ABSTRACT
Objective: to analyze the literature on sleep quality in shift workers into different categories. Method: Integrative review from the guiding question “which are the impacts caused by the shift/night shift workers and sleep quality among these workers?”. The criteria for inclusion in this article was: choice of the Pubmed database and Scielo library. Different search strategies were used from the Health Sciences Keywords Headings (MeSH) and the Medical Subject Headings (MeSH), by Boolean operators (or, and) in the period between 2008 until October 2013. Results: it is allowed to say that low levels of sleep quality showed an association with low ability to perform daily work activities and the presence of pain perception. Conclusion: The low sleep quality that was observed among musicians, nurses and drivers was high. Descriptors: Sleep; Work in shifts; Circadian Rhythm.

RESUMO
Objetivo: analisar na literatura a qualidade do sono em trabalhadores de turnos em diferentes categorias. Método: revisão integrativa com vista a responder a questão << Quais os impactos causados por trabalhadores em turnos/noturnos e a qualidade do sono entre estes trabalhadores?>>, na base de dados Pubmed e na biblioteca virtual Scielo. Foram utilizadas estratégias de busca distintas, a partir dos Descritores em Ciências da Saúde (DeCS) e dos Medical Subject Headings (MeSH), por meio dos operadores booleanos (or, and), no período entre 2008 até outubro de 2013. Os dados foram agrupados em figuras e discutidos com a literatura. Resultados: permitem dizer que baixos índices de qualidade do sono mostraram associação com baixa capacidade para desempenhar as atividades diárias do trabalho, além da presença de percepção da dor. Conclusão: a baixa qualidade do sono foi observada entre os músicos, enfermeiros e motoristas foi alta. Descritores: Sono; Trabalho em turnos; Ritmo Circadiano.

RESUMEN
Objetivo: analizar la literatura sobre la calidad del sueño en los trabajadores por turnos en diferentes categorías. Método: revisión integral de la pregunta orientadora “Cuáles son los impactos causados por los trabajadores por turnos/noche y la calidad del sueño entre estos trabajadores? Los criterios de inclusión en este artículo son: elección de la base de datos Pubmed y Biblioteca SciELo. Se utilizaron diferentes estrategias de búsqueda, de las Ciencias de la Salud Descriptores Headings (MeSH) y el Medical Subject Headings (MeSH), mediante operadores booleanos (o, y) en el período comprendido entre 2008 hasta octubre de 2013. Resultados: se permite decir que los bajos niveles de la calidad del sueño mostraron una asociación con una baja capacidad de realizar actividades diarias de trabajo y la presencia de la percepción del dolor. Conclusión: la baja calidad del sueño que se observó entre los músicos, las enfermeras y los conductores era alta. Descriptores: Sueño; El Trabajo por Turnos; Ritmo Circadiano.
The systematic study about the day and nocturnal work shifts or rotation shift have contributed to better understanding of the consequences on the health of the worker. The work is present in man's relationship with nature from ancient times, in which the human being with his own action boosts, regulates and controls the material exchange with nature and were through the work that were developed the other functions and human behaviors.

It is in the sphere of social reproduction that are generated new needs and possibilities, which will give rise to new social relationships, such relationships that are organized in the form of complex social, social needs, such as those of health that can be defined according to the social classes to which they belong.

The changes that have occurred in the world of work are reflected in the health of workers directly, thus increasing demand for new technologies, added to a complex set of organizational innovations that have interfered in the conditions and labor relations.

The intensification of the work is an element of the current phase of capitalism, which happens to involve consumption of physical and spiritual energies of workers, these changes impact directly on worker's health as a result of the process of work that needs to be reorganized so as to comply with the characteristics of each profession. The shift work is not invention of the industrial age, it already exists since the organization of cities and States.

The daytime and nighttime work regardless of the form or place of labor activities exist for millennia, mainly in strategic locations. Commercial structuring of work on systems of shifts in contemporary society is increasing the number of services that are generally for periods of 12, 14 to 24 hours. Thus, the work in shifts in the last decade increased gradually on the basis of the own demand of society by required services which makes the night job or irregular schedules every time more frequent, studies show that the form of work organization can generate impact on sleep quality among shift workers.

