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INTERNATIONAL PERSPECTIVES ON WELL-BEING AND BURNOUT WITHIN HEALTH SYSTEMS

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ABSTRACT

Objectives: To reflect on the present international culture of professional burnout in health care systems and the need for a radical new approach with an increased understanding of a person- and people-centered attitudes in the promotion of training in wellbeing and the prevention and management of burnout among physicians and health care professionals
Methods: A literature search worldwide was undertaken for significant research papers on professional education related to burnout with particular reference to both medical staff resilience and health care system factors.
Findings: Burnout among doctors is a global phenomenon. The incidence of burnout reported in a selection of studies among pediatric residents and staff are 25% in Argentina, 37% in the United Kingdom, and 70% in Saudi Arabia. In a national survey in the United States where the overall rate was 59% burned out residents reported significantly increased stress, poorer mental health, and decreased empathy, mindfulness, resilience, self-compassion, and confidence in providing compassionate care Three levels of change that should be the focus of training in prevention, health promotion, and stress reduction awareness have been recommended to reduce the risk of burnout: (1) modifying the organizational structure and work processes; (2) improving the fit between the organization and the individual doctor through professional development programs so that better adaption to the work environment occurs; and (3) individual-level actions to reduce stress and poor health symptoms through effective coping and promoting healthy behavior.
Discussion: The history of burnout shows important links with increased work complexity. Narrow training interventions such as debriefing after an adverse clinical event have not been found effective. A more comprehensive person-centered approach with a variety of measurable interventions has resulted in a reduction of 50% in the pediatric faculty in one study. A person- and

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people-centered cybernetic approach is needed with six standards are to establish and sustain a healthy work environment (1) authentic leadership (2) meaningful recognition, (3) skilled communication, (4) true collaboration, (5) effective decision making, and (6) appropriate staffing.
Conclusion: With such high levels of burnout, health systems worldwide can be viewed as failing their populations on a grand scale. Only an organizational paradigm change to a person- and people cybernetic centered system that incorporates complexity is adaptive and integrative will a health system be effective in preventing and ameliorating the effects of burnout and reduce the increasingly unaffordable misuse of human resources.

Keywords: burnout, emotional exhaustion, depersonalization, work–life balance, physician's autonomy person-centered, cybernetics, complex adaptive, viable, health systems

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INTRODUCTION

Burnout among doctors and health professionals is a global phenomenon. Though the multiplicity of factors may vary within different nations and among all the medical specialties of which pediatrics is an interesting example. There is a common theme of chronic occupational stress within all health systems. Three well-established criteria of burnout have been applied in international settings caused by chronic occupational stress. These are emotional exhaustion (physical and emotional tiredness); depersonalization (a breakdown in the ability to care, emerging cynicism, disengagement from the human service component of work); and reduced personal accomplishment (reduced output across all areas of life).

Burnout is an index of the dislocation between what the people are and what they have to do. It represents an erosion of the value dignity spirit and will – an erosion of the human soul. It is a malady that spreads gradually and continuously over time putting people into a downward spiral from which it is hard to recover [1].

Physicians feel dehumanized, powerless lacking in meaning because they are treated impersonally as objects or commodities rather than with the dignity and respect intrinsic in all people. There is a consequent loss of dignity hope and compassion needed to give meaning and purpose to everyone. Any attempt to

prevent or remedy these individual personal professional crises must take account of the wide range of issues involved in a person- and people-centered way.

OBJECTIVES

The objectives of this article are to review a range of the findings from international studies on physician burnout, and to propose a person- and people-centered and cybernetic approach be applied by modifying the health system organization, improving the working environment and supporting individual physicians to reduce stress and poor health symptoms through effective coping and promoting healthy behaviors.

METHODS

A literature search worldwide was undertaken for significant research papers on professional burnout particularly with reference to both medical staff resilience and health care system factors.

