

REVIEW

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Administrative professionals' quality of life in educational institutions: a systematic review

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Abstract

Objective Quality of life (QoL) is influenced by several factors and impacts the health and performance of workers. This systematic review aimed to synthesize the available evidence on the QoL of administrative professionals in educational institutions.

Methods A systematic search was conducted in Web of Science, Scopus, MEDLINE/PubMed, CINAHL, and LILACS, with no language or date restrictions. Eligible studies were peer-reviewed articles using quantitative, qualitative, or mixed methods (cross-sectional, cohort, case-control, or clinical trials) involving administrative professionals from secondary or higher education institutions. Study selection followed PRISMA 2020 and a registered protocol. Two independent reviewers screened and extracted data, with a third resolving disagreements. Methodological quality was assessed using the GRADE and Downs and Black checklist.

Results Of 6,929 records, three studies met the criteria, including 600 administrative professionals from Australia, Portugal, and Italy. All were cross-sectional and used validated QoL instruments (SF-36, EUROHIS-QOL 8-Index, VR-12). QoL was significantly associated with presenteeism, sleep quality, family dynamics, and social support. Despite heterogeneity, all studies were rated high quality with low risk of bias. A meta-analysis was not feasible; a narrative synthesis was performed.

Conclusions The findings of this systematic review can significantly contribute to promoting a healthy work environment for administrative professionals—especially in the education sector—regardless of whether they work onsite or remotely.

Keywords Workers' health, Occupational well-being, Remote work, Educational management

1 Introduction

Quality of life (QoL) is a comprehensive and subjective measure of an individual's perception of multiple dimensions of existence, including physical, psychological, and social well-being, as well as integration in personal and professional contexts [1]. Conceptually, QoL presents relevant intersections with perceived health, which justifies its increasing use as a health indicator in the occupational context [2]. Being an essential parameter



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for the evaluation of working conditions and for directing strategies aimed at promoting workers' health [3–5]. Given that working conditions have a direct influence on workers' QoL [6].

The health of workers, including their QoL, has been negatively associated with increasing demands and the work environment [7, 8], among them task overload, presenteeism, and lack of institutional support in the professional context. However, individual conditions, such as sleep quality, levels of physical activity, sedentary behavior, inadequate diet, and accumulation of family responsibilities, also have a significant influence [9, 10]. In addition, other psychosocial factors, such as occupational stress, job autonomy, social support, clarity of the role performed, and emotional instability [11], have gained strength in the literature [12–22]. In educational institutions, assessing QoL is relevant for technical-administrative professionals, who play essential roles in supporting academic operations and management [23–28].

At the height of the COVID-19 pandemic, technical and administrative professionals faced the challenge of reorganizing routines, work activities, and institutional processes to adapt to remote work [29–31]. Physical distancing, as recommended by health authorities, required a rapid transition to teleworking in several sectors, including education [32–35]. This context aggravated pre-existing problems, such as work overload, professional devaluation, and lack of institutional support [36–38], impacting health, QoL, and work-life balance [26, 39–45].

Despite their importance for the functioning of educational institutions, administrative professionals are still little considered in occupational health research [46–49]. Considering the impacts of transformations in the world of work, accentuated by the COVID-19 pandemic, this study seeks to support the formulation of institutional strategies that promote better working conditions and QoL, and to guide future research and guidelines aimed at evaluating this category.

Therefore, this study aimed to review and synthesize the available evidence on the QoL of technical-administrative professionals in educational institutions, considering both remote and in-person work and the factors associated with these modalities. The guiding question of the review was: “What are the perceptions of technical-administrative professionals in educational institutions regarding their quality of life?” By critically analyzing these perceptions, we present this systematic review article, in accordance with the PRISMA report checklist and previously published protocol [50], to deepen understanding of the impacts of different forms of work organization on QoL, thereby contributing to the development of more effective institutional strategies and public policies.

Thus, the results will serve as a basis for decision-making in educational institutions and promote a greater balance between professional and personal dimensions, especially given the challenges imposed by the constant evolution of the work environment. In addition, the results can guide future research and initiatives to value and improve the working conditions of these professionals.

2 Methods

The following subsections present the main points of the review, focusing on the methods, selection criteria, and quality of evidence in accordance with the protocol.

2.1 Protocol, registration, and design

The present systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) methodology for study identification, screening, eligibility, and inclusion [51]. Further details can be found in both the International Prospective Register of Systematic Reviews (PROSPERO) (registration number CRD42022365862) and the published protocol article [50]. This study did not require ethical approval because the analysis was based on secondary data.

The literature systematic review adhered to the Population, Exposure, Comparator, and Outcome (PECO) structure [52]. Thus, P = represents administrative professionals in educational institutions; E = encompasses remote work, in-person work before the COVID-19 pandemic, in-person work post-social isolation, environmental and socio-economic factors, workload, physical activity level, sleep, and nutrition; C = includes age, sex, and institution; and O = pertains to quality of life [50]. Database searches were conducted using the title, abstract, and keywords fields.

The search strategy across databases was based on keyword blocks related to the guiding terms: “administrative worker”, “quality of life”, and “educational institutions”, and their respective synonyms. The following five databases were used: Web of Science™ Core Collection, Scopus™, MEDLINE/PubMed®, Cumulative Index to Nursing and Allied Health Literature® (CINAHL® Plus), and Latin American and Caribbean Health Science Literature (LILACS). Regarding the search strategy, 6,782 studies were obtained in the first extraction (March 15, 2023). Subsequently, a second search was conducted to identify recently published studies not included in the initial search (from March 15, 2023, to August 18, 2023), yielding 147 additional studies. The retrieval tests were conducted regarding the search terms detailed in Supplementary Table S1. Additionally, a manual search was conducted to identify relevant articles from the reference lists of included studies [53] to ensure comprehensive coverage of the literature.

The Peer Review of Electronic Search Strategies 2015 (PRESS 2015) guidelines were employed to enhance the effectiveness and scope of the search strategy [54]. Preferred Reporting Items for Systematic Reviews and Meta-Analyses-Search (PRISMA-S) checklist guidelines were followed for metadata extraction [53, 55].

