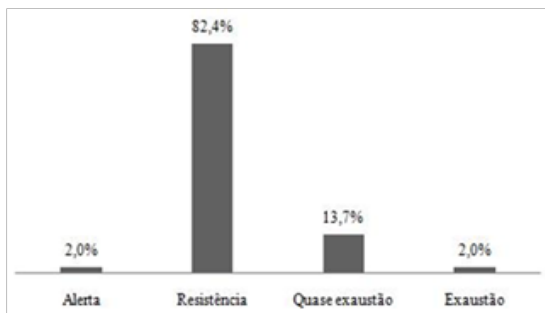
### Results

The analyzing the results shows that 51 works (41.8%) manifested stress symptoms while 71 (58,2%) did not manifest according to Figure 1.



**Figure 1** Stress presence among workers at MHVG/MT

The predominant stress phase identified was Resistance with 82.4% of the cases, followed by almost exhaustion (13.7%), alert and exhaustion (2.0%) (Figure 2). About the symptomology, the data shows in Figure 3, the predominance of psychology symptoms with 65%, physics with 33% and physic/psychologic with 2%.



**Figure 2** Stress phases of the workers at MHVG/MT

**Figure 3** Chi squared calculated and from literature, p-value calculated and comparative for  $\alpha = 0,05$ , of the associations between each variable of interest and stress presence in workers at the MHVG/MT

Variable of interest	$X^2_{calc}$	$X^2_{tab}$	$p - valor$	$p - valor \leq > \alpha$
Gender	3,983	3,841	0.046	<0.05
Education	1,365	5,991	0.505	> 0.05
Marital status	1.097	3,841	0.295	> 0.05
Age range	0.353	3,841	0.553	> 0.05
Number of children	1,903	5,991	0.386	> 0.05
Work shift	1,883	5,991	0.390	> 0.05
Physical activity	0.127	3,841	0.721	> 0.05
Presence of health problems	2,729	3,841	0.099	> 0.05
Presence of health problems in the family	8,888	3,841	0.003	<0.05
Familiar relationship	94,197	3,841	0,000	<0.05

Table 1 shows the description of the works accordingly with the social demographic, that are distribute as it follows: Most of the data (84.4%) is composed by women, high school is the most common education level (42.6%), the majority of the works are married (66.4%), the most common age range is between 30 to 59years-old (82.0%), the

most common case is of workers with 2 or 3 children (32.0% and 23.0%, respectively) and the majority (66.6%) works in standby duty.

**Table 1** Description according to the social demographic of the workers at MHVG/MT

Variable	Amount	Freq (%)
<b>Gender</b>		
Female	103	84.4
Male	19	15.6
<b>Total</b>	<b>122</b>	<b>100</b>
<b>Education Level</b>		
Primary School	27	22.1
High School	52	42.6
University	43	35.2
<b>Total</b>	<b>122</b>	<b>100</b>
<b>Marital status</b>		
Married	81	66.4
Single/Widower	41	33.6
<b>Total</b>	<b>122</b>	<b>100</b>
<b>Age Range</b>		
19 to 29	21	17.2
30 to 59	100	82
60 +	1	0.8
<b>Total</b>	<b>122</b>	<b>100</b>
<b>Number of children</b>		
0	23	18.9
1	21	17.2
2	39	32
3	28	23
4 to 6	11	9
<b>Total</b>	<b>122</b>	<b>100</b>
<b>Work shift</b>		
30hours/week	13	10.6
40hours/week	29	23.7
Standby shift	80	66.6
<b>Total</b>	<b>122</b>	<b>100</b>

According to stress and the variables, as seen in Table 2, in the women population stress is present in 45.6% while in the men population only appears in 21.1% of the cases. When the variable is education, stress is present in 37.0% of the primary school workers, 38.5% of the high school workers and 48.8% of the surveyed that have a university degree.

