

Review Article

Mental workload in faculty and consequences in their health: an integrative review

Carga mental en profesores y consecuencias en su salud: una revisión integrativa

Carga mental em professores e suas consequências para saúde: uma revisão integrativa

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Abstract

Introduction: The literature regarding the teachers' work context has documented working conditions and their effects on health. However, there is limited evidence of the Mental Workload (MW) effects in this group, despite being a psychosocial risk that is constructed from typical factors of teaching work. **Objective:** Literature about mental workload perceived by professors and their relation with work conditions and the effects on their health were explored. **Method:** An integrative review was realized in databases Web of Science, CINAHL Complete, PubMed, and Scielo using descriptors in English and Spanish. The inclusion criteria were quantitative, qualitative, and mixed studies published between 2013 and 2019. In addition, a manual search was made obtaining relevant one study for the approach of the subject. The studies were evaluated according to levels of evidence developed by the Oxford Center for Evidence-Based Medicine. **Results:** 20 articles were selected and divided into analytical categories: work conditions of professors, work effect on health, mental workload perceived by them, in addition to establishing suggestions for occupational health. **Conclusion:** The characteristics of the work environment include factors specific to mental workload, including high work intensity and strenuous work times, noise, a high number of students, bad interpersonal relationships, work instability, and lack of resources.

Keywords: Occupational Risks, Faculty, Occupational Health.

Resumen

Introducción: La literatura en cuanto al contexto laboral de los profesores ha documentado las condiciones de trabajo y sus efectos en la salud, sin embargo, existe escasa evidencia de los efectos de la Carga Mental de Trabajo (CMT) en este grupo, pese a tratarse de un riesgo

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psicosocial que se construye a partir de factores propios del quehacer docente. **Objetivo:** Explorar la literatura respecto a la CMT percibida por profesores y su relación con condiciones de trabajo y efectos en su salud. **Método:** Se realizó revisión integrativa en bases de datos Web of Science, CINAHL Complete, PubMed y Scielo utilizando descriptores en inglés y español considerándose como criterios de inclusión estudios cuantitativos, cualitativos y mixtos; estudios publicados desde 2013 al 2019. Además, se realizó búsqueda manual, rescatando un estudio de relevancia para el abordaje de la temática. Los estudios fueron sometidos a evaluación según niveles de evidencia desarrollados por el Oxford Centre for Evidence-Based Medicine. **Resultados:** Se localizaron 20 artículos y se formularon categorías de análisis: condiciones laborales de profesores, efectos del trabajo en la salud, carga mental percibida por los mismos, además de establecerse sugerencias para la salud ocupacional. **Conclusión:** Las características del contexto docente incluyen factores propios de la CMT, entre ellos la intensidad laboral y tiempos de trabajo extenuante, ruido, alta cantidad de estudiantes, mala calidad de relaciones interpersonales, inestabilidad laboral y falta de recursos.

Palabras clave: Riesgos Laborales, Docentes, Salud Laboral.

Resumo

Introdução: A literatura referente ao contexto de trabalho dos professores tem documentado as condições de trabalho e seus efeitos na saúde, porém existem poucas evidências dos efeitos da Carga Mental de Trabalho (CMT) neste grupo, embora a CMT possa ser um risco psicossocial que se constrói por meio dos fatores do trabalho docente. **Objetivo:** Explorar na literatura a carga mental percebida pelos professores, sua relação com as condições de trabalho e seus efeitos na saúde. **Método:** Realizou-se revisão integrativa nas bases de dados Web of Science, CINAHL complete, Pubmed e Scielo, utilizando os descritores em inglês e espanhol. Os critérios de inclusão foram: estudos quantitativos, qualitativos e mistos, publicados a partir de 2013 até 2019. Além disso, foi realizado uma busca manual resgatando um estudo de relevância que abordam a temática. Os estudos foram avaliados de acordo com os níveis de evidência desenvolvidos pelo *Oxford Center for Evidence-Based Medicine*. **Resultados:** Incluíram-se 20 artigos que foram organizados em categorias de análise: condições laborais dos professores, efeitos do trabalho na saúde, carga mental percebida e sugestões para a saúde ocupacional. **Conclusão:** As características do contexto docente incluem fatores específicos da CMT, incluindo a intensidade laboral, tempo de trabalho deficiente, ruído, elevado número de estudantes, relações interpessoais de baixa qualidade, falta de estabilidade no trabalho e falta de recursos.

