The relationship between doctor's health and safe patient care

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LIST OF ABBREVIATIONS

EWTD: European Working Time Directive

GP: general practitioner

HCV: hepatitis C virus

IOM: Institute of Medicine

OR: operating room

QOL: quality of life

SUD: substance use disorder

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1. SUMMARY

The relationship between doctor's health and safe patient care

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Safe patient care is an aspect of healthcare that is becoming increasingly recognized by the world's healthcare professionals as a crucial component of optimal patient outcome. Patient safety places emphasis on a physician's duty to report, analyze and prevent medical errors. Safe patient care is highly dependent upon a competent and functioning physician. The psychological and physical health of a doctor is vital in ensuring safe patient outcome. Today's medical professionals have greater diagnostic and therapeutic possibilities, but face a number of personal challenges. These include substance use disorder, psychiatric and neurologic disorders, burnout, physical impairments and age-related changes. If not successfully addressed by the physician and the health-care system, these obstacles could potentially negatively impact the doctor's wellbeing and eventually affect clinical competence. Poor patient safety may stem from any of these aetiologies, but it remains to be proven exactly how they affect patient outcome. Acknowledgement of a doctor's limitations should serve to improve the functioning of a health care system. This literature review attempts to summarize the currently available information on the association between a doctor's health and its relation to safe patient care. Possible relations are explored within the context of the physical and mental state of a physician and how they affect safe patient outcome in the medical workplace.

Keywords: physicians, clinical competence, health, patient safety

2. SAŽETAK

Povezanost zdravlja liječnika i sigurnosti bolesnika

Amanda Lam

Sigurnost bolesnika predstavlja aspekt zdravstvene skrbi koji postaje sve više prepoznat od strane zdravstvenih profesionalaca širom svijeta kao ključna sastavnica optimalnog ishoda skrbi. Sigurnost bolesnika nalaže obvezu liječniku da prevenira, prijavi i analizira medicinske pogreške. Skrb sigurna za bolesnika značajno ovisi o kompetentnosti i djelovanju liječnika; psihološko i tjelesno zdravlje liječnika od iznimne je važnosti u pogledu osiguranja sigurnog ishoda bolesnikove skrbi. Zdravstveni profesionalci imaju danas na raspolaganju velike dijagnostičke i terapijske mogućnosti, no također se suočavaju s nizom osobnih izazova koji uključuju psihičke i neurološke poremećaje, sindrom ovisnosti, sindrom izgaranja, tjelesne nedostatke te promjene povezane s dobi. Ukoliko ove okolnosti nisu prepoznate od strane liječnika i zdravstvenog sustava, one mogu negativno utjecati na zdravlje i posljedično kliničku kompetentnost liječnika. Bilo koje od navedenih stanja može potencijalno dovesti do okolnosti u kojima je ugrožena sigurnost bolesnika, no ostaje za istražiti točne mehanizme povezanosti sa ishodima skrbi za bolesnika. Prepoznavanje i uvažavanje ograničenja u radu liječnika može poslužiti u svrhu unaprjeđenja djelovanja zdravstvenog sustava. Pregled literature u ovom radu nastoji sažeto iznijeti dostupne spoznaje o povezanosti zdravlja liječnika i sigurne skrbi za bolesnika; analiziran je kontekst tjelesnog i mentalnog zdravlja liječnika te moguće povezanosti sa ishodima skrbi za bolesnika.

Ključne riječi: liječnici, zdravlje, klinička kompetentnost, sigurnost bolesnika

3. INTRODUCTION

Physicians perform their professional role by health promotion, preventing progress of disease, providing care or palliation. This is done either directly or through referral to others within the accessible health community they serve. Physicians in practice must take action in the maintenance and development of their skills, personal health and values as a core for the basis of ideal patient care. A number of risk factors exist toward the development of ill health in doctors. Doctors are particularly at risk because of their knowledge of and accessibility to drugs and also their tendency to self-medicate. Long hours, the breakdown in family relationships and support are further risk factors. Although addicted doctors feel immense guilt and shame at their substance use, they 'survive' at work, using a combination of secrecy, denial and intellectualisation (Marshall, 2008).

The wellbeing of a physician is complicated and many-sided; individual, professional, and organisational components should be taken into consideration when assessing a physician's health. When physicians are unwell, the functioning of a health care system will not be at its maximum potential. In addition to physician wellbeing benefiting the individual physician himself, it is also crucial to the management and delivery of high-quality patient care.

There are many barriers to wellness and many consequences of unwell physicians to the individual and to the health-care system. Health systems should routinely measure physician wellness and discuss the challenges associated with implementation (Wallace et al., 2009). Ultimately, efforts made of individual physicians to take better care of themselves would probably lead to higher job satisfaction, greater overall wellbeing, and reduced likelihood of experiencing stress and burnout.

The safe care of a patient is highly dependent on the health of the doctor. Amongst other factors, the health of the physician in charge is directly related to the quality of care that the patient receives. As the role of a doctor is as team leader, the strength of the team is directly correlated to the performance of the doctor in charge. A doctor's job is to assign roles and monitor the progress of the team; if the doctor is sick then he or she would not be able to perform this leadership role appropriately. This translates into a healthcare system that does not function ideally.

