

REVIEW

## Strategies for preventing presenteeism in nursing

### Estrategias para prevenir el presentismo en enfermería

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#### ABSTRACT

**Introduction:** presenteeism in nursing refers to physical presence at work with physical and mental limitations, even when the professional has physical or mental limitations that compromise their performance. This phenomenon has significant repercussions on productivity, professional well-being and patient safety, highlighting the need for effective strategies to mitigate it.

**Objective:** to summarize the main intervention strategies aimed at reducing the effects of presenteeism among nurses, analysing their causes, consequences and effectiveness.

**Method:** a critical narrative analysis was carried out, based on studies selected from a search of databases such as CINAHL® Plus and MEDLINE®. Articles published in the last 10 years in Portuguese, English and Spanish were included.

**Results:** the causes of presenteeism include organizational, psychosocial, physical and mental factors. The consequences include loss of productivity, risks to patient safety and worsening of the worker's health. Effective interventions include physical activity programs, mindfulness, cognitive-behavioral therapy, auricular acupuncture, multi-component workplace health promotion programmes, competency-based education and management of musculoskeletal disorders. Positive effects were observed in symptom reduction, increased productivity, well-being, safety and reduced organizational costs.

**Conclusion:** integrated strategies that combine organizational and individual approaches, show the best results, promoting the health and well-being of nurses, improving patient safety and reducing organizational costs.

**Keywords:** Presenteeism; Primary Prevention; Occupational Health Services; Nurses.

#### RESUMEN

**Introducción:** el presentismo en enfermería se refiere a la presencia física en el trabajo a pesar de experimentar limitaciones físicas y mentales, incluso cuando el profesional presenta restricciones que comprometen

su desempeño. Este fenómeno tiene repercusiones significativas en la productividad, el bienestar de los profesionales y la seguridad de los doentes, destacando la necesidad de estrategias eficaces para su mitigación.

**Objetivo:** sintetizar las principales estrategias de intervención destinadas a reducir los efectos del presentismo entre los enfermeros, analizando sus causas, consecuencias y eficacia.

**Método:** se llevó a cabo un análisis narrativo crítico, basado en estudios seleccionados a partir de una búsqueda en bases de datos como CINAHL® Plus y MEDLINE®. Se incluyeron artículos publicados en los últimos 10 años, en portugués, inglés y español.

**Resultados:** las causas del presentismo incluyen factores organizacionales, psicosociales, físicos y mentales. Las consecuencias abarcan la pérdida de productividad, los riesgos para la seguridad del doente y el deterioro de la salud del trabajador. Las intervenciones eficaces incluyen programas de actividad física, mindfulness, terapia cognitivo-conductual, acupresión auricular, programas de promoción de la salud en el lugar de trabajo de múltiples componentes, educación por competencias y gestión de trastornos musculoesqueléticos. Se observaron efectos positivos en la reducción de síntomas, aumento de la productividad, bienestar, seguridad y reducción de los costos organizacionales.

**Conclusión:** las estrategias integradas, que combinan enfoques organizacionales e individuales, presentan los mejores resultados, promoviendo la salud y el bienestar de los enfermeros, mejorando la seguridad de los doentes y reduciendo los costos organizacionales.

**Palabras clave:** Presentismo; Prevención Primaria; Servicios De Salud Ocupacional; Enfermeras Y Enfermeros.

## INTRODUCTION

Presenteeism consists of the physical presence of workers in the workplace with reduced performance,<sup>(1)</sup> or refers to the behavior of people who show up for work despite experiencing health problems that require rest and absence from work in order to be resolved.<sup>(1,2)</sup> This phenomenon has attracted attention both for its physical and mental problems and for the impact it has on work performance and productivity.<sup>(2)</sup>

Nurses, due to the physical and emotional demands of their practice, are particularly vulnerable to this phenomenon,<sup>(3)</sup> which is associated with adverse outcomes for both nurses and patients, and has important implications for healthcare organizations, particularly in terms of the safety and quality of care and increased costs.<sup>(3,4)</sup> A study conducted in the Eastern Province of Saudi Arabia found that presenteeism among nurses resulted in an estimated annual loss of productivity of US \$1959.<sup>(5)</sup>

International studies point to a high prevalence of presenteeism among nurses, with rates varying between 32 % and 94 %, <sup>(4)</sup> depending on the context and characteristics of the sample analyzed. These figures reflect not only a worrying reality for the occupational health of professionals, but also for the safety and quality of care provided to patients.