Palavras-chave: Riscos Ocupacionais, Docentes, Saúde do Trabalhador.

Introduction

In occupational health, different factors can generate effects on people, according to what was mentioned by the World Health Organization (WHO) that recognizes that the well-being of workers is not only conditioned by hazards in the place of work, but also by social and individual factors, and by access to services (Organización Mundial de la Salud, 2015). Health professionals in their role in promoting healthy behaviors, disease prevention, and health risks, have made visible the need to build healthy work

environments (Ceballos et al., 2016). They established different guidelines in this area for both performance of nurses, doctors, kinesiologists, nutritionists, occupational therapists, among other professionals, showing that they must focus their tasks on the prevention of diseases, accidents at work and promotion of occupational health, having to respond to the paradigmatic change in the world of work, which has undergone modifications as a result of advances in technology, public policies and legislation in the area (Boada-Grau & Ficapal-Cusí, 2012; Ceballos, 2015; Murillo et al., 2020). This is why different factors have been studied, involved in the effects of the work context on health.

The Mental Workload (MW) is one of them. It is used to refer to the tensions that work demands cause in the worker, and the relationship that occurs between the demands of the job and the mental capacities or resources of the person to face them. It is related to tasks that involve cognitive processes and affective aspects of the individual (Ferreira & Ferreira, 2014, p. 48). MB is a multidimensional phenomenon, which must be considered during the design of any work task and, according to the UNE-ISO 10075 standard, it is the result of the combination of different factors such as personal characteristics, the task, and the situation, and whose imbalance can generate the perception of psychosocial risks in the worker (Díaz et al., 2012). The latter occurs mainly in work contexts in the service area such as transportation, retail, and education.

Education is a work area for multiple people, and it is characterized by being a broad and diverse environment in which various psychosocial factors are recognized. Furthermore, teaching has been considered one of the professions most prone to the perception of burnout and emotional distress among its workers (Ilaja & Reyes, 2016), even generating disagreement with working conditions in most of them (Zamora-Díaz et al., 2017). In the field of primary and secondary education, numerous studies have been carried out to characterize the environment and working conditions of teachers, and the results of which have shown activities with high physical, mental and emotional demand, insufficient working conditions, and a high rate of work (Boström et al., 2019; Silva & Pinheiro, 2017). Because of this, the interest arises to determine other factors present in the work of teachers that could have effects on their health. Thus, the objective of this review is to explore what the international literature has addressed on the mental workload perceived by teachers and its relationship with working conditions and the effects on their health.

Method

An integrative review of the literature at the international level was developed to identify the data referring to the mental workload perceived by primary and secondary education teachers, together with the working conditions and the repercussions on their health.

The review was carried out under the methodology of Souza et al. (2010), which consists of six steps for the construction of the integrative review of the literature: 1) Preparation of the guiding question for the development of the integrative review, 2) search of the literature, 3) collection of the information that it would be extracted from the selected studies, 4) critical analysis of the studies included in the integrative review, 5) discussion of the results and 6) presentation of the integrative review.

The manuscript emerges to answer the guiding question: Is there a relationship between the mental workload perceived by primary and secondary education teachers, the working

conditions, and the effects on their health?. It was formulated from an adaptation of the PICOT strategy (Peñaherrera & Soria, 2015) to use in this review.

We consulted the Web of Science, CINAHL Complete, PubMed, and Scielo databases using the descriptors “Carga mental”, “Profesores”, “Docentes” and in English “Mental workload”, “Teachers” and “Schoolteachers”. The following inclusion criteria were established: a) Quantitative, qualitative and mixed studies, excluding abstracts, extracts, and paid articles in the first instance, b) Seniority since 2013-2019. Subsequently, a manual search was carried out with the same descriptors, and a study was rescued, due to its relevance to the subject.