When the variable is marital status, those without a partner (single, divorced or widower) stress is present in 36.6% of the surveyed, while the group with a partner this indicator is 45.7% of the cases. In the young age bracket (19 to 29years-old) stress is present in 47.6% of the cases, where in the adult bracket stress is present in 40.6% (30+years-old).

**Table 2** Variables of interest and stress presence of workers from MHVG/MT

Variable	Levels	Stress				Total
		No	Yes	No	Yes	
Gender	Female	56 (54.4%)	47 (45.6%)	103	(100.0%)	
	Male	15 (78.9%)	4 (21.1%)	19	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	
Education	Primary	17 (63.0%)	10 (37.0%)	27	(100.0%)	
	High school	32 (61.5%)	20 (38.5%)	52	(100.0%)	
	University	22 (51.2%)	21 (48.8%)	43	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	
Marital status	Married	44 (54.3%)	37 (45.7%)	81	(100.0%)	
	Single	26 (63.4%)	15 (36.6%)	41	(100.0%)	
	Total	70 (58.3%)	52 (41.7%)	122	(100.0%)	
Age Range	19 to 29	11 (52.4%)	10 (47.6%)	21	(100.0%)	
	30+	60 (59.4%)	41 (40.6%)	101	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	
Work shift	30 h	7 (53.8%)	6 (46.2%)	13	(100.0%)	
	40 h	14 (48.3%)	15 (51.7%)	29	(100.0%)	
	Standby	50 (62.5%)	31 (37.5%)	80	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	
Practice physical activity	No	42 (60.0%)	28 (40.0%)	70	(100.0%)	
	Yes	11 (64.7%)	6 (35.3%)	17	(100.0%)	
	Total	53 (60.9%)	34 (39.1%)	87	(100.0%)	
Health problem	No	40 (65.6%)	21 (34.4%)	61	(100.0%)	
	Yes	31 (50.8%)	30 (49.2%)	61	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	
Health problem in the family	No	51 (68.9%)	23 (31.1%)	74	(100.0%)	
	Yes	20 (41.7%)	28 (58.3%)	48	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	
Family relationship	Good or Great	66 (62.3%)	40 (37.7%)	106	(100.0%)	
	Regular or bad	5 (31.3%)	11 (68.8%)	16	(100.0%)	
	Total	71 (58.2%)	51 (41.8%)	122	(100.0%)	

When the indicator is the work-shift, it was evaluated those who work 30+hours have stress present in 46.2%, where those who work 40+hours showed a 51.7% stress indicator and 37.5% stress presence in those who work a standby shift. When the indicator is about those who practice any type of physical activity, where 40% of those who don't practice any kind of activity showed stress, and 35.3%. In the group of workers without health problems, 34.4% of those showed stress, where the workers with health problems was registered in almost half of the workers surveyed (49.2%). According to family health problems, those without a family member at the time with

health problems had stress present in 31.1% of the cases, while 58.3% with family members with current health problems showed stress.

In the group of workers where the family relationship is good or great, stress was registered in less than half of the cases (37.7%), whereas the group with family relationship regular or bad stress was present in 68.8% of the cases.

Analyzing the association levels of stress with the variables gender, health problem in the family and family relationship, the qui-square values are respectively,  $X^2=3.983$ ,  $X^2=8.888$  and  $X^2=94.197$ , higher



than the expected values of random (3.841) and the p-values are respectively 0.046, 0.003 and 0.000, higher than 0.05, which means we refuse the zero hypothesis and we assume that there is association among these three variables and stress presence.

In this way, is possible to assume that women show higher frequency of stress than men, workers who deal with health issues in their family show stress more often than those that do not deal with health issues at the moment of the study; In addition to it, workers with a poor or regular familiar relationship show higher frequency of stress than those with good or great relationship.