The causes of presenteeism among nurses are multifactorial, encompassing organizational, psychosocial and individual factors. Factors associated with presenteeism include workload, contractual arrangements (flexible), staff culture, age, place of work - intensive care, childcare responsibilities, job insecurity and leadership practices.<sup>(4,6,7)</sup> The following factors have been cited as antecedents to presenteeism: limited power, injustice, compulsory attendance, inadequate structural facilities, impaired professional identity, disconnection between managers and nurses, insufficient knowledge, physical and mental health problems, stress at work, professional burnout, multitasking and impaired communication.<sup>(8)</sup> The scarcity of resources and the high intensity of bureaucracy are factors that contribute to the difficulties faced by nurses in their practice. These difficulties can lead to an increase in presenteeism and cases of omission of nursing care, jeopardizing patient safety and quality of care.<sup>(9)</sup>

Given the significant impact of presenteeism on the health of professionals and the safety of care, it is essential to identify and implement effective strategies to prevent it. This study therefore aims to summarize and critically analyse the main intervention strategies for reducing presenteeism in nursing, providing a scientific and practical basis for promoting the occupational health of nurses.

## METHOD

This study is characterized by a critical narrative analysis, aimed at identifying, synthesizing and evaluating the main intervention strategies to mitigate presenteeism among nurses. The critical narrative approach makes it possible to integrate and analyze evidence from different studies, providing an in-depth understanding of the phenomenon and the solutions proposed in the literature.

To select the studies, a systematic search was carried out in the CINAHL® Plus and MEDLINE® databases, using the terms “presenteeism” OR “sickness presence” OR “sickness attendance” AND “intervention” OR

“prevention” AND “nursing” OR “nurses” OR “nurse”. Articles published in the last 10 years (2013-2023) in Portuguese, English and Spanish were included, ensuring an up-to-date and comprehensive view of the topic.

The inclusion criteria for the studies were: (1) studies that addressed the concept of presenteeism in nursing; (2) studies that analyzed the causes, consequences and interventions to mitigate presenteeism; (3) studies with samples of nurses or nursing practice contexts. On the other hand, studies that did not present empirical data or that focused on professions outside the health area were excluded.

After applying the inclusion and exclusion criteria, 52 articles were identified. Of these, 18 were selected for critical analysis. A full reading of the texts allowed for the extraction and synthesis of relevant information, organized into thematic categories, namely: (1) causes of presenteeism, (2) consequences of presenteeism, (3) intervention strategies, and (4) effects of interventions.

The critical analysis was aimed at assessing the methodological quality of the studies, the relevance of the proposed interventions and their results. The findings were synthesized and discussed based on a critical approach, identifying gaps and opportunities for future research and interventions in a nursing context.

## DISCUSSION

Presenteeism is a multifactorial phenomenon, reflecting the physical presence of professionals in the workplace, even when they are physically or psychologically unable to perform their duties to the full.<sup>(10,11)</sup> It compromises productivity both quantitatively and qualitatively and represents a huge challenge, especially for the health professions, especially nurses.

The analysis of the selected studies made it possible to identify and synthesize the causes, consequences and intervention strategies to mitigate presenteeism among nurses, offering a comprehensive and critical view of this phenomenon.

### Causes of presenteeism

The factors that contribute to presenteeism among workers are multiple and interrelated, and can be classified into four broad categories: individual factors in an organizational context, environment and work, chronic health problems, and mental health and psychosocial factors. With regard to individual factors in the organizational context, we highlight the sense of professional responsibility, the fear of overburdening colleagues, institutional pressure and the fear of retaliation, which appear to be the main motivators for workers to remain in the workplace even when they are ill or psychologically fragile.<sup>(12)</sup>

About work factors and the work environment, the literature shows that presenteeism is often influenced by conditions such as long shifts, high workloads, rigid organizational policies and lack of institutional support.<sup>(10)</sup> These factors create an environment that puts pressure on professionals to remain present, even in situations where rest would be necessary to recover their health.