To collect the data, we elaborated an instrument composed of eight items, which addresses the following variables: journal, indexing, year, place of execution, method, sample, main results, and level of evidence. This last variable was classified according to the levels of evidence developed by the Oxford Center for Evidence-Based Medicine (OCEBM) (Oxford Centre for Evidence-Based Medicine, 2011). The systematization of the bibliographic search is summarized in Figure 1.

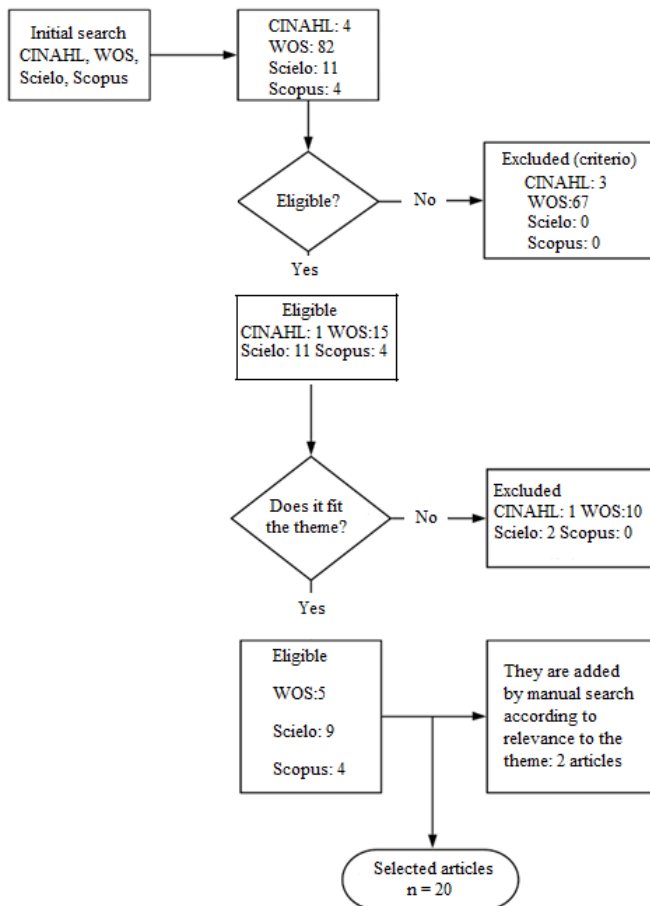


Figure 1. Flowchart of the literature review. Source: Our elaboration.

Results

The bibliographic search found 20 articles in total, of which 85% were quantitative, and the rest were qualitative and mixed. We observed that 75% of the studies were carried out in Latin American countries, 15% were developed in Europe, and 10% in North America and Asia. We found 50% of the articles indexed in Scielo, 25% indexed in WOS, and the rest of the articles were located in Scopus and Latindex. Table 1 describes the articles selected to be analyzed within the bibliographic review and their classification according to the level of evidence (Oxford Centre for Evidence-Based Medicine, 2011).

Table 1. Description of selected articles in the bibliographic review.

Code	Journal/Indexing, year and place of execution	Method and sample	Method and sample	Level of evidence
E.1	Trabalho, Educação e Saúde/ Scielo. 2016. Brazil (Guerreiro et al., 2016)	Quantitative, cross-sectional, sample 978 teachers.	Teachers report negative factors that condition their work: workplace infrastructure, remuneration, and the number of students per room. Positive factors are relationships with students, colleagues, and principals, and motivation, and the opportunity to express opinions.	3
E.2	Cadernos Brasileiros de Terapia Ocupacional/ Scopus. 2017. Brazil (Silva & Pinheiro, 2017)	Quantitative, descriptive, exploratory, sample 110 teachers	Bureaucratic activities represent greater physical demand such as correction of materials and group activities with students, which can translate into pain in the upper and lower limbs, head, and spine. As for the mental demands, the main cause is the disinterest of students and parents, which can translate into emotional symptoms such as irritability, discouragement and insomnia, stress, among others.	4
E.3	International journal on working conditions/ Latindex. 2017. Portugal (Sousa & Barros, 2017)	Mixed methodology, 89 teachers and 9 district schools participated.	There is high exposure to work times, emotional demands, and poor quality of social relationships at work, causing situations of exhaustion and generalized fatigue that condition the healthy exercise of their work activities.	3
E.4	Journal of Work and Organizational Psychology/ Web of Science. 2015. Brazil (Carlotto & Câmara, 2015)	Quantitative, cross-sectional study, shows 679 teachers from 37 schools.	34.8% of the teachers reported common mental disorders. Some psychosocial variables such as role ambiguity, burden, low level of social support, and low perception of self-efficacy were significantly associated with an increase in the probability of common mental disorders.	3
E.5	Avances en Enfermería/ Scielo. 2013. Colombia (Castro & Muñoz, 2013)	Quantitative, descriptive cross-sectional, a sample of 230 teachers.	51.7% of the teachers carried out work extensions, 37.8% reported the presence of noise in the classroom. The main causes of medical consultation in teachers were stress, 40.9%, vascular problems and varicose veins in the lower limbs with 29.1%, irritable bowel 28.3%, and dysphonia or aphonia 27.8%.	3