The global increase in the use of systems of work in shifts that involve reduced work weeks explains the growth in the number of studies that focus on the reflections on the health of exposed workers.
which may be biochemical, physiological or behavioral events, and these cycles can be circadian period of 24 hours, ultradian more frequent than a cycle of 20 hours and infradian less frequent than a cycle of 28 hours.

Many of the circadian rhythms are controlled by cells in the hypothalamic region, in the Quasimatic Above Core also influenced by external synchronizers as light and dark, feed, among others, but also persist without these environmental cues, that characterizes as endogenously generated rhythms.

Individuals properly synchronized to a social scheme of daytime work and nighttime rest with physiological and behavioral rhythms with maximum and minimum values, allocated at different times of the 24 hours cycle. A stable phase relationship between the various physiological rhythms, leads to the formation of an internal temporal order that seems to be a health condition for any organism.

The disruption of both the internal and the external temporal order can lead to health problems, often responsible for accidents, disinterest, anxiety, irritability, loss of efficiency, stress, which affect the quality of workers’ life.

There are indications that individual characteristics are important to account for such disturbances. Thus, an ever-present issue is to understand what are the strategies involved in the adaptation of every individual for the manipulation of temporal external schemas.

People who work in shifts or specifically on the night shift, usually have a poor quality sleep during the day. This occurs due to social conflicts and excessive daytime noise. This poor quality of sleep will cause increased drowsiness in the working time, either daytime or night; the sleep disorders have high social cost.

The balance between the influences of synchronizers and the internal temporal order may be disrupted by abrupt changes in workload, trans-meridian flights or night job.

With the increasing age, certain characteristics of biological rhythms change and are somehow associated with tolerance to work in shifts. Some studies have shown that older people (55-60 years old) prefer to sleep sooner, and before they used to do it, i.e. they showed reduction in total sleep time (TST). Thus, people become over the years living more in the morning, which can impede the social and family life.

To know the characteristics of the morning and evening of workers can assist in defining periods of physical and mental performance, contributing to the prevention of diseases to the health of workers.

**Sleep**

Although the function of sleep is not totally known, sleep is characterized by a reduced response to stimulus, reversible process, continuous movement, posture stereotype, specific to each species and individual schedules for each species and has restorative function, in addition to interfere in mood, memory, attention, sensory records, in the reasoning. Finally in cognitive relating a person to his environment and to determine the quality of his performance and his health.

Scholars claim that sleep is so important to maintain health as having a healthy alimentation and that its absence can be a source of stress in workers, mainly female cited in study compared to the genre.

The circadian rhythm and the homeostatic control are the largest determinants of sleep night watch, although other behavioral parameters, such as body temperature, hormone secretion, cardiopulmonary function cognitive performance and mood also exhibit circadian rhythmicity.

It is observed that two hours before waking up, the people's core temperature tends to express their lower values, increasing gradually, due to the concentration of cortisol in the blood, near the time when they awaken. On the other hand, sleep at night, guided by the absence of luminosity, favors the release of growth hormone and prolactin, fundamental substances to vital functions.

Thus this study becomes relevant insofar as they can subsidize reflections on sleep quality in different categories of workers, and improve the quality of assistance provided by the multidisciplinary team.

That issue prompted the search of knowledge through scientific publications and justified by the present study, since it will focus on the impacts caused by works on shifts/night shifts and sleep quality among these workers contributing to knowledge and consequently for the quality of care.

**OBJECTIVE**

- To analyze the literature on sleep quality in shift workers into different categories.

**METHOD**

It is an integrative review, with the guiding question, "what are the impacts caused by workers in shifts/night shifts and sleep quality among these workers?". The criteria for inclusion in this article were: choose PubMed database and virtual library Scientific
Electronic Library Online (SciELO); in each selected database, search strategies were always separate from the health sciences keywords (DeCS) and Medical Subject Headings (MeSH), with use of the Boolean operators (or, and) as secondary characters in the search refinement. Pubmed database and virtual library Scielo were chosen to search individual keyword to ensure a refined research.

