

## Special Article

# Nursing Staff Burnout: A Critical Review of the Risk Factors

**Georgios Tsolakidis, RN**

“Therapeftiki” Haemodialysis unit, Thessaloniki, Greece

**Antigoni Fountouki, MSc, PhD(c)**

Nursing Department, International Hellenic University, Greece

**Stiliani Kotrosiou, MSc, PhD**

General Department, University of Thessaly, Greece

**Vasiliki Diamantidou, MD, MSc, PhD ( c )**

Pathologist, Internist, 251 Aiforce Hospital, Athens, Greece

Public Health Sector, Department of Nursing, National Kapodistrian University of Athens, Greece

**Dimitrios Theofanidis, MSc, PhD**

Nursing Department, International Hellenic University, Greece

**Correspondence:** Antigoni Fountouki, Nursing department, International Hellenic University, Greece  
email: antifoutou@yahoo.gr

### Abstract

**Background:** Professional burnout is usually found in the working environment and affects almost all professional groups, such as nurses, civil servants, educators and many others who may experience moderate to severe cases of burnout symptoms. Although burnout can be found in all professional groups, it is most noticeable among professionals whose work involves constant demands coupled with intense interaction with individuals or groups who have demanding physical and emotional needs.

**Aim:** The general purpose of this review is to investigate the risks and factors that contribute to burnout in nursing staff. Within this context, the specific objectives include the following:

**Methods:** For this critical review’s needs, relevant articles were found by searching PubMed using specific seven key words in 12 separate combinations (sub-searches). Thus, PubMed was chosen because this particular database is considered inclusive enough to meet the needs of this review and the search was conducted in English, from 2000 to date.

**Results:** Perusal of the papers per se, leads to a categorization of four major groups and thirteen sub-themes. Thus, this critical review uncovers four main factors that predispose nurses to burnout, namely: Working conditions; Interpersonal factors; Environmental factors and Interactions.

**Discussion:** All nurses the clinical workplace creates a small community. Social support between workers minimizes conflicts in the workplace while increasing productivity. If interpersonal relationships between workers are absent or destroyed, by either work environment factors, negative colleagues or supervisors with poor leadership skills, not only is the peaceful cohabitation between workers lost, but also the organization itself is undermined.

**Conclusions:** It has been recognized by many studies that a positive workplace climate for nurses can play a key role in preventing burnout. A positive working ethos includes supportive relationships between nurses, the head of unit, medical staff, and overall positive leadership style, within an optimum team work spirit in order to prevent or diminish burnout.

**Keywords:** burnout, risks, factors, nursing, nurses, professional, exhaustion.

## Introduction

Risk factors are internal or external increasing an individual's chances of developing health issues. Factors that contribute to workplace problems and burnout have been the subject of study by various researchers around the world (Boamah et al., 2017; Fitzpatrick et al., 2019; Buckley et al., 2020).

Professional burnout is usually found in the working environment and affects almost all professional groups, such as nurses, civil servants, educators and many others who may experience moderate to severe cases of burnout symptoms.

Although burnout can be found in all professional groups, it is most noticeable among professionals whose work involves constant demands coupled with intense interaction with individuals or groups who have demanding physical and emotional needs (Valente et al., 2011).

The main risk factors for the occurrence of burnout in nurses include difficult working conditions prevailing in a healthcare setting and a conflict relationship which may develop with one or more patients. Patient care is a really challenging task that puts physical and psychological pressure on nurses (Serin and Balkan, 2014, Li et al., 2014).

Thompson (2014) reported a correlation between burnout and nursing-medical staff relationships. Kwon et al., (2021), in a study of 117 Korean nurses, reported that conflicts with medical staff created a worse psychological burden than conflicts with fellow nurses. Yet, Rowe and Sherlock (2005) on verbal abuse of nurses found that the most frequent source of abuse was from other nurses.

However, again it is worth mentioning that there have been investigations where no correlation with abuse and burnout (Leineweber et al., 2014).

Patients have high expectations from nurses, while nurses may not have the ability or the means to

fulfill all patient expectations. These factors may put nurses at risk for physical and mental disorders, including burnout (Lee & Ji, 2018).

## Aim

The general purpose of this review is to investigate the risks and factors that contribute to burnout in nursing staff. Within this context, the specific objectives include the following:

- to improve the understanding of the elements that predispose nurses to burnout.
- to help policy makers recognize risk factors and ways to avoid burnout in nursing personnel.
- to improve early diagnosis and help recognize different types of professional burnout.

## Methods

For this critical review's needs, relevant articles were found by searching PubMed using specific seven key words in 12 separate combinations (sub-searches). Thus, PubMed was chosen because this particular database is considered inclusive enough to meet the needs of this review and the search was conducted in English, from 2000 to date.

