

The Role of Formal Knowledge Management Practices in Reducing Burnout Among Healthcare Professionals

Rita Marques^{1,4}^a, Andreia Luís^{1,4}^b, Liliana Martins^{2,4}^c, Gisela Cotrim^{1,4}^d
and Marta Correia Sampaio^{3,4}^e

¹CUF Hospital, Santarém, Portugal

²Arco Ribeirinho Local Health Unit., Barreiro, Portugal

³Cefage, Évora, Portugal

⁴Polytechnic Institute of Santarém, School of Management and Technology, Santarém, Portugal

Keywords: Burnout, Knowledge Management, Healthcare Professionals, Formal Knowledge Management Practices.

Abstract: This study examines relationship between formal knowledge management practices and burnout among Portuguese healthcare professionals. Drawing upon the Maslach Burnout Inventory Scale and an adapted formal knowledge management practices scale, we examine the extent to which the adoption of structured knowledge management strategies is associated with lower levels of emotional exhaustion, depersonalisation, and reduced personal accomplishment. Our sample (N=218) reveals elevated burnout rates, with 39% presenting high emotional exhaustion and 45.4% reporting low personal accomplishment. Statistical analysis indicates that greater adoption of formal knowledge management practices correlates negatively with burnout, particularly in preserving personal accomplishment ($\rho=-0.320$, $p<0.001$). The private sector demonstrates higher formal knowledge management practices adoption rates than the public sector. Age and professional experience influence burnout patterns, with younger and less experienced professionals displaying higher rates. This study contributes to the literature by clarifying formal knowledge management practice's protective role in occupational well-being and suggests that organisational policy reforms promoting knowledge sharing could mitigate burnout in healthcare contexts.

1 INTRODUCTION

Burnout is strongly associated with psychological phenomena related to occupational stress, frequently affecting healthcare professionals whose work is centred on responding to the needs of others and fostering healthy work environments (Khan, 2023). The World Health Organization (2019) defines burnout as the result of chronic workplace stress that has not been successfully managed, expressed in three dimensions: emotional exhaustion, depersonalisation, and reduced personal accomplishment. In Portugal, recent studies indicate that between 32% and over 40% of healthcare

professionals present elevated symptoms or are at risk of burnout (Viana et al., 2022; Gonçalves & Gaudêncio, 2023).

Knowledge is recognised as a strategic resource within healthcare organisations, with Knowledge Management (KM) positioned as a core organisational capability that enables the capture, distribution, and effective application of information (Nonaka & Takeuchi, 1995; Davenport & Prusak, 1998). In healthcare, KM initiatives have been linked to improvements in clinical decision-making, patient safety, and staff engagement (Ayatollahi & Zeraatkar, 2020). Formal Knowledge Management Practices (FKMP) comprise structured, policy-driven approaches — including standardised protocols,

^a <https://orcid.org/0009-0004-8210-8361>

^b <https://orcid.org/0009-0006-6637-9668>

^c <https://orcid.org/0009-0001-2510-4442>

^d <https://orcid.org/0009-0003-9554-4798>

^e <https://orcid.org/0000-0003-0004-601X>

resource allocation frameworks, and formalised information systems — designed to ensure the consistent use of knowledge.

Despite a growing body of literature on the organisational benefits of KM, empirical evidence exploring its relationship with burnout remains scarce, particularly within European healthcare contexts. This study aims to address that gap by assessing the impact of FKMP on burnout among healthcare professionals and by comparing outcomes across the public and private sectors. Three hypotheses guide the analysis: (1) the adoption of FKMP is associated with burnout levels; (2) age influences both burnout levels and the adoption of FKMP; and (3) professionals in the public sector experience lower emotional exhaustion than those in the private sector. The expected findings will contribute to a deeper understanding of the role of KM in mitigating burnout and provide actionable strategies for people management in the health sector.

