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## Impacts of Obesity in the Hospital Environment: The Case of the Nurse

**Tricia Bogossian\***

Santa Úrsula University Graduate Program Master In Labor Management For Quality Of The Built Environment

\***Corresponding author:** Tricia Bogossian, Santa Úrsula University Graduate Program Master In Labor Management For Quality Of The Built Environment

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### Abstract

Obesity is responsible for diseases that can cause temporary or permanent removal of workers from the hospital, which can lead to loss of productivity and psychological problems, which end up impacting relationships in the institutional work environment. Thus, the objective of this study was to develop a booklet with measures to minimize the risks of obesity in the health of nurses. It sought to discuss the negative effects of the nurse's obesity and to identify the effects of obesity on the nurse's work relationships. An integrative review was made, consisting of six steps: what are the establishment of the research question, the search in the literature, categorization of studies, evaluation of the studies included in the review, interpretation of results and presentation of the research review with the construction of a booklet in order to develop recommendations for the management of obesity in the nurse's workplace in hospital institutions. The inclusion criteria adopted to guide the search and selection of publications were: articles published in national and international scientific journals, preferably in English and Spanish, peer-reviewed, that address the theme of obesity in nurses, between the periods of 2009 to 2019, that is, in the period of ten years. We searched for articles indexed in at least one of the databases Latin American and Caribbean Literature in Health Sciences (LILACS), Nursing Database (BDENF), Medical Literatures Analyzes and Retrieval System Online (MEDLINE), Elsevier SciVerse Scopus, Elsevier SciVerse Science Direct Journals, National Library of Medicine (PUBMED) or in the Scientific Electronic Library Online (SciELO) electronic library, using the following descriptors: Nursing; Worker's health; Work conditions; Risk factors; Workday; Chronic disease; Obesity; Nursing work; Nurses and nurses; Nurses; Public hospitals; University hospitals; Obesity; Work process;

Quality of life; Occupational risk; Occupational risks and occupational health. In the data analysis, there was a shortage of health promotion programs in the workplace to deal with the factor of overweight in nurses. In view of these results, one can think of pointing out the need to develop public policies that promote better working conditions for nurses. The appearance, in this current year of 2020, of Covid 19 brought new evidence of the need for a specific look and treatment for obesity in the category of nurses, corroborating with the studies treated in this work.

## Keywords

obesity; Nurse; Scratches; Job.

## Introduction

Work is an essential activity for human beings; it incorporates the man-nature relationship and the relationship of men between themselves and with themselves, which is established by social interaction. Seen as a factor of growth, personal fulfillment or even survival. It can be considered an organizer of social life, although it contemplates ways for the process of cultural, social and economic domination, and for the submission of workers to capital, according to historical determinants [1]. The changes that have occurred in this environment in the last decades have caused changes in the work environment and, depending on the way it has been carried out, it may be related to wear and tear, worsening health conditions and even causing illness itself [2].

In the age of globalization, the distribution of work activities, the increase in competitiveness in the labor market and fear of unemployment, end up inducing workers to submit to terrible working conditions, with reduced wages, moral and sexual harassment, accumulation of functions, to achieve proposed goals, excessive workload, among others. These factors can contribute to imbalance in the emotional state, eating pattern, physical activity routine, sleep and, thus, reaching the emergence of psychological and metabolic diseases [3].

However, new technologies can be explored in their positive dimensions, such as the elimination of routine, repetitive and exhausting functions, which are sources of disease and dissatisfaction, both in the sphere of manufacturing work, in the sphere of services, or even as in carrying out multipurpose, multifunctional work, favoring the use of abstract thinking, allowing greater interaction between the worker and the machine, since computer work supposes this interaction. However, computerized work leads workers to sit for hours in front of a computer screen, contributing to a sedentary lifestyle.

Above all, there would be a possibility to further reduce the time needed to earn for survival. In the course of this process of change guided by technological innovations and so-called globalization, the belief that these phenomena are here to stay, that their effects are cumulative and tend to configure a new social dynamic, seems to have been consolidated, even if adjustments will be made and that some realities, observed today, can be modified.

As a result of these changes in the work environment, there was a concern with the Quality of Life at Work (QVT), which is defined by factors and characteristics present in the work environment. This theme aims

to make possible (ensure) the needs of workers when carrying out their work activities, with the purpose of acquiring more satisfied, productive people and services with better quality.

Specifically, in the case of nursing, which is a technical-scientific profession in which mental activities are used, but also physical activities; if the individual does not have both in perfect harmony, he begins to present health problems that compromise his work activity.

Studies demonstrate high levels of overweight and obesity among nurses. Specifics of the nurse's work, such as rotating shifts that vary between morning afternoon and night, with long hours of work, in addition to assisting patients at the bedside are factors that negatively affect the lives of professionals and lead consequences in their work, health such as obesity, mood and digestion disorders [4-5].

## **Problem**

The question that will guide this research is: What are the impacts of nurses' obesity on work relationships in hospital institutions?

## **Goals**

### **General**

- Discuss the negative effects of nurses' obesity.

### **Specific**

- Identify the effects of obesity on nurses' work relationships.
- Develop a booklet with measures to minimize the risks of obesity in the health of nurses.

## **Study Relevance**

The work has already been recognized as a source of adverse environmental exposure associated with obesity (or excess weight gain). The activities to be considered in the conceptual frameworks include multilevel influences (ie, individual, group, organizational and community level), corporate vision (for example, leadership, cultural norms and values, and worker involvement) and environmental approaches, including conditions work (for example, physical environment, psychosocial factors, socioeconomic environment and work tasks and demands) [6-7].

Risk factors associated with obesity among workers include social stressors, psychosocial work factors, working hours, night work and sedentary behavior [8]. Work-related stress includes conflicts with colleagues and supervisors, lack of job control and negative group climate at work [9]. The authors cited studied the influence of social stress among working women on the Body Mass Index (BMI) and the change in BMI over the course of a year. Measures of social stress in the workplace - including control of work and conflict with co-workers - were positively correlated with BMI. In addition, the authors observed that the increase in social stressors at work and the reductions in work control increased the BMI in the longitudinal direction [9].

Being harassed at work, including being sworn in, shouting and receiving hostile or offensive gestures, was associated with both obesity and low levels of physical activity [10]. Likewise, physical threats at work were identified as moderately associated with weight gain in a longitudinal section study in Finland [11]. Factors in psychosocial work, such as job demands, job content, job control, social interactions and future and career problems, can affect health and well-being. Health behaviors can be intermediary factors between the psychosocial work environment and health-related outcomes, such as obesity or excessive weight gain.

Social interactions can be a strong influence in the workplace, where individuals spend much of their waking hours [12]. Obesity has many causes and associations. Diet, caloric expenditure, diabetes, stress, quality and quantity of sleep, appear grouped around obesity [11-14]. Obese workers are represented, in relation to the general population, in certain occupations [14-15].