RESULTS

Practicing medicine is stressful occupation to many physicians. A Canadian study reported that 64% of physicians feel that their workload is too heavy, and 48% have had an increase in their workload in the past year. Surveys consistently document that doctors work many hours, averaging 50–60 hours per week when not on call [2].

When physicians frequently work shifts longer than 24 hours, they have increased risk of burnout, percutaneous needle stick injuries, and motor-vehicle crashes or near-miss incidents when driving home, and make more serious medical errors than do those working shifts shorter than 24 hours. Physicians work in emotionally charged situations, associated with suffering, fear, failures, and death, which often culminate in difficult interactions with patients, families, and other medical personnel. Changes to the practice of medicine such as increased patient care demands, remuneration issues, growing bureaucracy associated with medical practice, increased accountability, and conflict between the needs of the organization and patients – are all potential threats to physician wellness. There has been a substantial decline in physicians' autonomy because of increased managerial and cost control by governments, employers, and patients.

With quality-of-care interventions attempting to standardize care protocols proven to provide improved care based on evidence, physicians often encounter

organizational restrictions on their shared decision making with their patients report increasing their job dissatisfaction and stress.

The rise of managed care in countries such as the United States and Israel has raised concerns because physicians fear that such care will be of lower quality for patients and reduce physicians' income and autonomy.

Growing evidence points to important negative consequences of physician ill health to healthcare systems by affecting recruitment and retention of physicians, workplace productivity and efficiency, and quality of patient care and patient safety. The worldwide shortage of physicians in primary health care makes physician wellness especially important for recruitment and retention to the medical profession [3].

In a meta-analysis, Lee and colleagues examined a diverse range of correlates from 65 samples of physicians from various regions and specialties. Emotional exhaustion and depersonalization were associated with a constraining organizational structure, lack of professional autonomy, negative attitudes to work, incivility/conflicts/violence, a poor quality and safety culture, high workload, low quality and safety standards, negative work attitudes, work–life conflict, and other contributors to poor mental health [4]. Outpatient specialties experienced higher emotional exhaustion levels than inpatient specialties when organization structures were constraining and contributors to poor mental health were present. When professional autonomy was respected, outpatient specialties experienced lower emotional exhaustion levels and depersonalization.

A large study of American physicians from all specialty disciplines compared burnout and job satisfaction with a probability-based sample of the general US population and found satisfaction with work–life balance varied with specialty. Highest rate of satisfaction was reported by physicians practicing dermatology, general pediatrics, and preventive medicine, whereas physicians practicing general surgery, and obstetrics/gynecology had the lowest rates. Interestingly, the study also found general surgery and internal medicine – despite having the lowest rates of satisfaction with work–life balance – had below-average burnout rates, whereas specialties with high burnout rates (like neurology) were not necessarily those least satisfied with work–life balance [5].

European General Practice Research Network Burnout Study Group, on the other hand, found that, while 12% of participants suffered from burnout in all three dimensions, 43% scored high for emotional exhaustion, 35% for depersonalization, and 32% for low personal accomplishment [6]. In the United Kingdom, approximately one-third of the physicians had features of burnout [7], which are comparable to studies from Arab countries like Yemen, Qatar, and Saudi Arabia [8–10]. Not only may the overall prevalence of burnout among doctors vary between countries, but the three dimensions of burnout may also vary. Doctors in the United

States experienced lower levels of emotional exhaustion than their counterparts in Europe where quality, safety culture and career development opportunities were strong. American doctors experienced higher levels of emotional exhaustion when faced with work–life conflict and if they used ineffective coping. European doctors with positive work attitudes, on the other hand, experienced lower emotional exhaustion levels and possibly depersonalization than their American counterparts. This systematic review [1] by examining the impact of various work environment-related stressors (such as quality, safety culture) or personal attributes (such as work–life conflict or positive work attributes) on the three dimensions of burnout highlighted the need to study burnout in the context of all these stressors.