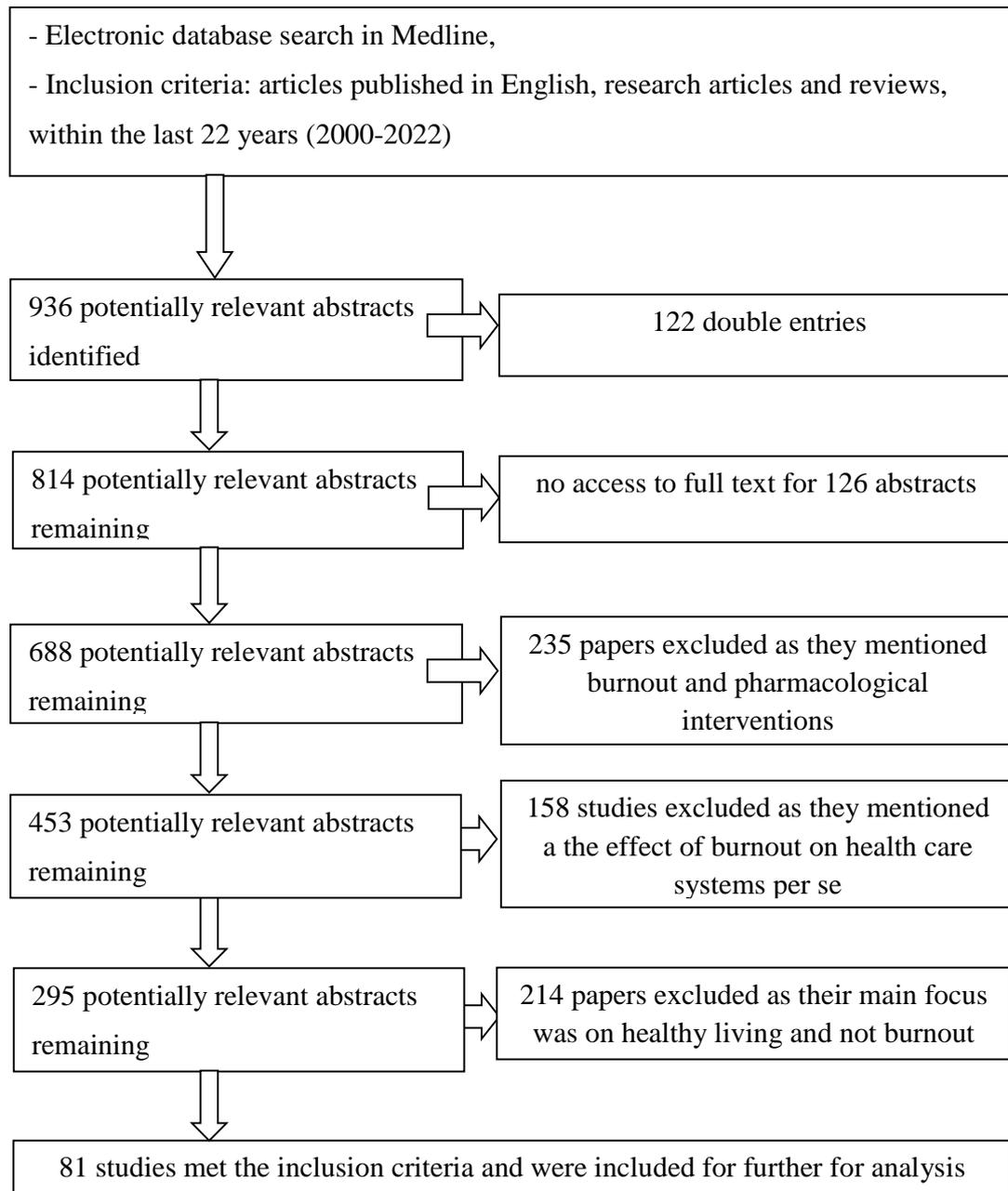
The articles chosen were the most appropriate for elaborating on the risks of developing professional burnout and thus served the review's main aim and objectives.

Therefore, keywords used were 'burnout', 'risks', 'factors', 'nursing', 'nurses', 'professional', 'exhaustion', together with the Boolean operator 'AND' appearing in both the title and the full text.

## Results

Search strategy with reasons for inclusion-exclusion and final number of papers included can be found in figure 1 below:

Figure 1: Flow chart of systematic search



Perusal of the papers per se, lead to a categorization of major groups and sub-themes as presented in table 1. Thus, this critical review uncovers four main factors that predispose nurses to burnout. These key-factors with their sub-categories are elaborated in table 1 below with further detailed descriptions of each one to follow thereafter:

**Table 1: Main factors and sub-factors for burnout in nursing staff**

<b>Working conditions</b>	Hospital staffing
	Shift work
	Salary
	Job insecurity
<b>Interpersonal factors</b>	Lack of justice
	Working environment
	Lack of clear duties and tasks
<b>Environmental factors</b>	Overcrowding in the workplace
	Noise pollution at work
	Natural Lighting
	Color
<b>Interactions</b>	Interactions with others
	Human-computer interaction

**Working conditions**

**Hospital staffing**

Adequate staffing of nursing units results in higher quality care for patients, increased patient satisfaction, decreased mortality, minimized complications, reduced days of hospitalization, fewer readmissions and lower rates of burnout among nursing staff.

Inadequate hospital staffing has been brought to forefront due to increased needs for nursing staff as exposed particularly during the Covid-19 pandemic. Yet, in many countries around the world, and despite the global strain on healthcare systems, as exposed by the pandemic, efforts to legislate on adequate hospital staffing often fail (Lasater et al., 2021).

In studies relating to the staffing of nurses, the greater number showed that in cases of understaffing, or in cases of staff/patient disproportion, nurses were more likely to develop burnout. Aiken et al., (2008) and Zhou et al., (2015) concluded that large ratios of patient: nursing staff were related to increased emotional exhaustion for the latter. Hanrahan et al., (2010) found a significant correlation between high patient-nursing ratios leading to malfunction, depersonalization, increased emotional exhaustion and low productivity levels.

Luan et al. (2017) concluded that emotional exhaustion is significantly influenced by the intensity of patient-nurse interactions which in return may compromise patient safety. Under this light, Akman et al., (2016) found that the lower the number of patients supervised by nurses, the lower the risk of developing burnout.