Additional research on social factors in the workplace can provide additional information and strategies that promote the growth of the obesity problem. By understanding some of the organizational and psychosocial factors of these jobs, more targeted and perhaps more effective interventions can be carried out, which justifies the conduct of this research.

Some specific factors of the nurse's work contribute to the development of obesity. Among social stressors, it highlights whether the need for social interaction with different professional teams and the resolution of conflicts of different nature. The shift work shift confers a high risk for disorders such as obesity due to the low quality of the food consumed and irregular feeding.

Night work directly affects the individual's metabolism leading to sleep deficit, imbalance of cardiac rhythm and insufficient rest time. Factors related to the dimensioning of personnel also interfere in habits. In general, professionals work in a smaller number of personnel than would be necessary, leading to overwork and the need for overtime. In addition, this category is poorly paid, so that nurses take on more than one job to ensure adequate remuneration.

## Literature Review

### Definition

The concept of obesity can be attributed to Chronic Non-Communicable Diseases (DCNT), of multiple causes and of high complexity, relating genetic inheritance, determinants of the environment, psychological and way of life [1]. The World Health Organization (OMS) conceptualizes obesity as excessive accumulation of fat, being considered one of the diseases of multiple factors and which is directly linked to the accumulation of adipose tissue in the body, in large quantities, generating health risks [16].

A state in which the body weight is above the acceptable or ideal weight, usually due to the excessive accumulation of fats in the body. Patterns can vary with age, sex, genetic or cultural factors. Regarding the body mass index, a IMC greater than 30.0 kg/m<sup>2</sup> is considered obese and a IMC above 40.0 kg/m<sup>2</sup> is considered morbidly obese [1]. Several methods can be used to quantify body fat.

Although there is a consensus in the scientific community that obesity is quite complex, presenting a multifactorial character, we must emphasize that its etiology depends on a range of values. Includes historic, ecological, political, socioeconomic, psychosocial, biological and cultural. We realized that the most studied factors of obesity are the biological ones related to the individual's lifestyle, especially with regard to the following binomial diet and physical exercise. It is part of the current Western lifestyle related to the greater energy supply of the diet and the reduction in the practice of physical activity with the incorporation of a sedentary lifestyle.

In view of the breadth of the theme and the different forms of concept and approach, we chose to describe the concepts from these sources as it is more related to a physiological factor that may cause other diseases, causing this obese nurse to have an impact on his hospital work relationships.

## Epidemiology

Overweight and obesity are a global public health problem, due to the risks and the substantial increase in prevalence in recent years. In Brazil, there is an increase in the frequency of overweight and obesity, characterizing an accelerated nutritional transition process in the country [17].

Excess weight is one of the main risk factors responsible for the increase in morbidity and mortality due to DCNT, resulting from a complex interaction between several factors, among which the characteristics of the work can be included. Adverse work conditions, such as long hours, excessive demands and exposure to hostile environments, can contribute to the prevalence of obesity in the working population. The work context can influence the worker's lifestyle, eating habits and physical activity positions and, consequently, affect his health [18].

Thus, one can analyze the changes that have been occurring, both in malnutrition and in obesity in Brazil [19]. Obesity has come to be seen as one of the priorities on the nutrition agenda through the National Food and Nutrition Policy (PNAN) [20].

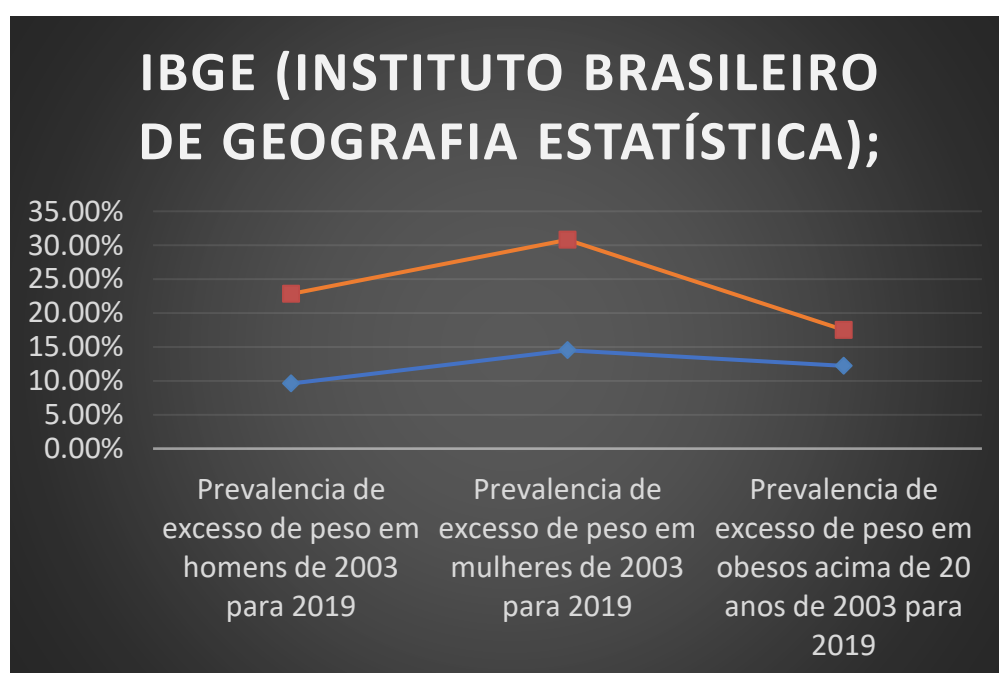
With the improvement of the income of the Brazilian population in the last decades and the changes in lifestyle, the patterns of food consumption have changed, which has been generating an increase in the prevalence of overweight and obesity in all social strata and consequent related comorbidities [21].

About half (49.5%) of the total calories available for consumption in Brazilian households, come from fresh or processed foods. The evolution of food availability in Brazil (from 2002 to 2017), indicates that fresh or minimally processed foods, and processed culinary ingredients, have been losing ground to processed foods and, above all, to ultra-processed foods [22].

Among the dietary changes, there is an increase in the intake of foods rich in fats, mainly of animal origin, sugar and salt, as well as the greater frequency of consumption of ultra-processed foods. These foods also tend to have high energy density and low fiber content, characteristics that have been proven to increase the risk of obesity, DM, cardiovascular diseases and even certain types of cancer [23].

Eating habits, whether healthy or not, acquired and consolidated in adolescence, are perpetuated in adulthood. A systematic review that evaluated the maintenance of eating patterns throughout the first years of life, observed a moderate correlation between eating patterns during childhood and adolescence, however, these patterns showed greater variability in adolescence, suggesting that habits acquired in childhood are perpetuated until adolescence, however, they can be discontinued in this period due to its great variability [24].