Table 1. Continued...

Code	Journal/Indexing, year and place of execution	Method and sample	Method and sample	Level of evidence
E.6	The Scientific World Journal/ Scopus. 2015. Brazil (Cezar-Vaz et al., 2015)	Quantitative, exploratory, and descriptive. Sample 37 teachers.	Stressful working conditions are related to inadequate salary, an excessive number of activities, and having to take work home. The consequences evidenced are anxiety, stress, and sleep disorders. Teachers reported that a good relationship between colleagues promotes well-being at work.	4
E.7	Sao Paulo Medical Journal/ Web of Science. 2015. Brazil (Baldacara et al., 2015)	Quantitative, observational, cross-sectional 110 municipal teachers.	45% of teachers have sufficient symptoms to consider the diagnosis of mental disorder and the need for treatment.	4
E.8	Revista Clínica Contemporánea/ Latindex. 2018. Spain (Guerrero-Barona et al., 2018)	Quantitative, cross-sectional, correlational 550 teachers from 64 educational centers	Indiscipline, lack of motivation of students, and little collaboration of families were the main sources of stress. Those who perceive high levels of stress have worse mental health, 36.3% show a risk of psychiatric disorder. A significant relationship was demonstrated between stress level, psychosocial risk factors, and mental health. Also, it is highlighted that job satisfaction and the level of commitment or involvement predict mental health.	3
E.9	Ciencia y trabajo/ SciELO. 2018. Chile (Mora Pino et al., 2018)	Quantitative, descriptive, cross-sectional, a sample of 70 municipal basic education teachers.	Regarding occupational dysphonia, there are personal and work-environmental factors that affect its presentation. The personal factors that stand out are insufficient hydration, raising the intensity of the voice, screaming and clearing the throat, high consumption of laryngeal irritants. Regarding the occupational context, it was found that: 82% of respondents occupy the voice for more than 31 hours. weekly, a high number of students, presence of drafts and temperature changes in the classroom; exposure to environmental noise. Lack of training for teachers on the proper use of the voice.	4
E.10	International journal of occupational medicine and environmental health/ Web of Science. 2013. Germany (Seibt et al., 2013)	Quantitative, correlational, sample of 630 teachers.	The classic work-related factors hardly contribute to mental health, with the effort-reward relationship being the most important factor identified, followed by physical complexes and personal factors. These factors should be intervened to prevent consequences in mental health.	3
E.11	Trabalho, Educação e Saúde/ SciELO. 2018. Brazil (Albuquerque et al., 2018)	Quantitative, cross-sectional study, 1201 teachers participated.	The factors weekly workload, number of students per class, and the number of classes per teacher were associated with minor psychiatric disorders. Psychological disturbances are very high among teachers, and there are signs of association with various forms of exploitation in teaching work.	3

Table 1. Continued...