2.2 Eligibility criteria

A systematic review demands a rigorous and methodical approach to minimize bias and generate more reliable evidence that supports informed decision-making [56]. Articles that met the predefined inclusion criteria for this systematic review were selected, regardless of language [54, 57], or publication period restrictions. Eligible articles may be excluded if they meet at least one of the defined exclusion criteria.

2.2.1 Inclusion criteria

- a) Peer-reviewed original research journal articles [58].
- b) Quantitative, qualitative, or mixed studies with the following designs: cross-sectional, cohort, case-control, and controlled clinical trials.
- c) Studies with a sample of administrative professionals from higher or secondary education levels or technical institutions.
- d) Studies that evaluated QoL.

- e) Studies published in English between 2013 and 2023.

2.2.2 Exclusion criteria

- a) Duplicate articles published on the same topic by the same authors. Only the most comprehensive article would be considered [59]. Duplicate articles will be manually reviewed to confirm exclusion [60, 61].
- b) Opinion articles, comments, editorials, dissertations, theses, reviews, systematic reviews, and case reports.
- c) Studies with incomplete data.
- d) Studies with mixed samples of faculty and administrative professionals, only if the data were reported separately or could be calculated from the provided data [58].
- e) Studies are not available in full in the searched databases, which could not be accessed even after several attempts to contact the authors.
- f) Articles written in a restricted language that cannot be adequately translated [53].
- g) Studies with records of retraction [53] until December 31, 2023, the date of the database update.

2.3 Review and reviewer training process

Articles identified through database searches were imported into EndNote to manage references and facilitate the removal of duplicate articles [60]. The metadata was then imported into Rayyan (<https://www.rayyan.ai/>) to facilitate the process of selecting studies based on the inclusion and exclusion criteria, reading the titles and abstracts of the identified articles, and ensuring reviewer blinding [53, 62]. Subsequently, the full text of selected articles was read to confirm their eligibility for inclusion [62].

An initial screening based on article titles and abstracts was conducted independently by two reviewers, R1 and R2. A third senior reviewer, R3 or R4, resolved disagreements due to eligibility criteria [53, 63, 64]. Later, the two independent reviewers, R1 and R2, read the non-excluded articles from the previous stage. Eligibility was assessed according to the pre-established inclusion and exclusion criteria. All reviewers allocated to conduct this systematic review were pre-trained in eligibility criteria, standardization of bias risk assessment, methodological quality evaluation, and the correct use of Rayyan and EndNote software [60, 64].

2.4 Article selection

The articles selected through the review process were included in this systematic review. Additionally, the reference lists of included articles were checked to identify additional eligible studies that the search strategy might have missed, as planned in the protocol. The updated search identification of 156 additional records. The PRISMA 2020 flow-chart was used to assist in organizing the steps and guiding the systematic review process [51] (Fig. 1) and the checklist of items that aid in conducting a systematic review (Supplementary Table S2).

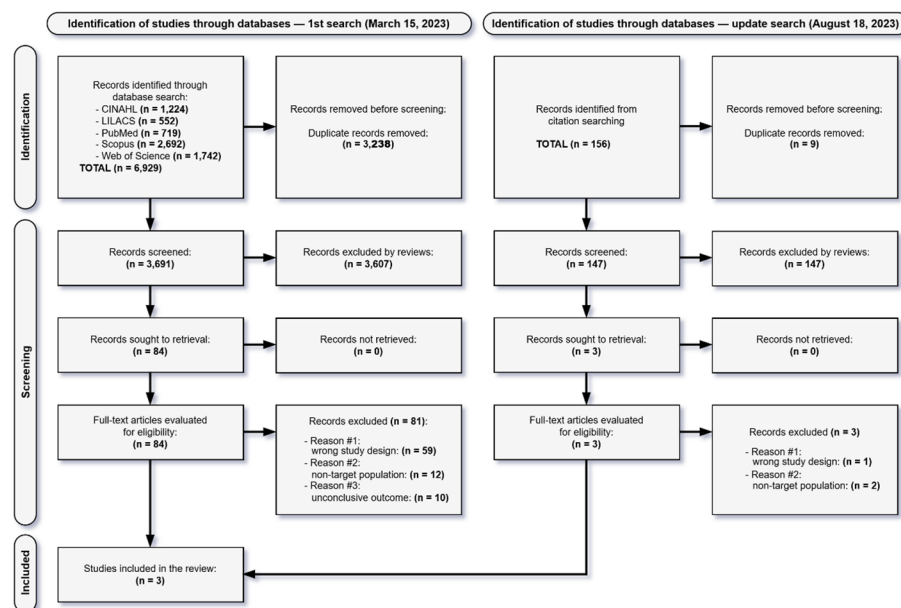


Fig. 1 PRISMA 2020 flow diagram for the systematic review. Independent reviewers, in parallel, and a blinded review process were adopted to eliminate biases in conducting the systematic review [65]. The Statistical Package for the Social Sciences (IBM™ SPSS™ Statistics), version 26 for Microsoft Windows™, was employed for the calculations

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2.5 Data extraction

Two independent reviewers (R1 and R2) extracted and assessed data, and discrepancies were resolved by a third senior reviewer (R3).

2.6 Methodological quality and bias assessment

Each of the included articles was evaluated using the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) approach, and the evidence was classified as high, moderate, low, or very low [66–68]. Given the observational cross-sectional design of the included studies and inherent methodological limitations, the certainty of the evidence was rated as low.

Two reviewers evaluated the bias risk independently (R1 and R2). The Downs and Black scale, comprising 27 items, was used to assess risk of bias in quantitative studies [69], with scores for cross-sectional (0–10 points) and longitudinal (0–16 points) [70, 71]. The items on the Downs and Black checklist could not be applied to all observational studies, and a subset of 10 questions (1–3, 6, 7, 10–12, 18, and 20) was used [72, 73]. Hence, a summary quality score was computed for each selected study, expressed as a percentage of the maximum possible score for the specific design of each study [71]. We considered a score $\geq 70\%$ to indicate a high methodological quality and low risk of bias, whereas a score $< 70\%$ indicated a higher risk of bias [69–71, 74].

The bias risk of qualitative studies was planned to be assessed using the Critical Appraisal Skills Program (CASP) checklist [71]; however, despite the CASP being registered in the protocol, no qualitative studies were included; thus, we did not utilize this checklist.

