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ORIGINAL ARTICLE

Evaluation of interventions to reduce burnout syndrome of healthcare workers with AHP and COPRAS methods

Emre Yılmaz[1]

[1] Department of Health Management, Faculty of Health Sciences, İstanbul Medipol University. İstanbul / Türkiye

Abstract

The aim of this study was to identify the most beneficial interventions to reduce burnout in healthcare professionals. The interventions and the criteria to be evaluated were identified as a result of the literature review and their weights were determined by 7 experts from the fields of health management, organizational behaviour, health communication and psychology using the AHP (Analytic Hierarchy Process) method. According to the criteria weights, the most beneficial interventions were ranked using the COPRAS (Complex Proportional Assessment) method. According to the results of the analysis, the most beneficial interventions for reducing burnout were found to be workload management and job sharing, regulation of working hours, and employee recognition and reward programmes. Healthcare organizations should establish clear guidelines to determine appropriate staffing levels and develop evidence-based workforce planning models to reduce excessive workload. Governments and policymakers should enforce working time regulations in line with international occupational health and safety standards and act as monitors to ensure fair working conditions. It is also important to integrate into organizational culture initiatives that recognize and value the contributions of health workers.

Keywords: Burnout, health management, multi-criteria decision making method, AHP, COPRAS

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Corresponding Author:
Emre Yılmaz
Email: emreyilmaz@medipol.edu.tr

Introduction

The concept of burnout was first introduced by Herbert Freudenberger in 1974, and Freudenberger defined burnout as a state of exhaustion resulting from the excessive demands individuals face in their professional lives [1]. Christina Maslach developed this concept further and proposed a multidimensional model that includes emotional exhaustion, depersonalization, and reduced personal accomplishment as its main components [2]. Emotional exhaustion refers to the depletion of emotional resources, while depersonalization includes negative attitudes and feelings towards customers or patients. The reduction of personal accomplishment reflects feelings of inadequacy and lack of success in one's job [2,3]. Burnout among healthcare professionals is an important factor that jeopardizes patient care and safety. It has been stated that burnout has serious negative effects on healthcare professionals and the patients they serve [4-6]. Tired and apathetic staff have problems with empathy, making accurate diagnoses, and providing quality healthcare. As a matter of fact, this situation leads to low job performance and an increase in medical errors. It is stated that the consequences of burnout may be worse, especially in high-risk environments such as emergency services and intensive care units [7,8]. Studies emphasize that high levels of burnout are associated with increased rates of anxiety, depression, and other psychological distress among healthcare professionals [9-11]. In addition, high levels of burnout among healthcare personnel lead to increased operational costs due to increased turnover rates and the need to recruit and train new personnel [12,13]. In fact, addressing burnout is not only an individual health issue but also a critical organizational issue affecting the sustainability of healthcare systems.

Considering all these factors, evaluating interventions to reduce burnout is essential for the sustainability of a functional and efficient health system [14]. Comprehensive interventions are needed to focus on the mental health of healthcare professionals and to assess risk factors for burnout and to determine preventive measures early [15]. When the literature is reviewed; studies suggest that interventions such as cognitive behavioral therapies [16], exercise programs [17], and progressive muscle relaxation and behavioral therapy [18] are effective in reducing burnout in different populations. In addition, providing training that provides permanent benefits to individuals to cope with the stress factor, which is one of the most important factors that trigger burnout, is also an effective intervention [19]. Interventions at the organizational level often concern altering the work structures and processes to construct a system that better enables individuals to experience well-being and to be free of stress [20]. This includes implementing systems that provide for sufficient rest periods; regulating the number of hours that individuals work; and promoting, as much as is feasible, a work-life balance that enables individuals to be fully present, both in their professional roles and in their personal lives. A study by Fraboni et al. emphasizes that, in the effort to prevent burnout, it is also vital to minimize work-home conflict and the kind of interpersonal conflicts that can make the workplace an unhealthy environment [21]. In addition, healthcare facilities should establish reward mechanisms as a reward for employee labor to increase employee motivation and reduce burnout levels and develop policies that encourage commitment and belonging to the organization [22,23]. Similarly, Ali et al. also emphasizes the importance of fair distribution and management of workload in order to reduce employee burnout levels [24]. Ghosh et al. supports this view and suggests that fair division of labor prevents conflict among employees and increases satisfaction, which would be an effective strategy to reduce burnout [25]. As a matter of fact, determining which interventions will be more effective in this process enables health facilities to transfer resource allocation to the right strategies [26].