Several definitions for doctor's health and patient safety have been published. A doctor's health can be judged upon a variety of characteristics; according to one study, measurements of quality of life (QOL), burnout, symptoms of depression and a doctor's sense empathy can be used to assess a physician's health (West et al., 2006). It remains important to develop standards of behavior in the area of physician health and wellness insofar as it affects physicians' professional activities, including patient care and trust in the profession (Taub et al. 2006).

There are many different factors that link a doctor's health to patient care; poor physician health can lead to impaired and incompetent colleagues, a serious issue across a range of healthcare professions. This should provide a compelling reason for the urgent attention of professional organisations, policymakers and regulatory bodies in order to create and clarify reporting opportunities when confronted with an incompetent or impaired colleague (Weenik et al., 2015).

Work on employees who 'derail', that is employees whose health, conduct or performance puts their employment or registration at risk, has identified some seemingly persistent. These include problems with interpersonal relationships, failure to meet business objectives, inability to build or lead a team and inability to change or adapt to a transition (Harrison, 2008). Sixty-four percent (n = 1120) of surveyed physicians agreed with the professional commitment to report physicians who are significantly impaired or otherwise incompetent to practice. Nonetheless, only 69% (n = 1208) of physicians reported being prepared to effectively deal with impaired colleagues in their medical practice, and 64% (n = 1126) reported being prepared to deal with incompetent colleagues (DesRoches et al., 2010).

Self-prescription by physicians and other forms of inappropriate self-treatment by both physicians and medical students represents serious issues for both patients and physicians. One meta-analysis states that according to 76% studies surveyed, reported self-treatment was >50% (range: 12-99%). Overall, only one of two respondents was registered with a GP or primary care physician (mean = 56%, range = 21-96) (Montgomery et al., 2011). Prevention strategies should target the prescribing and monitoring stages of pharmaceutical care (Gurwitz et al., 2003).

Two key elements that contribute to the health of a physician are their mental and physical well-being. A number of barriers exist to the effective management of mental health disorders and related behavioral problems in the medical workplace. The diagnosis of mental illness, and seeking treatment for it, may be highly stigmatizing (Brown et al., 2009). Such stigmatisation

can lead to a steep decline in patient care and safety. Ensuring that the reporting threshold of physician impairment is appropriately defined and clearly understood, improving access to evidence-based health programmes for practitioners, and strengthening upstream protections to prevent and minimise impairment at its roots, are all important steps in ensuring doctor's health (Bismarck et al., 2007). It is hard to measure what impact mental health has on successful treatment outcome of the physician's patients. Neuropsychiatric and neuropsychological assessments can be used to measure fitness to practice. These assessments focus on both psychiatric and neurological aspects of history and examination, with particular attention given to the interplay between brain disorder and mental symptomatology (Pitkanen et al., 2016).

The physical health of a doctor can be influenced by two important factors: healthcare accessibility and a physician's own initiative to seek treatment. As a physician is usually pressed for time, he or she is not always capable of planning a healthy lifestyle. One study mentions that about one quarter of respondents who underwent a urine test or swab had initiated it themselves, approximately one third had arranged their own blood pressure measurement or blood test and one fifth had arranged their own chest x-ray. A total of 17.6% of the clinical investigations had been done as part of an insurance or pre-employment medical examination. The results of 39.2% of the investigations had been reported directly to the subject who had initiated the test (Chambers and Belcher, 1992). There is a significant gap in the current knowledge of the health-access behaviours of doctors (Kay et al., 2008).

Patient safety in the community is becoming increasingly complex. Early discharge from the hospital, the pressure of short consultations and the increasingly fragmented nature of primary care services all increase the risk of unintentional patient harm (Wilson et al., 2001). Valuable research on safety has been conducted in primary care, and many sources of information indicate where the major causes of harm may occur (Wilson and Sheikh, 2002).

The majority of incidents in general practice can be categorised into four main areas which cover diagnosis, drug prescribing, communication between healthcare providers and patients and finally organisational factors such as administrative problems (Esmail, 2013). Clearly, patient safety is linked with a doctor's health. The culture of medicine tends to be hostile to doctors with disabilities, and patient safety, while of paramount importance, has been used as an excuse to exclude competent doctors with disabilities (Harrison, 2008). Previous retrospective cohort

studies of medical errors have been limited to hospitalized patients with adverse outcomes; they have been inefficient at identifying errors because they required a review of hundreds of medical records before finding an adverse outcome associated with a diagnostic error, and they were unable to link diagnostic errors with presenting initial complaints, initial (wrong) diagnoses, or personal lessons learned (Ely et al., 2012).

All doctors make mistakes and, while only some of these will result in serious harm, some patients will be spared. Clinical errors are common and potentially important. The Institute of Medicine (IOM) has identified medical error as a problem worthy of greater attention; in the wake of the IOM report, numerous additions were made to regulations regarding physician duty hours (Harris et al., 2015). Improved physician training, accessible community pharmacy databases and closer teamwork between patients, physicians and pharmacists could reduce the frequency of these errors (Tam et al., 2005). Some studies have tried to understand the causes of error but noted that the cause was often multiple and that in up to 50% no cause was identified (Sandars and Esmail, 2003). Care will vary by provider, and thus the outcome data must be collected and analysed in order that consistent outliers are detected, and corrective measures can be undertaken (Scarpello, 2012).

4. METHODS

An online search for sources using advanced search options and Boolean logical operators was performed through the PubMed database in the period December – February 2018.