2.7 Evidence summarization process

A rigorous approach was employed to summarize the evidence [75]. Critical evaluation of the methods used in the included studies was systematically conducted to consolidate the evidence [76]. The extracted data from the studies were evaluated transparently based on the detailed methodological approach specified in the systematic review protocol. A quantitative and qualitative assessment of these previously published studies related to the QoL of administrative professionals in educational institutions was carried out, and contact with the authors was not necessary for any additional data [70].

3 Results

The selection process for this systematic review is illustrated in Fig. 1. After searching five electronic databases, 6,929 records were initially retrieved. Following the removal of 3,238 duplicates and the exclusion of 3,607 articles based on title and abstract screening, 84 full-text articles were assessed for eligibility. Inter-reviewer agreement at this stage was high (agreement = 99.3%; Kappa = 0.87). Of these, 81 studies were excluded based on pre-established eligibility criteria, leaving three studies for inclusion. A manual search in the reference lists of the included studies was performed; however, no additional eligible studies were identified for this review. Ultimately, three studies were included in the final synthesis (Fig. 1). Agreement between reviewers during this final phase was complete (agreement = 100%; Kappa = 1.0).

Although initially including a substantial number of studies, many were excluded at various stages of the systematic review for not meeting the defined eligibility criteria, leaving only three studies at the end of the process. The studies included [77–79], conducted in Australia, Portugal, and Italy respectively, encompassed a total of 600 administrative professionals, with sample sizes ranging from 97 to 323 participants. All studies were cross-sectional in design, included both male and female participants (predominantly aged 30–60 years), and were published in English between 2013 and 2022.

Among the included studies, only one [78] explicitly examined work arrangement, distinguishing between remote (telework) and on-site work. The remaining studies [77, 79], conducted before or without consideration of the widespread adoption of remote work, did not isolate or analyze work modality as an independent variable.

The studies used quantitative methods and validated instruments to assess QoL, such as the SF-36, EUROHIS-QOL 8-index, and Veterans RAND 12-item Health Survey (VR12). As such, the synthesis was revised to reflect the identification of associated factors with QoL, rather than subjective perceptions, thereby aligning with the nature of the available evidence. Given the heterogeneity of the focus areas, the results were thematically organized into three categories of QoL determinants: Work-Related Determinants [77], Psychosocial Factors [78], and Behavioral and Lifestyle Factors [79].

Two of the included studies reported obtaining ethical approval [77, 78]. A summary of the study characteristics is provided in Table 1. All included studies were rated as high quality, scoring above 70% on the Downs and Black checklist. According to the GRADE

Table 1 Characteristics of cross-sectional studies included

#	Author (year)	Title	Language / country	N Female sex (%)	Age (years) M ± SD range	Instruments	Main results
1	Leicht et al. (2013) [77]	Relationship between employment category and gender on quality of life, physical activity and their barriers and motivators, for full-time university staff	English / Australia	180* F: 91 (70.0%)	42.3 ± 11.2	QoL via SF-36 was evaluated with: - Stage for PA change via Stages of Change Questionnaire. - PA level via the IPAQ long version.	Self-reported quality of life for all staff (47.4 ± 10.3) was similar to that of the general population. Male staff reported greater working hours ($p=0.05$). However, men and women reported similar quality of life, days of physical activity, and sitting time.
2	Magalhães et al. (2022) [78]	The relationship between presenteeism, quality of life and social support in higher education professionals: across-sectional path analysis	English / Portugal	97 F: 69 (71.1%)	46.1 ± 8.4	EUROHIS-QOL 8-index was evaluated with: - COPSQ II and SPS-6.	The mean quality of life score was 49.2 ± 15.4. Presenteeism, social support, and quality of life were significantly and positively correlated.
3	Stendardo et al. (2020) [79]	Sleep quality: a critical determinant of perceived quality of life in the administrative-technical workers of an Italian university	English / Italy	323 F: 234 (72.4%)	41–60	Health-Related QoL was evaluated with: - MEQ, VR12, and PSQI.	For 49.2% of those who slept poorly, sleep quality was the main factor affecting health-related quality of life. Family size and being a caregiver for a family member indirectly affect quality of life by influencing sleep quality.

* Sample quantified only from administrative professionals (total sample: 297). 'N' represents the sample size, 'M' represents the mean age of participants, 'SD' represents the standard deviation, 'F' represents the female group, and 'M' represents the male group. QoL is an acronym for Quality of Life, SF-36 is for Short Form 36, IPAQ is for International Physical Activity Questionnaire, EUROHIS-QOL is for European Health Interview Survey – QoL, COPSQ is for Copenhagen Psychosocial Questionnaire, SPS-6 is for Stanford Presenteeism Scale, MEQ is for Morningness–Eveningness Questionnaire, VR12 is for Veterans RAND 12-item Health Survey, PCS is for Physical Component Summary, PSQI is for Pittsburgh Sleep Quality Index.

approach, the certainty of the evidence was considered low, mainly due to the observational cross-sectional design of the included studies, which limits causal inference (Table 2). The reliability of this review process was further confirmed by strong inter-rater agreement (agreement = 99.3%; Kappa = 0.87) [76, 80].

The studies addressed different dimensions, from physical and psychosocial to biological and occupational, highlighting the multifactorial nature of QoL among administrative professionals in educational settings. Although the limited number of studies and heterogeneity among them made it impossible to carry out a meta-analysis, it was possible to integrate the results through a structured narrative synthesis.

Table 2 Assessment of the risk of bias and certainty of evidence for the included studies

Quantitative study (year)	Conflict of interest	Ethical approval	Downs and black scale										Grade checklist		
			A	B	C	E	F	H	I	J	N	O	Total	Score	
Cross-sectional studies (n= 3)															
Leicht et al. (2013)	No	Yes	1	1	1	1	0	1	0	0	1	1	07/10	70%	⊕○○○
Magalhães et al. (2022)	No	Yes	1	1	1	1	0	1	0	0	1	1	07/10	70%	⊕○○○
Stendardo et al. (2020)	No	No	1	1	1	1	0	1	1	1	1	1	09/10	90%	⊕○○○

Downs and Black checklist caption: (A) objective clearly stated; (B) main outcomes clearly described; (C) patient characteristics clearly defined; (E) main findings clearly defined; (F) random variability in estimates provided; (H) probability values reported; (I) sample target representative of the population; (J) sample recruitment representative of the population; (N) statistical tests used appropriately; (O) primary outcomes valid/reliable. GRADE is an acronym for Grading of Recommendations, Assessment, Development, and Evaluations:⊕ represents 'very low quality', ⊕⊕ represents 'low quality', ⊕⊕⊕ represents 'moderate quality', and ⊕⊕⊕⊕ means 'high quality'.