Code	Journal/Indexing, year and place of execution	Method and sample	Method and sample	Level of evidence
E.12	Health and quality of life outcomes/ Web of Science. 2015. China (Liu et al., 2015)	Quantitative, cross-sectional study, a sample of 965 teachers.	The teachers experienced a low level of health-related quality of life (HRQOL), with mental health being more affected than physical health. For their part, organizational behavior factors such as group identification, perception of organizational support, and psychological empowerment, are predictors of HRQL and are positive resources to improve it.	3
E.13	Ciencia y Trabajo/ Scielo. 2017. Brazil (Amorim et al., 2017)	Quantitative, descriptive, cross-sectional study, sample 89 teachers.	Most of the teachers had good work skills and a moderate level of mental fatigue. As the presence of fatigue increases, the ability to work decreases.	4
E.14	Ciencia y Trabajo/ Scielo. 2018. Chile (Arteaga González et al., 2018).	Quantitative, descriptive, correlational, cross-sectional study 156 educators.	There is a highly significant relationship in physical function with absenteeism and work dependency, and significant with the number of children in charge and working years. There is also a high relationship between body pain, days absent, vitality and the number of children in charge, and the emotional role with days absent from work, among others. Mental health is seen as good.	3
E.15	Trabalho, Educação e Saúde/ Scielo. 2015. Brazil (Conceição et al., 2015)	Quantitative, cross-sectional, correlational study, sample 175 teachers.	19.5% of teachers reported mental health alterations, which was more prevalent in those teachers who made more effort at work and less frequent in those with a better quality of life in the physical domain.	3
E.16	Occupational Medicine/ Web of Science. 2015. Germany (Adams et al., 2015)	Quantitative, cross-sectional study, teachers and educational staff participated in 13 schools	36% of the teachers were classified as having an excessively ambitious or resigned risk coping pattern related to work. 45% had a healthy ambitious pattern. The emotional and social factors of teachers and educational personnel were associated with risky and unambitious coping patterns, which should be focal points for intervention.	3
E.17	Salud de los trabajadores/ Scielo. 2013. Chile (Muñoz & Lucero, 2013)	Mixed study, qualitative method of case study with 15 workers from a special school interviewed.	A good work environment and participatory leadership by the school management stand out, as facilitators of the development of an effective intervention that allows improving the quality of work and physical health. Close to half of the workers presented risk in their mental health and emotional exhaustion, and more than 90% had low depersonalization, high personal fulfillment, and good overall quality of life at work. In the interviews, physical fatigue, assaults by the schoolchildren, muscle injuries due to improperly performed force, and a feeling of a poorly distributed workload were evidenced, which generated a disguised discomfort among the workers.	5

Table 1. Continued...

Code	Journal/Indexing, year and place of execution	Method and sample	Method and sample	Level of evidence
E.18	Salud Uninorte/ Scopus. 2017. Colombia (Acosta-Fernández et al., 2017)	Quantitative, non-experimental, cross-sectional, analytical, and explanatory study, with a sample of 68 university faculty.	The teachers reported high work demands with negative impact working conditions, expressed in discomforts such as constant verbalization, uncomfortable postures, and complex tasks. Furthermore, both groups carry out their work in unfavorable psychosocial conditions. In addition, the presence of violence exposure was identified in 80.8% of the teachers. Thus, 2/3 teachers would require immediate intervention to improve their working conditions.	4
E.19	Revista Portuguesa de Enfermagem de Saúde Mental/ Scielo. 2017. Brazil (Torres et al., 2017)	Quantitative, cross-sectional, exploratory study, sample 525 teachers.	A prevalence of 37.1% of common mental disorders was found. Physical and verbal aggression against the teacher, aggression or threat with a firearm or knife, trafficking, and drug use at school is associated with the presence of common mental disorders in teachers.	3
E.20	Salud Uninorte/ Scopus. 2013. Mexico (Aldrete et al., 2013)	Quantitative, cross-sectional, analytical study in a sample of 286 teachers.	45.5% of the participants presented sleep disturbance and 43% somatic symptoms. Association and risk were evidenced when it is perceived that the work has to do with health problems, added to absenteeism.	3

Source: Our elaboration.

After the description of the results, and following the method of Souza et al. (2010), we carried out a critical analysis of the international literature located in the search to respond to the objective of the literature review and identify the three categories of argumentation: 1) Working conditions of teachers, 2) Effects of work in the health of teachers, 3) Mental workload in teachers, shown in Table 2.