Newly qualified nurses with a short period of service experience are at greater risk of experiencing emotional exhaustion and cynicism, especially when a unit is severely understaffed (Boamah et al., 2017). Moreover, Kanai-Pak et al. (2008) reconfirmed that understaffing correlates with emotional exhaustion; the same observation was made by Leineweber et al. (2014), who also found a high correlation with the depersonalization and reduced performance in units with inadequate numbers of nursing staff. In contrast, it is also worth noting that studies were also found that did not relate staffing number to burnout (Lu et al., 2015, Dhaini et al., 2018).

Moreover, there were no reports on an agreed and optimum staffing level to prevent burnout, especially one that would be pragmatic within the current pandemic context.

**Shift work**

Shift work in various occupational groups, especially night shifts and emergency service personnel, can cause a de-synchronization of their normal, social and circadian rhythms (Bujacz et al., 2021). It is well known that nurses work in difficult shifts and long hours. This alone is enough to attract a large number of studies on the effect of shift work on the degree of burnout in nursing staff. Anwar and Elareed (2017) found that working in night shifts was commonly associated

with burnout, while Vidotti et al., (2018) found the same association with emotional exhaustion. Burnout levels, according to Canadas-De la Fuente et al. (2018), were not affected by cyclically-alternating working hours.

However irregular hours and frequently alternating shift work results in increased burnout. Those in shifts have been found to have a less positive attitude to their work, such as decreased job satisfaction and to experience increased job conflicts. Nevertheless, emotional exhaustion is not so common (Demerouti et al., 2004).

In an Italian study on nurses, shift work was associated with psychosomatic health problems, decreased job satisfaction, loss of motivation, but not burnout necessarily (Giorgi et al., 2018). When shifts were of 12 hours or longer duration, this resulted in emotional exhaustion (Stimpfel et al., 2012). Shorter time shifts are likely to have a protective effect against burnout (Hunsaker et al., 2015) as such a program provided significant flexibility against emotional exhaustion (Dhaini et al., 2018).

Moreover, low levels of burnout were observed where nurses had more than 8 days off per month (Wisetborisut et al., 2014). Under this light, another study found that a positive climate during the creation of the work program whereby shift nurses were involved in the decision making regarding their shifts, had a protective effect against emotional exhaustion (Stone et al., 2007).

### **Salary**

A job is basically a means of ensuring a decent living. However, global conditions and the financial crisis significantly may reduce an organizations' ability to enable nurses to reap rewards. Thus, reduced rewards may cause feelings of dissatisfaction with work and hence contribute to the emergence of burnout (Dall'Ora et al., 2020). Low wages are a 'burnout increasing' factor for many nursing groups and other care workers. Moreover, long working hours, for the same pay, can contribute to resentment and burnout (Sehlen et al., 2009).

### **Job insecurity**

The global turbulent financial crisis, followed by the pandemic, reduces opportunities for secure

employment and steady work, while the evolution of automation leads to less need for hands-on work and therefore, fewer and fewer jobs. The resulting feeling of job insecurity touches workers from various backgrounds (Giménez-Espert et al., 2020). Job insecurity leads to distress, psychosomatic symptoms, psychological withdrawal and burnout (Rostamabadi et al., 2019). At the same time, negative emotions interact with job insecurity affecting the burnout of workers (Bosman et al., 2005).

Job insecurity in nursing, relates to a subjective perception of a potential threat to the continuity of one's current job. Yet, most nurses have quantitative job insecurity, namely, continued existence for a job now and in the future (De Beer et al., 2016). However, there are more uncertainties to nursing posts, such as perceived threats of impaired quality in the employment relationship, possible income reductions, diminished career opportunities and overall deterioration of working conditions (Butterworth et al., 2013). Thus, job insecurity is a form of stress that affects nurses' professional performance and may jeopardize their mental health. Studies indicate a relationship between job insecurity and psychological distress, sleep disorders, increased burnout, job dissatisfaction and problems with family relationships. However, studies on the relationship between psychological distress and job insecurity among nurses are limited (Wang et al., 2019)

### **Interpersonal factors**

#### ***Lack of justice***

Satisfaction at work is fulfilled when employees enjoy fairness concerning their obligations and are rewarded accordingly (Maslach, 2003). When a healthcare organization acts with a view to justice, it shows appreciation for the people working in that environment whereby they perceive that each person is necessary and important.

The three components of justice i.e. trust, honesty and respect contribute to an individual's increased interest in work. Cynicism, anger, hostility and disempowerment, are likely to arise when people feel they are not treated fairly and with proper respect (Maslach and Leiter, 2016).

### **Working environment**

Many studies have found that the more positive an occupational environment, the lower the probability of emotional exhaustion (Zhou et al., 2015, Nantsupawat et al., 2017). Also, both emotional exhaustion and depersonalization are associated with a negative work environment (Hanrahan et al., 2010, Shao et al., 2018). Liu and Aungsuroch (2018) report that a negative work climate has a significant effect on job discontent thus leading to burnout. Laschinger et al. (2001) found that high organizational characteristics and appreciative supervision of the workplace lead to lower emotional exhaustion.

Poor hospital management and weak organizational support have a direct effect on emotional exhaustion (Van Bogaert et al., 2014). Employee confidence in an organization leads to lower levels of emotional exhaustion and burnout (Bobbio et al., 2012).