Table 1. Some International Studies on Rates of Burnout among Pediatricians

Nation	Burnout %	Comment
USA. [11]	20–35	5-year longitudinal study
UK. [12]	37	Multisite ITU and PICUs.
Ireland [13]	28.	National study
Spain [14]	56	Multisite ICU and PICUs one of three dimensions
Argentina [15]	25.4	Pediatric departments
Israel [16]	33	Pediatricians Web-based survey
Saudi Arabia. [17]	70	Pediatric residents in a tertiary academic center
Taiwan [18]	40	Pediatricians did not like their medical career and work environment.

Work-related stress in acute pediatric units was linked to concerns about missing a diagnosis, doubting decisions, being responsible for the management of critically ill children, suspicion of child abuse, the death of a child patient and challenging behavior by parents [19]. In one study successful coping mechanisms by members of a pediatric acute unit arose from the support of colleagues (86%), friends and family (73%), distracting activities (32.7%), and Sport (22%) [20].

A study of medical specialists reported that interference of work on home life and not being able to live up to one's professional standards were most related to stress and also that feeling poorly managed and resourced diminished job satisfaction [21].

Work environments where attention is not given to excessive workload, long work hours, fatigue, emotional interactions, cognitive demands from the nature of medical practice, restricted autonomy, and impact of structural and organizational changes on clinical practice fosters burnout [22].

While most people working in poorly functioning organizations may be exposed to high levels of stress putting them at greater risk of experiencing

burnout, certain demographic factors may accentuate the risk for burnout. These include young age, female gender, negative marital status, long working hours, and low levels of job satisfaction [23].

Significance of work environment was further highlighted by another study that found organizational factors, as opposed to illness severity of patients in an emergency department, were strongly associated with a higher level of burnout. Factors such as impaired work relationships with colleagues were found to be independently associated with higher burnout scores, whereas improved relationships with chief nurses and nurses were associated with a lower burnout score [24].

Some Prevention Strategies

Health care organizations globally are becoming to realize the need to address physician burnout due to these close linkages with quality of care, and also in the recruitment and retention of staff. The many functions of health human resources include identifying and managing burnout risk [25].

Understanding the pattern of risk factors that are associated with burnout will help develop preventative and therapeutic strategies against burnout among doctors [26]. Neither burnout as a phenomenon nor the preventive or intervention strategies should be looked at in isolation. Many of the risk factors for burnout among doctors are static in nature or are difficult to address through individual intervention strategies.

In general, three levels of change have been recommended in order to reduce the risk of burnout:

1. modifying the organizational structure and work processes and internal communication systems;
2. a supportive professional environment through professional development programs enabling opportunities for professional development for staff; and competent leadership; and
3. foster better adaption to the work environment and family–work balance (e.g., provision of kindergarten services and reduction of work-related calls); individual-level actions to reduce stress and poor health symptoms through effective coping and promoting healthy behaviors [27].

Physician wellness is complex and multifaceted: individual, professional, and organizational factors might affect a physician's ability to be well. In terms of individual factors, research suggests that physicians are not very good at tending to many of their wellness needs or seeking help from others [28].

The consequences of long periods of excessive work stress and burnout could have serious outcomes for the wellness of individual physicians (e.g., substance abuse, relationship troubles, depression, or even death) [29]. They tend to neglect their own health and procrastinate when seeking medical treatment. This pattern of behavior seems to be universal. For example, of 18% of Canadian physicians who were identified as depressed, only 25% considered getting help and only 2% actually did [30].

Medical school training is extremely stressful and often has negative effects on students' mental health, which could deter individuals from entering the profession, completing their medical training, or entering certain medical specialties. Medical students with burnout admitted to cheating in tests and feeling less altruistic. Depression was less associated with unprofessional behaviors [31].