2 THEORETICAL FRAMEWORK

2.1 Burnout in Healthcare Professionals

The term burnout is used to describe psychological phenomena related to stress, observed in professions focused on caring for others, such as healthcare, which require interpersonal interactions and support for the emotional needs of others (Maslach & Leiter, 2016 as cited in Lunn et al., 2025).

The increase in the prevalence of burnout affects not only HCPs but also patient safety, as well as the quality of care and the overall functionality of healthcare systems (Hodkinson et al., 2022 as cited in Koch et al., 2024). The daily contact of HCPs with extreme situations of human life makes their work physically and emotionally exhausting (Gil-Monte, 2005 as cited in Gago-Valiente et al., 2021). In 2024, the Medscape National Physician Burnout and Depression Report estimated a burnout rate for HCPs of approximately 49%, suggesting much higher rates than in the general population (Medscape National Physician Burnout & Depression Report 2024, as cited in Koch et al., 2024).

A widely adopted definition of burnout includes the combination of three dimensions: emotional exhaustion (inability to do or give more of oneself), depersonalisation (which is reflected in professional and personal relationships, making the individual colder and more distant) and reduced personal fulfilment (which leads to a loss of self-esteem and

motivation, with a consequent feeling of inadequacy and failure) (Maslach et al., 2001 as cited in Lunn et al., 2025; Back et al., 2016, Dréano-Hartz et al., 2016 as cited in Gonçalves & Gaudêncio, 2023).

2.2 Knowledge Management in Healthcare

Knowledge can be understood as the intensive use of information linked to innate and acquired human abilities, enabling the perception, interpretation, and understanding of data (Redha, 2016, as cited in Gherrab & Benoussad, 2024). It is commonly classified as explicit or tacit. Explicit knowledge exists outside the human mind and can be transferred through mechanisms such as document storage or digital media (Nonaka & Takeuchi, 1995, as cited in Bessick & Naicker, 2013). Tacit knowledge, by contrast, is embedded in individuals, difficult to verbalise, and cannot be fully captured, requiring networks of experts for effective use (Bhardwaj & Monin, 2006, as cited in Bessick & Naicker, 2013; Alavi & Denford, 2012; Breznik, 2018; Duhon, 1998; Grover & Davenport, 2001, as cited in Ayatollahi & Zeraatkar, 2020). Its transfer relies on observation, shared experiences, personal interaction, and trust (Alwis & Hartmann, 2008; McAdam, Mason & McCrory, 2007, as cited in Bessick & Naicker, 2013).

Knowledge Management (KM) structures the classification, sharing, and application of knowledge, recognising employees' expertise as a strategic resource for competitiveness (Bollinger & Smith, 2001; Bender & Fish, 2000, as cited in Bessick & Naicker, 2013; Chen, 2012; Heidari, Moghimi & Khanifar, 2013; Tabrizi & Morgan, 2014, as cited in Ayatollahi & Zeraatkar, 2020). Healthcare organisations, as particularly knowledge-intensive entities, are central generators of knowledge (Khalghania et al., 2013; Yaghobi et al., 2015, as cited in Ayatollahi & Zeraatkar, 2020). Knowledge is thus a key asset for value creation, competitiveness, and overcoming challenges (Zeleny, 1989; Felton & Finnie, 2003; Hosnavi & Ramezan, 2011, as cited in Ayatollahi & Zeraatkar, 2020), underlining the strategic importance of KM (Pablos-M'endez, 2005; Salehi et al., 2015, as cited in Ayatollahi & Zeraatkar, 2020). Since its introduction in the healthcare sector in the 21st century, KM has shown strong potential to improve patient care and organisational outcomes by converting information and intellectual assets into lasting value (Guptill, 2005; Nicolini et al., 2008; Rocha et al., 2012; Lee, Kim & Kim, 2014, as cited in Ayatollahi & Zeraatkar, 2020). Evidence demonstrates its contribution to patient safety,

optimised processes, cost reduction, and professional development (Chen, 2012; Khalghania et al., 2013; Deloitte, 2015, as cited in Ayatollahi & Zeraatkar, 2020), ultimately strengthening decision-making, efficiency, satisfaction, and organisational performance (Orzano et al., 2008, as cited in Kosklin et al., 2023).