Chronic health problems are another relevant category and are pointed out as frequent causes of presenteeism. Among the most common examples are central sensitivity syndromes such as fibromyalgia, irritable bowel syndrome, chronic headache, temporomandibular disorders and pelvic pain syndromes, in which persistent pain is a predominant feature.<sup>(13,14)</sup> These often disabling conditions not only affect workers' physical health but also compromise their professional performance.

Finally, in the context of mental health and psychosocial factors, presenteeism is often associated with workplace bullying, psychosocial stress and burnout.<sup>(10)</sup> There is a two-way relationship between these factors, in that stress and psychological distress can lead to presenteeism, which in turn exacerbates vulnerability to bullying and burnout, establishing a vicious cycle of deteriorating mental health.<sup>(10)</sup>

Rainbow *et al.*<sup>(15)</sup> suggest that presenteeism may exacerbate burnout, contributing to a vicious cycle of physical and emotional overload. In this dynamic, burnout is associated with both perceived stress and presenteeism. The directionality of this relationship indicates that higher levels of presenteeism and perceived stress are linked to an increased risk of burnout.

### Consequences of presenteeism

The consequences of presenteeism can be grouped into three broad categories, namely productivity and efficiency, risks to patient and staff safety, and the physical and psychological health of the worker.

In terms of productivity and efficiency, presenteeism translates into a significant reduction in the performance of professionals who, despite being physically present, are unable to carry out their duties to the full. This phenomenon generates higher hidden costs than absenteeism, as workers who are present but perform poorly make it difficult to detect and manage the problem effectively.<sup>(2,16)</sup>

With regard to patient and team safety, presenteeism compromises the quality of care provided, increasing the risk of medical errors and negligence, which jeopardizes the safety of users and the healthcare team itself.<sup>(12)</sup> Professionals working in compromised physical or psychological conditions are more likely to make mistakes, directly affecting clinical outcomes.

Finally, in terms of the physical and psychological health of workers, presenteeism is associated with the worsening of pre-existing health conditions and the development of new pathologies, such as physical and emotional exhaustion.<sup>(17,18)</sup> Studies show that staying at work in inadequate health conditions contributes to a cycle of deteriorating health, in which physical exhaustion and psychological suffering progressively worsen, negatively impacting the well-being and quality of life of professionals.

### Interventions to mitigate presenteeism

Interventions aimed at mitigating presenteeism among health professionals are diverse and cover strategies ranging from organizational approaches to individual programs focused on promoting health and well-being. In the field of interventions based on physical activity and relaxation, the PRECEDE-PROCEED program stands out, which has shown effectiveness in reducing presenteeism among physically inactive workers, promoting improvements in physical fitness, mood and self-efficacy.<sup>(17)</sup> The “Happy Nurse” project, which applied a brief mindfulness approach, also showed a positive impact, with a significant improvement in mental well-being and a reduction in stress symptoms.<sup>(18)</sup>

In the context of complementary interventions, auricular acupressure proved to be effective, providing improvements in sleep quality, reducing perceived stress and reducing presenteeism among nurses.<sup>(11)</sup> These approaches, which are based on complementary therapies, demonstrate that caring for physical and emotional well-being can have a direct impact on the presence and productivity of professionals.

Among psychotherapeutic interventions, cognitive-behavioral therapy (CBT) has stood out as an effective strategy for managing insomnia and reducing presenteeism.<sup>(14,19)</sup> CBT-based programs provide professionals with tools to deal with stress and improve their mental health, which is reflected in greater functionality and productive presence at work.