Some indispensable factors come to the fore to determine effective interventions. Interventions should be systematic and accessible to all professionals. They should be based on problem solving with well-defined goals [19]. Another critical factor is the sustainable effect of the intervention over time. It is necessary to

evaluate whether the intervention has long-term benefits in terms of reducing burnout and preventing its recurrence [27,28]. Moreover, interventions that can be seamlessly integrated into existing organizational structures are more likely to have a significant impact in reducing burnout. Accessibility and inclusiveness are also extremely important criteria to consider. Every healthcare organization should ensure that all professionals in an organization can easily access the intervention, that it covers both personal and organizational dimensions and that it is systemic and inclusive [29]. The concept of accessibility is to ensure that all individuals, regardless of their role or seniority, have equal and fair opportunities to benefit from the intervention. This is a fundamental principle that should not be compromised. In this context, accessibility takes into account and adapts to the specific needs of diverse populations and the relevant institutional culture [30,31]. On the other hand, cost-effectiveness of interventions is emphasized as another important criterion for evaluation. Organizations need to ensure that the resources required to implement and maintain the intervention yield adequate benefits [32]. It is also stated that if the values and needs of the staff are compatible with the intervention, the staff will be more likely to participate in the intervention [33,34]. Interventions that require fewer changes in staff making current practice are more easily integrated into daily routines with a minimum of disruption staff [35]. Considering all this literature, identifying effective interventions to combat burnout syndrome is a critical necessity to ensure the well-being of healthcare professionals and promote the sustainability of the healthcare system.

The aim of this study is to determine the most beneficial interventions to reduce burnout syndrome in healthcare professionals.

Materials and Methods

Type and design of the research

This research is a quantitative study conducted to rank the most beneficial interventions to reduce burnout syndrome among healthcare professionals and to offer solution suggestions. In the study, Analytical Hierarchy Process (AHP) and COPRAS (Complex Proportional Assessment) methods, which are multi-criteria decision-making (MCDM) approaches, were used. In this direction, the research design is descriptive and cross-sectional. This study addresses the research question:

Which interventions are the most effective in reducing burnout syndrome among healthcare professionals, based on multi-criteria decision-making methods (AHP and COPRAS)?

Determining interventions and criteria

In the study, interventions aimed at reducing burnout syndrome among healthcare professionals and criteria to evaluate the interventions were collected under 7 headings as a result of the literature review and are shown in Table 1 and Table 2 together with their sources.

In order to determine the weights of these criteria; 7 experts who are specialized in health management, organizational behavior, health communication and psychology, and who have knowledge and experience on the research topic, made evaluations using AHP forms. These question forms consist of questions based on pairwise comparisons of criteria consisting of linguistic expressions such as equally important, moderately important, important, very important and extremely important. In line with these questions, participants made their evaluations according to importance levels ranging from 1 to 9.

In the next stage, the COPRAS method was used in the light of weighted criteria to determine the most beneficial interventions to reduce burnout syndrome. Information on experts is detailed in Table 3.

Analysis of data

AHP

AHP is a structured decision-making methodology widely used in various fields, including management, engineering, and education, to facilitate complex decision-making by breaking a problem into a hierarchy of subproblems that can be analyzed independently [37,38]. AHP allows decision makers to systematically evaluate multiple criteria and

Table 1. Interventions to be used in the study.