2.3 Formal Knowledge Management Practices (FKMP)

FKMP are deliberate, structured activities embedded into organisational processes—such as documented standard operating procedures, centralised knowledge repositories, regular formal training, and policy-driven knowledge dissemination (Värk & Reino, 2020). Their objective is to benefit the organisation in facing various challenges and are carried out with the organisation's means and resources (rooms, furniture, computer systems, computers, etc.)” (Värk & Reino, 2020, p. 6).

Riege (2005) emphasises some barriers to knowledge sharing in organisations, including individual barriers (age and gender differences), diversity in educational levels, lack of trust and lack of recognition of intellectual property, organisational barriers such as ineffective leadership, reluctance to use computer systems, and lack of communication.

FKMP aim to ensure consistent and equitable access to information, which can improve coordination and reduce uncertainty in clinical practice.

2.4 FKMP and Burnout: Theoretical Linkages

The Job Demands–Resources (JD-R) model (Bakker & Demerouti, 2017) posits that organisational resources can buffer the impact of job demands on burnout. FKMP, by enhancing information flow and reducing ambiguity, can serve as

Data collection used two previously validated self-response scales applied in Portugal, both based on Likert-type items. Burnout was measured with the Portuguese version of the Maslach Burnout Inventory (MBI), which assesses emotional exhaustion (EE), depersonalisation (DP), and personal accomplishment (PA) on a 7-point scale ranging from “Never” (0) to “Every day” (6). Formal Knowledge Management Practices (FKMP) were measured using an adapted dimension of Pais’ (2014) KM scale, consisting of 22 items rated on a 5-point scale from “Almost never” (1) to “Almost always” (5). Internal consistency was confirmed with Cronbach’s α values

above 0.70. The broader KM construct is subdivided into four dimensions: FKMP, informal practices, cultural orientation, and competitive orientation towards knowledge (Koo & Yang, 2025).

2.5 Data Analysis

Statistical analyses were performed in SPSS v30. Descriptive statistics characterised the sample. Associations between categorical variables were tested using Chi-square or Fisher’s Exact Test, with Cramer’s V for effect size. Spearman’s rank correlation was used for ordinal associations. Significance threshold was $p < 0.05$.

3 RESULTS

3.1 Sociodemographic Characteristics

Regarding the characteristics of the 218 participants in this study, most participants are female (82.11%). 44.04% of respondents are nurses, followed by 25.23% who are Senior Diagnostic and Therapeutic Technicians (DTT), with a bachelor’s degree being the most common level of education (45.87%). In the Greater Lisbon area, Setúbal Peninsula, West and Tagus Valley, 61.47% of respondents are located, with the public sector standing out with the highest number of responses (59.17%).

3.2 Burnout Levels

According to Maslach et al. (1996, as cited in Ribas, 2010), the MBI subscales are classified into low, medium, and high levels for emotional exhaustion (EE), depersonalisation (DP), and personal accomplishment (PA). Based on this framework, the study revealed high prevalence of burnout, with 39% of professionals scoring high on EE, 27.1% on DP, and 45.4% on PA, the latter being the most concerning dimension. Statistical analyses using chi-square (χ^2), Fisher’s Exact Test (FET), Cramer’s V , and Spearman’s coefficient (Nihan, 2020; Zhao et al., 2021; Akoglu, 2018) identified significant associations between burnout and sociodemographic variables. Age was significantly associated with DP (FET=15.461; $p=0.011$) and PA ($\chi^2=16.357$; $p=0.008$), with older professionals reporting lower depersonalisation (4.6%) and greater personal accomplishment (9.6%). Professional category was also strongly linked to burnout (EE $\chi^2=14.244$; $p=0.026$; DP $\chi^2=12.710$; $p=0.047$; PA $\chi^2=13.289$; $p=0.038$), with nurses consistently showing higher

Table 1: Association between burnout dimensions and sociodemographic variables.