Professional and personal distress impacts on both physician's behavior and on their patient's care. More dissatisfied doctors tend to have riskier prescribing profiles, less adherent and less satisfied patients all of which might impact the quality of patient care [32]. Work "engagement" is being increasingly identified in occupational health psychology literature as preventative against burnout [33]. It has the potential to improve the fit between the organization and the employee. It has generally been recognized that engaged workers have high levels of energy and identify strongly with their work sense of significance, enthusiasm, inspiration, pride, and challenge characterize dedication.

Building resilience is often suggested as a preventative strategy against burnout among doctors. At an individual level it can be seen as an attribute that may be effective in reducing effects of stress through effective coping and promoting healthy behaviors. Resilience is defined as a dynamic, evolving process of positive attitudes and effective strategies. A Canadian study of physicians [34] identified four main aspects of physician resilience: (1) attitudes and perspectives, which include valuing the physician role, maintaining interest, developing self-awareness, and accepting personal limitations; (2) balance and prioritization, which include setting limits, taking effective approaches to continuing professional development, and honoring the self; (3) practice management style, which includes sound business management, having good staff, and using effective practice arrangements; and (4) supportive relations, which include positive personal relationships, effective professional relationships, and good communication.

A positive work environment has been defined as one "*that attracts individuals into the health profession, encourages them to remain in the health workforce and enables them to perform effectively including professional development programmes to facilitate better adaptation to the work environment*" [27]. Key features of a positive work environment include where work–life balance is achieved by providing a family-friendly work environment and flexible working

hours. Protection from exposure to occupational risks, enhancing job security, provision of childcare opportunities, compensation for reduced employment and maternity/parental leave were identified as attributes of work environment that prevent burnout.

Anecdotal reports of a wide range of strategies, including participation in panel and group discussions, conferences, and retreats without having to take time off; providing a list of resources to doctors including books, websites, and contact information for experts and workshop leaders who are trained in combating burnout; having professional body policy acknowledging the specific occupational stressors faced by physicians and encouraging physician self-care through proper rest and exercise; spending time with family and having a personal physician to assess well-being objectively; setting limits on hours and choosing a certain type of medical practice, being positive and maintaining a balance in life [35].

Stress management programs are often recommended for managing burnout. A systematic review [36] found no evidence of effectiveness of brief stress management training interventions in reducing job stress for health workers. While this systematic review did not look at specific interventions for doctors, it did find low-quality evidence to support the effectiveness of stress management training of moderate intensity (defined as more than six hours contact over one month) in short-term reduction of job stress levels, but the beneficial effects diminished without booster sessions. The review found strong levels of evidence to support the effectiveness of intensive, long-term stress management training programs in reducing workplace stress and risk of burnout among a wide range of health workers. Simply reducing stress levels may not necessarily lead to reducing the risk of burnout. Factors such as personality traits and personal circumstances may determine, whom among those exposed to chronic stress may experience burnout. These personal factors are evaluated, and intervention strategies individualized to the person experiencing burnout.

Findings from a systematic review [37] shed some light on the effectiveness of individualized intervention strategies against burnout. This systematic review grouped intervention strategies against burnout into person-directed (cognitive behavioral therapy, relaxation, music making, massage, and multicomponent programs) and work-directed (attitude change and communication, support from colleagues, participatory problem solving and decision making, and changes in work organization). The authors found limited evidence to support the efficacy of either person- or work-directed intervention strategies in reducing burnout in health care workers and highlighted the need for good-quality intervention studies for burnout. Participation in "wellness programs" was suggested to be related to lower incidence of burnout among doctors [although another systematic review

that cautioned no causal relationship between participation in wellness programs with lower incidence of burnout in doctors could be established.

There is some evidence to suggest participation in a mindful communication program may be associated with short-term and sustained improvements in burnout among doctors [38]. An American study examining the effect of an intensive educational program consisting of an eight-week intensive phase (2.5 hours/week, 7-hour retreat) followed by a 10-month maintenance phase (2.5 hours per month) teaching in mindfulness, communication, and self-awareness found improvements in mindfulness to be associated with significant improvements in all three dimensions of burnout.

