Scientific evidence on the association between burnout and metabolic syndrome: integrative review

Evidências científicas sobre a associação entre burnout e síndrome metabólica: revisão integrativa

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Abstract
Objective: To evaluate the scientific evidence available in the literature on the association between Burnout Syndrome and Metabolic Syndrome.

Methods: Integrative literature review, searching the databases of the Cumulative Index to Nursing and Allied Health Literature, National Library of Medicine, National Institutes of Health, Web of Science, Scopus, Cochrane Library, Latin American and Caribbean Center on Health Sciences Information, Scientific Electronic Library Online and Springer Link. The selected articles were analyzed according to the Agency for Healthcare Research and Quality.

Results: Most (80%) of the 5 studies that met the selection criteria were in English language and indexed in the Web of Science and Scopus databases. Among the studies, 80% had physicians as the main authors. The Asian continent (Israel, Japan and China) concentrated the majority of production. There was no predominance of study design. The financial area corresponded to 60% of the study participants.

Conclusion: The available evidence in the literature is incipient, only 20% of the eligible articles showed association between the syndromes studied and the others, indicate association between Burnout and MS components separately.

Keywords
Burnout, professional; Metabolic syndrome; Occupational health; Epidemiology

Descritores
Exaustão profissional; Síndrome metabólica; Saúde do trabalhador; Epidemiologia

Descriptors
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Introduction

The multiple metamorphoses that occur in the world of work in Brazil are notable, mainly due to the inconsequential ideological, social and political crisis of austerity. In the context of the work, the core goes through the proletarianization and subproletarianization of productive segments and services in an unrestrained and irreversible perspective, fleeing metaphorically from the Gaussian curve. (1)

Proletarianization is based on the loss of autonomy over the labor process and subproletarianization, such as precarious, temporary, outsourced and fragmented work. (1) These conditions give rise to suffering, adversity and degrading conditions of exploitation in the work-place. The logic of privatization, posed as a soft sine wave, presents detrimental outcomes to the health of the worker.

Faced with this complex scenario, mental attrition occurs at work, resulting in Common Mental Disorders (CMD), occupational stress and Burnout Syndrome (BS). BS, also known as the syndrome of professional exhaustion, is a phenomenon initiated by chronic stress at work and affects mainly workers who have continuous contact with people. BS has three related and independent dimensions, namely: (a) emotional exhaustion, which refers to lack of energy, physical and mental exhaustion; (b) depersonalization, which gives rise to emotional insensitivity; (c) reduced professional achievement, generating dissatisfaction with work activities, low self-esteem, reduced interaction with peers, feeling of incompetence. (2)

The prevalence of BS varies in professional categories, from 4.8% to 39.3% in health professionals, from 54.9% to 56% in police officers, from 5.7% to 15.4% in professors. (3-8) These variations between the prevalences arise from the use of non-robust criteria for the definition of the syndrome. Studies indicate that BS is an exposure factor for: TMC, iatrogenies, psychoactive substances use, suicidal ideation and suicide attempt, musculoskeletal pain, sleep disorders, impaired immunity, abdominal adiposity, insulin resistance, hypercholesterolemia, type 2 diabetes and Metabolic Syndrome (MS). (9-19)

MS, according to the National Cholesterol Education Program's Adult Treatment Panel III and the I Brazilian Guideline for the Diagnosis and Treatment of Metabolic Syndrome, is characterized as “[...] a complex disorder represented by a set of cardiovascular risk factors usually related to central fat deposition and insulin resistance.” (20) For diagnosis of MS, the individual should present a combination of at least three of the five components: elevated waist circumference, hypertriglyceridemia, reduction of HDL cholesterol, systemic hypertension, and hyperglycemia. The association of MS with cardiovascular disease raises overall mortality by approximately 1.5 times and cardiovascular mortality by 2.5 times. (20)

Investigations on MS have been conducted in distinct populations, such as Venezuelan, Mexican, North American and Asian, and their occurrence, albeit high, varies. It is estimated that, from 2003 to 2012, the overall prevalence of MS in the United States was 33%, with significant superiority in women compared to men. (20,21) Data referring to the predominance of MS in Brazil are scarce and do not show the actual occurrence of this event at the population level.