Variable	MBI Dimension	Test / Value	Cramer's V	p-value
Age	MBI-DP	FET = 15.461	0.193	0.011
Age	MBI-PA	$\chi^2 = 16.357$	0.210	0.008
Professional category	MBI-EE	$\chi^2 = 14.244$	0.181	0.026
Professional category	MBI-DP	$\chi^2 = 12.710$	0.171	0.047
Professional category	MBI-PA	$\chi^2 = 13.289$	0.175	0.038
Education level	MBI-PA	FET = 16.350	0.225	0.052*
Years of professional experience	MBI-DP	$\chi^2 = 18.724$	0.207	0.016

burnout, particularly in DP (55.2% vs. physicians at 10.2%).

Education level showed a marginal but notable association with PA (FET=16.350; $p=0.052$; $V=0.225$), as professionals with higher education reported greater burnout (postgraduate 48.5% vs. elementary/secondary 2.0%). Years of practice were associated with DP ($\chi^2=18.72$; $p=0.016$; $V=0.207$), with more experienced professionals (≥ 20 years) showing lower depersonalisation compared with those with 1–5 years. These results suggest that professional maturity may buffer burnout, while higher qualifications may increase vulnerability, possibly due to workload and responsibility.

Overall, burnout was shaped by age, profession, education, and experience, with nurses and younger staff particularly vulnerable, while older and more experienced professionals reported greater accomplishment, indicating resilience-building over time. However, higher education correlated with greater burnout, underscoring the need for organisational strategies to better support highly qualified staff. In this context, Knowledge Management (KM), and specifically Formal Knowledge Management Practices (FKMP), emerges as a valuable organisational tool to mitigate burnout. Structured knowledge-sharing systems, continuous training, and expert networks can reduce emotional exhaustion, strengthen professional identity, and enhance accomplishment. Previous studies confirm KM's role in improving decision-making, patient safety, and staff engagement (Ayatollahi & Zeraatkar, 2020), all of which are linked to job satisfaction and well-being. Thus, integrating FKMP within healthcare organisations may function not only as an efficiency mechanism but also as a strategic intervention to address burnout, supporting evidence-based people management policies in the health sector.

3.3 Formal Knowledge Management Practices Adoption

There were no statistically significant associations between FKMP and sociodemographic characteristics

in the sample under study, with the exception of the sector of professional activity (1=Private; 2=Public), which is associated with FKMP, as the χ^2 test shows ($\chi^2=8.719$; $p\text{-value}=0.013$). Cramer's V corroborates the association and defines it as strong (0.200). The frequencies obtained show that HCPs in the public sector report less involvement in FKMP when compared to professionals in the private sector (42.3% against 57.7%).

Table 2: Association between FKMP and socio-demographic variables.

	FKMP		
	χ^2	FET	Cramer's V
Gender	0.134	-	-
p-value	0.971	-	-
Age	-	7.257	-
p-value	-	0.268	-
Professional category	5.075	-	-
p-value	0.541	-	-
Level of education	-	17.160	-
p-value	-	0.400	-
Years of professional experience	5.788	-	-
p-value	0.678	-	-
Region	-	5.612	-
p-value	-	0.684	-
Sector	-	-	0.200
Public	8.719	-	-
Private	-	-	-
p-value	0.013	-	-

3.4 Formal Knowledge Management Practices and Burnout

Spearman's correlations revealed negative associations between FKMP and all burnout dimensions (see table 3). The MBI-EE shows a moderate positive correlation with the MBI-DP ($\rho=0.466$; $p\text{-value}<0.001$) and a weak positive correlation with the MBI-PA ($\rho=0.277$; $p\text{-value}<0.001$), indicating that higher levels of burnout tend to be associated with greater depersonalization and lower personal accomplishment.