There was some initial success within a pediatric faculty of a limited low-cost and focused burnout intervention initiative. Before intervention, 74% of the faculty who completed the survey tool, 36% reported measures consistent with burnout on at least one of the two survey questions and after the intervention of 68% of faculty who completed the repeat survey tool 18% of faculty reported burnout [39].

Table 2. Common Factors Associated with Physician Burnout from International Studies (Adapted from Amoafo et al. 2015) [40]

Health System Stressors
System governance leading to
erosion of professional values
loss of autonomy
Rigid organizational structures
Inflexible hours of work
Longer working hours
Trying to do “more with less”
Professional factors
Highly bureaucratic professional regulatory systems that include
- Appraisals,
- Revalidation
- Quality inspections
Emotionally demanding professional clinical work
Personal factors
Work/home conflicts
Higher presence of symptoms of depression
Tendency to avoid seeking help and support when unwell or under pressure
Perceived stigma among doctors around mental illness
Knowledge of and access to drugs and alcohol

Table 2. (*Continued*)

Tendency to self-medicate
Decreased empathy, mindfulness, resilience, self-compassion
,
Decreased confidence in providing compassionate care
Younger age
Female sex

The Need for Change in Health Systems

The variety of factors commonly associated with physician burnout that emerge from these international studies reflect the pervading management culture and show the underlying theme of dysfunctional health systems. A worldwide approach must be based on an understanding of the basic psycho-biological mechanism of health, the importance of the patient physician relationship with a health system that will encompass the necessary variety that is part of human nature. The main focus should shift to each individual's needs being met within a multiprofessional adaptive and creative environment.

There is accumulating empirical evidence that person-centered public health is more effective than public health that is vertically controlled and/or market-driven; there has been substantial gain in theoretical knowledge of the management of health care organizations as complex adaptive systems [23, 41].

A cybernetic person-centered methodology, which has an inherent connectivity that enables a system to perform best overall rather than just being the sum of the individual parts or persons, could transform the current health systems. Cybernetics is concerned with concepts at the core of understanding complex systems such as learning, cognition, adaptation, emergence, communication, and efficiency [42].

Most important of all is the need to identify the purpose and ethical drivers of the health system that should be shared and identified with throughout the organization and to effect the principle that organizations should maximize the professional freedom of their participants, within all of the practical constraints of the professional requirement of them to fulfill their purpose.

Effective functioning of complex organizations depends on cooperation and co-active communication among people, that is, simultaneously top-down input from experts and bottom-up input from people with needs [43].

Health care staff are self-aware and cannot flourish without the opportunity to be self-directed, cooperative, and creatively free [44]. This interactive communication based on trust in commitment to fairness allows creative adaptation that is sensitive

to local resources, traditions, and needs, thereby assuring sustainability, equity, and inclusiveness without the inefficiency of top-down bureaucratic regulation. It also provides excellent opportunities for leadership by creative people to inspire others to join them in contributing to increased social equity and trust. Effective leadership requires a coaching approach in which people function creatively (i.e., they are self-directed, cooperative, and self-transcendent). Tolerance and acceptance of social, cultural, ecological, and historical diversity rather than insistence on uniformity is characteristic of well-functioning communities.

Health systems are far more complex in terms of their management and systems of control than is currently understood. The framework by which control is exerted throughout an organization relies heavily upon multiple interconnected layers, communicating with one another. Organizational charts often neglect the processes through which the system **truly** functions. Relationships between individuals, departments, and groups are, in reality, far more complicated than vertical managerial control.