In cases in which the state of obesity is already in place, dietary treatment is seen as one of the main factors for maintaining long-term loss of body mass (MC) and for reducing diseases resulting from obesity. Studies show that hypoenergetic diets (DHs) and nutritionally balanced, contribute to the reduction of body mass, concentrations of Total Cholesterol (CT), Low Density Lipoprotein Fraction (LDL-c), Triglycerides (TGs) and Blood Pressure (PA) [25].



**Table 1:** Graph of the prevalence of overweight by sex Source: IBGE (2010).

In this graph we can see that there was an increase in overweight among men and women from 2003 to 2019, with women having the greatest weight gain in this period [26].

## Diagnosis

There are several methods that can be used to quantify body fat, the most accurate and precise being the direct methods of assessing body composition. However, these referrals are expensive and complex to perform, such as computed tomography (TC), hydro densitometry and dual emission X-ray absorptiometry (DEXA) and nuclear magnetic resonance.

Direct methods have as their main limitation the difficulty in logistics related to their use, especially in studies that intend to evaluate a large number of people. On the other hand, there are methods called

indirect, also used to quantify body fat, with a more accessible cost, easy to perform and with relatively satisfactory accuracy and validity. Among them are: the measurement of skinfolds, waist circumference (CC), and body weight (PC), as well as other indices that are derived from these indirect measures. In the case of epidemiological studies, the most frequently reported is the body mass index or the IMC. It represents the most usual measure, being the ratio between weight in Kg by the square of the height in meters. It is considered a world standard to analyze the accumulation of body fat, as it is low cost and easy to be analyzed. It is used by the OMS to classify the degree of obesity, when its value is above 30 kg/m<sup>2</sup>. The classification is made as follows: obesity grade I the BMI is between 30 and 34.9 kg/m<sup>2</sup>, obesity grade II the IMC is between 35 and 39.9 kg/m<sup>2</sup>, obesity grade III, the IMC is equal or above 40 kg/m<sup>2</sup>, considered morbid obesity.

Although the IMC does not clearly show someone's body composition, it has a good correlation with body mass and a low correlation with the person's size.

Classification	IMC Kg/m <sup>2</sup> )	Risk of co morbidities
Low weight	< 18.5	Low
Normal weight	18.5 – 24.9	Average
Overweight	>. 25	—
Pre-obesity	25 – 29.9	Increased
Grade I of obesity	30 – 34.9	Moderate
Grade II of obesity	35 – 39.9	Serious
Grade III of obesity	40.0	Very serious

**Table 2:** Classification of nutritional status by IMC Source: ABESO, 2016.

## Characteristics of Nursing Work

In hospital environments, the health team's working conditions and shifts are different. In the case of nurses, the scale of hours to be fulfilled is always higher in quantity than other professions. This goes back to the old days when nursing was seen only as a technical and manual profession, as opposed to an intellectual one. With the advent of the profession, better positioning, more knowledge, the publication of scientific studies the area has gained more prominence and this view is being modified. However, the number of hours to be fulfilled is a constant struggle in the category. In some places the 30 hours a week, 24x120 scale are already determined, while others require 40 hours a week. Taking into account that all health professions have already managed to regulate, in all places of operation, the 30 hours a week, one wonders why this is so. What would be the real interests involved? However, what is known is that the nurses' workload is a factor that impacts their health. In addition, low wages or relatively good wages, but in order to adapt to a good quality of life, it leads to more than one job, leading to an unhealthy lifestyle. These factors would be enough, but added to these are the lack of time to dedicate to the family, to attend a gym, for leisure. And yet, in some situations, personal dissatisfaction. Such factors, by themselves, already contribute to obesity in nurses.

In general, nurses work in four different areas within the profession, assistance, management, teaching and research. In the context of assistance, the Professional has the function of promoting quality nursing care, evolving actions for the promotion, prevention and treatment of diseases. The nurses is responsible

for direct care for critically ill patients, nursing care for greater technical complexity and requiring scientifically based knowledge and amenity to make immediate decisions; technical procedures such as puncture arterial, umbilical venous access, bladder catheterization, mesenteric catheterization, aspiration of airways and administration of chemotherapy [21,27].

In management the nurse is responsible for the direction, coordination, planning, organization, execution and evaluation of services and technical activates of nursing. Operates in the organization of material and human resources in order to provide safe and quality care. The systemation of nursing care is the methodology that subsidizes and organizes care.

In the teaching field, the nurse is responsible for undergraduate students in internship field and is also responsible for the continuing education of nurses, technicians and nursing assistants, seeking the improvement of these professionals, the nurse assistants, seeking the improvement of these professionals. In research, nurses are increasingly encouraged to base their practices in scientific evidence, therefore they must know how to produce and consume research. The specific actives of the nurse and his work routine vary from according to their specialty and place of work within the hospital context, but it can be said that assistance and management go together in daily practice involving the evaluation of patients, carrying out the systematization of care nursing and nurse's private procedures, team supervision of nursing technicians and assistants, in addition to the administration of thru service related to human and material resources. In Brazil, there are still no data according to which costs are defined.

In Brazil, there are still no data according to which the costs that stressed people represent for the institutions are defined, nor the portion of the population with health changes resulting from stress. However, what has usually occurred among these professionals, due to work overload, is the lack of time to rest, reflect, organize, learn. This, for many nurses, ends up causing physical and emotional stress, as can be seen in research [28].

Thus, nurses who work in a planned way, through the systematization of assistance in the development of activities, generate quality care. It is notorious, throughout the history of nursing, Florence (1970) already used planning in assisting the client, even in an empirical way. This facilitated care. Planning is a tool that helps nurses to organize, execute and evaluate nursing actions, in order to rationally achieve their goals and obtain better performance and greater productivity in their work. Thus, in order to provide quality assistance, it is essential to effectively meet the needs of the client, promoting his active participation in his care, according to his individuality, and having a holistic view of the human being. In addition, it is observed, the transformation to quality in care that requires efforts and teamwork.

To provide quality assistance is to result in the efficiency and precision of your actions. Making a small analogy, such behaviors are evidenced by the bureaucratic theory of Max Weber (1940) which advocates that bureaucracy is a form of human organization based on rationality, that is, the adequacy of means to the intended objectives in order to guarantee the maximum efficiency.



For these professionals occupying long hours, growing and achieving goals are goals. However, with creativity and motivation, it is possible to combine work and leisure, maintain the quality of life and provide quality care. Thus, concepts of quality of life need to be focused on the organizational environment, in search of balance and peace [28].