In terms of organizational interventions, multi-component workplace health promotion programmes have proved to be an effective approach. These programs, which integrate wellness strategies, stress screening and the promotion of emotional awareness, have demonstrated a favorable cost-benefit ratio, with a positive impact on occupational health.<sup>(20,21,22,23,24)</sup>

Multi-component workplace health promotion programmes have also shown promising results, with examples such as the Magnet4Europe project<sup>(22)</sup> and the MENTUPP study,<sup>(23)</sup> which adopt approaches focused on institutional culture, leadership training and organizational development. These programs aim not only to reduce presenteeism, but also to create healthier and more productive working environments.<sup>(22, 23, 24)</sup>

In the context of competency-based education, it has been found that the continuous development of skills and knowledge contributes to improving the performance of health professionals, increasing their self-confidence and role clarity, which in turn reduces the incidence of presenteeism.<sup>(25)</sup>

Finally, musculoskeletal disorder management programs stand out as a relevant intervention for workers exposed to repetitive physical effort. These programs have been shown to significantly reduce presenteeism by promoting better ergonomic practices and proper physical health management.<sup>(26)</sup>

Taken together, these strategies demonstrate that an integrated approach, combining organizational and individual interventions, is the most effective way to mitigate presenteeism in healthcare settings.

### Effects of intervention programs

Intervention programs to prevent or mitigate presenteeism among healthcare workers have shown positive results in five key areas: reducing physical and psychological symptoms, increasing productivity, improving satisfaction and quality of life at work, patient safety and reducing organizational costs.

With regard to reducing physical and psychological symptoms, interventions based on techniques such as mindfulness, stress management, auricular acupressure and cognitive-behavioral therapy have proved to be effective.<sup>(11,14,18,19,21)</sup>

Auricular acupressure is a safe, effective and practical intervention to reduce burnout and secondary traumatic stress and may improve the ability of healthcare professionals to develop therapeutic relationships with patients and families.<sup>(27)</sup>

These approaches have made it possible to reduce days of presenteeism, improve the functionality of professionals, promote more effective management of chronic pain and mitigate physical and psychological symptoms such as stress and sleep disorders.

Increased productivity, both perceived and objective, was another area of significant impact. Physical activity programs, such as the PRECEDE-PROCEED model, showed substantial gains in energy levels, mood and performance.<sup>(17)</sup> At the same time, interventions that promoted a healthy organizational climate, with an emphasis on active listening and collaborative management, resulted in greater motivation and less presenteeism. Similarly, competency-based education contributed to an improvement in clinical performance and a reduction in functional presenteeism among professionals, since if nurses develop skills they will feel more satisfied, motivated and confident in providing care and consequently reduce the causes of presenteeism.



(12,25)

The improvement in satisfaction and quality of life at work has also been documented. Initiatives such as Magnet4Europe, MENTUPP and educational actions aimed at self-care have demonstrated positive impacts on the well-being of professionals.<sup>(20,21,22)</sup> These interventions have not only promoted a healthier working environment, but have also strengthened the commitment and satisfaction of professionals.

With regard to patient safety and reducing professional errors, it was found that presenteeism is directly associated with a greater likelihood of clinical failures, putting patient safety at risk.<sup>(12,28)</sup> However, strategies that prioritized the occupational health of professionals, such as psychological support and improved working conditions, proved to be effective in reducing the occurrence of clinical errors.<sup>(12,17)</sup>

Finally, the reduction in organizational costs stood out as an additional benefit of the interventions implemented. A meta-analysis showed that programs to promote healthy lifestyles have a favorable cost-benefit ratio, reflected in higher productivity and lower absenteeism and presenteeism.<sup>(20)</sup> Interventions aimed at managing mental symptoms and musculoskeletal disorders not only improved the health status of professionals, but also reduced the indirect costs associated with lost productivity.<sup>(24,26)</sup>

### Implications for health practice and policy

Assessing and monitoring the causes of presenteeism among nurses is fundamental to developing effective interventions to mitigate this phenomenon. Implementing comprehensive strategies that combine organizational and individual approaches is one of the main measures to promote occupational health and ensure healthier working environments.

At an organizational level, it is essential that health institutions adopt policies to prevent and manage presenteeism, integrating programs that promote the physical and mental health of professionals. These programs can include actions such as stress management through mindfulness practices, the development of personal and professional skills, the management of musculoskeletal symptoms and the promotion of a healthy organizational climate. Such initiatives not only help to reduce nurses' physical and psychological symptoms, but also boost productivity, improve satisfaction and quality of life at work, patient safety and reduce organizational costs.