4 Discussion

This systematic review synthesizes three studies on the QoL of administrative professionals in educational institutions, addressing both remote and in-person work, using validated and widely recognized instruments, such as SF-36, EUROHIS-QoL 8-Index, and VR-12. The studies explored: (1) QoL, physical activity, sedentary behavior, and related factors; (2) associations between presenteeism, social support, and QoL; and (3) the impact of sleep, chronotype, and family responsibilities on QoL.

The findings of this review align with existing literature, highlighting the influence of physical activity, social support, presenteeism, sleep quality, and work-family dynamics on the QoL of administrative professionals. To contextualize these findings, evidence from the broader literature also indicates that regular physical activity consistently correlates with improved outcomes across multiple QoL domains [81–83]. A study focusing on young workers found that regular physical activity was the main factor positively associated with higher QoL scores [84]. Similarly, the promotion of unsupervised physical activity among office workers has been shown to contribute positively to Health-Related Quality of Life (HRQoL), highlighting the need for workplace policies [85]. These external findings are consistent with the results of Leicht, Sealey, and Devine [77], who identified prolonged working hours and sedentary routines as barriers to healthier behaviors, even among those aware of the benefits of physical activity.

The importance of a healthy work environment is highlighted in this review and in international guidelines. From a broader perspective, organizations such as the WHO define it as a setting where workers and managers collaborate to promote health, safety, and well-being without compromising productivity. This underscores the need for comprehensive occupational strategies integrated into organizational culture [86].

Evidence from longitudinal and population-based studies further supports the relevance of sleep quality for QoL. Outside the scope of the included studies, longitudinal studies, such as that of Kudrnáková [87], demonstrate that changes in sleep quality precede variations in QoL indicators over time, while large population analyses, such as that of Lee [88], with more than 200,000 participants, confirm this association even after adjusting for multiple confounding factors. These findings align with those reported by Stendardo et al. [79], who identified sleep quality as the most significant factor for health-related QoL among technical-administrative workers. In addition, contextual elements such as family size and caregiver role emerge as indirect influences, indicating that social overload can potentiate the adverse effects of poor sleep quality. The data confirm the importance of sleep in QoL and highlight the need to include social and occupational factors in health promotion strategies.

Large-scale evidence further reinforces the relevance of QoL assessment in occupational health research. For contextual comparison, the meta-analysis by Su et al. (2021) was based on data from 139 studies and provided a comprehensive assessment of HRQoL among Chinese workers [89]. They reported consistently lower mean scores compared to normative values for the general population in the physical (14.1), psychological (13.7), social relationships (14.0), and environmental (12.3) domains. These findings highlight the value of QoL assessment as a health indicator and suggest that combined scores may serve as benchmarks for developing workplace health promotion programs [89]. This aligns with the justification of the current revision, which considers

QoL not only a descriptive outcome, but also a prospective tool to identify risks and prioritize holistic strategies, taking into account the multifactorial nature of QoL.

Psychosocial aspects, such as presenteeism and social support, were also prominent in the reviewed studies and are echoed in broader occupational health literature. The study by Magalhães [78], included in this review, found that supervisor support reduced presenteeism and improved QoL. Supporting this, evidence shows that coworker and family support are positively associated with psychological capital, which in turn mediates the effects of social resources on stress and can protect against burnout and poor job performance [90].

Moreover, policy-oriented and intervention-based studies outside this review have emphasized the need to prioritize mental health initiatives in the workplace. Interventions that combine body positivity workshops, sleep hygiene education, and peer support networks have been recommended to enhance well-being and QoL among workers [91]. These multidimensional strategies align with the conclusions of this review, especially concerning the combined influence of sleep, family dynamics, and organizational support on administrative staff well-being.

The three studies provide a comprehensive overview of the complex interactions among QoL, presenteeism, social support, sleep quality, and other related factors that affect the lives of white-collar workers. The study by Leicht et al. [77] highlights the importance of considering the impact of working hours and sedentary behavior on the QoL of administrative professionals in the university context. It is revealed that faculty, although more educated and aware of the benefits of PA and the risks of sedentary behavior, still exhibit inadequate behaviors, which may be attributed to long working hours. Thus, this finding underscores the need for locally tailored programs to promote occupational health, especially for vulnerable subgroups, such as male faculty with long working hours.

The investigation conducted by Magalhães et al. [78] deepens the relationship between presenteeism, QoL, and social support. The authors demonstrated that supervision of social support has a direct influence on presenteeism and, consequently, on the formal qualification of administrative professionals. This finding highlights the importance of organizational support sought by employees promote psychological well-being and improve service quality, emphasizing the need for management practices that foster a healthy work environment.

On the other hand, the study by Stendardo et al. [79] focuses on the relationship between sleep quality and QoL, identifying sleep as the predominant factor influencing QoL of university daytime workers. Furthermore, family variables, such as family size and the role of family caregiver, are highlighted as significant for sleep quality and, consequently, for HRQoL. This underscores the importance of considering not only individual factors but also family contexts in promoting workers' holistic health.

4.1 Strengths and limitations

The search across five databases, including two multidisciplinary databases, with no language or year restrictions ensured the review's comprehensiveness. Pre-registration and publication of the protocol demonstrate the commitment to transparency and strengthen the reliability of the results. The rigorous definition of eligibility criteria

ensured the careful selection of included studies, contributing to reproducibility and methodological integrity.

However, this review has some limitations, particularly the scarcity of available evidence and the methodological heterogeneity among the included studies, which restricted the scope of the conclusions. In addition, restricting the inclusion criteria to professionals working in secondary and higher education, excluding those in primary education, may have contributed to the low number of included studies.