According to the variables: Education, number of children and work shift, the Chi-square calculated are, respectively,  $X^2=1.365$ ,  $X^2=1.903$ ,  $X^2=1.883$ , lower than the expected by chance (5.991) and p-value equal to 0.505, 0.386 and 0.390, higher than 0.005.

About the variables: Marital status, age range, physical activity, health problems or issues, the Chi-square calculated are, respectively,  $X^2=1.097$ ,  $X^2=0.353$ ,  $X^2=0.127$  and  $X^2=2.729$  lower than the expected by chance (3.841) and p-values equal to 0.295, 0.553, 0.721, 0.099, in other words, the zero hypothesis is not rejected, therefore is not assumed associations between these variables and stress predominance.

## Discussion

The results of the research show that a significative number of workers manifested stress symptoms, predominantly in the resistance phase. The predominance of the intermediate phase (Resistance) was 82.4% of the total evaluations. This result goes beyond what is available in the literature currently, where the resistance phase generally appears with 41.2%.<sup>15,16</sup>

However, the predominance of the resistance phase corroborates with the studies of Santos and Nakasu,<sup>17</sup> Chaves et al.,<sup>18</sup> and Wottrich et al.<sup>19</sup> According to Lipp,<sup>20</sup> in this phase the immunological system is affected, contributing to the individual's health problems and the organism works trying to find equilibrium.

The results of predominance of the psychological symptomatology are compatible with the study from Santos & Nakasu<sup>17</sup> and for these the predominance of psychological order seems to indicate vulnerability of this group towards this phenomenon. This result diverges from the study of Chaves et al.,<sup>18</sup> with the predominance of physical factors.

About the presence of stress in the female gender and this result had been statistically significative, corroborates studies such as Morais et al.,<sup>5</sup> Assis, Silva, Lopes, Silva & Santini,<sup>21</sup> Sadir, Bignotto, Lipp.<sup>20</sup> Calais, Andrade & Lipp<sup>22</sup> tries to bring up this question based on societies demands towards woman that adds the career overload (professional or academic) to the personal, biological, sexual, social demands. Andrew<sup>23</sup> emphasizes the myth that man stress more than woman, due to the fact stress affects two times more women than men in all age ranges. Besides that, women are more humiliated than men at work and think more of suicide.

Even though the stress levels found had been high in professionals with a university degree this data was not statistically significant and diverges from results of the study from Gomes, Gardim, Bernardo, Peffardini and Lorençon<sup>24</sup> and from Santos & Nakasu<sup>17</sup> were primary school was the most stressed with 61%.

The correlation between stress and marital status, where those who live in a stable marriage have higher stress levels also appeared in

other researches like Morais et al.,<sup>5</sup> Soares et al.,<sup>25</sup> and Sadir, Bignotto, Lipp.<sup>20</sup> Reinhold comments that a higher stress levels in married women may be understood due to the multiple functions and doubled demands in front of personal and professional life. In addition to the self-motivation and demands that the woman makes to herself looking for perfection and to deal with all the attributions (2004).

The fact that stress being predominant in younger people is in line with the study from Souza, Bernardes, Fonseca, Gonçalves and Lopes,<sup>26</sup> where older people showed to be less stressed. Oliveira and Cupertino believe that older start learning strategies to deal with difficulties (2005)<sup>27</sup> and that people tend to reevaluate life in a more rational and pondered with the passing of time.<sup>28</sup> To Naseem,<sup>29</sup> the individuals become emotionally intelligent while getting older.