The following combination of MeSH search terms were used:

#1 (Clinical Competence OR Employee Performance Appraisal) AND Physicians AND Patient Safety

#2 Physicians AND Health AND Patient Safety

No limit was placed on year of publication, but the search was limited to English language publications.

The search yielded 93 abstracts.

All of the abstracts were examined for relevance. A selection of abstracts was made according to the following criteria: abstracts in English, abstracts that reported original research and / or reviews. Studies were excluded if their main focus was not on the identification and description of physician health and patient safety.

After applying the selection criteria, 58 abstracts remained.

The initial selection of abstracts also led to the identification of additional literature used as references.

A detailed reading of these papers resulted in the final 42 articles used for the purpose of this review.

5. RESULTS

5.1 Substance use disorder

Substance use disorder (SUD) is a common source of impairment among both residents and attending physicians. SUD accounts for the highest number of cases with regard to impairment among doctors. It is estimated that as many as fifteen percent of practicing physicians will suffer from SUD at one point in their career - an incidence approximately equal to that of the general population (Oreskovich et al., 2015). Drugs chosen by physicians include alcohol and prescription medications and less often illicit street drugs. Narcotic dependency is a major cause of physician impairment, with a lifetime prevalence approaching 10% to 15% while alcohol dependence ranges from 8% to 15%. The most common drug of abuse appears to be alcohol, followed by opiates (Dhai et al., 2006). Adverse patient outcome can often be linked to SUD among the practicing physician population.

One study observes that the role of SUD in medical liability claims may be underreported because it is often concealed (Schaefer and Perz, 2014). The successful practice of medicine relies on a fully competent physician who maintains a store of current medical knowledge, retains the ability to think critically and applies that knowledge to make sound medical decisions under any circumstance. A physician suffering from SUD is unlikely to be able to adhere to the lofty criteria necessary to perform complex tasks in modern medical practice.

Drug diversion is the transfer of any legally prescribed controlled substance from whom it was prescribed to another individual. A recent study focused on drug diversion by healthcare professionals and its links to poor patient outcome (Schaefer and Perz, 2014). This research revealed errors in prevention, detection and response to drug diversion among healthcare facilities. Enforcement of strong narcotic security measures and active monitoring systems are best be suited for preventing drug diversion.

An appropriate response to drug diversion includes consultation with public health officials, assessment of any harm to patients and immediate reporting to enforcement agencies. Another study focused on hepatitis C infection (HCV) as a result of drug diversion among

anesthesiologists (Warner et al., 2015). In this paper, the authors made clear the value of public health surveillance in uncovering different methods of drug diversion and its impact on affected patients (Figure 5-1).

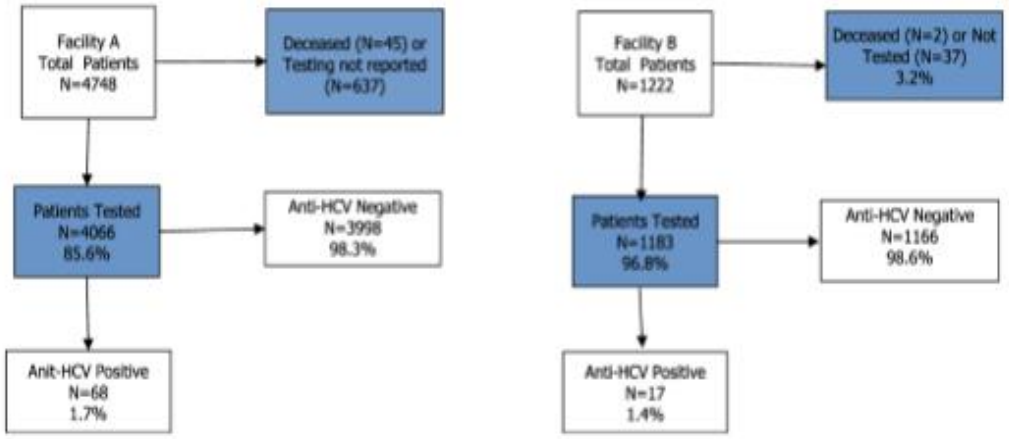

Figure 5-1: Outcome of recommended HCV testing for patients who underwent surgery during the technician's employment at facilities A and B. Shaded boxes use total patients as the denominator for percentage; other boxes use patients tested as the denominator for percentage.

Warner AE, Schaefer MK, Patel P, et al. (2015) Outbreak of hepatitis C virus infection associated with narcotics diversion by an hepatitis C virus-infected surgical technician. Am J Infect Control 43:53-58.

This investigation identified a large outbreak of HCV infection associated with drug diversion by an HCV-infected surgical technician who was able to gain access to syringes filled with fentanyl. Doctors are no less vulnerable to narcotic dependence than the general population (Kay et al., 2005).

5.2 Psychiatric and neurologic disorders

Certain psychiatric illnesses are common among impaired physicians. These include depression, anxiety, personality disorders and disruptive behavior. Ironically, traits which ensure a physician's success such as orientation towards achievement, self-sacrifice, denial of feelings, extreme competitiveness and intellectualization of emotions can contribute to the development of an unstable psychological state. Unfortunately, modern medicine places low priority on the mental health of physicians.