The literature points to exposure factors for MS, such as periodontitis, Acanthosis nigricans, non-alcoholic fatty liver disease, biomarkers (adipokines, neuropeptides, proinflammatory cytokines, anti-inflammatory cytokines, antioxidant status markers and prothrombotic factors). schizophrenia, anxiety, working conditions, occupational stress and BS. (22-29) However, many other factors have not yet been identified.

The changes in the world of work and the current precarious conditions and also the chronic exposure to multiple deleterious factors lead to occupational stress and exacerbation of this, to the presence of BS. Therefore, these conditions will contribute to the reduction of biological resilience and, therefore, will affect the homeostasis, contributing to the development of MS. (16,30)

Thus, stressful work situations stimulate the response of the Hypothalamic Adrenal Hypophysis axis (HHA), leading to insulin resistance as a consequence of excessive production of cortisol. The in-
crease in the levels of cortisol released by the adrenal cortex, related in turn to the stimulation of the adrenocorticotrophic hormone (ACTH) released by the pituitary gland, would be related to abdominal adiposity, since there is lipid mobilization from adipose tissue, and of glucose, from hepatic glycogen, aiming to increase the amount of energy available for stress situations.\(^{(16)}\)

The objective of the study is to evaluate the scientific evidence available in the literature on the association between Burnout Syndrome and Metabolic Syndrome.

**Methods**

An integrative literature review was conducted, which gathers, evaluates and synthesizes findings from primary studies, based on available scientific evidence on a particular topic. To systematize this review, six steps were followed: elaboration of the guiding question; search or sampling in the literature; data collection; critical appraisal of included studies; discussion of results; presentation of the integrative review.\(^{(31)}\)

It is noteworthy that the recommendations of the Statement for Reporting Systematic Reviews and Meta-Analyzes of Studies (PRISMA) were followed. In this sense, the PICO strategy was used to elaborate the guiding question. This strategy represents an acronym for Patient, Intervention, Comparison and Outcomes.\(^{(32)}\) Also, the P referred to the workers exposed to the development of BS and MS, I to the stressful working site, C comparisons between the levels of scientific evidence and the possible association between BS and MS. Therefore, the guiding question was obtained: What scientific evidence is available in the literature about the association between BS and MS?

The search for publications was carried out from September to December of 2018, using Boolean operator AND, truncation techniques, in articles published in the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), National Library of Medicine National Institutes of Health (PubMed), Web of Science, Scopus, Cochrane Library, Latin American and Caribbean Center on Health Sciences Information (LILACS), Scientific Electronic Library Online (SciElo) and Springer Link. The keywords were defined according to the descriptors in health sciences (DeCS) and Medical Subject Headings (MeSH), in Portuguese, Spanish and English, being: Esgotamento Profissional, Agotamiento Profesional, Burnout, Profesional; Síndrome Metabólica, Síndrome Metabólico, Metabolic Syndrome.

Articles published in Portuguese, Spanish and English, without date limit, available electronically in the abovementioned databases and dealing with the association between Burnout and MS, were considered eligible. The exclusion criteria were: articles that had no relation with the object; experience reports and case-reports, monographs, dissertations, theses, summaries in annals of events, book chapters. Duplicate items were considered only once.

A built instrument was used to collect and construct the database, containing information that included: identification; institution of the study; type of publication; methodological characteristics of the study; and evaluation of methodological rigor.

The Agency for Healthcare Research and Quality (AHRQ) ranks six levels of evidence: (I) evidence resulting from meta-analysis and systematic review; (II) evidence obtained in clinical trials with randomization; (III) evidence obtained in clinical trials without randomization; (IV) evidence from cohort and case-control studies; (V) evidence from a systematic review of descriptive and qualitative studies; (VI) evidence based on a descriptive or qualitative study.

After reading and critically analyzing the articles, a table was prepared with a summary of the selected publications, containing author/year/journal, country where the study was conducted, thematic considerations, type of study, conclusions synthesis and AHRQ classification.