As policy implications, we recommend the development of Occupational Health Policies in At-Risk Professions, with an emphasis on recognizing presenteeism as a public health issue. These policies should be specific to health professionals, especially nurses, and should adopt a preventive approach, based on scientific evidence and adapted to the specific needs of the sector.

Regulating working conditions is another essential measure to combat presenteeism. This regulation must set limits on the working hours of professionals, guarantee adequate break policies and establish minimum physical and mental health conditions in the workplace.

In addition, Hospital Quality and Performance Indicators need to include metrics related to workers' health, especially with regard to presenteeism. These metrics could cover monitoring the frequency of presenteeism cases, assessing its relationship with clinical errors and adverse events, and measuring the impact of implemented interventions. In this way, it will be possible to ensure a continuous assessment of the effectiveness of occupational health policies and promote the continuous improvement of working environments.

Promoting healthy working environments, with institutional support and suitable working conditions, is fundamental to preventing occupational burnout and ensuring the well-being of professionals.

The creation of national guidelines defining prevention, assessment and intervention standards for presenteeism in healthcare settings could be a key measure. They can include the creation of regular physical and mental health screening programs (burnout, anxiety, fatigue); Promotion of easy access to psychological support, including in the workplace; Incentives for physical activity, mindfulness and stress management. The Order of Nurses must integrate this issue into its positions and strategic plans, especially in monitoring the overload of nurses and ensuring safe staffing.

Unions must negotiate specific clauses on occupational health and support for professionals in collective agreements.

In the educational field, it is recommended that socio-emotional and self-care skills be included in nursing training curricula. Developing these skills from the start of training prepares future professionals to deal with stressful situations, promote self-care and effectively manage the challenges of clinical practice. Continuing education in occupational health and stress management should be encouraged throughout one's career, strengthening nurses' ability to deal with the risk factors associated with presenteeism.

Finally, it is essential to guarantee Equity in Access to Health Care for Health Professionals, through referral to occupational health services, implementing policies that ensure priority, confidential and effective access to mental health and rehabilitation services. These policies should include programs for psychological support, counseling and therapeutic follow-up, ensuring that nurses have access to appropriate care in situations of vulnerability.

In this way, the combination of organizational strategies, occupational health policies and continuing education contributes to the prevention of presenteeism and the promotion of healthier, safer and more productive work environments.

### Limitations of the Review and Future Suggestions

This review has some limitations that need to be taken into account. Firstly, although the use of a critical narrative analysis provides an in-depth understanding of the phenomenon, it does not allow for a quantitative assessment of the effectiveness of the interventions, which limits the ability to generalize the results obtained. Secondly, the process of selecting studies was not accompanied by a systematic assessment of their methodological quality, which may have influenced the strength of the evidence synthesized. In addition, the lack of a comparative analysis between different practice contexts and intervention strategies compromises the understanding of the applicability of the findings in different realities. Lastly, there may be potential language bias due to the inclusion of only Portuguese, English, and Spanish studies. Finally, mixed-methods research is recommended (e.g., combining quantitative meta-analyses with qualitative insights), which allow for a quantitative assessment of the effectiveness of interventions, as well as the development of intervention studies that explore the impact of specific strategies in mitigating presenteeism in healthcare settings. At the same time, it would be pertinent to include qualitative studies that delve into nurses' and managers' perceptions of the effectiveness of these interventions, promoting a more holistic understanding of the phenomenon.

### CONCLUSION

The analysis of intervention strategies to mitigate presenteeism should consist of integrated approaches, which combine organizational and individual actions, since they are the most effective. Psychological support programs, ongoing training, promotion of physical and mental health, improvement of working conditions and development of a healthy organizational culture are examples of measures that have demonstrated a positive impact. These interventions not only reduce professionals' physical and mental symptoms, but also promote their overall well-being, increase productivity and ensure safer, higher-quality care.