Although this review followed a pre-registered protocol, some minor modifications occurred due to the characteristics of the available evidence. Specifically, although the protocol planned to appraise qualitative studies using the CASP checklist, no qualitative studies met the eligibility criteria and were therefore included. Nevertheless, the findings offer relevant contributions to advancing knowledge in the field and may encourage further research. Future studies may adopt broader eligibility criteria to explore gaps that have not yet been addressed in the existing literature.

5 Conclusions

The relationships identified in the studies highlight the need for personalized workplace interventions within contexts comparable to those examined, given the complexity and multifactorial nature of the elements that influence the QoL of administrative professionals. Among these factors are levels of physical activity, working hours, sedentary behavior, presenteeism, social support, sleep quality, chronotype, and family characteristics. Therefore, organizational strategies should address not only workload and physical health-related issues but also social and family dimensions, while acknowledging that these recommendations are limited to the populations and work arrangements investigated in the reviewed studies. Such a holistic approach may foster a more positive work environment and improving the overall QoL of administrative professionals in educational institutions.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12982-026-01520-1>.

Supplementary material 1. Table S1. Return tests' results related to the terms comprising the search string.

Supplementary material 2. Table S2. The PRISMA 2020 checklist for this systematic review.

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Author contributions

All authors contributed to the study conception and design. Conceptualization: NGP, WPC, MBC, PRESN, and MN; Data Curation: NGP; Formal Analysis: NGP, RMFS, and MSVF; Funding Acquisition: No external funding; Investigation: NGP and MN; Methodology: NGP, WPC, MBC, PRESN, and MN; Project Administration: NGP, PRESN, and MN; Resources: NGP, RMFS, WPC, MSVF, and MN; Software: NGP, RMFS, and MSVF; Supervision: PRESN and MN; Validation: RMFS, WPC, MBC, PRESN, and MN; Visualization: NGP, WPC, MBC, PRESN, and MN; Writing – Original Draft Preparation: NGP, RMFS, WPC, IFRO, ARM, AV, MSVF, PRESN, and MN; Writing – Review & Editing: NGP, RMFS, WPC, MBC, IFRO, ARM, AV, MSVF, PRESN, and MN. All authors read and approved the final manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Ethical approval was not required for this study as it is an analysis of previously published articles (i.e., secondary data).

Competing interests

The authors declare no competing interests.

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References

1. The WHOQOL Group. The world health organization quality of life assessment (WHOQOL): position paper from the world health organization. *Soc Sci Med*. 1995;41:1403–9. [https://doi.org/10.1016/0277-9536\(95\)00112-K](https://doi.org/10.1016/0277-9536(95)00112-K).
2. Medvedev ON, Landhuis CE. Exploring constructs of well-being, happiness and quality of life. *PeerJ*. 2018;6:e4903. <https://doi.org/10.7717/peerj.4903>.
3. Ronchetti M, Russo S, Di Tecco C, Iavicoli S. How much does my work affect my health? The relationships between working conditions and health in an Italian survey. *Saf Health Work*. 2021;12:370–6. <https://doi.org/10.1016/j.shaw.2021.04.002>.
4. Rusli BN, Edimansyah BA, Naing L. Working conditions, self-perceived stress, anxiety, depression and quality of life: A structural equation modelling approach. *BMC Public Health*. 2008;8:48. <https://doi.org/10.1186/1471-2458-8-48>.
5. Kowalska M, Szemik S. Health and quality of life vs. occupational activity. *Med Pr*. 2016;67:663–71. <https://doi.org/10.13075/mp.5893.00420>.
6. Mendes M, Trindade L, de Pires L, et al. Nursing practices in the family health strategy in Brazil: interfaces with illness. *Rev Gaucha Enferm*. 2021;42. <https://doi.org/10.1590/1983-1447.2021.20200117>.
7. Duracinsky M, Marcellin F, Cousin L, et al. Correction: Social and professional recognition are key determinants of quality of life at work among night-shift healthcare workers in Paris public hospitals (AP-HP ALADDIN COVID-19 survey). *PLoS ONE*. 2024;19:e0308720. <https://doi.org/10.1371/journal.pone.0308720>.