The health sector has a high rate of illness among workers resulting from frequent exposure to biological, physical and psychological loads. Among these workers, nursing represents the largest contingent of the workforce, especially in hospitals, becoming more exposed and vulnerable in the development of health problems [28].

Generally, these professionals hardly have a single job. This is due to the fact that the salaries in the category are, in most cases, below the average salary although their training is university, with an average duration of four and a half to five years. Thus, the workload exceeds 40 hours a week, as they associate with two jobs or overtime to have a salary compatible with a good quality of life, with less economic restrictions. When one considers that a large number of these professionals are women, the situation worsens.

### **The Work Environment, The Nurse's Function and Obesity**

There are some factors in the work environment that influence the favoring of obesity in nurses. One of them is the use of a computer for a long period of time, more common in administrative activities such as the elaboration of monthly, weekly, daily and vacation schedules. Realization of standard operating protocols and other activities that are performed seated, much of the time, in addition to the time in the evolution of patients and in the nursing, prescriptions performed on each patient admitted daily at least once each shift.

Still, dissatisfaction at work may lead to excessive and inappropriate consumption of food as a way to emotionally supply frustrations. This does not mean that every obese individual is professionally dissatisfied, but that frustration can lead to obesity if it is repetitive and continuous, causing a change in eating habits.

Studies have shown that the prevalence of obesity among nurses was statistically higher than among other health professionals who are less likely to work in shifts and have disruptive work patterns that contribute to obesity (MOODY; NEAVE, 2016). In addition to shift work, the lack of breaks, the accelerated nature of work and conflicting interpersonal relationships, since the category deals with different professionals and situations in their daily routine. In addition, obesity in nurses favors the risk of other diseases and injuries. Some of the problems can be fatigue, shortness of breath, arthritis, hypertension, diabetes, among others, which can reduce productivity in the workplace [30].

Obese nurses may have considerable difficulty in performing certain physical aspects of activities to patients who require access to tight spaces, range of motion and mobility, and may have difficulties in performing nursing tasks such as cardiopulmonary resuscitation, movement and handling and care for women personal needs of patients in need of care. The activity already provides the risk of injury in the

workplace and the performance of certain physical aspects of the nursing function while obese, can further harm the health of nurses or increase the likelihood of injury [31].

Another additional factor that makes the treatment of obesity in nurses a challenge is that the workforce is predominantly female, including shift workers and a large number of low-paid employees, factors associated with a higher prevalence of obesity [32].

Obesity is highly contextual. It can be considered a consequence of the reciprocal way in which individuals interact with their environments [32]. The work environment represents an important consideration due to the reciprocal nature of obesity and employment. Although many researchers have studied the impact of obesity on performance and productivity, it is equally important to note the potential influence of work on obesity. Obesity is responsible for diseases that can lead to temporary or permanent leave of the company worker, which can lead to loss of productivity and psychological problems that impact relationships in the workplace.

A study based on the 2002 National Health Interview Survey found that 9636 workers with obesity had more than twice the work limitation of workers with normal weight. Obese workers had a prevalence of 6.9% of limitations at work versus 3.0% among workers with normal weight. Sanchez Bustillos; Vargas; Gomero-Cuadra (2015) reported that 56,971 respondents in the Canadian Community Health Survey, 2009-2010, and found that obesity is marginally associated with absenteeism and presenteeism. IMC was found to be associated with a number of other medical conditions among workers, including emotional exhaustion [33], vasomotor symptoms of menopause [34], and metabolic risk factors related to diabetes in workers in China [35].

With increasing levels of obesity among workers, employers are assessing the impact of weight gain, not only on health costs, but also on occupational accidents, absenteeism, presenters and, therefore, with a focus on on-site interventions work to address this public health problem [35].

The work has already been recognized as a source of adverse environmental exposures associated with obesity (or excess weight gain) [36,37,7].

The activities to be considered in the conceptual frameworks include multilevel influences (ie, individual, group, organizational and community level), corporate vision (for example, leadership, cultural norms and values and worker involvement) and environmental approaches, including conditions of work (for example, physical environment, psychosocial factors, socioeconomic environment and work tasks and demands).

Risk factors associated with obesity among workers include social stressors, psychosocial work factors, working hours, night and night work and sedentary behavior (YARBOROUGH et al., 2018). Work-related stress includes conflicts with co-workers and supervisors, lack of control over job functions and negative group climate at work. [38] Studied the influence of social stress among women workers on IMC and the change in IMC over the course of a year. Measures of social stress in the workplace - including control of work and conflict with co-workers - were positively correlated with IMC. In addition, the authors observed

that the increase in social stressors at work and the reductions in work control increased IMC in the longitudinal direction.

In a 14-year longitudinal study of Canadian workers, decision-making authority was identified as a significant work-related predictor of obesity among women, but not men (QUIST et al., 2013). Factors in psychosocial work, such as job demands, job content, job control, social interactions and future and career problems, can affect health and well-being. Health behaviors can be intermediary factors between the psychosocial work environment and health-related outcomes, such as obesity or excessive weight gain.

Social interactions can be a strong influence in the workplace, where individuals spend much of their waking hours [12]. Obesity has many causes and associations. Diet, caloric expenditure, diabetes, stress, quality and quantity of sleep appear grouped around obesity [12-13]. Obese workers are -represented in relation to the general population in certain occupations [14-15]. For example, a study found that non-Hispanic white men who worked in health services (36.3%), protection services (34.3%) and transportation and handling of materials (33.7%) had the highest prevalence of obesity, while among non-Hispanics, the highest prevalence of obesity was in agriculture, fishing and forestry (35.9%), transportation and handling of materials (31.5%) and production (30.4%) [39].

Although there are positive impacts on measures such as voluntary increase in activity in the workplace [39], additional research on social factors in the workplace can provide additional information and mitigation strategies for the growth of the obesity problem. By understanding some of the organizational and psychosocial factors of these jobs, more targeted and perhaps more effective interventions can be carried out, which justifies the conduct of this research. [40] evaluated weight changes over 10 years and related costs by group and found that the cost of an overweight or obese person is greater than the economic loss of a person with healthy weight or a previously healthy weight. Some studies also report the effect of reduced productivity at work (presenteeism) due to overweight or obesity, which was assessed using an employee survey [41].

There is strong evidence of a higher risk of co morbidities, such as type 2 diabetes, hypertension, coronary heart disease and stroke, in overweight and obese individuals [4]. As overweight and obesity cause only a fraction of the costs related to co morbidity, multiplying the fraction attributable to the population (QAD) by the costs of each co morbidity and then summarizing all diseases, estimates the total costs attributable to obesity.