Intervention No	Intervention	Intervention Statements	References
M1	Stress Management and Resilience Training	These trainings enable employees to be more resilient to workplace pressures, thus reducing the risk of burnout that excessive stress can cause.	[19,20]
M2	Psychological Support and Counseling	Regular psychological support allows employees to discover their inner resources, develop methods of coping with stress, and relieve their emotional burden.	[15,16]
M3	Regulation of Working Hours	Regular breaks, flexible working hours, and overtime arrangements provide employees with opportunities to rest and recover. This situation prevents overload and significantly reduce the risk of burnout.	[21,36]
M4	Workload Management and Job Sharing	Workload management and job sharing reduce the pressure on overburdened employees by ensuring that work is distributed more fairly.	[24,25]
M5	Physical Activity Programs	Regular exercise improves mood by increasing the secretion of endorphins in the body, strengthens the physical and mental health of employees, thus reducing the risk of burnout.	[17,18]
M6	Support for Work-Life Balance	Policies that support work-life balance allow employees to spend time resting, spending time with their families and personal development. Employees feel more satisfied and at peace. In fact, this situation makes a significant contribution to the prevention of burnout syndrome.	[21,36]
M7	Employee Recognition and Reward Programs	Employees who are not appreciated are not satisfied with their jobs and experience a feeling of burnout. Recognition and reward programs ensure that healthcare professionals feel that their efforts are valued. This increases their motivation and prevents burnout.	[22,23]

Table 2. Criteria for evaluating interventions.

Criteria No	Criteria	Criteria Explanations	References
C1	Employee Satisfaction	It is a criterion that measures how healthcare professionals respond to an intervention and its impact on job satisfaction. Interventions with high employee satisfaction result in greater participation and more positive outcomes.	[33,34]
C2	Ease of Implementation	It evaluates how practical and applicable the intervention is. Since healthcare professionals already work at a busy pace, interventions should not be complex and time-consuming.	[35]
C3	Inclusiveness	It indicates whether the intervention is suitable for all healthcare professionals and whether it addresses different groups of professionals (doctors, nurses, support staff, etc.).	[29, 31]
C4	Cost	It is an important factor affecting the feasibility and sustainability of the intervention. High-cost interventions may often not be sustainable for institutions in the long term.	[32]
C5	Sustainability	It refers to the long-term sustainability of the intervention. If an intervention may be effective initially but becomes unsustainable in the long term, it will fail to consistently reduce burnout.	[27,28]
C6	Effectiveness	It is a measure that evaluates the extent to which the intervention achieves its main purpose. It allows determining the success of the interventions in achieving the targeted results.	[19]
C7	Compliance with the Corporate Culture	Organizational culture is a reflection of values, attitudes and behaviors, so it is important that interventions adapt to this culture. It determines how much employees will internalize and accept this intervention.	[30,31]

Table 3. Expert details.

Expert	Area of Expertise	Education Level	Title	Experience (years)
E1	Health Management	PhD	Asst. Prof.	9
E2	Health Management	PhD	Prof. Dr.	18
E3	Health Communication	PhD	Assoc. Prof.	15
E4	Psychology	PhD	Prof. Dr.	15
E5	Psychology	PhD	Asst. Prof.	8
E6	Organizational Behavior	PhD	Assoc. Prof.	13
E7	Organizational Behavior	PhD	Asst. Prof.	10

alternatives, allowing them to prioritize options according to their relative importance [37]. The AHP methodology includes the following steps [39,40];

Problem definition and hierarchical structuring: The first stage involves clearly defining the decision problem and structuring it into a hierarchy. The decision problem is typically structured into a hierarchy with the main objective at the top, followed by the criteria and subcriteria, and finally the alternatives at the bottom. This hierarchical structure helps organize the decision-making process.

Pairwise comparisons: Decision makers make pairwise comparisons between criteria and alternatives. Each element is compared to all other elements in terms of their contribution to the goal. This is done using a relative importance scale (1 (equal importance) – 9 (extremely important) that allows for the quantification of subjective judgments.