8. Koca M, Deniz S, Inceoglu F, Kiliç A. The effects of workload excess on quality of work life in Third-Level healthcare workers: A structural equation modeling perspective. *Healthcare*. 2024;12:651. <https://doi.org/10.3390/healthcare12060651>.
9. de Oliveira IFR, Pereira NG, Monteiro LF, et al. Factors influencing the quality of life and mental health of Brazilian federal education network employees: an epidemiological cross-sectional study. *Heliyon*. 2025;11:e42029. <https://doi.org/10.1016/j.heliyon.2025.e42029>.
10. Santos Jesus JIF, Monfort-Pañego M, Alves Santos GV, et al. Food, quality of life and mental health: A Cross-Sectional study with federal education workers. *Nutrients*. 2025;17:2519. <https://doi.org/10.3390/nu17152519>.
11. Fernandes Mda, SV, Mendonça CR, da Silva TMV, et al. Relationship between depression and quality of life among students: a systematic review and meta-analysis. *Sci Rep*. 2023;13:6715. <https://doi.org/10.1038/s41598-023-33584-3>.
12. Ahmad M, Maon SN, Aziz NISA. (2018) The Relationship Between Job Stress and Quality of Life Among Working Adults. In: *Proceedings of the 2nd Advances in Business Research International Conference*. Springer Singapore, Singapore, pp 261–270.
13. Jain A. Effects of work overload on job satisfaction and stress due to work overload: A case study of different organizations. *Int J Sci Res (IJSR)*. 2021;10:1705–7. <https://doi.org/10.21275/SR21326142426>.
14. Guerra DN, García Hurtado D, Acosta DR, Rodríguez Torres E. Work stress and its influence on female performance: a systematic review. *Health Leadersh Qual Life*. 2024;3. <https://doi.org/10.56294/hl2024.546>.
15. Sun Y, Wei M, Zhao Q, et al. Mediating effect of sleep quality on the association between job stress and health-related productivity loss among workers in R&D enterprises in Shanghai. *Front Public Health*. 2024;12. <https://doi.org/10.3389/fpuh.2024.1331458>.
16. Yoshida A, Asakura K, Imamura H, et al. Relationship between working hours and sleep quality with consideration to effect modification by work style: a community-based cross-sectional study. *Environ Health Prev Med*. 2024;29:23–00252. <https://doi.org/10.1265/ehpm.23-00252>.
17. Sharari H, Qawasmeh R, Helalat A, Jahmani A. Enhancing employee sustainability through employee quality of life: the role of top management support. *TQM J*. 2025;37:1320–41. <https://doi.org/10.1108/TQM-11-2023-0379>.
18. Kurogi K, Ikegami K, Eguchi H, et al. A cross-sectional study on perceived workplace health support and health-related quality of life. *J Occup Health*. 2021;63. <https://doi.org/10.1002/1348-9585.12302>.
19. Neupane S, Lallukka T, Salonsalmi A, et al. Trajectories of satisfaction with work–family reconciliation among midlife employees: the role of family-related factors and quality of life. *Eur J Public Health*. 2024;34:1059–65. <https://doi.org/10.1093/eurpub/ckae117>.
20. Gómez-Redondo P, Marín V, Leal-Martín J, et al. Association between physical activity guidelines and sedentary time with workers' Health-Related quality of life in a Spanish multinational company. *Int J Environ Res Public Health*. 2022;19:6592. <https://doi.org/10.3390/ijerph19116592>.
21. Quinn TD, Perera S, Conroy MB, et al. Impact of sedentary behaviour reduction on desk-worker workplace satisfaction, productivity, mood and health-related quality of life: a randomised trial. *Occup Environ Med*. 2025;82:61–8. <https://doi.org/10.1136/oemed-2024-109868>.
22. Liu Y, Song Y, Koopmann J, et al. Eating your feelings? Testing a model of employees' work-related stressors, sleep quality, and unhealthy eating. *J Appl Psychol*. 2017;102:1237–58. <https://doi.org/10.1037/apl0000209>.
23. Siqueira PH, de Teodoro L, Bertassi BC AL. Quality of work life of the administrative technical servants in education: analysis of a Brazilian federal university. *Archives Bus Res*. 2020;8:67–83. <https://doi.org/10.14738/abr.87.8266>.
24. Karlsson S, Rytberg M. Those who walk the talk: the role of administrative professionals in transforming universities into strategic actors. *Nordic J Stud Educational Policy*. 2016;2016:31537. <https://doi.org/10.3402/nstep.v231537>.
25. Ningsih K. (2020) *Administrasi Pendidikan dan Tenaga Kependidikan*.