We have included articles with complete texts in English and Portuguese and indexed in databases and on chosen virtual library, published in the years 2008, 2009, 2010, 2011, 2012 and 2013 through the month of October. We have excluded: items that do not focus the resume in no mention of the pre-defined keywords; studies published in the last 10 years and studies that are not “free text”, which made it difficult to access information. The definition of the information to be extracted from selected studies was: after reading criticism of the articles and sorting according to the criteria of inclusion and exclusion, selected articles were tabulated according to the following categories: database, virtual library, year of publication and journal articles have been assessed by the included studies in integrative review: selected articles have been assessed by the authors as to the quality of the information and, finally, included for evaluation and discussion. Figure 1 shows the search strategies in the databases and their results.

<table>
<thead>
<tr>
<th>Database/Library Online</th>
<th>Search of strategy</th>
<th>Articles found</th>
<th>Articles selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pubmed</td>
<td>(‘poverty’ [MeSH Terms] OR ‘poverty’ [All Fields] OR ‘poor’ [All Fields]) AND (‘sleep’ [MeSH Terms] OR ‘sleep’ [All Fields]) AND (‘loaotrfree full text’ [sb] AND “loaotrfull text” [sb]) AND ‘2008/10/16’ [PDat]: ‘2013/10/14’ [PDat])</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>Scielo</td>
<td>(shift [All Fields] AND (“manpower” [Subheading] OR “manpower” [All Fields]) OR “workers” [All Fields]) AND (“loaotrfree full text” [sb] AND “loaotrfull text” [sb]) AND ‘2008/10/16’ [PDat]: ‘2013/10/14’ [PDat])</td>
<td>362</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 1. Description of Search Strategies and the number of articles found in the Pubmed database and Library Online SciELO.

The data were analyzed and interpreted in the discussion, in addition to other studies which assisted in the conclusion of this article.

RESULTS

From targeted search strategies have been selected 19 articles for the analysis and discussion of this integrative review, being 15 articles of the SciELO, 4 of the PubMed, as it can be viewed in the table below:

<table>
<thead>
<tr>
<th>Database/Library Online</th>
<th>Year</th>
<th>Author</th>
<th>Journals</th>
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<tbody>
<tr>
<td>Pubmed</td>
<td>2012</td>
<td>Ljosa et al.</td>
<td>J-Stage</td>
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<tr>
<td>Pubmed</td>
<td>2012</td>
<td>Li et al.</td>
<td>BMCentral</td>
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<td>Pubmed</td>
<td>2012</td>
<td>Mohabib et al.</td>
<td>Revista Elsevier</td>
</tr>
<tr>
<td>Pubmed/Scielo</td>
<td>2010</td>
<td>Mesquita et al.</td>
<td>Revista de Saúde Pública</td>
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<tr>
<td>Scielo</td>
<td>2012</td>
<td>De Queiros et al.</td>
<td>Revista de Saúde Pública</td>
</tr>
<tr>
<td>Scielo</td>
<td>2012</td>
<td>Araujo et al.</td>
<td>Revista Psico-USF</td>
</tr>
<tr>
<td>Scielo</td>
<td>2012</td>
<td>Xavier et al.</td>
<td>Revista Brasileira de Enfermagem</td>
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<tr>
<td>Scielo</td>
<td>2011</td>
<td>Silva et al.</td>
<td>Revista Anna Nery</td>
</tr>
<tr>
<td>Scielo</td>
<td>2011</td>
<td>Dorrian et al.</td>
<td>Revista de Saúde Pública</td>
</tr>
<tr>
<td>Scielo</td>
<td>2011</td>
<td>Anacleito et al.</td>
<td>Revista Paulista de Pediatria</td>
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<td>Scielo</td>
<td>2010</td>
<td>Da Rocha et al.</td>
<td>Revista Escola de Enfermagem</td>
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<td>Revista Arquivo de Neuropsiquiatria</td>
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<td>Revista Psiquiatria Clínica</td>
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<td>2009</td>
<td>Cardoso et al.</td>
<td>Revista Brasileira de Educação Médica</td>
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<td>2009</td>
<td>De Martinho et al.</td>
<td>Revista Escola de Enfermagem</td>
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<td>Marques et al.</td>
<td>Revista Brasileira de Saúde Ocupacional</td>
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<td>Steffens et al.</td>
<td>Revista da Dor</td>
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<tr>
<td>Scielo</td>
<td>2008</td>
<td>Penteado et al.</td>
<td>Revista Sociedade e Saúde</td>
</tr>
<tr>
<td>Scielo</td>
<td>2008</td>
<td>Antunes et al.</td>
<td>Revista Brasileira Medicina Esporte</td>
</tr>
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Figure 2. Distribution of selected articles according to the authors, journal, title and year of publication.