It is urgent to address presenteeism in nursing, as we recognize the global shortage of nurses, the departure from the profession in the context of the COVID-19 pandemic, and the challenges and tensions in post-pandemic health care. In this sense, continuous investment must be made in the mental and physical health of nurses, in professional training and in the creation of healthy work environments to ensure the sustainability of the health system.

### REFERENCES

1. Mohammadi MM, Dehghan Nayeri N, Varaei S, Rasti A. Exploring the concept of presenteeism in nursing: A hybrid concept analysis. *Int J Nurs Knowl*. 2021;32(3):166-76. <https://doi.org/10.1111/2047-3095.12308>
2. Shan G, Wang S, Wang W, Guo S, Li Y. Presenteeism in nurses: prevalence, consequences, and causes from the perspectives of nurses and chief nurses. *Front Psychiatry*. 2021;11:584040. <https://doi.org/10.3389/fpsyt.2020.584040>
3. Min A, Kang M, Park H. Global prevalence of presenteeism in the nursing workforce: A meta-analysis of 28 studies from 14 countries. *J Nurs Manag*. 2022;30(7):2811-24. <https://doi.org/10.1111/jonm.13688>
4. Gerlach M, Hahn S, Rossier C, Geese F, Hamers J, Backhaus R. Presenteeism among nurses: An integrative review. *Int J Nurs Stud Adv*. 2024;7:100261. <https://doi.org/10.1016/j.ijnsa.2024.100261>
5. Shdaifat EA. Presenteeism and productivity loss among nurses. *Int J Occup Saf Ergon*. 2023;29(3):1007-15. <https://doi.org/10.1080/10803548.2022.2108660>
6. Carvalho DP, Rocha LP, Brum AN, Brum RG, Bordignon SS, Barlem EL, Tomaschewski-Barlem JG. Relationship between workloads and presenteeism among nursing workers. *Rev Bras Enferm*. 2021;74(6):e20210044. <https://doi.org/10.1590/0034-7167-2021-0044>
7. Santos BD, Rocha FL, Bortolini J, Terra FD, Valim MD. Factors associated with presenteeism in nursing workers. *Rev Bras Enferm*. 2022;75(1):e20201290. <https://doi.org/10.1590/0034-7167-2020-1290>
8. Mohammadi MM, Nayeri ND, Varaei S, Rasti A. The nurse without a nurse: the antecedents of presenteeism in nursing. *BMC Nurs*. 2021;20:143. <https://doi.org/10.1186/s12912-021-00669-1>