Calculating weights and consistency ratio: The results of the pairwise comparisons are used to calculate the weights of each criterion and alternative. A consistency ratio (CR) is calculated to ensure that the decisions made are consistent. This can be done using various methods such as the eigenvector method or linear programming approaches.

Synthesizing the results: Finally, the weighted scores of the alternatives are added together to determine the overall ranking. This synthesis provides a clear indication of which alternative is preferred according to the established criteria.

COPRAS

COPRAS is one of the MCDM methods that provide a systematic and effective framework for evaluating alternatives and making informed choices in complex decision-making scenarios [41]. One of its most basic features is that it gradually ranks alternatives according to their importance and benefit. It compares alternatives with each other and reveals how much better or worse they are than other alternatives as a percentage [42].

The COPRAS method steps can be expressed as follows [43]. *Creating the decision matrix;* The decision matrix is created from the $x\,i\,j$ values. The criteria are in the row section and the alternatives are in the column section (Equation 1).

$$D = \begin{vmatrix} X_{11} & \dots & X_{1n} \\ . & . & . \\ X_{m1} & \dots & X_{mn} \end{vmatrix} \quad (1)$$

Creating the normalized decision matrix; The normalized decision matrix is determined using Equation (2).

$$x_{ij}^{*} = \frac{x_{ij}}{\sum_{i=1}^{m} x_{ij}}, \quad \forall j = 1,2,3,\dots,n \quad (2)$$

Creation of weighted decision matrix; Weighted normalized decision matrix is created with Equation (3). Here, $d\,i\,j$ is the weighted value, $w\,j$ is the criterion weight. Criterion weights are obtained by AHP method.

$$D' = d_{ij} = x_{ij}^{*} \cdot w_j \quad (3)$$

Calculation of the optimality function value (benefit-cost); High (max) desired criteria are expressed as "benefit"; low (min) desired criteria are expressed as "cost". The sum of the values in the weighted normalized decision matrix for benefit and cost criteria is calculated using Equation (4) and Equation (5), respectively.

$$S_i^+ = \sum_{j=1}^{k} d_{ij}\,, \quad j = 1,2,3,\dots,k \tag{4}$$

beneficial criteria

$$S_i^- = \sum_{j=k+1}^{n} d_{ij}\,, \quad j = k+1, k+2, k+3, \dots, n \tag{5}$$

cost criteria

Calculating the relative importance of alternatives; The relative importance value $(Q\,i)$ is calculated for alternatives with Equation (6). The highest $Q\,i$ value obtained represents the best alternative.

$$Q_i = \frac{S_i^+}{\sum_{i=1}^{m} S_i^-} \cdot S_i^- \cdot \sum_{i=1}^{m} \frac{1}{S_i^-} \tag{6}$$

Determining the highest relative importance; The one with the largest value among the relative priority values is calculated (Equation 7).

$$Q_{\max} = \max\{Q_i\}, \quad \forall i = 1,2,3,\dots,n \tag{7}$$

Determining the benefit levels of alternatives; The performance index $(P\,i)$ is calculated for each alternative using Equation (8).

$$P_i = \frac{Q_i}{Q_{\text{maks}}} \cdot 100\ (\backslash\%) \tag{8}$$

Ethical aspect of the study

The scientific suitability of the research was approved by the Non-Interventional Clinical Research Ethics Committee of İstanbul Medipol University (Date: 10/10/2024, and Decision No: 960). Written informed consent was provided by all participants using the tenets of the Declaration of Helsinki.

Results

The criteria obtained as a result of the literature review were evaluated by experts through AHP forms and comparison matrices were obtained. The integrated decision matrix was created by taking the geometric mean of the values in the matrix containing the opinions of 7 experts (Table 4).