Table 2. Classification of articles according to categories.

Categories	Selected studies
Teachers working conditions	E. 1; E.3; E.5, E.6; E.8; E.9; E.11, E.12; E.18; E.19
Effects of work on teachers' health	E.1; E.2; E.4; E.5; E.6; E.7; E.8; E.9; E.10; E.12; E.13; E.14; E.15; E.16; E.17; E.18; E.19; E.20
Mental workload on teachers	E.12; E.13; E.14; E.16; E.17

Source: Our elaboration.

Finally, the authors of the article propose a section of *Suggestions for occupational health based on the findings of the review*, given the evidence found.

Discussion

Working conditions of teachers

In the working conditions of teachers in primary and secondary educational establishments, the studies have described negative factors that condition teaching work.

Among these negative factors, characteristics of the work environment have been identified such as the infrastructure of the place and the perception of lack of resources; working conditions such as low wages, a large number of students per room, number of classes and activities, and the perception of inequity in conditions, and insecurity related to job stability, added to the intensity and long work times, noise in the classroom that requires raising the voice, the presence of drafts and temperature changes in the classroom, and exposure to environmental noise; added to negative perceptions of interpersonal relationships that contemplate problems with students, emotional demands, exposure to situations of violence and low quality of social relationships at work (Acosta-Fernández et al., 2017; Castro & Muñoz, 2013; Albuquerque et al., 2018; Cezar-Vaz et al., 2015; Guerrero-Barona et al., 2018; Mora Pino et al., 2018; Guerreiro et al., 2016; Sousa & Barros, 2017; Torres et al., 2017).

Regarding the positive factors, good relationships with students, colleagues, and authorities of the establishments, the motivation for work, the opportunity to express opinions, the identity of being a teacher, and the recognition of the work stand out (Cezar-Vaz et al., 2015; Guerreiro et al., 2016). Also, a study in China indicated that certain factors of organizational behavior such as group identification, the perception of support from the organization, and psychological empowerment, are predictors of health-related quality of life and represent positive resources to improve it (Liu et al., 2015).

Effects of work on teachers' health

The demands that teachers assume to fulfill the responsibilities related to their work have been associated with health damage according to the results of the bibliographic review. The consequences that arise as a result of attempts to overcome precarious working conditions lead to a negative connotation of physiological, physical, and mental workload (Guerreiro et al., 2016). Thus, health effects and risk factors such as depressive symptoms, stress related to school factors, exhaustion, physical exhaustion, and generalized fatigue, muscle injuries, sleep disturbance, and exposure to situations and behaviors of violence in the educational workplace have been described. (Acosta-Fernández et al., 2017; Aldrete et al., 2013; Amorim et al., 2017; Cezar-Vaz et al., 2015; Guerrero-Barona et al., 2018; Herman et al., 2020; Muñoz & Lucero, 2013).

From the physiological point of view, vascular problems and varicose veins in the lower limbs, irritable colon, dysphonia or aphonia, and sleep disorders are described more frequently (Castro & Muñoz, 2013; Cezar-Vaz et al., 2015; Silva & Pinheiro, 2017). For dysphonia, a study carried out in Chile indicates that there are personal and occupational-environmental factors such as insufficient hydration, raising the intensity of the voice, screaming and clearing the throat, and high consumption of laryngeal irritants (caffeine, dressings, carbonated drinks). Regarding the occupational context, we found that 82% of those surveyed occupy the voice for more than 31 hours a week in the work context (Mora Pino et al., 2018).

Activities that represent greater physical demand have been identified such as the correction of materials and group activities with students, which can translate into health effects such as pain in the upper and lower limbs, head, and spine (Silva & Pinheiro, 2017).