While the majority applied the QAD approach, studies assessed national costs based on lost workdays due to absence from work, loss of productivity and premature death [42]. Studies show that the prevalence of obesity among nurses was statistically higher than among other health professionals, such as allied health professionals who, although categorized in the same socioeconomic classification, are less likely to work in shifts and have disruptive work patterns that contribute to obesity. In these studies, the prevalence of obesity among nurses was significantly lower than in unregistered health professionals. This reflects the inequalities in the population level in the prevalence of obesity, where obesity is more common in people with low education, low income or in manual occupations [43-44][30].

These findings on the prevalence of obesity have important implications for the health of the health and social care workforce, the effectiveness of health promotion offered by health professionals and patient safety. Given the link established between obesity and an increased risk of illness and injury, obesity among health professionals potentially harms your health. Obese individuals may have problems associated with obesity, including fatigue, shortness of breath or arthritis, which can reduce productivity in the workplace [30].

The capacity of the workforce can be reduced by increasing absenteeism and premature departure from the workforce. Together, these two factors can increase the cost of providing services through sick leave payments for existing employees, increased salary costs for temporary employees (agency), increased training costs to replace employees and the consequent loss of employment. experience and knowledge. The high prevalence of obesity among the health workforce should urge policymakers and employers to provide solutions, such as supporting the team to maintain a healthy weight through workplace initiatives [45].

The team's investment in health, in turn, would benefit the health service in terms of sustainability and high quality patient care, through positive impacts on productivity, retention and absence rates, through improved morale, satisfaction at work and well-being [46].

Obesity among health professionals can hamper effective patient care through impaired performance that affect patient safety. Obese nurses may have considerable difficulty in performing certain physical aspects of patient care activities that require access to tight spaces, range of motion and mobility and may have difficulties in performing nursing tasks such as cardiopulmonary resuscitation, movement and handling and care personal needs of patient's care needs due to limited space in the bathrooms. Even nurses in good physical shape are at risk of injury in the workplace, and the performance of certain physical aspects of the nursing function while obese can further harm the health of nurses or increase the likelihood of injury [31].

Nurses report low levels of physical activity and diets with low consumption of fruits and vegetables, but with high sugar content. Finding ways to improve nurses' health is an important challenge not only because nurses make up the largest occupational health group in the world, but also because many nurses have an unfavorable health profile for work activity [47].

Existing reviews of workplace health interventions to address obesity suggest that the most effective interventions to improve employee health behaviors combine individual and environmental strategies, such as pairing personalized messages with environmental support and reinforcement [48].

There are additional factors that make the treatment of obesity in nurses a challenge. The nursing workforce is predominantly female and includes shift workers, in addition to a large number of low-paid employees, factors associated with a higher prevalence of obesity [32]. Several cross-sectional studies report significant associations between shift work and increased body mass index (IMC) in nurses [49-51].

Night shift workers are less likely to engage in leisure-time physical activities, which can lead to weight gain [51-52] found that night shift work was also associated with irregular meals, increased intake of animal carbohydrates, fats and proteins, along with low consumption of dietary fiber and frequent snacks. Sleep deprivation and interruption of circadian rhythms are other potential causes, and short-term sleep restriction is associated with impaired metabolism, increased blood pressure and unregulated appetite. Finally, we searched the literature for interventions and strategies used to deal with obesity in nurses. Some studies have focused on physical activity and dietary interventions [53]. Other studies recommend changes in the activity of nurses in the workplace (for example, walking meetings) or exercise routines incorporated into the workday [54]. There are also studies that recommend incentives or challenges to motivate nurses to increase their physical activity or consumption of fruits and vegetables and studies that suggest motivational strategies, such as setting goals personalized health training or motivational emails.

If nurses are chosen to develop interventions to deal with obesity, the complexity of nurses' professional lives must be addressed. Nurses face potential barriers to leading healthy lifestyles, both inside and outside the workplace, including shift work, lack of breaks, the accelerated nature of work and the emotional work of nursing. This makes them less likely to participate in health promotion programs in the workplace than other health professionals. The literature review carried out found a shortage of health promotion programs in the workplace to deal with overweight in nurses, despite the evidence that nurses are more likely than the general population to be obese [5].

## Methodology

The methodology used to carry out this research is the integrative review, which is a research method for the incorporation of evidence in health, being an investigation method that made possible the search, critical evaluation and synthesis of the available evidence on obesity in nurses. This method is composed of six phases that are inherent to it: searching the literature, categorizing the studies, evaluating the studies included in the review, interpreting the results and presenting the research review with the construction of a booklet in order to develop recommendations for the management of obesity in the nurse's workplace in hospital institutions [55].

The integrative review arose in view of the necessary importance of guaranteeing a healthcare practice based on scientific evidence. It has been identified as a unique tool in the health field, as it synthesizes the available research on a given theme and directs the practice based on scientific knowledge.

- First phase: identify the theme and selection of the research problem.
- Second phase: define the criteria for inclusion and exclusion of studies / sampling from the database search.
- Third phase: select the information to be extracted from the selected studies / categorization of the studies.
- Fourth phase: evaluate the chosen studies.
- Fifth phase: interpret the results.
- Sixth phase: review and present the final product.

In this sense, the following research question was defined: What are the impacts of nurses' obesity on work relationships in hospital institutions?

The inclusion criteria adopted to guide the search and selection of publications were:

- Articles published in national and international scientific journals, peer-reviewed, addressing the theme of obesity in nurses.
- Articles published in Portuguese, English or Spanish.
- Articles published between the periods of 2009 to 2019.
- Articles can be found using the following keywords / descriptors; nursing, obesity, worker's health, working hours, public hospitals, occupational nursing, nurses, occupational risk, outsourcing, epidemiology and overweight. To limit the search for data in this study, Boolean Operators were used.

Nursing	AND	Obesity	AND	Worker's health
Working hours	AND	Public hospitals		
Worker's health	AND	Nursing work	AND	Nurse
Nurse	AND	Occupational risk		
Hospitals	AND	College students	AND	Outsourcing
Nursing	AND	Worker's health	AND	Epidemiology

**Table 3:** Search strategy using Boolean operators Source: the author.

I think that some descriptors should not have been used, I see that obesity entered only once. The inclusion criteria will be: Articles Level 1 (randomized controlled clinical trials) and Level 2 (prospective cohort studies, prospective comparative studies and sample studies representative of the population) selected in the criterion nurse working in hospitals. The exclusion criteria were: Publications that were not available in full text; Articles published outside the determined period and studies that were not included in levels 1 and 2. Data collection took place between the months of March and December 2020, and these data were organized and computed in Excel 2010 spreadsheets, which included the following variables: article title, authors, year of publication, database, objective, method, results and conclusion.