Regarding FKMP, there were significant negative correlations with all the dimensions of the MBI. The strongest correlation occurs with the MBI-PA ($\rho=-0.320$; $p\text{-value}<0.001$), suggesting that the presence of FKMP is associated with higher levels of personal fulfillment. There were also negative correlations with the MBI-EE ($\rho=-0.249$; $p\text{-value}<0.001$) and the MBI-DP ($\rho=-0.145$; $p\text{-value}=0.032$), although these were less evident.

These results suggest that the presence of FKMP can play a protective role against burnout, especially in terms of preserving personal fulfillment in professional practice.

Table 3: Correlation between the dimensions of the MBI and FKMP.

	MBI-EE	MBI-DP	MBI-PA	FKMP
MBI-EE				
Spearman	1	0.466	0.277	-0.249
<i>p-value</i>		<0.001	<0.001	<0.001
MBI-DP				
Spearman	0.466	1	0.294	-0.145
<i>p-value</i>	<0.001		<0.001	0.032
MBI-PA				
Spearman	0.277	0.294	1	-0.320
<i>p-value</i>	<0.001	<0.001		<0.001
FKMP				
Spearman	-0.249	-0.145	-0.320	1
<i>p-value</i>	<0.001	0.032	<0.001	

3.5 Hypothesis Testing

H1 was supported: higher FKMP adoption correlated with lower burnout levels. H2 was partially supported: age was associated with DP and PA but not with FKMP adoption. H3 was not supported: public sector HCPs did not exhibit lower emotional exhaustion compared to private sector counterparts.

4 DISCUSSION

The research revealed concerning levels of burnout among healthcare professionals (HCPs). High emotional exhaustion (39%) and low personal fulfillment (45.4%) suggest shortcomings in working conditions and in formal knowledge-sharing strategies that could mitigate burnout (Värk & Reino, 2020; Kosklin et al., 2023). Although depersonalisation was less prevalent (27.1%), it still requires attention. Romão et al. (2025) emphasise personal development and social support as protective factors, while integrated KM models combining technology and collaboration can enhance staff well-being and service quality (Guptill, 2005; Nicolini et al., 2008; Rocha et al., 2012; Lee, Kim & Kim, 2014, as cited in Ayatollahi & Zeraatkar, 2020). Analysis of sociodemographic variables (Table 1) confirmed significant associations with burnout. Age was inversely related, with younger professionals more vulnerable, consistent with previous studies (Santos, 2015; Marôco et al., 2016; Costa et al., 2020; Veloso, 2020; Vindegaard & Benros, 2020, as cited in Oliveira, 2022). Professional category was also significant, with nurses showing higher burnout across all MBI dimensions, echoing evidence that nurses are more susceptible than other HCPs (Vidotti et al., 2018, as cited in Lazo et al., 2021). Burnout compromises staff well-being and care quality, with impacts on patients and families (West et al., 2018, as cited in Ribeiro et al., 2023; Lazo et al., 2021).

Education level also showed an association with burnout, in line with Maslach et al. (2001) and Maslach & Leiter (2016, as cited in Cavalcante, 2022), who reported higher burnout among more educated professionals. Years of experience were also relevant: professionals with 16–20 years of practice reported higher burnout, consistent with Mendonça (2020), who noted that older employees often experience greater burnout. These findings suggest that both early- and mid-career professionals are at risk: younger staff due to lack of resilience, and more experienced staff due to cumulative strain. Results on FKMP (Table 2) indicate that organisational context influences adoption more strongly than sociodemographic factors. In the private sector, KM is implemented to promote growth and profit, while in the public sector it is focused on service quality and effectiveness (Batista, 2012, as cited in Passos, 2021). However, public institutions often retain a culture of “non-sharing” of knowledge, reinforcing hierarchical structures (Batista, 2006, as cited in Passos, 2021). A shift from “knowledge is power” to “sharing knowledge is power” is needed (Passos, 2021, as cited in Trindade, 2023).