As part of the clinically based and viable complex adaptive system, Beer [43] has proposed five layers of activities founded firstly on the primary operations of the organization which he terms the "**implementation"** of the overall mission, secondly a **coordination** function with financial and support services, thirdly **control** of all of the structures that are put in place by senior leadership to ensure established rules, rights, resources, and responsibilities. Effective, efficient, and fair policies require integration across efforts toward health promotion, disease prevention, cure, rehabilitation, and palliation. Fourthly **intelligence with** responsibility for looking externally from the overall system, at the environment in which it operates, and establishing which factors may impact operations, and how it needs to adapt in order to remain viable and sustainable the need for intersectoral coordination to promote the health of people and the welfare rights of people in society as a whole. There is reciprocal feedback in influence across many sectors of society, such as health, education, food security, industry, military spending, economics, and sustainable resource utilization, which all influence one another.

And fifthly, a **Policy Board,** with the organization ethos based on professional values**,** encompassing all policy decisions within the organization and balances demands from all of the other interconnected systems. As custodian of the culture and values of the organization, the board dictates policy decisions, steering the entire system in a single, cohesive direction.

The "organizational" purpose allows for the infinite recreation of the relationship between various parts regardless of whether the parts themselves may change. This is the ability to self-organize, or autopoiesis**.** Any organization that is unable to maintain its purpose is prone to collapse due to failure to create the necessary relationships between its constituents.

This viable system model with syntegrity of the team promotes continuing education with knowledge sharing and decision making outside the hierarchical control of health systems. This approach avoids the current expensive reductionary binary system of management "of what is acceptable" to more proactive arrangements aiming for "what is desirable" where our professional vision values and virtues foster a person-centered approach to the needs and care of all our patients.

CONCLUSIONS

The variety of factors highlighted in the international literature related to burnout among the staff working in different environments within health systems point to the importance of the proper functioning of health systems themselves in meeting the needs of their employees. Only a total reimaging of the systems along person- and people-centered principles with an open cybernetic ontology will affect the desired changes by modifying the organizational structure and work processes, with authentic leadership and appropriate staffing. Effective management decision making relies on true collaboration and skilled communication.

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REFERENCES

1. Maslach C, Leiter MP. 1997. The Truth about Burnout. Jossey-Bass, San Francisco.
2. Thommasen H, Lavanchy M, Connelly I, Berkowitz J, Grzybowski S. 2001. Mental Health, Job Satisfaction, and Intention to Relocate. Opinions of Physicians in Rural British Columbia. Canadian Family Physician 47: 737–744.
3. Virtanen P, Kivimäki OT, Virtanen M, Pentti M, Vahtera J. 2008. Work Stress and Health in Primary Health Care Physicians and Hospital Physicians. Occupational and Environmental Medicine 65: 364–366.
4. Lee RT, Seo B, Hladkyj S. Lovell BL, Schartzmann L. 2013. Correlates of Physician Burnout across Regions and Specialties: A Meta-analysis. Human Resources for Health 11 (48).
5. Shanafelt TD, Boone S, Tan L, Dyrbye LN, Sotile W, Satele D, West CP, Sloan J, Oreskovich MR. 2012. Burnout and Satisfaction with Work-Life Balance among US Physicians Relative to the General US Population. Archives of Internal Medicine 8: 1377–1385.