9. Dirgar E, Berşe S, Şahin A, Tosun B, Levya-Moral JM. Presenteeism and missed nursing care: a descriptive, correlational and observational study. *BMC Nurs.* 2024;23(1):652. <https://doi.org/10.1186/s12912-024-02253-9>
10. Liu M, Cheng L, Wang Y, Zeng Q, Zeng Y. The bidirectional relationship between workplace bullying and presenteeism: A systematic review and meta-analysis. *Workplace Health Saf.* 2025;73(5):248-59. <https://doi.org/10.1177/21650799241302824>
11. Sim H, Park Y. Effects of auricular acupressure on nurses' perceived stress, sleep quality, and presenteeism: A single-blind, randomized controlled trial. *Holist Nurs Pract.* 2025;39(1):15-24. <https://doi.org/10.1097/HNP.0000000000000667>
12. Pereira F, Querido A, Verloo H, Bieri M, Laranjeira C. Consequences of nurse presenteeism in Switzerland and Portugal and strategies to minimize it: A qualitative study. *Healthcare (Basel).* 2022;10(10):1901. <https://doi.org/10.3390/healthcare10101871>
13. Adams L, Turk DC. Psychosocial factors and central sensitivity syndromes. *Curr Rheumatol Rev.* 2015;11(2):96-108. <https://doi.org/10.2174/1573397111666150619095330>
14. Yang PL, Matthews SW, Burr RL, Cain KC, Barney PG, Zia JK, et al. Cognitive behavioral therapy-based comprehensive self-management program improves presenteeism in persons with irritable bowel syndrome: a secondary data analysis. *Int J Environ Res Public Health.* 2022;19(5):2714. <https://doi.org/10.3390/ijerph19053003>
15. Rainbow JG, Drake DA, Steege LM. Nurse health, work environment, presenteeism and patient safety. *West J Nurs Res.* 2019;42(5):332-9. <https://doi.org/10.1177/0193945919863409>
16. Shdaifat EA. Presenteeism and productivity loss among nurses. *Int J Occup Saf Ergon.* 2023;29(3):1007-15. <https://doi.org/10.1080/10803548.2022.2108660>
17. Kim HJ, Choo J. Effects of an integrated physical activity program for physically inactive workers: based on the PRECEDE-PROCEED model. *J Korean Acad Nurs.* 2018;48(6):692-707. <https://doi.org/10.4040/jkan.2018.48.6.692>
18. Watanabe N, Horikoshi M, Shinmei I, Oe Y, Narisawa T, Kumachi M, et al. Brief mindfulness-based stress management program for a better mental state in working populations - Happy Nurse Project: A randomized controlled trial. *J Affect Disord.* 2019;251:186-94. <https://doi.org/10.1016/j.jad.2019.03.067>
19. Fang L, Lyu Z, Ai S, Du S, Zhou W, Zeng S, et al. Is cognitive behavioral therapy for insomnia more cost-effective? New perspective on economic evaluations: a systematic review and meta-analysis. *Sleep.* 2024;47(8):zsad123. <https://doi.org/10.1093/sleep/zsae122>
20. Vargas MAM, Romero SM, De Diego CR. Economic evaluation of workplace health promotion interventions focused on lifestyle: systematic review and meta-analysis. *J Adv Nurs.* 2021;77(9):3657-91. <https://doi.org/10.1111/jan.14857>
21. Nascimento T, Pestana G. Improving efficiency in organizations by monitoring stress and promoting awareness and wellbeing at the workplace. *Eur Conf Knowl Manag.* 2019;2:1197-204. <https://doi.org/10.34190/KM.19.165>
22. Aiken LH, Sermeus W, McKee M, Lasater KB, Sloane D, Pogue CA, et al. Physician and nurse well-being, patient safety and recommendations for interventions: cross-sectional survey in hospitals in six European countries. *BMJ Open.* 2024;14(2):e079931. <https://doi.org/10.1136/bmjopen-2023-079931>
23. Tsantila F, Coppens E, De Witte H, Arensman E, Amann B, Cerga-Pashoja A, et al. Outcome assessment of a complex mental health intervention in the workplace: Results from the MENTUPP pilot study. *Int Arch Occup Environ Health.* 2023;96(8):1149-65. <https://doi.org/10.1007/s00420-023-01996-3>
24. Noben C, Smit F, Nieuwenhuijsen K, Ketelaar S, Gärtner F, Boon B, et al. Comparative cost-effectiveness of two interventions to promote work functioning by targeting mental health complaints among nurses: pragmatic

cluster randomised trial. Int J Nurs Stud. 2014;51(10):1321-31. <https://doi.org/10.1016/j.ijnurstu.2014.01.017>

25. Imanipour M, Ebadi A, Monadi Ziarat H, Mohammadi MM. The effect of competency-based education on clinical performance of health care providers: A systematic review and meta-analysis. Int J Nurs Pract. 2022;28(1):e12936. <https://doi.org/10.1111/ijn.13003>

26. Grana E, Galanis P, Velonakis E, Tziaferi S, Sourtzi P. Investigating the effectiveness of a workplace musculoskeletal disorders management program. Healthcare (Basel). 2024;12(18):2345. <https://doi.org/10.3390/healthcare12181815>

27. Afrasiabi J, McCarty R, Hayakawa J, Barrows J, Lee K, Plouffe N, Schomberg J. Effects of acupuncture and acupressure on burnout in health care workers: a randomized trial. J Trauma Nurs. 2021;28(6):350-62. <https://doi.org/10.1097/JTN.0000000000000614>

28. Lui JNM, Andres EB, Johnston JM. Presenteeism exposures and outcomes amongst hospital doctors and nurses: a systematic review. BMC Health Serv Res. 2018;18(1):985. <https://doi.org/10.1186/s12913-018-3789-z>

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