The three burnout dimensions were correlated: emotional exhaustion was linked to depersonalisation and reduced accomplishment, while depersonalisation was associated with low fulfillment. Associations between burnout and FKMP showed that higher burnout (EE, DP, PA) corresponded with lower involvement in FKMP. This aligns with Parayitam et al. (2021), who argue that emotional exhaustion harms organisational performance, but that knowledge sharing mitigates depersonalisation and strengthens productivity. KM, through active sharing of information and experiences, enhances professional fulfillment by reinforcing competence and contribution to organisational goals. However, exclusive focus on FKMP may be limiting, as informal practices also foster flexibility, creativity, and intrinsic motivation, complementing formal systems (Värk & Reino, 2020).

Regarding hypotheses, results showed partial confirmation. Hypothesis 1 was supported: FKMP had a protective effect against burnout, with significant correlations across all dimensions, strongest with personal fulfillment, corroborating Kosklin et al. (2023), Khan (2023), and Parayitam et al. (2021). Hypothesis 2 was partially validated: age was associated with depersonalisation and personal accomplishment, confirming lower burnout among older professionals (Santos, 2015; Marôco et al., 2016; Costa et al., 2020; Veloso, 2020; Vindegaard & Benros, 2020, as cited in Oliveira, 2022), though age did not influence FKMP adoption. Hypothesis 3 was not supported: contrary to expectations, public-sector professionals did not show less emotional exhaustion. Instead, private-sector staff were more engaged in protective practices, reflecting differences in organisational culture (Batista, 2006, 2012; Trindade, 2023, as cited in Passos, 2021).

Overall, this study confirms that burnout among HCPs is shaped by sociodemographic and organisational factors. Nurses and younger professionals are especially vulnerable, while higher education and mid-career experience also increase risk. Organisational culture strongly influences KM adoption, with private institutions more advanced than public ones in implementing FKMP. Importantly, higher burnout is associated with lower KM engagement, suggesting a vicious cycle where stress reduces resilience and inhibits knowledge sharing. To break this cycle, healthcare organisations must promote both formal and informal KM practices, embedding knowledge-sharing cultures that enhance professional well-being, improve patient care, and strengthen organisational performance.

5 CONCLUSIONS

The aim of this research was to analyse the role of the FKMP in reducing burnout among HCPs in Portugal. The results show considerable levels of burnout in the sample under study, with a special focus on high emotional exhaustion and low personal fulfilment. Although depersonalization is less worrying, it needs attention, as it reflects the emotional detachment that is detrimental to the therapeutic relationship with the patient.

The results indicate that the organizational context has a greater impact on the adoption of FKMP than sociodemographic variables. In the private sector, KM is driven by competitiveness, innovation and profitability objectives, favoured by a results-oriented organizational culture and knowledge sharing. In contrast, the public sector faces cultural barriers, such as information retention, which hinders the effective adoption of KM. It is therefore essential to promote a cultural change that values collaboration and shared knowledge, a fundamental condition for the success of KM in public organizations.

Based on the data obtained, future research will be needed to more comprehensively explore the link between FKMP and its impact on burnout levels. It would also be pertinent to develop longitudinal studies that can assess causal relationships and test the effectiveness of specific interventions, such as the implementation of digital knowledge-sharing platforms.

To sum up, this research contributes to the understanding of how FKMP influence burnout among Portuguese HCPs. High burnout prevalence was observed, with FKMP adoption inversely related to burnout dimensions, especially personal accomplishment. Organisational context, more than demographic factors, appears to drive FKMP implementation.

Limitations include the cross-sectional design, non-probabilistic sampling, and reliance on self-reported measures, which restrict causal inference and generalisability. Future studies should adopt longitudinal designs, incorporate informal KM practices, and examine intervention efficacy in both public and private sectors.