6. Soler JK, Yaman H, Esteva M, Dobbs F, Asenova RS, Katic M, Ozvacic Z, Desgranges JP, Moreau A, Lionis C et al. 2008. Burnout in European Family Doctors: The EGPRN Study. Family Practice 25: 245–265.
7. Sharma A, Sharp DM, Walker LG, Monson JR. 2008. Stress and Burnout in Colorectal and Vascular Surgical Consultants Working in the UK National Health Service. Psychooncology 17: 570–576.
8. Al-Dubai AR, Rampal KG. 2010. Prevalence and Associated Factors of Burnout among Doctors in Yemen. Journal of Occupational Health 52: 58–65.
9. Abdulla L, Al-Qahtani DM, Al-Kuwari MG. 2011. Prevalence and Determinants of Burnout Syndrome among Primary Healthcare Physicians in Qatar. South African Family Practice 53: 380–383.
10. Sealyham A. 2008. Prevalence of Burnout amongst Physicians Working in Primary Care in Riyadh Military Hospital, Saudi Arabia. Health Care Management Review 33: 29–39.
11. Batra M, Kemper KJ, Serwint JR, Schwartz A, Wilson PM, Staples BB, Schubert C, McClafferty H, Mahan JD. 2017. Burnout in Pediatric Residents: A National Survey to Inform Future Interventions. Academic Pediatrics. Conference: Annual Meeting of the Association of Pediatric Program Directors, APPD 2017. United States 17 (5): e39–e40.
12. Colville GA, Smith JG, Brierley J, Citron K, Nguru NM, Shaunak PD, Tam O, Perkins-Porras L. 2017. Coping with Staff Burnout and Work-Related Posttraumatic Stress in Intensive Care. Pediatric Critical Care Medicine 18 (7): e267–e273.
13. Hayes B, Prihodova L, Walsh G et al. 2017. What's up Doc? A National Cross-Sectional Study of Psychological Wellbeing of Hospital Doctors in Ireland. 10.1136 BMJ Open 2017, 7: e018023.
14. Rodriguez-Rey R, Palacios A, Alonso-Tapia J, Perez E, Alvarez E, Coca A, Mencia S, Marcos A, Mayordomo-Colunga J, Fernandez F, Gomez F, Cruz J, Ordonez O, Llorente A. 2019. Burnout and Posttraumatic Stress in Paediatric Critical Care Personnel: Prediction from Resilience and Coping Styles. Australian Critical Care: Official Journal of the Confederation of Australian Critical Care Nurses 32 (1): 46–53.
15. Cordero ML, Mamondi V, Berra S, Rossi C, Florencia M. 2017. Salud percibida y su relación con factores macrosociales e individuales en niños de dos departamentos de Tucumán, Argentina Archivos Argentinos de Pediatría 115 (5): 415–423.
16. Grossman Z, Chodick G, Kushnir T, Cohen HA, Chapnick G, Ashkenazi S. 2019. Burnout and Intentions to Quit the Practice among Community Pediatricians: Associations with Specific Professional Activities. Israel Journal of Health Policy Research 8(1): 2.

17. Jamjoom RS, Park YS. 2018. Assessment of Pediatric Resident's Burnout in a Tertiary Academic Centre. Saudi Medical Journal 39 (3): 296–300.
18. Chen DF, Tsai TC, Lei SM. 2013. Career Satisfaction, Commitment, and Well-Being among Taiwanese Pediatricians. Pediatrics & Neonatology 54 (3): 173–178.
19. Garcia TT, Garcia P, Celiny R, Molon ME, Piva JP, Tasker RC, Branco RG, Ferreira PE. 2014. Prevalence of Burnout in Pediatric Intensivists. An Observational Comparison with General Pediatricians. Pediatric Critical Care Medicine 15 (8): e347–e353.
20. van Steijn ME, Scheepstra KWF, Yasar G et al. 2019. Occupational Well-Being in Pediatricians: A Survey about Work-Related Posttraumatic Stress, Depression, and Anxiety. European Journal of Pediatrics 178: 681–693.
21. Dyrbye LN, Shanafelt TD, Balch CM, Satele D, Sloan J, Freischlag J. 2011. Relationship between Work–Home Conflicts and Burnout among American Surgeons: A Comparison by Sex. Archives of Surgery 146: 211–217.
22. Wallace JE, Lemaire JB, Ghali WA. 2009. Physician Wellness: A Missing Quality Indicator. Lancet 374: 1714–1721.
23. Amoafo E, Hanbali N, Patel A, Singh P. 2015. What Are the Significant Factors Associated with Burnout in Doctors? Occupational Medicine 65 (2): 117–121.
24. Embriaco N, Azoulay E, Barrau K, Kentish N, Pochard F, Loundou A, Papazian L. 2007. High Level of Burnout in Intensivists: Prevalence and Associated Factors. American Journal of Respiratory and Critical Care Medicine 175: 686–692.
25. Kumar S. 2016. Burnout and Doctors: Prevalence, Prevention and Intervention Healthcare 4: 37: 1–9.
26. Colville GA, Smith JG, Brierley J, Citron K, Nguru NM, Shaunak PD, Tam O, Perkins-Porras L. 2017. Coping with Staff Burnout and Work-Related Posttraumatic Stress in Intensive Care. Pediatric Critical Care Medicine 18 (7): e267–e273.
27. Wiskow C, Albreht T, de Pietro C. 2010. How to Create an Attractive and Supportive Working Environment for Health Professionals. WHO: Copenhagen, Denmark, pp. 1–37.
28. Arnetz BB. Psychosocial Challenges Facing Physicians of Today. 2001. Social Science and Medicine 52: 203–213.
29. Canadian Medical Association. 2003. Guide to Physician Health and Well-Being: Facts, Advice and Resources for Canadian Doctors. Canadian Medical Association, Ottawa, ON.
30. Fares J, Al Tabosh H, Saadeddin, Z, El Mouhayyar C, Aridi H. 2016. Stress, Burnout and Coping Strategies in Preclinical Medical Students. North American Journal of Medical Sciences 8 (2):75–81.