Articles indexed in at least one of the databases Latin American and Caribbean Literature in Health Sciences (LILACS), Nursing Database (BDENF), Medical Literatures Analyzes and Retrieval System Online (MEDLINE), Elsevier SciVerse Scopus, Elsevier SciVerse Science Direct Journals, National Library of Medicine (PUBMED) or in the electronic library Scientific Eletronic Library Online (SciELO);

Data base	Articles found	Selected articles	Featured items
Lilacs	850	8	8
Scielo	70	1	1
Pubmed	50	6	6
Total	970	15	15

**Table 4:** Articles found following the Boolean operators, Source: Research carried out from March to January 2020.

The table represents the inclusion of all the findings following the Boolean operators with their combinations. An article was repeated in three databases.

## Results

The searches in the databases referred to in the methodology of this work selected resulted in the obtaining of 15 articles. Table 5 presents the results of the survey carried out from 2010 to 2020 on the reflexes of obesity in the work of nurses, including columns with information on the title, author, database, year, objective, method followed in the investigation, the results obtained and the conclusion reached by the author (s). Table 6 shows the number of articles found and included results according to the database Medline, Pubmed, Lilacs, Scielo and others.

Scientific articles published in the database of Pubmed, Medline, Lilacs, Scielo between the years 2009 and 2020 were searched, using similar research criteria, with a view to identifying interventions addressing nurses' obesity in the workplace, in university hospital institutions

Nº	Study title	Author	Data base	Kind of study/	Study population	Summary of results
				Methodology		

1	Working hours and health in nurses of public hospitals according to gender	FERNANDES, J.C et al (2017)	Scielo	Cross-sectional, population-based study	Eligible nurses	Among women, the group corresponding to the longest workweek was more likely to report health assessment as regular when compared to those with short shifts. Among men, those on average were more than twice as likely to assess their health as regular when compared to short hours.
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2	Effects of work on the health of nurses working in a surgical clinic	SILVA R.M. et al (2016)	Lilacs	Cross-sectional, population-based study	Nurses working in clinical-surgical at university hospitals	Physical illness prevailed, finding an association between the factors Social and psychological damage and the variables practice of physical activity, work accident and option for work shift, where social and psychological damage was evidenced.
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3	Precarious work in a teaching hospital and presenteeism in nursing	VIEIRA M.L.C.et al.	Revista de Enfermagem UERJ	Qualitative study. Descriptive, having as field a public hospital located in the city of Rio de Janeiro.	Temporary worker.	There is a need for an institutional policy aimed at depreciating work, which can minimize the occurrence of prexenteism and losses to performance and quality of service.
		-2018				
4	The flexibilization of work relations in health: the reality of a Federal University Hospital	ALVES, S.M.P. et al	Scielo	Revisão integrativa de literatura	Trabalhador terceirizado no hospital de ensino	The flexibilization of labor relations has become an obstacle within the scope of this HU, contributing to the precariousness of work and the social lack of protection of workers.
		-2015				

5	Night work and its impacts on the health of the nursing team; integrative review	REIS, F. F; BRAGA, A.L.S et al. (2015)	Scielo	Integrative literature review from 23 to 25 September 2013.	Night nursing worker	The occupational nurse must focus on the construction of the promotion, prevention and recovery of the worker's health, carrying out activities to identify and reduce risks to the health of this specific group.
6	Health problems reported by nursing workers	MACHADO, L. S. F. et al. (2014)	Scielo	Cross-sectional population cohort study	Nursing workers at a hospital in Bahia	The study showed the need for greater awareness of the work process and carrying out preventive activities.

7	Profile of overweight and obesity in nursing workers in intensive care and emergency units	SILVEIRA, C.D.S. et al.  -2013	PUCRS	Cross-sectional population cohort study	Nursing workers in intensive and emergency units	In the investigated workers, a high percentage of overweight and obesity was evidenced. Changes in lifestyle, especially the inclusion of healthy eating and physical exercise, are important and necessary measures for the prevention and control of cardiovascular diseases. considering the growing increase in overweight and obesity in our society.
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9	Work ability and fatigue among nursing workers	SILVA, F. J.	USP	Cross-sectional population cohort study	Nursing workers at the medical and surgical clinical units of the University Hospital of USP	It was found that these measures are unavoidable in reducing fatigue levels and improving work, investing in improvements in the worker's lifestyle as well as in the work environment.
		-2011				



11	Nurses with chronic diseases, relationships with illness, prevention and the work process.	TEIXEIRA, R. C; MANTOVAN, M. F. (2009)	Scielo	Quantitative and descriptive research.	Nurses with chronic diseases.	The health problems of the nurse worker deserve to be highlighted in hospital work and in the health sector as a whole. It offers conditions for readjustments in their living and working conditions, adaptation to less stressful functions, sectors and schedules to better cope with external and internal stimuli, which is fundamental for the non-appearance or worsening of the chronic health condition.
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13	Obesity as a risk factor for nursing professionals in a philanthropic institution	OLIVEIRA, A. F. C; NOGUEIRA, M. S. (2010)	Scielo	Cross-sectional, population-based study	Obese nursing workers and with altered pressure levels	Although these professionals are aware of the severity of the disease and the importance of changing lifestyle habits, they still have difficulties with this behavior, which suggests the implementation of educational programs in the workplace.
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14	Working conditions socio-demographic characteristics and skeletal muscle disorders in nursing workers	MAGNAGO, T. S. B. S. et al. (2010)	Lilacs	Cross-sectional population-based study	Nursing workers at a public university hospital in the countryside of RIO Grande do Sul	The lumbar spine was the most frequent location mentioned by workers, indicating the need for a participatory proposal for the promotion of health and well-being in nursing work, involving hospital managers as well as workers.
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15	Obesity and Covid 19: a reflection on the relationship between pandemics	BOLSONI-LOPES, A.; FURIERI, L; ALONSO-VALE, M.I.C	Scielo	Reflective study that contributes to a critical-reflective construction on the topic Obesity in interface with COVID 19.	Health worker	Obesity is a risk factor for the worsening of Covid 19, which is contributing to the overload of health services and requires differentiated attention with health education within the scope of the Unified Health System.
		-2020				

## Discussion

In this survey of studies on nurses' obesity, we can analyze the fifteen articles displayed in the table in an integrative way. The first article on working hours in nurses in public hospitals according to gender, it was found that the results pointed to an urgency in promoting interventions in the organization of work and valuing the nursing professional who is often still female, associating beyond the hours worked, a double journey when associating household or household chores. With this recognition there is a search to reduce the multiple bonds, with salary improvement and contribute to minimize the possible effects on workers' health and the quality of care in hospitals.

The second article on the effects of work on the health of nurses working in clinical-surgical studies showed that physical illness prevailed, finding an association between the social and psychological damage factors and the variables of physical activity, work accidents and the option for the work shift and with the verification that this produces harmful effects to health. The third article on precarious work in a teaching hospital and presenters in nursing, which indicates that temporary workers, because they do not have the labor rights provided for by law and suffer from fear of unemployment, remain at work even with poor health, overburdening the team and bringing losses, in that moment that they are, for the quality of the assistance.