REFERENCES

- Akoglu H. (2018). User's guide to correlation coefficients. *Turkish journal of emergency medicine*, 18(3), 91–93. <https://doi.org/10.1016/j.tjem.2018.08.001>

- Ayatollahi, H., & Zeraatkar, K. (2020). Factors influencing the success of knowledge management process in health care organisations: a literature review. *Health Information and Libraries Journal*, 37(2), 98–117. <https://doi.org/10.1111/hir.12285>
- Bakker, A. B., & Demerouti, E. (2017). Job demands–resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
- Bessick, J., & Naicker, V. (2013). Barriers to tacit knowledge retention: An understanding of the perceptions of the knowledge management of people inside and outside the organisation. *SA Journal of Information Management*, 15(2). <https://doi.org/10.4102/sajim.v15i2.556>
- Cavalcante, D. C. (2022). *Burnout, depressão ocupacional, ansiedade e engagement nos diferentes regimes de trabalho dos serviços públicos brasileiros*. Dissertação de mestrado, Faculdade de Psicologia e de Ciências da Educação - Universidade do Porto]. Repositório da Universidade do Porto. <https://hdl.handle.net/10216/141708>
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business School Press. https://www.researchgate.net/publication/229099904_Working_Knowledge_How_Organizations_Manage_What_They_Know
- Fajardo-Lazo, F. J., Mesa-Cano, I. C., Ramírez-Coronel, A. A., & Quezada, F. C. R. (2021). Professional burnout syndrome in health professionals. *Archivos Venezolanos de Farmacología y Terapéutica*, 40(3), 248–255. <https://doi.org/10.5281/zenodo.5038655>
- Gago-Valiente, F. J., Mendoza-Sierra, M. I., Moreno-Sánchez, E., Arbinaga, F., & Segura-Camacho, A. (2021). Emotional exhaustion, depersonalization, and mental health in nurses from huelva: A cross-cutting study during the sars-cov-2 pandemic. *International Journal of Environmental Research and Public Health*, 18(15). <https://doi.org/10.3390/ijerph18157860>
- Ganiyu, I. O., Plotka, G., Seuwo, P., & Ige-Olaobaju, A. (2025). Examining the use of LEGO Serious Play to enhance postgraduate research capacity. *Humanities and Social Sciences Communications*, 12(1). <https://doi.org/10.1057/s41599-024-03930-5>
- Gherrab, S., & benoussad, Z. (2024). Cloud technology as a mediator between knowledge management processes and job burnout: A case study of research professors in Algerian universities. *Journal of Science and Knowledge Horizons*, 4(02), 70–88. <https://doi.org/10.34118/jskp.v4i02.4009>
- Gonçalves, F., & Gaudêncio, M. (2023). Burnout and quality of life in Portuguese healthcare professionals working in oncology and palliative care - a preliminary study. *BMC Palliative Care*, 22(1). <https://doi.org/10.1186/s12904-023-01273-7>
- Khan, T. N. (2023). Using Knowledge Management to Enhance Organizational Performance and Effectiveness. *International Journal of Advanced Engineering, Management and Science*, 9(11), 01–17. <https://doi.org/10.22161/ijaems.911.1>
- Koch, A. K., Schröter, M., Berschick, J., Schiele, J. K., Bogdanski, M., Steinmetz, M., Stritter, W., Voss, A., Seifert, G., & Kessler, C. S. (2024). A custom tailored, evidence-based, theory-informed intervention for healthcare professionals to prevent burnout (LAGOM): study protocol for a pragmatic randomized controlled trial. *Trials*, 25(1), 628. <https://doi.org/10.1186/s13063-024-08491-1>
- Koo, M., & Yang, S.-W. (2025). Likert-Type Scale. *Encyclopedia*, 5(1), 18. <https://doi.org/10.3390/encyclopedia5010018>
- Kosklin, R., Lammintakanen, J., & Kivinen, T. (2023). Knowledge management effects and performance in health care: a systematic literature review. *Knowledge Management Research and Practice*, 21(4), 738–748. <https://doi.org/10.1080/14778238.2022.2032434>
- Lunn, J., Brennan, L., Brewster, L., Hindocha, A., Patel, P., Stowell, C., & Isba, R. (2025). Burnout and staff experiences of health inequalities in children's hospitals: a qualitative analysis. *BMJ Open*, 15(2). <https://doi.org/10.1136/bmjopen-2024-095418>
- Melo-Ribeiro, P., Marta, P., & Mota-Oliveira, M. (2023). Avaliação de Burnout em Profissionais de Saúde da Unidade de Faro do Centro Hospitalar Universitário do Algarve. *Revista Portuguesa de Psiquiatria e Saúde Mental*, 9(4), 126–136. <https://doi.org/10.51338/rppsm.532>
- Mendonça, P. M. M. (2020). *Idade e burnout nos bombeiros voluntários: A moderação pela percepção de suporte*. [Dissertação de mestrado, Faculdade de Psicologia – Universidade de Lisboa]. Repositório da Universidade de Lisboa. <http://hdl.handle.net/10451/44939>
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford University Press. <https://doi.org/10.1080/23735082.2023.2272611>
- Oliveira, A. P. (2022). *Antecedentes individuais do burnout nos profissionais das áreas covid19 de um hospital da região norte*. [Dissertação de mestrado, Escola de Economia e Gestão - Universidade do Minho]. Repositório da Universidade do Minho. <https://hdl.handle.net/1822/82879>
- Parayitam, S., Usman, A. S., Olson, B. J., & Shea, T. (2021). Effect of Emotional Exhaustion and Knowledge Sharing on Depersonalization, Work Accomplishment, and Organizational Performance. *International Journal of Knowledge Management*, 18(1), 1–20. <https://doi.org/10.4018/ijkm.291101>
- Ribas, C. (2010). *Síndrome de burnout em profissionais de saúde: Uma abordagem bioética num estudo preliminar* [Dissertação de mestrado, Escola Superior de Tecnologias da Saúde do Porto - Universidade do Porto]. Repositório da Universidade do Porto. <https://hdl.handle.net/10216/55785>
- Román-Sánchez, D., Paramio-Cuevas, J. C., Paloma-Castro, O., Palazón-Fernández, J. L., Lepiani-Díaz, I.,