26. Kumar P, Kumar N, Aggarwal P, Yeap JAL. Working in lockdown: the relationship between COVID-19 induced work stressors, job performance, distress, and life satisfaction. *Curr Psychol*. 2021;40:6308–23. <https://doi.org/10.1007/s12144-021-01567-0>.
27. Lidyanti N, Kartiwi AP, Somantri M. Supervision of school administrative staff competence to improve school administration quality in public high schools. *Int J Educational Manage Innov*. 2023;4:127–38. <https://doi.org/10.12928/ijemi.v4i2.8069>.
28. Sarinami putri. (2020) Administrasi Pendidikan dan Tenaga Kependidikan (PTK 1).
29. de Oliveira TC dos, Muzeka S, Batista ALP et al. E. (2022) Worker health impacts from working from home during the COVID-19 pandemic. *Work* 72:9–17. <https://doi.org/10.3233/WOR-210553>
30. Ingusci E, Signore F, Giancaspro ML, et al. Workload, techno Overload, and behavioral stress during COVID-19 emergency: the role of job crafting in remote workers. *Front Psychol*. 2021;12. <https://doi.org/10.3389/fpsyg.2021.655148>.
31. Rodríguez-Modroño P, López-Igual P. Job quality and Work—Life balance of teleworkers. *Int J Environ Res Public Health*. 2021;18:3239. <https://doi.org/10.3390/ijerph18063239>.
32. Baloch GM, Sundarasan S, Chinnna K, et al. COVID-19: exploring impacts of the pandemic and lockdown on mental health of Pakistani students. *PeerJ*. 2021;9:e10612. <https://doi.org/10.7717/peerj.10612>.
33. Castro RR, Santos RSC, Sousa GJB, et al. Spatial dynamics of the COVID-19 pandemic in Brazil. *Epidemiol Infect*. 2021;149:e60. <https://doi.org/10.1017/S0950268821000479>.
34. Silva CEMda, da Cruz Neto CC, Bezerra ACV, et al. Influência Das condições de bem-estar domiciliar Na prática do Isolamento social Durante a pandemia Da Covid-19. *J Health Biol Sci*. 2020;8:1–7. <https://doi.org/10.12662/2317-3076/jhbs.v8i1.3410.p1-7.2020>.
35. Mobach MP. Workplace impact on employees: A lifelines Corona research initiative on the return to work. *PLoS ONE*. 2023;18:e0279902. <https://doi.org/10.1371/journal.pone.0279902>.
36. Zhang N, Xu D, Li J, Xu Z. Effects of role overload, work engagement and perceived organisational support on nurses' job performance during the COVID-19 pandemic. *J Nurs Manag*. 2022;30:901–12. <https://doi.org/10.1111/jonm.13598>.
37. Mihalache M, Mihalache OR. How workplace support for the < scp>COVID -19 pandemic and personality traits affect changes in employees' affective commitment to the organization and job-related well-being. *Hum Resour Manage*. 2022;61:295–314. <https://doi.org/10.1002/hrm.22082>.
38. Liu X, Jing Y, Sheng Y. Work from home or office during the COVID-19 pandemic: the different chain mediation models of perceived organizational support to the job performance. *Front Public Health*. 2023. <https://doi.org/10.3389/fpubh.2023.1139013>. 11:.
39. Lee SE, Shin G. The effect of perceived organizational and supervisory support on employee engagement during COVID-19 crises: mediating effect of Work-Life balance policy. *Public Pers Manage*. 2023;52:401–28. <https://doi.org/10.1177/00910260231171395>.
40. Costin A, Roman AF, Balica R-S. Remote work burnout, professional job stress, and employee emotional exhaustion during the COVID-19 pandemic. *Front Psychol*. 2023;14. <https://doi.org/10.3389/fpsyg.2023.1193854>.
41. Mattock SL. Leadership and Work—Life balance. *J Trauma Nurs*. 2015;22:306–7. <https://doi.org/10.1097/JTN.0000000000000163>.
42. Björk-Fant JM, Nordmyr J, Forsman AK. Work-life balance and the psychosocial work environment in Finnish working life: the case of gender and family life stages. *Work*. 2024;1–12. <https://doi.org/10.3233/WOR-230166>.
43. Razumova TO, Aleshina AB, Maria A, Serpikhova. Work-life balance under conditions of changes in the quality of working life. *Level Life Popul Reg Russia*. 2020;16:24–37. <https://doi.org/10.19181/lsprr.2020.16.3.2>.
44. Dwitanti E, Murwani FD, Siswanto E. WORK-LIFE BALANCE, ON EMPLOYEE PERFORMANCE THROUGH WORK STRESS AND WORKLOAD. *Int J Bus Law Educ* 4:569–86. <https://doi.org/10.56442/ijble.v4i2.211>.
45. Dias E, Pires da Costa W, Da Silva Valadão Fernandes M, et al. Teachers' quality of life perception during the COVID-19 pandemic: a systematic review protocol. *J Hum Growth Dev*. 2024;34:268–77. <https://doi.org/10.36311/jhgd.v34.15837>.
46. Beutel T, Koestner C, Wild PS, et al. Burnout, self-rated general health and life satisfaction among teachers and other academic occupational groups. *Front Public Health*. 2023;11. <https://doi.org/10.3389/fpubh.2023.1209995>.
47. Ribeiro JS, Pereira R, Freire IV, et al. Stress and quality of life among university students: A systematic literature review. *Health Professions Educ*. 2018;4:70–7. <https://doi.org/10.1016/j.hpe.2017.03.002>.
48. Bian H, Jiang H. Alleviating occupational stress in Chinese junior high school teachers: the role of mindfulness-based interventions. *Front Psychol*. 2025;16. <https://doi.org/10.3389/fpsyg.2025.1479507>.
49. Ali HT, Helal A, Ismail SM, et al. Exploring the quality of life of university students in egypt: A Cross-Sectional survey using the world health organization quality of life-BREF (WHOQOL-BREF) assessment. *Am J Health Promotion*. 2025;39:263–73. <https://doi.org/10.1177/08901171241285094>.
50. Pereira NG, Silva RMF, de Oliveira IFR, et al. Administrative professionals' quality of life in educational institutions: a systematic review protocol. *BMJ Open*. 2023;13:e074119. <https://doi.org/10.1136/bmjopen-2023-074119>.
51. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:1–9. <https://doi.org/10.1136/bmj.n71>.
52. Morgan RL, Whaley P, Thayer KA, Schünemann HJ. Identifying the PECO: a framework for formulating good questions to explore the association of environmental and other exposures with health outcomes. *Environ Int*. 2018;121:1027–31. <https://doi.org/10.1016/j.envint.2018.07.015>.
53. Pérez-Neri I, Pineda C, Flores-Guerrero JL, et al. Adherence to literature search reporting guidelines in leading rheumatology journals' systematic reviews: umbrella review protocol. *Rheumatol Int*. 2022;42:2135–40. <https://doi.org/10.1007/s00296-022-05194-1>.
54. McGowan J, Sampson M, Salzwedel DM, et al. PRESS peer review of electronic search strategies: 2015 guideline statement. *J Clin Epidemiol*. 2016;75:40–6. <https://doi.org/10.1016/j.jclinepi.2016.01.021>.
55. Rethlefsen ML, Kirtley S, Waffenschmidt S, et al. PRISMA-S: an extension to the PRISMA statement for reporting literature searches in systematic reviews. *Syst Rev*. 2021;10:1–19. <https://doi.org/10.1186/s13643-020-01542-z>.
56. Higgins J, Thomas J, Chandler J et al. Cochrane Handbook for Systematic Reviews of Interventions version 6.5. Cochrane, 2024. Cochrane Handbook for Systematic Reviews of Interventions version 6.5 (updated August 2024). Cochrane, 2024.
57. The Campbell Collaboration. (2021) Campbell Collaboration Systematic Reviews: policies and guidelines version 1.8 (updated February 2021).