**Results**

A total of 199 articles were found in the databases, namely: 22.6% CINAHL, 25.6% PubMed, 13.1%
Web of Science, 21.6% Scopus, 5.5% Cochrane Library, 2.5% LILACS, 3.1% SciELO and 6.0% Springer Link. Based on the eligibility criteria and the detailed analysis of the publications, 194 articles did not meet the criteria, equivalent to: 10.9% duplicated, 88.1% were not related to the object of study, 0.5% in another language and 0.5% case report. In light of the above, in this review, five articles were selected, which are summarized in figure 1.

Of the five eligible studies, 80% were in English and 20% in Spanish, mostly indexed in the Web of Science and Scopus databases. It should be noted that four (80%) journals were from the worker’s health area and only one (20%) from the medical area. Regarding the years of publication, they were between 2006 and 2018. The search criteria did not include a temporal cut. Regarding the training of the main authors of each study, 80% were doctors and 20% were nurses. There was a greater concentration of articles in the Asian continent - Israel, Japan and China - (60%). In Europe, the countries that conducted studies were Spain and France, representing 40% of the sample.

There was no predominance of study design, being: literature review, cross-sectional, cohort, non-randomized quasi-experimental and case-control, representing 20% each. The population investigated in the studies was mainly composed of professionals who developed labor activities in the financial area (60%). A single study was conducted with high school teachers, and no research was identified with health workers.

According to AHRQ categories, 40% of the articles were classified as level of evidence IV (cohort and case-control); 20%, level of evidence V (literature review); 20%, level of evidence VI (cross-sectional); and 20%, level of evidence III (quasi-experimental/non-randomized study).

All the studies that composed the integrative literature review described Burnout as a predictive variable for MS. In 20% of the studies, the association between the syndromes was evident; in 60%, the association between Burnout and MS components separately. The articles of this review are summarized in chart 1, according to the year of publication.

**Figure 1.** Integrative Review Flowchart on Scientific Evidence Between Burnout and Metabolic Syndrome
Discussion

This is the first Brazilian study to investigate the scientific evidence on the association between BS and MS. The results of the present integrative review contribute to the recognition of the emergency in research and interventions in the workplace, highlighting the burnout and its outcomes as deleterious conditions to the health of the worker.

In the context of Brazil, the history involving the rights of workers is dominated by struggles and bloodshed, free of any moral stain. Only in 2012 was the National Worker and Worker Health Policy promulgated. However, data registered in the Social Security Yearbook published by the National Social Security Institute (INSS) have been disseminated for more than a decade. The amount of sickness benefits granted, with mental and behavioral disorders, including Burnout, among the main causes of withdrawal.

In the databases, several descriptive studies were found that point out the frequency of BS. Its magnitude, transcendence, severity and vulnerability are clear in the literature.

Most of the articles (80%) present a physician as the first author, but the object studied should be conducted by multiprofessional health areas, since the care of the worker with MS, with BS as an independent variable, will require follow-up multi-professional. In addition, scientific production is an important factor in the improvement of health care actions.2

The largest number of articles focused on the Asian continent, certainly by the investment of countries like Japan and China in Science and Technology (S & T).39 It is observed that, in Brazil, no records were found. This fact is justified by the lack of investment in S&T, and Ad aeternum slogan: “Research in Brazil is in consolidation”.

No research has been identified with health workers. We emphasize the importance of studies that evaluate the association and causality between BS and MS, since it is also a risk group that experiences unhealthy work environments, with long working hours and excessive or ineffective allostatic response.28,33,34

Of the studies identified in this review, according to the AHRQ categories, most are classified as level of evidence IV (cohort and case-control), which results in a level of median evidence. Regarding the association between the syndromes, more than half indicates association between Burnout and MS components separately. Of all the eligible articles, none had as main scope the association between the
syndromes. These were presented as secondary or tertiary objectives, which can be pointed out as a limitation of this integrative review.

The relevance of conducting epidemiological studies with robust analyzes and clinical trials to better understand, compare and evaluate the effects of Burnout Syndrome.

Conclusion

It is concluded that the available evidence in the literature is incipient, only 20% of the eligible articles showed association between the syndromes studied and the others, indicate association between Burnout and MS components separately. The results of this review suggest that future studies should prioritize health professionals as participants, since they have too much exposure to work stress and Burnout Syndrome, and present more robust designs that better explain the path of association/causality between the syndromes discussed here.

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