Psychiatric illness frequently goes undiagnosed among physicians. Though there is evidence that untreated mood disorders increase the risk of suicide among healthcare professionals, it is not frequently correlated to poor patient health. Occupational well-being is accompanied by positive emotions, a feeling energy, and increased concentration, and it is likely that physicians who experience greater well-being, energy and concentration in their work can more fully dedicate their attention to patient needs to provide them with optimal care (Scheepers et al., 2015) Discrimination in medical licensing, the loss of hospital privileges and a slower pace of professional advancement create barriers towards physician's seeking help. It is recommended that changing institutional policies as well as transforming professional attitudes will encourage more physicians to seek help when needed. A study by Center et al. states that as barriers are removed and physicians confront depression and suicidality in their peers, they are more likely to recognize and treat these conditions in patients, including colleagues and medical students (Center et al., 2003).

The most significant risk factor for suicide appears to be major depressive disorder, but there are also a host of other causes that may play a role, including eating disorders, anxiety, SUD, feelings of despair and hopelessness, physical or sexual abuse and adverse life events. The stigma against mental health can create an environment in which an individual physician has to suffer in silence as historically the medical tradition has promoted foregoing help in the past. Although increasing research exists for reporting the prevalence of mental illness amongst physicians and medical students, there is still minimal research focused on the prevention of such diseases in a healthcare setting.

One American study documents the process of developing and implementing a prevention program, including the program's origins and goals, their critical decision-making processes, and successes and challenges of the program's first year (Moutier et al., 2012). This study showed that of the 2860 medical students, housestaff and faculty who received the email invitation in the first year, 374 individuals (13%) completed screens, 101/374 (27%) met criteria for significant risk for depression or suicide, and 48/374 (13%) received referrals for mental health evaluation and treatment. This may be one of the only programs of increasing awareness of depression among the physician population and de-stigmatizing seeking help to prevent suicide.

Mood related disorders are another source of burden to patient health. In a healthcare environment these types of diseases may cause disruptive behavior which interfere with patient outcome and lead to the delivery of poor quality care. Disruptive behavior creates considerable challenges in the workplace. Disrespectful behavior threatens organizational culture and patient safety (Leape et al., 2012). Unprofessional behaviour is frequently manifested in practice by medical students, residents and physicians, and it is associated with personality characteristics that are evident early in training (Bahaziq and Crosby, 2011).

Failure to address poor professionalism results in injury and death of patients, and also undermines the morale of clinical teams, erodes confidence in services and doctors, and exposes healthcare organisations to costly litigation (Donaldson et al., 2014). The Joint Commission recently issued a sentinel event alert stating that disruptive behavior can compromise patient safety and foster medical errors, contribute to poor patient satisfaction and to preventable adverse outcomes, undermine individual and team communication and effectiveness, increase the cost of care, and cause qualified clinicians, administrators, and managers to seek new positions in more professional environments (Brown et al., 2009).

Responses to disruptive physician behavior range from tolerance to aggression. Many physicians fail to realize that a psychiatric condition may be at the root of their unacceptable behavior and therefore do not seek help. It is well known that SUD can lead to physician impairment which in turn can lead to disruptive behavior. Less known factors contributing to patterns of disruptive behaviour include depression, burnout and stress behavior. Hazardous attitudes are common among orthopedic surgeons and relate in small part to demographics and practice settings (Bruinsma et al., 2015). Prompt recognition of disruptive physician behavior is crucial for the

health and safety of patients and the wellbeing of the physician himself. Brown et al. states that better management of disruptive behavior resulting from physician mental health impairment can be facilitated by:

1. Understanding the prevalence of mental health conditions and how these conditions can cause physician impairment
2. Recognizing behaviors that may reflect psychiatric morbidity
3. Understanding risk factors and high-risk groups
4. Understanding barriers to effective reporting

Several chronic neurological diseases such as Parkinson's disease and multiple sclerosis can negatively affect a physician's ability to safely practice medicine. In most cases of neurological disorder, the physician can track the progression of his or her disease to ensure that their ability to practice is not impaired. Such situations become more complicated with regard to a disease such as Alzheimer's dementia. The progression of this disease can be subtle and is likely to be detectable by the physician but generally becomes unnoticed by his or her colleagues.

An epileptic disorder can make practicing medicine extremely difficult. Katz states that the etiology, frequency, severity, and adequacy of medical control of the epileptic episodes will all contribute toward determining the advisability of continued and/or restricted practice. In general, those rules that apply to driving restrictions (6 months seizure-free in many states) represent a reasonable requirement before resuming practice. In the cases, wherein sleep deprivation or other disturbances in circadian rhythms exacerbate the seizures, it would be advisable for the physician to avoid night shifts (Katz, 2017).

5.3 Burnout

Burnout is a syndrome characterized by a low sense of personal accomplishment, a loss of enthusiasm for work (emotional exhaustion), and feelings of cynicism (depersonalization). Although difficult to fully measure and quantify, findings of recent studies suggest that burnout may erode professionalism, influence quality of care, increase the risk of medical error, and promote early retirement. Burnout also seems to have adverse personal consequences for physicians, contributing to broken relationships, problematic alcohol use and suicidal ideation (Shanafelt et al., 2012). As discussed previously, many of the personality traits associated with successful medical practice, when taken to the extreme, can also result in physician burnout. Such qualities may include an intrinsic drive to work harder, an obsession to prove oneself and the desire to minimize personal needs.

Nearly fifty percent of physicians in the United States have experienced one or more of the major symptoms of burnout, a level considerably greater than that found in the general population (Shanafelt et al., 2012). It has been determined that a strong relationship exists between burnout and medical error, quality of practice, and malpractice litigation.