The column totals of the values in the integrated decision matrix were taken and each value was divided by the column total to create a normalized matrix. Then, the row averages of the normalized matrix values were taken to determine the eigenvector (weight) values of the criteria (Table 5).

In the last stage, in order to calculate the consistency ratio, the integrated matrix values were multiplied by the eigenvector averages, the row totals were taken and the eigenvalue scores were found. Criteria weights and rankings are given in Table 6.

According to Table 6, the most important criterion to be used in the evaluation of interventions aimed at reducing burnout syndrome in healthcare professionals was found to be "Employee Satisfaction" with a normalized weight score of 25%. This was followed by "Cost"

Table 4. AHP integrated decision matrix.

	C1	C2	C3	C4	C5	C6	C7
C1	1.00	1.85	3.47	5.50	1.72	1.17	3.47
C2	0.54	1.00	4.02	0.64	1.87	3.73	0.85
C3	0.29	0.25	1.00	0.14	5.00	3.00	7.00
C4	0.18	1.57	7.00	1.00	5.00	3.00	3.00
C5	0.58	0.53	0.20	0.20	1.00	0.25	3.00
C6	0.85	0.27	0.33	0.33	4.02	1.00	5.00
C7	0.29	1.17	0.33	0.33	0.33	0.20	1.00
Total	3.73	6.64	16.35	8.15	18.95	12.35	23.33

Table 5. AHP normalized matrix.

	C1	C2	C3	C4	C5	C6	C7	Eigenvector (Weight)
C1	0.27	0.28	0.21	0.68	0.09	0.09	0.15	0.25
C2	0.14	0.15	0.25	0.08	0.10	0.30	0.04	0.15
C3	0.08	0.04	0.06	0.02	0.26	0.24	0.3	0.14
C4	0.05	0.24	0.43	0.12	0.26	0.24	0.13	0.21
C5	0.16	0.08	0.01	0.02	0.05	0.02	0.13	0.07
C6	0.23	0.04	0.02	0.04	0.21	0.08	0.21	0.12
C7	0.08	0.18	0.02	0.04	0.02	0.02	0.04	0.06

Table 6. AHP criteria weights and rankings.

Criteria No	Criteria	Eigenvector (Weight)	Ranking
C1	Employee Satisfaction	0.25	1
C4	Cost	0.21	2
C2	Ease of Implementation	0.15	3
C3	Inclusiveness	0.14	4
C6	Effectiveness	0.12	5
C5	Sustainability	0.07	6
C7	Compliance with the Corporate Culture	0.06	7

(21%) and "Ease of Implementation" (15%). "Compliance with the Corporate Culture" was determined as the least important criterion with a weight of 6%.

After determining the criterion weights with the AHP method, the rankings of interventions aimed at reducing burnout syndrome were determined with the COPRAS method. According to the method, beneficial criteria indicate that higher values indicate a better situation in achieving the goal. In this direction, employee satisfaction, ease of implementation, inclusiveness, effectiveness, sustainability and compliance with the corporate culture are beneficial criteria. The high values of these criteria have a positive effect on the selection of alternatives. The cost criterion was treated as anon-beneficial criterion (i.e., lower values are preferred). The low value of this criterion has a positive effect on the selection of interventions. For the interventions in Table 1, a survey form was prepared according to a 5-point Likert scale, taking into account the 7 criteria in Table 6.

Table 7. COPRAS decision matrix.

Intervention No	Criteria No						
	C1	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
M1	2.714	2.571	2.857	4.285	2.857	2.142	1.571
M2	2.142	2.857	3.428	3.428	2.857	3.714	2.714
M3	3.857	3.857	3.142	2.285	4.857	3.857	3.857
M4	4.571	4.714	4.857	1.285	4.857	4.142	4.714
M5	1.428	1.142	2.714	4.571	1.285	1.571	1.857
M6	2.142	1.857	3.428	3.857	2.142	3.714	3.142
M7	2.571	3.142	4.714	2.714	3.428	3.714	4.714
TOTAL	19.428	20.142	25.142	22.428	22.285	22.857	22.571

Table 8. COPRAS normalized matrix.