31. Williams ES, Skinner AC. 2003. Outcomes of Physician Job Satisfaction: A Narrative Review, Implications, and Directions for Future Research. Health Care Management Review 28 (2): 119–139.
32. Bakker A, Schaufeli W, Leiter M, Taris T. 2008. Work Engagement: An Emerging Concept in Occupational Health Psychology. Work Stress 3: 187–200.
33. Jensen PM, Trollope-Kumar K, Waters H, Everson J. 2008. Building Physician Resilience. Canadian Family Physician 54: 722–729.
34. Gundersen L. 2001. Physician Burnout. Annals of Internal Medicine 135: 145–148.
35. Van Wyk BE, Pillay-Van Wyk V. 2010. Preventive Staff-Support Interventions for Health Workers. Cochrane Database of Systematic Reviews. cochranelibrary.com
36. Marine A, Ruotsalainen J, Serra C, Verbeek J. 2006. Preventing Occupational Stress in Health Care Workers. Cochrane Database of Systematic Reviews. cochranelibrary.com
37. Krasner E. 2009. Mindfulness Training Being Helpful in Reducing Burnout Scores. Journal of the American Medical Association 302: 1284–1293.
38. Aita-Levy et al. 2018. Initial Success of a Faculty Burn out Intervention in an Academic Pediatric Department. Journal of Investigative Medicine 66 (2): 619–620.
39. Begun JW, Zimmerman B, Dooley K. 2003. Health Care Organizations as Complex Adaptive Systems. In Advances in Health Care Organization Theory. Mick SM, Wyttenbach M (Eds). San Francisco, Jossey-Bass, pp. 253–288.
40. Plsek PE, Wilson T. 2001. Complexity, Leadership, and Management in Healthcare Organisations. British Medical Association 323 (7315): 746–749.
41. Beer S. 1984. The Viable System Model: Its Provenance, Development, Methodology and Pathology. Journal of the Operational Research Society 35 (1): 7–25.
42. Cloninger C, Salvador-Carulla L, Kirmayer L, Schwartz M, Appleyard J, Goodwin N, Groves J, Hermans M, Mezzich J, Van Staden CW, Rawaf S. 2015. A Time for Action on Health Inequities: Foundations of the 2014 Geneva Declaration on Person- and People-centered Integrated Health Care for All. International Journal of Person Centered Medicine 4 (2): 69–89.
43. Cloninger CR. 2013. What Makes People Healthy, Happy, and Fulfilled in the Face of Current World Challenges? Mens Sana Monographs 11: 16–24.
44. Kirmayer LJ et al. 2009. Community Resilience: Models, Metaphors and Measures. Journal of Aboriginal Health 7 (1): 62–117.