Burnout exists in such high prevalence within the physician population that is necessary to examine and understand its predictors and possible preventative measures. Assessments have been made to associate burnout with behavioral factors, lifestyle and demographics. A study completed by Mustafa states that personality, through deductive and inductive reasoning, is likely to exert significant influence on both the medical student's behavior and his/her susceptibility to burnout. Thus, with personality representing - in and of itself - a principal model for prediction of burnout risk, controlling for personality traits when addressing health behaviors' influence *per se* on burnout is essential (Mustafa, 2015).

Physicians resilient to burnout can be characterized as having the ability to invest time to initiate a chain of positive reinforcements despite a harsh or stressful working environment. Promoting stress management techniques appears to have a positive impact in the prevention of burnout. Zwack and Schweitzer write that whether the stressor in question is a demanding patient, excessive paperwork, or time pressures, a well-diversified pool of social resources and fields of

interest, together with realistic expectancies and good self-knowledge, will support sustainable coping. This, in turn, creates experiences of efficacy that confirm health-promoting attitudes and practices (Zwack and Schweitzer, 2013).

Developing resilience in a physician is critical for both physician and patient. Resilience can be seen as an ever-changing and evolving process of developing effective management strategies and retaining a positive attitude. In a study done by Jensen et al., the researchers found that four main aspects of physician resilience can be identified. These include:

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 honouring the self
3. Practice management style, which includes sound business management, having good staff, and using effective practice organization
4. Supportive relations, which include positive personal relationships, effective professional relationships, and good communication

A relationship exists between burnout and major medical errors. A wide range of miscalculations comprise medical mistakes, including administering wrong dosage, failing to recognize an allergy, making an error or a delay in a diagnosis as well as misidentifying patients. A missed, wrong or delayed diagnosis has a direct effect on patient safety (Guo et al., (2014). Although efforts have been made to better patient care, medical errors still remain a very frequent cause of morbidity and mortality. One study revealed that of 7905 participating surgeons, 700 (8.9%) reported concern they had made a major medical error in the last three months. Over 70% of the surgeons attributed the error to individual rather than system level factors. Reporting an error during the last three months had a large, statistically significant adverse relationship with their mental quality of life, all three domains of burnout (emotional exhaustion, depersonalization, and personal accomplishment) and symptoms of depression (Shanafelt et al., 2010). Major medical errors reported by surgeons are strongly related to a surgeon's degree of burnout and their mental wellbeing.

Although there is extensive research and data concerning physician burnout, little research has been completed evaluating rates of burnout among the physician population and the differences in burnout between the medical specialties. A study done by Shanafelt et al., reveals that when assessed using the Maslach Burnout Inventory, 45.8% of participating physicians reported at least one symptom of burnout. Substantial differences in burnout were observed by specialty, with the highest rates among physicians at the front line of care access (family medicine, general internal medicine, and emergency medicine). Physicians in specialities at the front line of care seem to be at greatest risk to burnout (Shanafelt et al., 2012).

Urgent access to general practice is considered to be a major patient priority forcing general practitioners (GPs), policy making stakeholders and administrators to coordinate how primary care is provided. Models promoting urgent access are liken to open access, walk-in, same-day access and advanced access; they cover a multitude of different access types. Walk-in open access in primary care can influence a GP's workload and type, but little research has been done on the consequences. Information chaos is experienced routinely by primary care physicians. This is not just inconvenient, annoying and frustrating; it has implications for physician performance and patient safety (Beasley et al., 2011). In one study of Danish general practice, the researchers found that GPs with walk-in open access clinics were more likely to suffer from burnout. Having open access was associated with a three-fold increased likelihood of burnout (Vedsted et al., 2013). Even though causality can not be established by design, it would be beneficial to closely monitor possible negative consequences toward physician health of open access in general practice.

Burnout within the GP population appears to be quite common. The extent in prevalence of burnout rates may mirror variances in studied populations which stem from differences in demographic characteristics and from the management and organization of general practice. Discovering the actual prevalence of burnout in a population of physicians can be challenging due to the differences in applied limits for classification of the condition and cultural concerns regarding the attitude to disclose dissatisfaction with the physician's work. One study suggests that physician's thoughts about changing their medical speciality is an important predictor of burnout. However, burned out GPs did not have higher job turnover rates than burnout-free GPs (Pedersen et al., 2013).

The cognitive function of an individual can be highly impaired by burnout. It is concerning that medical residents at risk of burnout, who are constantly developing and learning new skills while monitoring patients, may be more likely to commit medical errors than medical residents at a lower burnout risk. Those at high risk potentially jeopardize patient care and safety. Oliveira et al. sent a cross sectional survey to 2773 anesthesiology residents in the United States. It was determined that high burnout risk was found in 41% (575 of 1417) of respondents. Working >70 hours per week, having >5 drinks per week and female gender were associated with increased burnout risk. Twenty-two percent (298 of 1384) screened positive for depression. Working >70 hours per week, smoking, female gender, and having >5 drinks per week were associated with increased depression risk. Two hundred forty (17%) respondents scored at high risk of burnout and depression, 321 (23%) at high risk of burnout, 58 (4%) at high risk of depression only, and 764 (56%) at low risk of burnout or depression (Oliveira et al., 2013). There is no doubt that burnout and depression are very prevalent in medical residents.