Regarding mental demands, the main cause is disinterest by the students and parents, which can translate into emotional symptoms such as irritability, discouragement, and

insomnia, which can favor the appearance of stress, anxiety disorders, and depression (Silva & Pinheiro, 2017). A study carried out in municipal teachers in Brazil pointed out that there is a high prevalence of mental health diseases in teachers, which agrees with what is found in the international literature (Baldacara et al., 2015; Carlotto & Câmara, 2015; Conceição et al., 2015; Muñoz & Lucero, 2013; Torres et al., 2017). On the other hand, factors related to the increase in the probability of suffering from common mental disorders have been investigated, such as role ambiguity, understood as the lack of clarity in the expectations related to the individual's tasks in their work, mental overload, low level of social support and low perception of self-efficacy (Carlotto & Câmara, 2015). Also, significant associations have been evidenced between certain working conditions and effects on mental health, such as an inadequate salary and anxiety, and between an excessive number of activities and psychosocial risks such as stress and mental overload (Cezar-Vaz et al., 2015; Guerrero -Barona et al., 2018; Liu et al., 2015; Seibt et al., 2013).

On the other hand, the teachers reported that a good relationship between colleagues promotes well-being in the workplace, and the relationship between a high quality of life at work with: psychological well-being, work-life balance, and a low level of psychological disorders (Cezar-Vaz et al., 2015).

Some factors and characteristics of the work undoubtedly affect the quality of work and the state of health of the workers. Therefore, as indicated in a study carried out in Chile with preschool educators, a good work environment and participatory leadership of managers should be promoted, as facilitating factors for the development of an effective intervention that allows improving these aspects (Muñoz & Lucero, 2013). Another study with similar characteristics demonstrated a highly significant relationship between a physical function with absenteeism and work dependency, a high relationship between body pain, days of absenteeism, vitality, and number of children in charge, and emotional role with days of absenteeism labor, among other factors that are important to be intervened (Arteaga González et al., 2018).

In addition to considering working conditions harmful to health, these could interfere with student learning, putting the educational process at risk and conditioning the healthy exercise of teachers' work activities (Silva & Pinheiro, 2017). There is evidence of a need to formulate interventions that promote healthy workspaces for teachers, that intervene in critical factors, such as emotional, environmental, work, and social, and that favor effective coping patterns (Adams et al., 2015).

Mental workload on teachers

The literature review did not show results of studies that measured the perceived mental workload in primary and secondary teachers, with any validated and specific instrument for its assessment. However, we found studies that widely describe some characteristics of the work environments and teacher's personal and health effects, which have been related to the perception of mental workload, which will be detailed below.

Among the characteristics of the work environment and the task, there are cognitive demands (Díaz et al., 2012). For teachers these demands are reflected in activities such as the preparation of classes and materials, work correction, evaluations, among others; added to the temporal organization and the environmental conditions of lighting, sound, and temperature, the degree of centralization in decision-making and emotional demands

(Adams et al., 2015; Arteaga González et al., 2018; Ceballos et al., 2016; Díaz et al., 2012; Rodríguez-Martínez et al., 2018). The teacher's characteristics related to the mental workload are age, gender, health status, family problems, and personality characteristics, among others (Ceballos-Vásquez et al., 2015; Díaz et al., 2012). Regarding the health effects that have been described related to mental workload, we highlight the degree of fatigue (Amorim et al., 2017).

At the same time, the perception of the work environment and its implicated factors will have significant repercussions and associations on worker performance (Díaz et al., 2012), as well as effects on the perception of health-related quality of life (Liu et al., 2015; Muñoz & Lucero, 2013; Costa et al., 2020).

Suggestions for Occupational Health Based on Review Findings

After recognizing that teaching work and its effects on health contemplate a series of factors involved in the perception of mental workload, it is necessary to point to the measures that will allow workers and educational institutions to soften its effects and promote healthy environments of work.

An important softening factor in the perception of psychosocial risks at work is social support, understood as the support that the worker perceives in the work context, and described by Karasek & Theorell (1990), highlighting that if it is perceived positively, the psychosocial environment could be perceived in a better way, is related to better levels of job satisfaction, teaching commitment and improving teamwork (Cezar-Vaz et al., 2015; Extremera et al., 2019; Guerrero-Barona et al., 2018; Karasek & Theorell, 1990).