Related to the work shift, it was verified that those who work 40hours, and are full-time inside the hospital, are the most stressed. Felix, Machado and Sousa comment that the hospital is considered an insalubrious environment, advantageous for disease development (2017).<sup>30</sup> Besides that, the bigger the work shift the higher the stress level on the professional,<sup>31</sup> due to the nature of the work, having to stand the imminent risk of death, associated to the personal factors and the psyche suffering.<sup>32</sup>

When the variable is physical activity practice, a higher frequency of stress was found on those who didn't practice any activity. Even though this data had not been statistically significative the study showed that physical practice is efficient in reducing stress levels, increasing the body's health and life quality.<sup>33</sup> Besides that, the study concluded that emotions triggered during exercise give an outlet to the stressful sensations from the everyday life, changing the way people interact with one another and the world and the way people feel, think and act in society.<sup>34</sup>

In the group of workers with health problems, stress was present in almost half of the cases. This result allows an association between stress and quality of life, inside the health quadrant, which is one of the quadrants of quality of lie. It is possible to evaluate that in the health field a variety of diseases can be acquired from excessive stress.<sup>35</sup> Autors such as Lipp, Malagris and Novaes<sup>36</sup> emphasize that stress can trigger damage to an individual's health.

Another important correlation was between the stress levels and having a family member with a health problem, professionals that declared having a family member at the time struggling with a health issue, presented stress. According to this, Lipp comments that it is a known fact where dangerous diseases stresses nearby family members, Holmes & Rahe's Social Readjustment Scale, it takes up to 44 points of adaptive energy for when there is an unhealthy family member in the family (2007). Besides that, family is a whole that works as a living organism, where each member has its function, and when one of those gets sick, the others must deal with the lost in the family.<sup>37</sup>

A supporting point to the literature is having a regular or bad familiar relationship. In this group, the stress presence registered is statistically significant. This result can be explicit, accordingly to the literature, mankind lives in a social context where family is the closest support frame. This way, taking care of your family members is common practice.<sup>38</sup> A dysfunctional family can cause severe damage to its members. Generally, family tends to offer protection, affection, safety and love, being the reference for the hardest moments. Stress caused by the external world or by emotional difficulties can be reduced when there is a structured family, where people accept, support each other; becoming the biggest stress relief mechanism.<sup>37</sup> It is important

to emphasize that high stress levels are produced by the individual and the way the one perceives reality is fundamental in this process.<sup>39</sup> In the same note, Naseem<sup>29</sup> shows in his study that workers with higher emotional intelligence presents less stress and a higher level of happiness and satisfaction.<sup>40–42</sup>

## Study's limitations

The biggest difficulty while accomplishing this research was being able to make workers let their daily work activities to do the survey, specially those in the assistance field. Some did not want to participate and reported that it could delay their job, evidently a constant stress, letting themselves to the side frequently.

## Final considerations

This study allowed to verify that there is association between stress and gender, where women are more susceptible to it. There is association between stress and health problems in the family members, where the group with this situation being in general more stressed. It was also verified strong association between stress and familiar relationships, where is most likely to manifest stress those who have a bad or regular relationship with their family.

It is verified that many of the health workers are working ill, stressed, psychologically ill, and it is important the reflection of who is taking care of our health cares, that are compelled to treat people and deal with anguish, adversity and psychological suffering.

The work conditions inflict physical and emotional overload and society's pressure to deliver efficiency affects both health and job satisfaction of workers, triggering stress and emotional pain, which has been generating exhaustion. The correlation between work and sickness has been the focus of countless scientific research. Work can be a joy source or intense suffering due to the conditions, the communication, the expectations, pressure and other variables.

Due to its peculiarity, activities from a health worker inside a hospital present to them the confrontation against stressful situations and the transcendence of their limitations seeking people's treatments, which not always they receive the recognition they deserve.

This way, it is evident the necessity of a specific work in mental health applied in the development of health workers, investing in job recognition, also offering aid for personal difficulties the worker might be facing. It is important to provide identification of alternatives and variety of solutions with group practices or meetings and individuals where people can learn strategies to cope with stress.

This research reinforces the necessity of new researchers that evaluate the stress variables that are present inside a corporative environment, specially due to the lack of studies in Brazil's currently reality, with the intention of preventing bigger impacts in health workers everyday and quality of the services to the population.

## Acknowledgements

None.

## Conflict of interest

The author declares no conflict of interest.

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