5.4 Physical impairments

Physician impairment can come in the form of a number of physical conditions that affect an individual in everyday life. Even minor impairments such as slight hearing loss and some decrease in visual acuity can have an impact on the outcome of patient care. For example, hearing loss can be problematic in a busy operating room with a lot of background noise. Loss of visual acuity can make difficult precise physical tasks. Other physical factors such as stamina, agility, strength and fine motor skills all come into play when assessing a physician's physical ability to practice medicine.

The determination of a physician's health and fitness to practice medicine is usually decided by specialists of occupational medicine. Harrison states that occupational psychologists can assess the role of personality in performance at work and can make inferences about doctors' behaviour when suffering from stress. Work on employees who 'derail', that is employees whose health, conduct or performance puts their employment or registration at risk, has identified some themes that appear to be persistent (Harrison, 2016). These are:

1. Problems with interpersonal relationships
2. Failure to meet business objectives
3. Inability to build or lead a team
4. Inability to change or adapt to a transition

The impaired physician may pose a hazard to proper patient care, and concerns with regard to health and behaviour are all taken into careful consideration. An assessment model of a physician should take into account both individual and workplace factors. The importance of occupational health expertise is becoming increasingly recognized as playing a key role in the assessment model. One study done by Ruitenburg et al. concluded that future hospital physicians expressed a need for current and future occupational healthcare.

Physicians are generally said to be healthier than the general population, as their standard mortality rate is lower. However, doctors have very similar rates of chronic illness and have the same health needs with regards to prevention as the rest of the general community. There is a need to improve a physician's access to health care by reducing the obstacles they face when seeking help.

Data shows that the barriers that doctors describe are also similar to those experienced by the general community, especially once other social determinants of health (for example, financial, physical and education barriers) are considered. Most people who do not have a GP simply do not believe they need one, and it is possible that since most doctors are satisfied with the care they receive, many doctors may not believe they need a GP. Lack of time and cost issues are important concerns for the general community as well as doctors (Kay et al., 2008). Embarrassment and confidentiality are also complex issues that act as barriers toward obtaining health care for a physician. Kay et al. states that there is a need to incorporate physical health into the debate on doctors' health. Clearer recommendations for us all to have a GP, not just to coordinate preventative care, but to establish a pathway into the healthcare system when needed (Kay et al., 2004).

5.5 Age-related changes

The process of aging is the result of physiological changes over a span of time. Aging can lead to impairment of a physician's ability to safely practice medicine. Among the most stressful aspects of medical practice are extremely extended work hours and night call. From general surgical literature, a pattern of increasing evidence describes the high complication rate and mortality associated with out-of-hours work (Asfour et al., 2014). Some older physicians may find it difficult to cope with the more physically demanding conditions of practice; they may be more likely to make late night errors when called to work the night shift or as a result of prolonged work hours. One study by Bolster and Rourke showed interventions dealing with duty hour restrictions such as night floats, shortened shifts, and protected time for sleep resulted in better outcomes of patient care, physician well-being and education (Bolster and Rourke, 2015). The final stage of the European working time directive (EWTD) was introduced in 2009 and reduced working hours for doctors in the UK due to the new health and safety requirements for the organisation of working time (Jennison, 2013).

After the age of thirty, the human being suffers a gradual decrease in cognition and may even be eventually affected by dementia. Many common diseases of the elderly, such as heart disease and stroke, can further potentiate age-related loss of cognition. Many medical procedures require expert judgement and decision-making. Another recent study focusing on providing safe 108 laparoscopic cholecystectomies discovered that one hundred and eight cognitive elements (35 [32%] related to situation awareness, 47 [44%] involving decision-making, and 26 [24%] action-oriented subtasks) and 75 potential errors were identified and categorized into 6 general themes and 14 procedural tasks. Of the 75 potential errors, root causes were mapped to errors in situational awareness (24 [32%], decision-making (49 [65%], or either one (61 [81%]) (Madani et al., 2015). Clearly cognition is a critical factor in the outcome of patient safety.

Although cognition and aging are inversely related, continuing education and greater economic wellbeing will serve to minimize the cognitive declines of age and possibility prevent late life dementia. Since physicians have to be highly educated to successfully practice medicine, one can argue that the prevalence of dementia in the general public are not necessarily proportionate to the prevalence of dementia in a physician. A study done by Larson et al. revealed that in 1993,

12.2% of surveyed adults 70 years of age or older had some cognitive impairment, as compared with 8.7% in 2002. Education was protective against cognitive impairment, and the results suggested that "overall, the combined impact of recent trends in medical, lifestyle, demographic and social factors have been positive for the cognitive health of older Americans" (Larson et al., 2013).

In addition to cognition, well developed social skills are extremely important in preventing harm in the healthcare setting. These skills include decision-making, professionalism, interpersonal communication, leadership and team-working. The use of clinical supervision and other workplace training methodology should be implemented to teach non-technical competency in basic social skills in trainee doctors. Junior clinicians often experience difficulties applying their patient safety knowledge in the hierarchical healthcare workplace. More experienced health professionals with a developed understanding of the wider systematic issues associated with unsafe care can more easily apply their knowledge in the clinical environment. First year residents would benefit from learning about patient safety skills in the clinical environment rather than learning them in medical school (Walton et al., 2016). Patient safety in a healthcare provider's education still largely reflects clinical safety (e.g. attention to infection control and medication safety) (Ginsburg et al., 2013).