The fourth article on the flexibilization of work relations in health: the reality of a federal university hospital that structurally interfered in the trajectory of this institution, which, based on the Federal Government's policy of reducing the staff, adopted outsourcing for maintenance of the workforce, resulting in worker turnover, conflict of diverse orders, discontinuity and disorganization of work processes. The fifth article Night work and its impacts on the health of the nursing team; integrative review of 2013, which concludes that the occupational nurse should focus on building the promotion, prevention and recovery of workers' health with a reduction in health risks.

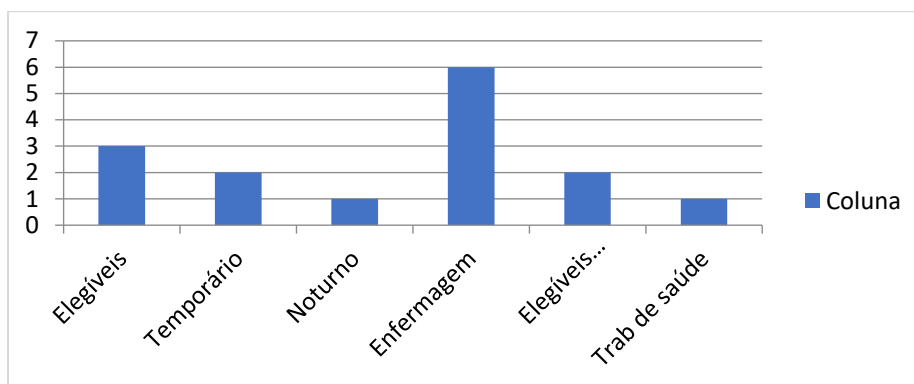
The sixth article on health problems reported by nursing workers at a public hospital in Bahia where the results found showed a higher frequency of postural problems (musculoskeletal) and mental health complaints (mental tiredness and nervousness) while complaints of respiratory problems were more frequent. prevalent among nursing technicians and assistants. The seventh article on the profile of overweight and obesity in nursing workers in intensive care and emergency units that showed a high percentage of overweight and obesity in the investigated workers, where changes in life habits, especially the inclusion of healthy eating and the practice physical exercise are important and necessary measures for the prevention and control of cardiovascular diseases, considering the growing increase in overweight and obesity in this society,

The eighth article on nursing working conditions and illness; reasons for reducing the workday to 30 hours have as an analysis that it is not possible to change the nature of the object of nursing work and health institutions that are unhealthy, but there are limitations to institute new forms of organization of this work, controlling the unhealthy, the dangerousness and the pain of this work and, therefore, the exhaustion and exhaustion of the workers, allowing the recovery of the workforce and distance from the exposure to loads due to the decrease in the workday. The ninth article The capacity for work and fatigue among nursing workers concluded that investment in improvements in the worker's lifestyle and in the work environment are essential conducts in reducing fatigue levels and in maintaining and improving with recovery for quality of work.

The tenth article on nursing working conditions in the wards of a university hospital where biological, physiological, ergonomic and chemical risks were identified, disfavoring the health of the nursing worker in order to propose changes in the work process. The eleventh article on nurses with chronic diseases, the relationship with illness and the prevention of the work process that talks about the health problems of the nurse worker and that deserves to be highlighted in the hospital environment and in the whole of health, which is fundamental for the no appearance or worsening of the chronic health condition. The twelfth article on the role of nurses in the multidisciplinary team in face of overweight / obesity in the work environment that concludes the performance of this professional in a proactive way with a multidisciplinary team aiming at the individual and collective monitoring of actions, developed in control and prevention overweight and obesity. In addition, it must individually monitor workers with high IMC in order to raise and prevent co morbidities of this condition.

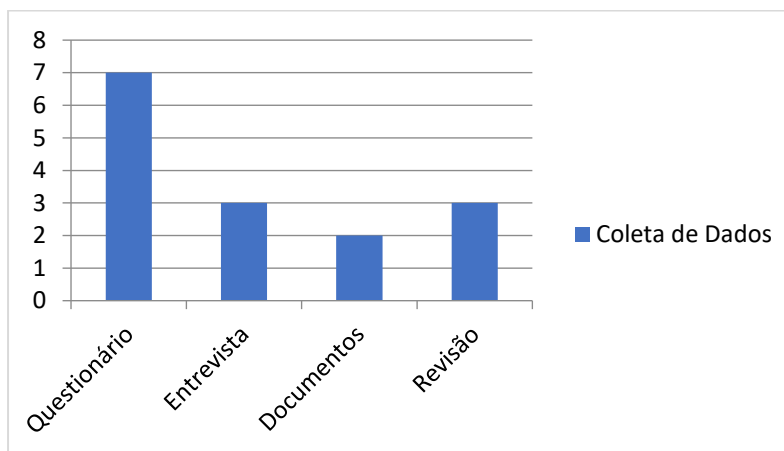
The thirteenth article on obesity as a risk factor for nursing professionals in philanthropic institutions that identifies that nursing professionals know the severity of the disease and the importance in life habits

and, therefore, the need for the implementation of educational programs on the spot arises of work in order to favor the change of behavior of these professionals. The fourteenth article on working conditions, sociodemographic characteristics and musculoskeletal disorders with nursing workers who identified the lumbar spine as the most frequent reported by workers and workers who identified pain in several regions. The fifteenth article which is a reflective study on obesity and the interface with Covid 19, defining obesity as a risk factor, contributing to the overload of health services and requiring differentiated attention with health education within the scope of the Unified System of health.



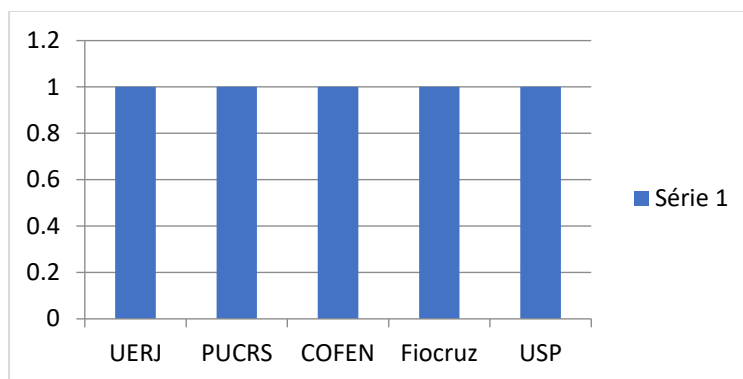
**Graph 1:** Category of worker per article.

Of the 15 articles selected with this theme, 40% correspond to nursing workers, 20% correspond to eligible nurses, 13% correspond to temporary workers, and 13% eligible nursing workers and 7% to night workers and 7% to health.