The review highlights the evidence regarding the positive effects of teaching work, essential points to promote, such as the interpersonal relationships between teachers, and the ties they establish with their students. This undoubtedly rewards what was previously stated about social support, but it also has a significant emotional value, added to the teaching identity, with effective recognition, and motivation for work. In addition, the worker's development should be emphasized in favor of their abilities for work, which allows giving meaning to it, and increasing the sense of belonging in it (Katsantonis, 2020; Zamora-Díaz et al., 2017).

Given this, studies have pointed out the importance of generating coping strategies in teachers, which aim to avoid increased stress and the consequent illness (Herman et al., 2020; Oliveira et al., 2017).

Based on the literature review, the authors suggest (Díaz et al., 2012; Ceballos, 2015; Ceballos et al., 2016; Barrios Pérez et al., 2019; Murillo et al., 2020):

1. For educational institutions, it is suggested to promote the development of evidence on occupational health aimed at education professionals to support the promotion of healthy work environments based on empirical evidence;
2. To carry out a diagnosis of the psychosocial factors perceived by teachers: specifically, measure the mental workload of teachers, with validated and standardized instruments for each country, which allows addressing the factors that influence it and that may affect the perception of the work environment and the teacher's health;

3. To coordinate aspects of work organization such as deadlines in delivery of committed teaching activities, vacation planning, or leave in advance, and strengthen the level of autonomy of the teaching position to reduce ambiguity in decision-making;
4. Implementation of effective breaks between academic activities (calm down), at least every two hours, and the review of working hours in extension and workload;
5. To train workers in educational institutions in leadership and teamwork to improve social support and quality of work life;
6. From occupational health, its study should be deepened as an incipient pole for the exercise of health professionals and the formulation of new knowledge in this matter to improve the health of workers and the promotion of environments healthy work, teacher education in self-care, stress management, prevention of occupational hazards and work-family conciliation;
7. To strengthen collaborative work links between health and education entities to formulate and/or propose manuals or protocols to respond to needs such as job evaluation, proper use of the voice, use of ergonomic elements, preventive health checks inside educational centers, among others.

Conclusions and Perspectives

The findings evidenced in this review allow the authors to conclude that:

Teaching work is exposed to multiple psychosocial risks and their determinants. We evidenced working conditions that represent health risks for teachers, and some personal characteristics that could affect their ability to face them.

The teachers work with high intensity and very limited times, requiring activities outside the schedule to respond to the demands of their work. Also, they must respond to environmental factors, work with a high number of students and the factors related to it, develop in work environments in which there is a presence of poor quality of interpersonal relationships in the teams and other aspects that are related to the job instability and lack of resources to carry out their tasks.

On the other hand, the effects on the health of teachers are widely described in the literature, and they coincide in highlighting physical and mental health problems, which would condition the healthy exercise of teachers' work activities.

Even so, they highlighted positive aspects such as the identity of being a teacher and the recognition of work and, in some cases, the good relationship between colleagues, which promotes well-being in the workplace and enhances a suitable work environment.

The study of mental workload as a psychosocial occupational factor of teachers represents a challenge for all disciplines that contribute to safety and health at work. This shows a gap for research, both in generating evidence about occupational health that contributes to improving work environments and in enhancing the characteristics and abilities of the worker in favor of their health.

This is how the need arises to contribute to the study of mental load, making objective and subjective measurements of the factors associated with it and the work environment to ensure a healthy work for teachers, with a low amount of risks for their health from an integral perspective, and that, finally, allow the intervention of psychosocial risks and contribute to an adequate educational process.

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Author's Contributions

Yanni Lonnette González-Palacios conception and design of the text, acquisition of data, analysis, and interpretation of data, and writing of the text. Paula Andrea Ceballos-Vásquez conception and design of the text, acquisition of data, analysis, and interpretation of data, drafting of the text, and critical review of the text. Flérida Rivera Rojas conception and design of the text, and critical review of the text. All authors approved the final version of the text.

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Erratum

ERRATUM: Mental workload in faculty and consequences in their health: an integrative review

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Due to technical problems during the editorial production the article “Mental workload in faculty and consequences in their health: an integrative review”, DOI <https://doi.org/10.1590/2526-8910.ctoAR2123>, published in *Cadernos Brasileiros de Terapia Ocupacional*, 29, e2808, 2021, was published with an error.

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