- Rodríguez, J. M. de la F., & López-Millán, M. R. (2022). Empathy, Burnout, and Attitudes towards Mental Illness among Spanish Mental Health Nurses. *International Journal of Environmental Research and Public Health*, 19(2). <https://doi.org/10.3390/ijerph19020692>
- Romão, M. E., Setti, I., Alfano, G., & Barelo, S. (2025). Exploring risk and protective factors for burnout in professionals working in death-related settings: A scoping review. *Public Health*, 241, 1–11. <https://doi.org/10.1016/j.puhe.2025.01.038>
- Silva, M. S. M. (2018). *Ambiente físico hospitalar: A influência no burnout, stress, fadiga e satisfação no trabalho dos PS* [Dissertação de mestrado, Escola de Ciências Sociais, Departamento de Psicologia - Universidade de Évora]. Repositório da Universidade De Évora. <http://hdl.handle.net/10174/23264>
- Värk, A., & Reino, A. (2021). Practice ecology of knowledge management—connecting the formal, informal and personal. *Journal of Documentation*, 77(1), 163–180. <https://doi.org/10.1108/JD-03-2020-0043>
- Viana, D. S., Teixeira P, Ferreira E. (2022). Prevalence of Burnout in Portuguese Public Health Medical Residents amid the Response to the COVID-19 Pandemic. *Port J Public Health*. 2022 Jul 14; 40(2):112-121. <https://doi.org/10.1159/000525602>
- World Health Organization. (2019, May 28). *Burn-out an "occupational phenomenon": International classification of diseases*. <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>
- Zhao G, Yang H, Yang J, Zhang L, & Yang X. (2021). A Data-Based Adjustment for Fisher Exact Test. *Journal of Biostatistics and Biometric Applications*, 6(1). www.annexpublishers.com