	Criteria						
	Max	**Max**	**Max**	**Min**	**Max**	**Max**	**Max**
Weights	0.25	0.15	0.14	0.21	0.07	0.12	0.06
Intervention	**C1**	**C2**	**C3**	**C4**	**C5**	**C6**	**C7**
M1	0.139	0.127	0.113	0.191	0.128	0.093	0.069
M2	0.110	0.141	0.136	0.152	0.128	0.162	0.120
M3	0.198	0.191	0.125	0.101	0.217	0.168	0.170
M4	0.235	0.234	0.193	0.057	0.217	0.181	0.208
M5	0.073	0.056	0.107	0.203	0.057	0.068	0.082
M6	0.110	0.092	0.136	0.171	0.096	0.162	0.139
M7	0.132	0.156	0.187	0.121	0.153	0.162	0.208

Table 9. COPRAS weighted normalized matrix.

Intervention No	Criteria No						
	C1	C2	C3	C4	C5	C6	C7
M1	0.034	0.019	0.015	0.040	0.008	0.011	0.004
M2	0.027	0.021	0.019	0.032	0.008	0.019	0.007
M3	0.049	0.028	0.017	0.021	0.015	0.020	0.010
M4	0.058	0.035	0.027	0.012	0.015	0.021	0.012
M5	0.018	0.008	0.015	0.042	0.004	0.008	0.004
M6	0.027	0.013	0.019	0.036	0.006	0.019	0.008
M7	0.033	0.023	0.026	0.025	0.010	0.019	0.012

Table 10. Importance values and final ranking for interventions.

Intervention No	S_i^+	S_i^-	Qi	P_i	Ranking
M1	0.094	0.04	0.113	48.50	6
M2	0.103	0.032	0.127	54.48	4
M3	0.141	0.021	0.177	75.81	2
M4	0.170	0.012	0.233	100	1
M5	0.059	0.042	0.076	32.95	7
M6	0.095	0.036	0.116	49.70	5
M7	0.125	0.025	0.155	66.53	3

This survey form was evaluated by 7 experts, whose details are shown in Table 3. The decision matrix created by taking the averages of the expert evaluations is shown in Table 7.

The normalized decision matrix was obtained using Equation (2) (Table 8).

Equation (3) was applied using the criterion weights obtained as a result of the AHP analysis and a weighted normalized matrix was created (Table 9).

The values of for beneficial criteria and for cost criteria were determined using Equation (4) and (5). The relative importance values () for each intervention were calculated using Equation (6). In the next stage, the highest relative importance and the benefit levels (of the interventions were determined using Equation (7) and (8) and the final rankings were made (Table 10).

According to Table 10; M4, symbolized as; with a performance index of 100% is the most beneficial intervention. M3 with a performance index of 75.81% and M7 with a performance index of 66.53% are among the most beneficial interventions, respectively. The least beneficial intervention was determined as M5 with a performance index value of 32.95%.

Discussion

Within the scope of the study, the most beneficial interventions to reduce burnout syndrome in healthcare professionals were determined to be workload management and job sharing, regulation of working hours and employee recognition and reward programs, respectively.

There are similar results in the literature regarding the workload management and job sharing intervention, which has the highest performance index (100%), that are consistent with the study findings. When looking at the literature, Dobešová Cakirpaloglu et al. emphasize in their studies that organizational strategies aimed at managing workload, providing adequate support, and recognizing the contributions of healthcare professionals are very important in reducing burnout syndrome [44]. Khosravi et al. emphasize the importance of the need for systemic interventions, including workload management, in combating burnout [4]. Similarly, Hertzum stated that workload in healthcare services is an important risk factor that increases the likelihood of errors and burnout; that effective management of workload and making the necessary job sharing will increase performance and reduce burnout rates [45]. In fact, Warshawsky states in study that healthcare organizations can create a supportive atmosphere that not only reduces burnout

but also increases overall job performance and satisfaction by implementing workload management strategies [46].