### **Lack of clear duties and tasks**

The existence of clear nursing tasks and the arbitrary general duties of nurses according to the level of training, which includes their duties and responsibilities towards colleagues, doctors and other healthcare professionals, create the backbone for preventing conflict at work and allows for optimum inter-professional relationships (Sapountzi-Krepia et al., 2001). Lack of outline of duties leads to ambiguity of roles, resulting in frequent conflicts and disputes among the staff. In a 2017 survey of 200 nurses working in hospitals in the prefectures of Achaia and Messinia, Southern Greece, investigating nurses' views on burnout, it was found that a lack of duties affected 49% of nurses emotionally (Stassinoula, 2017).

### **Environmental factors**

Environmental factors, which prevail in the workplace, can affect the level of either stress or satisfaction of nurses. There are growing indications that the physical working environment affects performance at work, job satisfaction, workplace injuries, worker behaviors, communication patterns, worker fatigue, error rates, physical exhaustion and psychological stress (Stichler, 2009).

### **Overcrowding in the workplace**

The presence of many people in a workplace is another main environmental stress factor for nurses, especially in key areas such as critical care or emergency departments. This has a significant impact on the quality of care, staff turnover and satisfaction of both patients and staff (Richardson et al., 2005). A study of Romanian nurses working in an emergency department found that high risk of burnout is linked to excessive patient numbers and overcrowding (Popa et al., 2010).

### **Noise pollution at work**

Noise in workplaces is a source of stress for workers. Emergency department or ICU personnel are often exposed to high levels of noise. The literature states that in ICU environments, occupational stress due to continuous and loud noise is associated with emotional exhaustion and burnout (Brennan-Jones et al., 2020). Another study with ICU nurses found that loud noises were significantly linked to worker detachment from work (Erne et al., 2022). The continuous sound of a phone was considered a major contributing factor to burnout in nurses in oncology wards (Sehlen et al., 2009).

### **Natural Lighting**

Most healthcare facilities are illuminated by a combination of natural lighting (windows) and artificial light (electrical sources). Artificial lighting and inadequate lighting are another major problem in the work. Adequate lighting or exposure to natural light has a positive effect on the disposition of individuals (Bell & Sheridan, 2020). Even if there is no relationship between the levels of burnout and the hours of exposure to natural light, an indirect correlation between work stress and work satisfaction can be established (Alimoglu and Donmez, 2005).

A study conducted in Turkey in 141 nurses found that those exposed to natural light of the day for at least 3 hours experienced less stress and were more satisfied at work (Alimoglu and Donmez, 2005). In addition, exposure to natural day time light can improve health, including feeling of being energized, steadier heart rhythms and improved sleep patterns (Boyce et al., 2003).

## **Color**

Color is an essential element of visual stimulation with well-documented psychological and physiological effects. Blue, green and purple are considered cold, soft and soothing colors respectively. While orange, red, and yellow are considered warm and stimulating colors, especially when accompanied by high illumination, they encourage activity or movement, as opposed to cold colors that promote passive behavior. Blue and green are commonly used in healthcare units as they have been found to stimulate staff and secure balance in their emotional states (Applebaum et al., 2010).

## **Interactions**

### ***Interactions with others***

Freudenberger (1974) originally used the concept of burnout to characterize the psychological condition of volunteers who worked in health care. In tasks that have strongly demanding interpersonal interactions, individuals do not readily show professional satisfaction, and develop greater burnout (Emanuel et al., 2011). Moreover, increased interaction with patients who have chronic or incurable conditions can lead to burnout especially where supervisory support is inadequate (Bakhamis et al., 2019). Shimizutani et al., (2008) found that patient-related burnout for nurses are greater where there is extended conflict with patients.

### ***Human-computer interaction***

Computers are now ubiquitous in every workplace. For nurses, a constant human-computer interaction is inevitable, which is becoming increasingly intense and significantly increases their stress levels (Rababah et al., 2021). Although computers make tasks simpler and less demanding, work demands can be high, with excessive stress and more complex decision-making capabilities and conflict over time spent in actual clinical care delivery (Ibrahim et al., 2019).

A high dependency on information and communication technology can cause mental overload amongst nurses with neglect for other activities and personal needs. In this context, there is a marked increase in time pressure, role conflicts, feelings of guilt, social isolation,

physical symptoms, concern for electromagnetic radiation and economic problems (Sligo et al., 2017).

## **Discussion**

Working conditions are constantly changing and become more demanding as a result of technology, globalization and increased competition (D'Souza, et al. 2003). This combination has been labeled in the international literature as a key risk factor for burnout. From an employer's point of view, the workload is interpreted as productivity. However, in terms of actual workload it means increased burden for nurses and time. To increase productivity, employees need to work longer hours with less interruption thereby meeting intense labor demands while some are even forced to perform simultaneously parallel tasks (Irinzi et al., 2019). Thus, under these conditions, several studies found a correlation between a heavy workload and burnout.

In a meta-analysis on levels of burnout and risk factors in medical area nurses, occupational burnout was found to be related to emotional exhaustion which is a predictor of it per se (Molina-Praena et al., 2018). In another study carried out on 183 Japanese nurses, a high workload was a predictor of emotional burnout, ultimately resulting in cynicism (Kitaoka & Masuda, 2013). VanBogaert et al., (2013), also found that emotional exhaustion was associated with excessive workload in their sample of 1,201 Dutch nurses. Furthermore, it has also been demonstrated that a heavy workload is related to both emotional exhaustion and depersonalization (Andela et al., 2016, Galletta et al., 2016).