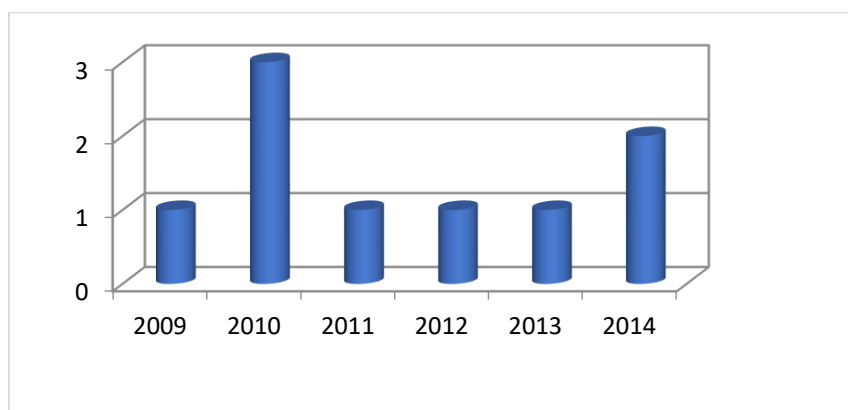
**Graph 2:** Data collection instrument

Of this sample of 15 articles, the majority analyzed used 47% questionnaires as an instrument of data collection, 20% interview, 20% form review articles and 13% used research in institutional documentation.



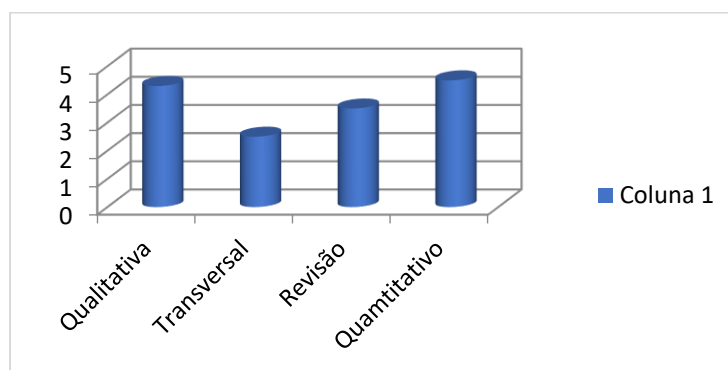
**Graph 3:** Data collection from journals

In this graph 3 referring to the data collection instrument (Series 1), articles in the same proportionality were found in the USP, FIOCRUZ, PUCRS, UERJ and COFEN journals. In the Scielo database, 9 articles were found, corresponding to 60% of the sample.



**Graph 4:** Number of articles according to the year

In the number of articles according to the year, we observed that we found through the descriptors a greater number of articles in the year 2010, followed by 2014 and in practically the same proportion as in other years.



**Graph 5 -** Approach used in the articles

In the approach used in the articles, 53% are cross-sectional, 20% are integrative reviews, 13% are quantitative and 7% are qualitative when compared to the total sample.

## Conclusion

Brazilian nurses who work in hospital environments are known to be subjected to long working hours. According to the authors, the shift system allows these professionals to dedicate themselves to more than one productive activity, being able to lead them to exhaustion, consequently causing illness. Likewise, these working conditions can also affect the quality of life of this individual and the assistance that is provided to patients, because, especially in relation to obesity, which is the focus of this research, there may be impacts on the fitness for the patient. work, performance, attendance and productivity of these workers.

On the other hand, it should be noted that nursing, as a job belonging to the tertiary economic sector, covering the area of provision of health care services, is strongly impacted by a country's capitalist economic and social policies. One of these impacts is precisely the poor working conditions that are offered to workers, causing an illness that, according to the author, has no visibility or transparency in official statistics. The current situation, of flexibilization of work relations, favors even more the illness at work of nurses, since the policy of reducing the staff adopted in hospitals including university students, in contrast to making services more effective, as announced, proved to be major obstacles for these institutions, reversing considerable losses, both for workers, as well as for students and users.

The influence of working conditions in the work process and nurses' health-disease process is influenced by the social, psychological and material resources of working conditions, which are determined by organizational, technical and economic factors in the workers' environment. of nursing, greatly impact workers' health, contributing to their illness.

The precariousness of work contributes to presenters in nursing, as temporary workers, as they do not have the labor rights that are provided for by law, and suffer from the fear of becoming unemployed, submit themselves to exhaustive working conditions even with impaired health. Thus, according to the authors, not only the worker is harmed, with the burden that is attributed to him, but also the hospital, which sees the effects of the deficiency on functional performance, the team and the quality of the service provided to the user.

In view of this, nurses, especially those whose activities are limited to hospital institutions, are exposed to different situations that cause harmful effects to their health, which are due to the work organization itself, such as, for example, shift work (including the night shift), which they suggested as one of the risk factors for the development of problems related to mental health, and overweight or obesity, due to the difficulty of maintaining a routine of physical activity and healthy eating.

In this sense, the positive association of working conditions with overweight and obesity, having verified, for abdominal obesity, which classifies metabolic complications and cardiovascular risk, increased risk frequencies in 28.02% of the workers analyzed and a greatly increased risk in 22.70% of that total. It was found a positive association between outsourced work, with the greatest number of links the night shift



with overweight and obesity in nurses. This is because, according to the authors, the long journey is associated with the non-practice of physical activity and the non-adoption of healthy eating.

The results of the bivariate analyzes prepared by the authors in relation to self-rated health showed significant associations common to the two groups investigated, among other elements investigated, the absence of physical activity and obesity. In women, poor self-rated health was associated with a lack of social support at work and a short duration of nighttime sleep.

In addition to obesity and overweight, other types of complaints, related to problems with sleep, symptoms related to mental health, musculoskeletal and digestive disorders, which may be associated not only with physical overload, but especially with psychic overload, considering the overload of duties and long working hours to which they are submitted. In general, the need to promote care to nurses to provide them with quality of life at work and increase the quality of healthcare delivery to users, considering that, according to the authors, nurses feel cared for whenever the work environment, in structural and social terms, as explained in the introduction to the research, provides them with the necessary means and conditions so that they can feel valued and fulfilled in the personal and professional spheres and enjoy well-being and comfort. The authors also support the need to allow the expression of their points of view and emotions, since, in their view, healthy work must maintain adequacy with regard to the limits and potential of organizations, human conditions and adaptations to the place work, whenever possible, to reduce the rates of emergence of chronic non-communicable diseases, in this case, the nurse's obesity.

Obesity, a common situation among nurses, seemed to be triggered by stress factors inherent to the profession that can lead to illness, decreased ability to work, restricted functional activities, fatigue and loss of care quality.

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