◆ General characteristics of the studies

Of the 19 articles included in this review, 13 refers to transversal studies, one refers to the qualitative research, two studies of the review, one study almost semi experimental, one descriptive exploratory article and a case control study.

From the articles searched, 99% address issues inherent to sleep. From these, 5 (31%) has as main objective the quality of sleep, 1(6%) discuss the exercise and sleep deprivation, evidencing its effects and developmental issues. From these, 5 (31%) has as main objective the quality of sleep, 1(6%) discuss the exercise and sleep deprivation, evidencing its effects and developmental issues.
reflections, 2(12%) describe the architecture of sleep, the same value for relations between the sleep/night watch cycle, and even 3(18%) for jobs that have defined circadian rhythm and their relationships. Other works were grouped by having as their main objective to describe some characteristic related to sleep and its relationship with workers, especially those shifts of nursing 5(21%).

About 30% of the studies with samples used the Questionnaire of Sleep Quality Index of Pittsburg.

Of the five studies which have proposed to assess the quality of sleep, the largest sample was composed of 710 participants and the smallest of 9 participants, such as sleep quality may affect the health of workers, the next item in this article demonstrates the reflections caused in the health of this population.

**DISCUSSION**

◆ Impacts caused by works on shifts/night shifts

The findings allow us to say that currently there are in Brazil about 22.86 million workers, 2.59 million are employed officially registered and 279 thousand are hired in the public service24, almost half of this population works more than 44 hours a week, sometimes provided in the Constitution of 1988 as the maximum weekly working journey. For that workweek be fulfilled, it seems quite reasonable to assume that, at least in part of these workers, the work is done out of the daytime.

The work done in shifts, especially night work fixed or alternated brings losses to health of worker and under the optics of chronobiology these losses are caused by a disorder of the body’s internal time.25 As a result and after two years and seven months of work on the night shift in an attempt to adapt to this schedule, the researcher has repeated episodes of pharyngitis, urinary infections, disturbances in sleep pattern, from the possibility of low resistance due to the work carried out by him.25

Individuals who work in shifts may develop sleep disorders, showing high social cost due to increased risk of traffic accidents, the overuse of medicines for sleep, in the case of insomnia, and sleep medications, mainly in night workers, which contributes to a poor quality of life.9

The three main sources of difficulties arising from work in shifts are: 1) the adaptation of biological rhythms inversions of periods of activity and rest, 2) the sleep disturbance, 3) domestic and social factors.1

Still, the work in shifts may have fixed schedule or be rotating and the sleep disorder is more frequent when the shifts are nocturnal or very early in the morning, can still occur damage to job performance, reducing the alert may increase the risk of accidents.3

The most negative direct impact of work in shifts including night shift would be sleep deprivation, as 60% to 70% of workers complain of shifts in sleep disorders2, this sleep deprivation can still trigger the trend that night shift workers tend to sleep two hours less the day shift workers.29

These workers shifts may show poor quality sleep during the day. The excesses noise of the day and some social conflicts can collaborate harming the sleep of a worker, increasing sleepiness during work, both in the daytime and night-time and consequences in the workplace, such as: accidents, disinterest, anxiety, irritability, loss of efficiency and stress.1,17

Sleep disorders contribute to the poor quality of life of workers, mainly those of the nighttime, which can cause accidents, with the increased use of medicines for sleep, or to keep awake. The inversion of schedules and directions so intense for men and women, and can also be a cause of these disorders. In describing the daily life, noise (of children, neighbors or cars) appears not only as the factor that most affect their sleep, but also as an inevitable part of a daytime society.1

Another sign that can be associated with the imbalance in the behavior of the sleep is anxiety, evidenced by the insomnia, awakening feature several times during sleep, so eager people have difficulty maintaining sleep, have a lower time of deep sleep, and sleep more fragmented than healthy individuals.1