In German cancer care workers, including nurses, work-related stress are primarily associated with increased working hours and high physical workload (Sehlen et al., 2009). Yet, it is noteworthy that the study of Madathil et al., (2014) on 89 nurses working in hospitals in Montana and New York, showed no correlation between high workload and burnout.

Undoubtedly, nurses' relationships with doctors play an important role at multiple levels. Li et al., (2021) reported that poor relationships between nurses and doctors are associated with all dimensions of burnout according to the Maslach

scale. Moreover, Hanrahan et al. (2010) report that the quality of relationships between nurses and doctors have a significant effect on whether staff develop emotional exhaustion and depersonalization. One study found a significant correlation between nurse-doctor relationships with emotional exhaustion (Kanai-Pak et al., 2008), while another led to the conclusion that the quality of the relationship per se had an impact on personal achievements (Van Bogaert et al., 2013).

In some instances, a patient may play a key role in the burnout of nursing staff. Thus, there are cases whereby a nurse cares for an inconsiderate, over-demanding and even abusive patient with multiple requirements and as a result, develops burnout with emotional exhaustion and cynicism. Poncet et al., (2007) showed that end-stage care where there are a large number of key decisions to be made, also contribute to a greater likelihood of burnout. Where a nurse gets closer to a patient, care anxiety can become intense and this is associated with high burnout as proposed by Khamisa et al., (2016). Understandably, multiple conflicts with patients are associated with burnout (Laeque et al., 2018).

The relationship between nurses and superiors is one factor that has also been frequently studied for its association with burnout. Stone et al. (2007) report that a non-supportive supervisor has a significant impact on the occurrence of burnout. Poncet et al. (2007) also report that a good quality relationship with the Head Nurse provides some protection against burnout. Also, both Moloney et al. (2018) and Hunsaker et al. (2015) identified an association between a supportive supervisor and less burnout. However, low confidence in the supervisor causes significant worsening of the risk of burnout (Bobbio et al., 2012).

In a study by Wei et al. (2019) on nurses in the US, ward managers were found to be a direct cause of anxiety for staff nurses. According to Shanafelt et al., (2020), overall worker consistency was significantly greater and occupational stress was lower when staff in charge deployed a participatory management model. Generally, a supporting environment by superiors or colleagues is associated with low levels of burnout among healthcare workers (Devereux et al. 2009). Two studies found a correlation between poor leadership skills of the superiors and emotional

exhaustion (Li et al., 2021, Dhaini et al., 2018), and two more, with depersonalization (Cao and Naruse, 2019, Jansen et al., 1999)

Thus, leadership style is known to affect burnout. An caring authentic leadership style results in the development of positive working conditions, which leads to lower levels of emotional exhaustion and cynicism (Boamah et al., 2017). Laschinger (2012) states that such a leader decreases workplace bullying, resulting in a further decrease of emotional exhaustion. Genuine leadership skills affect all areas of work life and thus also burnout levels (Laschinger et al., 2016).

### Conclusions

All nurses the clinical workplace creates a small community. Social support between workers minimizes conflicts in the workplace while increasing productivity. If interpersonal relationships between workers are absent or destroyed, by either work environment factors, negative colleagues or supervisors with poor leadership skills, not only is the peaceful cohabitation between workers lost, but also the organization itself is undermined.

Overall, it has been recognized by many studies that a positive workplace climate for nurses can play a key role in preventing burnout. A positive working ethos includes supportive relationships between nurses, the head of unit, medical staff, and overall positive leadership style, within an optimum team work spirit in order to prevent or diminish burnout.

### References

- Aiken LH, Clarke SP, Sloane DM, Lake ET, Cheney T. (2008). Effects of hospital care environment on patient mortality and nurse outcomes. *J Nurs Adm.* 38(5):223–229.
- Akman O, Ozturk C, Bektas M, Ayar D, Armstrong MA. (2016) Job satisfaction and burnout among paediatric nurses. *J Nurs Manag.* 24(7):923–933.
- Alimoglu, M. K., & Donmez, L. (2005). Daylight exposure and the other predictors of burnout among nurses in a University Hospital. *International Journal of Nursing Studies.* 4;549–555.
- Andela M., Truchot D., Van der Doef M. (2016) Job stressors and burnout in hospitals: the mediating role of emotional dissonance. *Int J Stress Manag.* 23(3):298–317.