Since clinical abilities decline with the aging physician, it is more likely that the older physician will become associated with adverse patient events in contrast to his younger counterpart. Generally, decisions made about reducing activities and retirement are left to the individual, even though individuals have a limited ability to accurately judge their performance as they age. One solution to such problems may be enforcing a standardized schedule. A suggested schedule might include no further on-call duties for those aged 60 years and older, no further high-acuity cases for those aged 65 years and older, and retirement from the operating room (OR), clinical practice (with possible continuation of non-OR clinical or other non-clinical activities, if desired) at the age of 70 years. These timelines could be extended with a satisfactory performance in an annual testing session involving assessment and practice in crisis management (Baxter et al., 2014). A screening process considering biopsychosocial reserve and professional load, while applicable to older clinicians, would optimally become implemented for physicians across their

career span (Williams and Flanders, 2016). Plans to extend working life may require changes to the clinical responsibilities of older doctors (Scarpello, 2012).

As physicians practice into their later years, they must participate in continuing medical education programs and undergo evaluations of their clinical skills to ensure patient safety and care. Growing evidence that aging physicians may be advantaged by a lifetime of experience but possibly disadvantaged under certain circumstances by lapses in current medical knowledge (Katz, 2016). Though age may not be a wholly accurate measure of ability, it cannot be ignored entirely (Lee, 2016).

With a population of aging physicians, a risk exists that their psychophysiological decline may have an impact on patient outcome. Deterioration of both technical and non-technical skills could have a negative impact on clinical practice. In many studies, the relationship between increasing age and adverse outcomes is a biphasic curve, with increasing experience and volume contributing to improving outcomes as younger physicians mature, but plateauing and becoming less of a factor as limitations imposed by older age become dominant (Katz, 2017).

Aging may not necessarily follow a predictable pattern of decreased ability since not all realms of functional decline are affected at the same time or even at the same rate. Continuing medical education provides some means detecting and perhaps reversing the decline in ability associated with age. The introduction of recertification based on an assessment of competence at education sessions could play a crucial role in maintaining a high standard of patient care and an appropriate level of patient safety. Recertification should be objective without the need to compare to any pre-existing standards therefore; three factors have come to light: validity, reliability and feasibility (Giacalone et al., 2016). The Miller pyramid is a tool used to assess such features. (Figure 5-2).

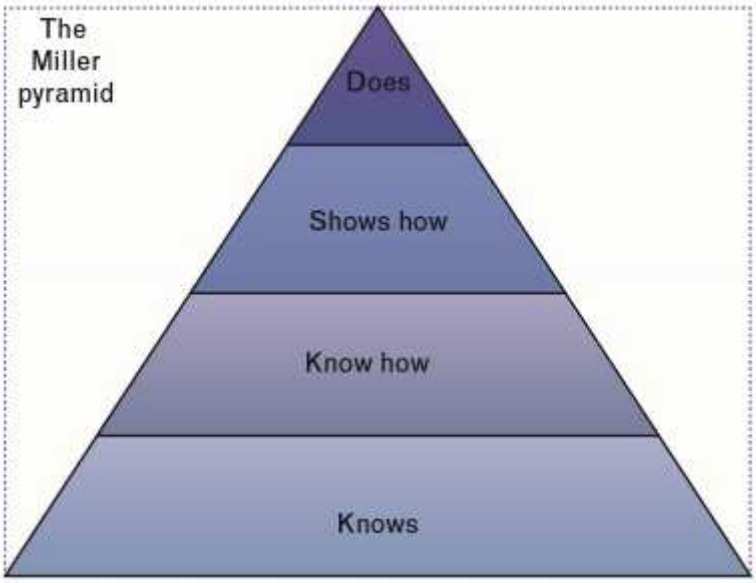

Figure 5-2: Evaluation of competence based on the quantity of tasks the physician can perform autonomously.

Giacalone M, Zaouter C, Mion S, et al. (2016) Impact of age on anesthesiologists' competence. Eur J Anaesthesiol 33:787-793.

The pyramid is divided into four levels in relation to the number of tasks a physician can perform autonomously. The first three levels are easily measurable while the fourth level requires direct observation during clinical activity. One can see that with this tool it is impossible to evaluate technological and nontechnological skills at the same time; therefore, this pyramid is an incomplete way to measure a physician's competence. Impairment of ability should be detected promptly and at an early stage before its effect on performance can manifest. In addition, this must be done before any type of correction can be made. The application of continuing medical education is a valid and dependable way of detecting impairment in ability without any harm to patients. Competence assessment and remedial education programs play an important role in assisting the identification and remediation of knowledge and clinical skill deficiencies (Grace et al, 2014) The complexity of healthcare will always require a level of efficiency and adaptability at odds with standardization and predictability (Grigg, 2015).

In *The measurement and monitoring of safety*, the authors have developed a framework which they believe should be included in any safety and monitoring approach to give a comprehensive and rounded picture of a healthcare organisation's safety (Vincent et al., 2013). The framework encompasses the principal facets of safety while providing clarity and simplicity at the same time (Figure 5-3).

Figure 5-3: A framework for safety measurement and monitoring

Vincent C, Burnett S, Carthey J. 2013. The measurement and monitoring of safety. The Health Foundation www.health.org.uk/measuresafety.