The intervention with the second highest performance index (75.81%) is the regulation of working hours. Lin et al. stated that there is a significant positive relationship between burnout levels and working hours in healthcare professionals; reducing working hours may be a feasible intervention [47]. Parola et al. suggest that alternative working hours and lower patient loads may be effective as strategies to combat burnout among nurses [48]. Karataş et al. stated that burnout levels seen in healthcare professionals are associated with working hours exceeding 17 hours per day; regulating working hours may alleviate stress factors that increase burnout [49]. In fact, Eltorki et al. stated that working more than 50 hours per week is an important risk factor for burnout; working hours should be arranged in a way that increases the well-being of employees [50]. In the study conducted by Fon et al. it was revealed that working long hours is associated with higher burnout and stress rates, and it is mentioned that healthcare organizations should implement regulatory policies that limit excessive working hours [51].

The intervention with the third highest performance index (66.53%) is employee recognition and reward programs. In fact, when looking at studies in the literature; Johnson et al. emphasized that the burnout levels of healthcare professionals are alleviated when they are appreciated and emphasized that recognizing and rewarding employees' efforts plays an important role in reducing burnout levels [52]. In addition, it is stated that the probability of burnout is 40% lower in healthcare professionals who are valued by their institutions [53]. Similarly, Kesti suggests in his study that when healthcare professionals feel valued, their job satisfaction increases, and this reduces burnout [54]. Adekanmbi also states that organizational reward systems significantly affect employee performance and burnout; stated that effective recognition strategies increase job performance and reduce intentions to leave the job [55].

Limitations of the study

The research design is cross-sectional and the findings reflect only a certain period of time. The study is based on the judgments of only seven experts, which limits the generalizability of the findings. Longitudinal data collection is needed to evaluate the long-term effects of the interventions and their performance over time. In addition, the study is based on expert opinions, not directly on the experiences and preferences of healthcare professionals experiencing burnout. In future studies, collecting data from a larger and more representative sample by directly involving healthcare professionals would be beneficial in terms of confirming the findings and making more comprehensive inferences.

Conclusion

Various interventions can be implemented to reduce burnout syndromes in healthcare professionals. The most beneficial intervention is workload management and job sharing. In this regard, healthcare organizations should establish clear guidelines for workload distribution, determine adequate staffing ratios, and create evidence-based workforce planning models that will reduce excessive workload. Investments should be made in digital solutions and automation to minimize administrative burdens. The adoption of digital health solutions such as AI-supported clinical decision support systems can reduce workload on employees. Sharing of responsibilities among employees should be allowed. Indeed, the encouragement of leaders and managers in creating a supportive work culture is very important. Open communication should be encouraged regarding expressing workload difficulties and requests for support should be allowed without fear of stigmatization. A work environment that respects the need for work-life balance should be created. In addition, the inclusion of healthcare professionals in decision-making processes ensures that their voices are heard.

On the other hand, for the intervention of regulating working hours, organizations should prioritize the well-being of their staff by implementing reasonable work schedules that balance workload distribution and allow

for adequate rest periods. Governments and policy makers should implement working hour regulations that are in line with international occupational health and safety standards and act as a supervisor to ensure fair working conditions.

Finally, initiatives that encourage the recognition and appreciation of healthcare professionals' contributions should be integrated into the corporate culture for employee recognition and reward programs. In addition, non-monetary incentives such as additional days off, flexible working hours or professional development opportunities can significantly affect job satisfaction and reduce burnout levels. Healthcare organizations should allocate sufficient resources to support such initiatives. In addition, this process should not be seasonal and should be continued with systemic changes such as fair compensation and professional development opportunities for sustainability.

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Conflict to interest

There is no conflict of interest in this study.

Data availability statement

The full data set supporting the results of this study can be shared upon request.

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