- Anwar M.M., Elareed H.R. (2017) Burnout among Egyptian nurses. *Journal of Public Health-Heidelberg*. 25(6):693–7.
- Applebaum, D., Fowler, S., Fiedler, N., Osinubi, O., & Robson, M. (2010). The impact of environmental factors on nursing stress, job satisfaction, and turnover intention. *The Journal of Nursing Administration*. 40;(7-8):323–328.
- Bakhamis L., Paul DP 3rd, Smith H., Coustasse A. (2019) Still an Epidemic: The Burnout Syndrome in Hospital Registered Nurses. *Health Care Manag (Frederick)*. 38(1):3-10.
- Bell M, Sheridan A. (2020) How organisational commitment influences nurses' intention to stay in nursing throughout their career. *Int J Nurs Stud Adv*. Nov;2:100007.
- Boamah S.A., Read E.A., Spence Laschinger H.K. (2017). Factors influencing new graduate nurse burnout development, job satisfaction and patient care quality: a time-lagged study. *J Adv Nurs*. 73(5):1182–95.
- Bobbio A., Bellan M., Manganelli AM. (2012) Empowering leadership, perceived organizational support, trust, and job burnout for nurses: a study in an Italian general hospital. *Health Care Manag Rev*. 37;(1):77–87.
- Bosman, J., Rothmann, S., Buitendach, J.H. (2005) Job insecurity, burnout and work engagement: The impact of positive and negative affectivity. *South African Journal of Industrial Psychology*, 31:48–56.
- Boyce P., Hunter C., Howlett O. (2003) *The Benefits of Daylight Through Windows*. Troy, NY: Rensselaer Polytechnic Institute.
- Buckley L., Berta W., Cleverley K., Medeiros C., Widger K. (2020) What is known about pediatric nurse burnout: a scoping review. *Hum Resour Health*. 11;18(1):9.
- Bujacz A., Rudman A., Gustavsson P., Dahlgren A., Tucker P. (2021) Psychosocial working conditions of shiftworking nurses: A long-term latent transition analysis. *J Nurs Manag*. 29(8):2603-2610.
- Butterworth P., Leach L.S., McManus S., Stansfeld S.A. (2013) Common mental disorders, unemployment and psychosocial job quality: is a poor job better than no job at all?. *Psychol Med*. 43(8):1763–72.
- Brennan-Jones C.G., Tao K.F., Tikka C., Morata T.C. (2020) Cochran corner: interventions to prevent hearing loss caused by noise at work. *Int J Audiol*. 59(1):1-4.
- Cañadas-De la Fuente G.A., Ortega E., Ramirez-Baena L., De la Fuente-Solana E.I., Vargas C., Gómez-Urquiza J.L. (2018) Gender, Marital Status, and Children as Risk Factors for Burnout in Nurses: A Meta-Analytic Study. *Int J Environ Res Public Health*. 25;15(10):2102.
- Cao X, Naruse T. (2019) Effect of time pressure on the burnout of home-visiting nurses: the moderating role of relational coordination with nursing managers. *Jpn J Nurs Sci*. 16 (2):221–31.
- Dall'Ora C., Ball J., Reinius M., Griffiths P. (2020) Burnout in nursing: a theoretical review. *Hum Resour Health*. 5;18(1):41.
- D'Souza, R. M., Strazdins, L., Lim, L.L. (2003) Work and health in a contemporary society: Demands, control, and insecurity. *Journal of Epidemiology and Community Health*. 57:49–54.
- De Beer L.T., Rothmann Jr S., Pienaar J. (2016) Job insecurity, career opportunities, discrimination and turnover intention in post-apartheid South Africa: examples of informative hypothesis testing. *Int J Human Resour Manag*. 27(4):427–439.
- Demerouti, E., Geurts, S. A., Bakker, A. B., & Euwema, M. (2004). The impact of shiftwork on work-home conflict, job attitudes and health. *Ergonomics*, 47:987–1002.
- Devereux, J. M., Hastings, R. P., Noone, S. J., et al. (2009). Social support and coping as mediators or moderators of the impact of work stressors on burnout in intellectual disability support staff. *Research in Developmental Disabilities*, 30:367–377.
- Dhaini S.R., Denhaerynck K., Bachnick S., Schwendimann R., Schubert M., De Geest S. (2018) Work schedule flexibility is associated with emotional exhaustion among registered nurses in Swiss hospitals: a cross-sectional study. *Int J Nurs Stud*. 82:99–105.
- Emanuel L.L., Ferri, F.D., von Gunten C.F., Von Roenn J.H. Compassion fatigue and burnout in cancer care. 2011:Medscape.
- Erne K., Knobel S.E., Naef A.C., Gerber S.M., Fischer T., Mast F.W., Schefold J.C., Zante B., Nef T., Jeitziner M.M. (2022) Influence of noise manipulation on retention in a simulated ICU ward round: an experimental pilot study. *Intensive Care Med Exp*. 28;10(1):3.
- Fitzpatrick B., Bloore K., Blake N. (2019) Joy in Work and Reducing Nurse Burnout: From Triple Aim to Quadruple Aim. *AACN Adv Crit Care*. 30(2):185–188.
- Freudenberger H.J. (1974) Staff burnout. *Journal of Social Issues*. 30:159–165.
- Galletta M., Portoghese I., Ciuffi M., Sancassiani F., Aloja E., Campagna M. Working and environmental factors on job burnout: a cross-sectional study among nurses. *Clin Pract Epidemiol Ment Health*. 2016;12:132–41.
- Giorgi F., Mattei A., Notarnicola I., Petrucci C., Lancia L. (2018) Can sleep quality and burnout affect the job performance of shift-work nurses? A hospital cross-sectional study. *J Adv Nurs*. 74(3):698-708.