This framework allows for an organized approach to safety measurement and monitoring. It highlights five dimensions to develop a comprehensive and organized coverage of a healthcare organization's safety. The five dimensions are:

1. Past harm: encompasses both psychological and physical measures

2. Reliability: defined as ‘failure free operation over time’ and applies to measures of behaviour, processes and systems
3. Sensitivity to operations: the information and capacity to monitor safety on an hourly or daily basis
4. Anticipation and preparedness: the ability to anticipate, and be prepared for, problems
5. Integration and learning: the ability to respond to and improve from safety information

The significance of age related deterioration depends upon the demands of the work being undertaken. Reduced muscle strength may have a negative impact on clinical practice. The effects of chronic disease can potentiate any further reduction of clinical capacity. Cognitive decline is of particular importance because optimal medical care requires sharp cognition. The safety of patients is of prime importance, but aging doctors must also play a role in field of scarce human resources. The recognition of deteriorating health is vital and requires proactive solutions and management. Lillis and Milligan state that current methods of ensuring competence are inadequate for supporting aging doctors. They recommend a new initiative comprising collaboration between regulators, colleges and, employing institutions to support the aging doctor in providing safe and effective practice (Lillis and Milligan, 2017).

In many studies, physicians’ age is not an independent risk factor for poor outcome. Several aspects of cognition, such as judgment, wisdom, and compassion are frequently maintained or even improved with increasing age. Coupled with a lifetime of clinical experience, these preserved attributes can provide an advantage to an older physician (Katz, 2017). What remains is the question of how a department chair can intervene with an aging physician whose capacities have declined. Perhaps the most important aspect of the interaction would be to emphasize that declining skill, dexterity, and endurance - while they could be putting patients at risk - are not evidence that a physician can no longer contribute to a department or group in other capacities (Angelos, 2016).

5.6 The second victim syndrome

Medical errors are a leading cause of death in the United States (Landgren et al., 2016). Healthcare professionals can become secondary victims of medical error due to their own psychological and emotional responses as a result of involvement in the medical error. These mistakes in patient care can cause a widespread impact on practicing physicians. Both negative and positive repercussions can occur as a result of such poor patient care. Negative outcomes include self-doubt, shame, guilt, and anxiety. Positive outcomes include increased assertiveness, confidence, and improved colleague relationships. Clearly, physician involvement in medical error may cause a serious psychological response.

Identifying the factors that mediate the emotional response of a medical error on an individual will help him cope. Additionally, both the short term and long-term responses should be understood. Sirriyeh et al. identified twenty-three studies investigating the response and coping of health professionals following the event of an error. They have found that consistent findings support the existence of an intense emotional response, and a significant impact of the error on individuals' professional and personal lives (Sirriyeh et al., 2010). Furthermore, the study revealed that current research fails to fully address how individuals cope with making an error, and the effects of the long-term emotional impact of the error on themselves and those around them, especially their patients.

Medical errors and adverse events are unavoidable in the reality of a healthcare setting. Although this is true, involvement in errors generally causes grim health effects, serious emotional distress, and variable performance related consequences in staff members and physicians. Committing a medical error often provokes intense emotional distress that seems to considerably increase the risk for burnout and depression. This evidence suggests a reciprocal cycle of these symptoms and future suboptimal patient care and error (Schwappach and Boluarte, 2008).

Clear communication and a good relationship between colleagues and supervisors seem to be the most helpful resource for physicians. Doctors involved in errors usually do not get support from their employing institution. The mechanisms available to physicians who want to minimize medical errors in their practice are few, difficult to engage, and not always effective (Lee, 2015).

Many doctors feel that their health service employer had not been understanding of doctors who had become ill or who were subject to difficult and demanding personal circumstances (Smith et al., 2017). Adverse events that caused patient injury and for which the doctor felt responsible are most likely to have been experienced by middle aged, male doctors in intervention intensive areas of medicine such as surgery (Aasland and Forde, 2005). For many doctors, having gone through serious patient injury caused by their own shortcomings has had a negative impact on both their professional and personal lives. Perhaps the guilt and shame of making a medical error would be lessened if the doctors felt welcome by their places of employment to share their emotions, give constructive criticism, and receive feedback in a supportive environment.

6. CONCLUSIONS

A doctor's health is a significant factor in safe patient care. Patient outcome is highly dependent on the physician's competence, which is affected by his or her personal health. Physician performance is directly related to physical and emotional stressors experienced in the workplace. Studies have begun to identify the root causes that contribute to both positive and negative elements associated with the doctor's health.

Strategies to reduce poor physician performance and physician error should focus on improving ways a doctor can seek help when in need. The current individual approaches assume that the physician's performance and patient safety is affected by substance use disorder, psychiatric and neurologic disorders, burnout, physical impairment, age-related changes, and the second victim syndrome. Systematic approaches remain confident that despite individual physician problems, the overall performance is adequate for diagnostic and metacognitive tasks needed in the workplace, but nonetheless these personal issues need to be highlighted to be solved and thus improve the efficiency of the healthcare system as a whole. These two approaches are not mutually exclusive, and the major aim of each is to find and describe factors affecting a doctor's health and the manner in which those factors affect safe patient care.

The various personal physician health and psychological problems should influence policymaker's healthcare institutions of their responsibility to create optimal conditions that will result in the best patient safety. Understanding doctors as human beings and providing them with the opportunities and tools to heal themselves physically and mentally will not slow efficiency of the healthcare system; rather, it will lead to enhanced physician performance and greater patient safety and satisfaction.

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9. BIOGRAPHY

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