58. Terra LF, Costa WP, Silva RMF, et al. Interventions towards barriers to the practice of physical activity in adolescence: a systematic review protocol. *PLoS ONE*. 2023;18:e0287868. <https://doi.org/10.1371/journal.pone.0287868>.
59. Costa WP, Fernandes MSV, Memon AR, et al. Factors influencing the work of researchers in scientific initiation: a systematic review protocol. *PLoS ONE*. 2024;19:e0297186. <https://doi.org/10.1371/journal.pone.0297186>.
60. Fernandes Mda, SV, Mendonça CR, Silva TMV, Noll M. The relationship between depression and quality of life in students and the academic consequences: protocol for a systematic review with meta-analysis. *Int J Educ Res*. 2021;109:101812. <https://doi.org/10.1016/j.ijer.2021.101812>.
61. McKeown S, Mir ZM. Considerations for conducting systematic reviews: evaluating the performance of different methods for de-duplicating references. *Syst Rev*. 2021;10:1–8. <https://doi.org/10.1186/s13643-021-01583-y>.
62. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan—a web and mobile app for systematic reviews. *Syst Rev*. 2016;5:1–10. <https://doi.org/10.1186/s13643-016-0384-4>.
63. Liberati A, Altman DG, Tetzlaff J, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration. *BMJ*. 2009;339. <https://doi.org/10.1136/bmj.b2700>.
64. Noll M, Wedderkopp N, Mendonça CR, Kjaer P. Motor performance and back pain in children and adolescents: a systematic review and meta-analysis protocol. *Syst Rev*. 2020;9:1–6. <https://doi.org/10.1186/s13643-020-01468-6>.
65. Andrić B, Priyashantha KG, Alwis AC. Employee engagement management in the Covid-19 pandemic: a systematic literature review. *Sustainability*. 2023;15:987. <https://doi.org/10.3390/su15020987>.
66. Balshem H, Helfand M, Schünemann HJ, et al. GRADE guidelines: 3. Rating the quality of evidence. *J Clin Epidemiol*. 2011;64:401–6. <https://doi.org/10.1016/j.jclinepi.2010.07.015>.
67. Guyatt GH, Oxman AD, Schünemann HJ, et al. GRADE guidelines: a new series of articles in the journal of clinical epidemiology. *J Clin Epidemiol*. 2011;64:380–2. <https://doi.org/10.1016/j.jclinepi.2010.09.011>.
68. Piggott T, Morgan RL, Cuello-García CA, et al. Grading of recommendations assessment, development, and evaluations (GRADE) notes: extremely serious, grade's terminology for rating down by three levels. *J Clin Epidemiol*. 2020;120:116–20. <https://doi.org/10.1016/j.jclinepi.2019.11.019>.
69. Downs SH, Black N. The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *J Epidemiol Community Health* (1978). 1998;52:377–84. <https://doi.org/10.1136/jech.52.6.377>.
70. Noll M, Mendonça CR, Rosa LPS, Silveira EA. Determinants of eating patterns and nutrient intake among adolescent athletes: a systematic review. *Nutr J*. 2017;16:1–11. <https://doi.org/10.1186/s12937-017-0267-0>.
71. Silva RMF, Mendonça CR, Azevedo VD, et al. Barriers to high school and university students' physical activity: a systematic review. *PLoS ONE*. 2022;17:1–24. <https://doi.org/10.1371/journal.pone.0265913>.
72. Muthuri SK, Francis CE, Wachira LJM, et al. Evidence of an Overweight/Obesity transition among School-Aged children and youth in Sub-Saharan africa: A systematic review. *PLoS ONE*. 2014;9:1–26. <https://doi.org/10.1371/journal.pone.0092846>.
73. Noll M, de Mendonça CR, de Souza Rosa LP, Silveira EA. Determinants of eating patterns and nutrient intake among adolescent athletes: a systematic review. *Nutr J*. 2017;16:1–11. <https://doi.org/10.1186/s12937-017-0267-0>.
74. Silva RMF, Mendonça CR, Noll M. Barriers to high school and university students' physical activity: a systematic review protocol. *Int J Educ Res*. 2021;106:1–5. <https://doi.org/10.1016/j.ijer.2021.101743>.
75. Ramos ACF, Silva RMF, Bizinotto T, et al. Tools for assessing knowledge of back health in adolescents: a systematic review protocol. *Healthcare*. 2022;10:1–10. <https://doi.org/10.3390/healthcare10081591>.
76. Squires A. A valid step in the process: a commentary on Beckstead (2009). *Int J Nurs Stud*. 2009;46:1284–5. <https://doi.org/10.1016/j.ijnurstu.2009.05.016>.
77. Scott Leicht A, Sealey M, Devine R S. Relationship between employment category and gender on quality of life, physical activity and their barriers and motivators, for full-time university staff. *Int J Workplace Health Manag*. 2013;6:160–73. <https://doi.org/10.1108/IJWHM-04-2012-0008>.
78. Magalhães S, Barbosa J, Borges E. The relationship between presenteeism, quality of life and social support in higher education professionals: A cross-sectional path analysis. *PLoS ONE*. 2022;17:e0267514. <https://doi.org/10.1371/journal.pone.0267514>.
79. Stendardo M, Maietti E, Masotti E, et al. Sleep quality: a critical determinant of perceived quality of life in the administrative -technical workers of an Italian university; 2020.
80. McHugh ML. Interrater reliability: the kappa statistic. *Biochem Med (Zagreb)*. 2012;22:276–82.
81. Mahindru A, Patil P, Agrawal V. Role of physical activity on mental health and Well-Being: A review. *Cureus*. 2023. <https://doi.org/10.7759/cureus.33475>.
82. Schwartz BD, Liu H, MacDonald EE, et al. Impact of physical activity and exercise training on health-related quality of life in older adults: an umbrella review. *Geroscience*. 2025;47:2879–93. <https://doi.org/10.1007/s11357-024-01493-6>.
83. Moussa-Chamari I, Farooq A, Romdhani M, et al. The relationship between quality of life, sleep quality, mental health, and physical activity in an international sample of college students: a structural equation modeling approach. *Front Public Health*. 2024;12. <https://doi.org/10.3389/fpubh.2024.1397924>.
84. Andrade Louzado J, Lopes Cortes M, Oliveira MG, et al. Quality of life and associated factors in young workers. *Int J Environ Res Public Health*. 2021;18:2153. <https://doi.org/10.3390/ijerph18042153>.
85. Nguyen TM, Nguyen VH, Kim JH. Physical exercise and Health-Related quality of life in office workers: A systematic review and Meta-Analysis. *Int J Environ Res Public Health*. 2021;18:3791. <https://doi.org/10.3390/ijerph18073791>.
86. World Health Organization, Burton J. WHO healthy workplace framework and model. background and supporting literature and practices; 2010.
87. Kudrnáčová M, Kudrnáč A. Better sleep, better life? Testing the role of sleep on quality of life. *PLoS ONE*. 2023;18:e0282085. <https://doi.org/10.1371/journal.pone.0282085>.
88. Lee S, Kim JH, Chung JH. The association between sleep quality and quality of life: a population-based study. *Sleep Med*. 2021;84:121–6. <https://doi.org/10.1016/j.sleep.2021.05.022>.
89. Su Y, Liu M-S, De Silva PV, et al. Health-related quality of life in Chinese workers: a systematic review and meta-analysis. *Glob Health Res Policy*. 2021;6:29. <https://doi.org/10.1186/s41256-021-00209-z>.
90. Aguilar Velasco MM, Wald A. Mitigating the negative aspects of project work: the roles of psychological capital and coworker and family support. *Project Leadersh Soc*. 2025;6:100176. <https://doi.org/10.1016/j.plas.2025.100176>.

91. Zhao J, Wu C, Gao Y, et al. The associations between BMI, body appreciation, body image flexibility, sleep duration and loneliness in workers in Southern China. *BMC Public Health*. 2025;25:1358. <https://doi.org/10.1186/s12889-025-22640-4>.

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