- Giménez-Espert M.D.C., Prado-Gascó V., Soto-Rubio A. (2020) Psychosocial Risks, Work Engagement, and Job Satisfaction of Nurses During COVID-19 Pandemic. *Front Public Health*. Nov 20;8:566896.
- Hanrahan N.P., Aiken L.H., McClaine L., Hanlon A.L. Relationship between psychiatric nurse work environments and nurse burnout in acute care general hospitals. *Issues Ment Health Nurs*. 2010;31(3):198–207.
- Hunsaker S., Chen H.C., Maughan D., Heaston S. Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. *J Nurs Scholarsh*. 2015;47(2):186–94.
- Ibrahim S., Donelle L., Sidani S., Regan S. (2019) Factors influencing Registered Nurses' intention to use Health Information Technology in clinical practice: an integrative literature review. *Can J Nurs Inform*. 14;(1–2):25–31.
- Kanai-Pak M., Aiken L.H., Sloane D.M., Poghosyan L. (2008) Poor work environments and nurse inexperience are associated with burnout, job dissatisfaction and quality deficits in Japanese hospitals. *J Clin Nurs*. 17(24):3324–3329.
- Khamisa N., Peltzer K., Ilic D., Oldenburg B. (2016) Work related stress, burnout, job satisfaction and general health of nurses: a follow-up study. *Int J Nurs Pract*. 22(6):538–545.
- Kitaoka K., Masuda S. (2013) Academic report on burnout among Japanese nurses. *Japan Journal of Nursing Science*. 10(2):273–279.
- Kwon C.Y., Lee B., Kwon O.J., Kim M.S., Sim K.L., Choi Y.H. (2021) Emotional Labor, Burnout, Medical Error, and Turnover Intention among South Korean Nursing Staff in a University Hospital Setting. *Int J Environ Res Public Health*. 26;18(19):10111.
- Laeque S.H., Bilal A., Babar S., Khan Z., Rahman S.U. (2018) How patient-perpetrated workplace violence leads to turnover intention among nurses: the mediating mechanism of occupational stress and burnout. *J Aggress Maltreat Trauma*. 27(1):96–118.
- Lasater K.B., Aiken L.H., Sloane D.M., Frech R., Martin B., Reneau K., Alexander M, McHugh M.D. (2021) Chronic hospital nurse understaffing meets COVID-19: an observational study. *BMJ Quality & Safety*. 30:639–647.
- Laschinger H.K., Read E.A. (2016) The effect of authentic leadership, person-job fit, and civility norms on new graduate nurses' experiences of coworker incivility and burnout. *J Nurs Adm*. 46(11):574–80.
- Laschinger H.K. (2012) Job and career satisfaction and turnover intentions of newly graduated nurses. *J Nurs Manag*. 20(4):472–484.
- Lee E.K., Ji E.J. (2018) The moderating role of leader-member exchange in the relationships between emotional labor and burnout in clinical nurses. *Asian Nurs Res (Korean Soc Nurs Sci)*, 2(1):56–61.
- Leineweber C, Westerlund H, Chungkham HS, Lindqvist R, Runesdotter S, Tishelman C. (2014) Nurses' practice environment and work-family conflict in relation to burn out: a multilevel modelling approach. *PLoS One*. (5):e96991.
- Li A., Early S.F., Mahrer N.E., Klaristenfeld J.L, Gold J.I. (2014) Group cohesion and organizational commitment: protective factors for nurse residents' job satisfaction, compassion fatigue, compassion satisfaction, and burnout. *J Prof Nurs*. 30(1):89–99.
- Li, N, Zhang, L, Li, X, Lu, Q. (2021) The influence of operating room nurses' job stress on burnout and organizational commitment: The moderating effect of over-commitment. *J Adv Nurs*. 77:1772–1782.
- Liu Y., Aunguroch Y. (2018) Factors influencing nurse-assessed quality nursing care: a cross-sectional study in hospitals. *J Adv Nurs*. 74(4):935–945.
- Lu M., Ruan H., Xing W., Hu Y. (2015) Nurse burnout in China: a questionnaire survey on staffing, job satisfaction, and quality of care. *J Nurs Manag*. 23(4):440–447.
- Luan X., Wang P., Hou W., Chen L., Lou F. (2017) Job stress and burnout: A comparative study of senior and head nurses in China. *Nurs Health Sci*. 19(2):163–169.
- Madathil R., Heck N.C., Schulberg D. (2014) Burnout in psychiatric nursing: examining the interplay of autonomy, leadership style, and depressive symptoms. *Arch Psychiatr Nurs*. 28;(3):160–166.
- Maslach, C. (2003). *Burnout: Cost of caring*. Cambridge: Malor Books.
- Maslach C., Leiter M.P. (2016) Understanding the burnout experience: recent research and its implications for psychiatry. *World psychiatry: official journal of the World Psychiatric Association (WPA)*, 15(2):103–111.
- Molina-Praena J., Ramirez-Baena L., Gómez-Urquiza J.L., Cañadas G.R., De la Fuente E.I., Cañadas-De la Fuente G.A. (2018) Levels of Burnout and Risk Factors in Medical Area Nurses: A Meta-Analytic Study. *Int J Environ Res Public Health*. 10;15(12):2800.
- Moloney W., Boxall P., Parsons M., Cheung G. (2018) Factors predicting registered nurses' intentions to leave their organization and profession: a job demands-resources framework. *J Adv Nurs*. 74(4):864–875.
- Nantsupawat A., Kunaviktikul W., Nantsupawat R., Wichai khum O.A., Thienthong H., Poghosyan L. (2017) Effects of nurse work environment on job dissatisfaction, burnout, intention to leave. *Int Nurs Rev*. 64(1):91–98.