One of the important factors that should be taken into consideration is the change of shifts, because it causes changes in biological rhythms, causing a disturbance.7 This internal abrupt rupture happens when there are changes in work shifts or intercontinental travel, so the jet-lag that is the result of a time zone change, can cause discomfort, fatigue and difficulty to falling asleep.7 Still in workers who perform rotating shifts the symptoms are similar to those generated by the jet lag and are called lag shift.7

In some groups such as bus drivers, security and healthcare professionals: nurses may be vulnerable to diseases such as sleep changes, gastrointestinal disorders, cardiovascular, weight gain, mental disorders, even on social and family life the injury can manifest in the performance of any activity, such as the social, cultural and sports school.3,9
In other groups such as healthcare professionals, nurses not only favors the emergence of sleep disorders, but also an increase in daytime drowsiness and decrease the individual alert states. Even in the hospital context the worker process has peculiar nature, as for example an employee who performs activities in alternate periods, during day and night, making it impossible for their body to adapt to work, schedules in another study, carried out a peculiar feature about the duration of sleep, the data showed that individuals who worked during the night slept until 14 hours shortly after the completion of his work, suggesting that the need to replace hours of sleep more than hours that were effectively lost.

The quality of sleep is associated with satisfaction with work and productivity and has been the focus of further investigation with health workers. The frequency of low quality of sleep that is identified in the Working Group of musicians was (71%) higher than the identified in other occupational categories as noted in industry workers that showed a prevalence of low sleep quality of 35.4%.

In a study, results suggest that sleep quality content varies according to the average energy at work and in usual activities, i.e. totals show that the higher energy wear, this contributes to a sharp way to worse sleep quality indices, corroborating with the assumption that a high energy wear at work impairs the quality of sleep.

But in another study, the findings demonstrate that the early awakening of professionals of the day shift (may lead individuals to wake up earlier), business hours and favored an fitful to subject, having as a consequence, the sleep deficit.

The association identified in a study conducted with the musicians between the perception of pain and physical discomforts with sleep quality suggests that may be related to: 1) postural inadequacies primaries, i.e. bad posture not necessarily related to the implementation of the instrument; 2) secondary postural inadequacies running the instrument, resulting from the inadequacy of the relationship of the dimensions of the accessories of the instrument with the instrumentalists and excess voltage during the performance; 3) technical defects of running without major postural repercussions, but causing strain or excessive muscular contraction with joint or neuromuscular overload; and 4) muscle and joint diseases, the pain can be aggravated by fear of losing opportunities in a restricted job market, leading many professionals to live with the pain and discomfort generated with the practice of the instrument.

The logical reasoning and memory may also be impaired when there is sleep deprivation or a sleep of poor quality, because the information is more efficiently stored when there is an adequate period of sleep during a state known as REM “of English rapid eye movement” - which are consolidated in the long term, some are memorized in the short term. In addition to other symptoms such as hypertensives problems, tiredness, nausea, headaches, burning eyes, blurred vision, joint pain and decreased libido.

In another study carried out under the impact of night work related to genre, researchers identified a chronobiological analysis of the daytime sleep a reduction of total daily sleep duration among women compared to men. The sleep deprivation cause prejudice in alertness, cognitive performance and mood, so the ability to perform mental work declines 25% for each successive 24 hours in which an individual remains awake.

### CONCLUSION

The analysis of the quality of sleep-related studies in the years 2007 to 2013 may tell us the frequency of low sleep quality observed among musicians, nurses and drivers was high. Domain-related variables of the physical quality of life showed greater explanatory power of variation of scores of evaluation of the quality of sleep and should be prioritized in intervene measures. In addition, low levels of quality of sleep showed association with low ability to perform day-to-day activities and work. The perception of pain and discomfort also presented strong association with sleep quality, confirming that an ergonomic aspect important the profession of musicians. More comprehensive studies and intervention with sleep, quality of life and health of musicians are still needed.

It is necessary to understand the consequences from the nurse of workers who work in shifts, mainly in sleep quality, to promote the occupational health care, this group of professionals.

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