- Poncet M.C., Toullic P., Papazian L., Kentish-Barnes N., Timsit J.F., Pochard, F. (2007) Burnout syndrome in critical care nursing staff. *American Journal of Respiratory and Critical Care Medicine*, 175:698–704.
- Popa F., Raed A., Purcarea V.L. (2010) Occupational burnout levels in emergency medicine – A nationwide study and analysis. *Journal of Medicine and Life*, 3:207–215.
- Rababah J.A., Al-Hammouri M.M., Ta'an W.F. (2021) A study of the relationship between nurses' experience, structural empowerment, and attitudes toward computer use. *Int J Nurs Sci*. 18;8(4):439–443.
- Richardson S.K., Ardagh M., Gee P. (2005) Emergency department overcrowding: The Emergency Department Cardiac Analogy Model (EDCAM). *Accident and Emergency Nursing*, 13:18–23.
- Rostamabadi A., Kargar Shouroki F., Jalilian H., Choobineh A., Azmoon H., Shakerian M. (2019) The relationship between work-related psychosocial factors and burnout among Iranian nurses: Job Demand-Control-Support model. *Med Lav*. 26;110(4):312-320.
- Rowe M.M., Sherlock H. (2005) Stress and verbal abuse in nursing: Do burned out nurses eat their young? *Journal of Nursing Management*, 13:242–248.
- Sapountzi-Krepia D., Kalofissudis I., Psychogiou M., Peterson D., Sakellari E. (2001) Seeing to the future through the shadow of the nursing staff shortage: Greek registered nurses' views on a possible establishment of a family nursing policy in Greek hospitals. *ICU and Nursing Web Journal*, 7:56-60
- Sehlen, S., Vordermark, D., Schäfer, C., Herschbach, P., Bayerl, A., Pigorsch, S., Rittweger, J., Dormin, C., Bölling, T., Wypior, H. J., Zehentmayr, F., Schulze, W., Geinitz, H., & DEGRO Quality of Life Work Group. (2009). Job stress and job satisfaction of physicians, radiographers, nurses and physicists working in radiotherapy: A multicenter analysis by the DEGRO Quality of Life Work Group. *Radiation Oncology*, 6:4–6.
- Serin A, Balkan M. (2014) Burnout: the effects of demographic factors on staff burnout: an application at public sector. *Int Bus Res*, 7(4):151–159.
- Shanafelt T.D., Makowski M.S., Wang H., Bohman B., Leonard M., Harrington R.A., Minor L., Trockel M. (2020) Association of Burnout, Professional Fulfillment, and Self-care Practices of Physician Leaders With Their Independently Rated Leadership Effectiveness. *JAMA Netw Open*. 1;3(6):e207961.
- Shao J, Tang L, Wang X, Qiu R, Zhang Y, Jia Y, (2018) Nursing work environment, value congruence and their relationships with nurses' work outcomes. *J Nurs Manag*. 26(8):1091–1099.
- Shimizutani, M., Odagiri, Y., Ohya, Y. (2008) Relationship of nurse burnout with personality characteristics and coping behaviors. *Industrial Health*, 46:326–335.
- Sligo J., Gauld R., Roberts V., Villa L.A. (2017) literature review for large-scale health information system project planning, implementation and evaluation. *Int J Med Inf*. 97:86–97.
- Stassinoula E. (2017) Professional burnout syndrome in nursing staff. PhD Thesis, URI: <http://repository.library.teimes.gr/xmlui/handle/123456789/5974>
- Stichler J.F. (2009) Healthy, healthful, and healing environments. A nursing perspective. *Crit Care Nurs Q*. 32(3):176–188.
- Stimpfel A.W., Sloane D.M., Aiken L.H. (2012) The longer the shifts for hospital nurses, the higher the levels of burnout and patient dissatisfaction. *Health Aff (Millwood)*. 31(11):2501–2509.
- Stone P.W., Du Y., Gershon R.R. (2007) Organizational climate and occupational health outcomes in hospital nurses. *J Occup Environ Med*. 49(1):50–58.
- Thompson D. (2014) The examination of practice environment, burnout, and missed care on pressure ulcer prevalence rates using a complexity science framework: University of Kansas.
- Valente L.E., Truzzi A., Souza W.F., Alves G.S., Alves C.E., Sudo F.K. (2011) Health self-perception by dementia family caregivers: Sociodemographic and clinical factors. *Arquivos de Neuropsiquiatria*, 69:739–744.
- Van Bogaert P., Kowalski C., Weeks S.M., Van Heusden D., Clarke S.P. (2013) The relationship between nurse practice environment, nurse work characteristics, burnout and job outcome and quality of nursing care: a cross-sectional survey. *Int J Nurs Stud*. 50(12):1667–77.
- Van Bogaert P., Timmermans O., Weeks S.M., van Heusden D., Wouters K., Franck E. (2014) Nursing unit teams matter: impact of unit-level nurse practice environment, nurse work characteristics, and burnout on nurse reported job outcomes, and quality of care, and patient adverse events—a cross-sectional survey. *Int J Nurs Stud*. 51(8):1123–1134.
- Vidtti V., Ribeiro R.P., Galdino M.J.Q., Martins .T. (2018) Burnout syndrome and shift work among the nursing staff. *Rev Lat Am Enfermagem*. 26:e3022.
- Wang J.L., Okoli Chizimuzo T.C., He H.J., Feng F., Li J.W., Zhuang L.L., Lin M. (2019) Factors associated with compassion satisfaction, burnout, and secondary traumatic stress among Chinese nurses in tertiary hospitals: A cross-sectional study. *Int J Nurs Stud*. 102:103472.
- Wei H., Roberts P., Strickler J., Corbett R.W. (2019) Nurse leaders' strategies to foster nurse resilience. *J Nurs Manag*. 27(4):681–687.

Wisetborisut A, Angkurawaranon C, Jiraporncharoen W, Uaphanthasath R, Wiwatanadate P. (2014) Shift work and burnout among health care workers. *Occup Med (Lond)*.64(4):279–286.

Zhou W., He G., Wang H., He Y., Yuan Q., Liu D. (2015) Job dissatisfaction and burnout of nurses in Hunan, China: A cross-sectional survey. *Nurs Health Sci*. 17(4):444–50.