CLINICIAN TEACHERS' MENTAL HEALTH: THAI PHYSICIANS

Exploring Internal and External Contributors to Mental Health

among Thai Physicians in Clinical Teaching Contexts

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Abstract

Physicians who teach in clinical settings experience considerable psychological challenges in being responsible for both student learning and patient care. The present study aimed to determine the prevalence of physician burnout and professional fulfillment, and to identify internal and external factors associated with mental health outcomes in Thai clinician teachers working in non-university teaching hospitals. A one-time online questionnaire was completed by physicians at 37 governmental non-university teaching hospitals in Thailand, with 227 respondents being assessed in the main analyses. Four mental health outcomes were evaluated including burnout, professional fulfillment, quality of life, and intentions to quit. The prevalence of professional fulfillment was 20%, and burnout was 30.7 %, Hierarchical regression analysis evaluated both an internal, psychological predictor (clinical teaching self-efficacy) and external, structural predictors (multiple roles at work, teaching support) controlling for the background variables of gender, years of teaching experience, family roles, and chronic disease. Results showed clinical teaching self-efficacy to positively predict professional fulfillment (β = .292, $p \le .001$) and negatively predicted burnout ($\beta = -.206$, p = .003) highlighting the importance of teaching development plans for Thai physicians to enhance clinical teaching selfefficacy and improve mental health outcomes.

Résumé

Les médecins enseignant en milieu clinique font face à des défis psychologiques considérables lorsqu'ils sont responsables à la fois de l'apprentissage des étudiants et des soins aux patients. La présente étude visait à déterminer la prévalence de l'épuisement professionnel et de l'épanouissement professionnel des médecins, et à identifier les facteurs internes et externes associés aux résultats de santé mentale chez les enseignants cliniciens thaïlandais travaillant dans des hôpitaux publiques. Un questionnaire en ligne a été rempli par les médecins de 37 hôpitaux publiques gouvernementaux en Thaïlande, avec 227 répondants évalués dans les analyses principales. Quatre résultats de santé mentale ont été évalués, notamment l'épuisement professionnel, l'épanouissement professionnel, la qualité de vie et les intentions d'arrêter de fumer. La prévalence de l'épanouissement professionnel était de 20 % et l'épuisement professionnel était de 30,7 %. L'analyse de régression hiérarchique a évalué à la fois un prédicteur psychologique interne (auto-efficacité de l'enseignement clinique) et des prédicteurs externes (rôles multiples au travail, soutien à l'enseignement) contrôlant les variables contextuelles du genre, des années d'expérience en enseignement, des rôles familiaux et des maladies chroniques. Les résultats ont montré que l'auto-efficacité de l'enseignement clinique prédisait positivement l'épanouissement professionnel ($\beta = .292, p \le .001$) et l'épuisement prédit négativement ($\beta = -.206$, p = .003), soulignant l'importance des plans de développement de l'enseignement pour les médecins thaïlandais afin d'améliorer l'auto-efficacité de l'enseignement clinique et améliorer les résultats en matière de santé mentale.

Introduction

Physician mental health has long been examined as vital to quality healthcare. As many physicians work long hours without adequate self-care, their mental well-being is often ignored resulting in challenges at work or in their personal life. Physician burnout is thus becoming increasingly prevalent internationally, impacting patient outcomes and entire health care systems (e.g., medical error, patient safety; West et al., 2018). A recent systematic review by Rotenstein et al. (2018) reported a prevalence rate for physician burnout of 67%, with many factors found contribute to higher burnout including both internal factors (e.g., gender, age and years of experience, knowledge and skills, type of specialty, psychological characteristics, personal health issues and lifestyle), and external factors (e.g., close relationships, social support, work autonomy, workload, multiple roles, job security).

In Thailand, empirical evidence on burnout and well-being in physicians is limited. Nevertheless, recent work by Pitanupong and Jatchavara (2018) with physicians in the lower southern region of Thailand suggests a remarkably high burnout prevalence rate of 99.6%, with number of work hours per week, the physician's academic performance in medical school, type of medical specialty, perceived sleep quality, perceived work-related stress, and family stress being statistically associated with the Thai physician burnout. However, as study participants were recruited exclusively from the lower southern region of Thailand and included only physicians from secondary and tertiary care hospitals, these results may not accurately represent the prevalence of physician burnout at other institution types (e.g., medical education centres) across the country due to subcultural differences (e.g., lifestyles, religions).

In recent years many tertiary care hospitals in the Thai public health sector have become additionally responsible for medical educational centres (MECs) that provide teaching programs for both undergraduate and postgraduate medical trainees. Therefore, the addition of unfamiliar educational roles to ongoing patient care and administrative responsibilities may induce mental health challenges in these physicians. This assumption is supported by findings from Khan et al. (2019) with academic anesthesiologists in Pakistan that showed a burnout prevalence rate of 50% due largely to the perceived mismatch with their primary career choice and dissatisfaction with managing multiple roles (e.g., academic vs. practice).

To summarize, data concerning physician burnout and relevant contributors in Thailand specific to modern teaching contexts (e.g., medical education centres) are currently not available. Accordingly, the present research aimed to: 1) determine the prevalence of physician burnout and professional fulfillment among Thai physicians from multiple MEC sites in the public health sector; and 2) examine how selected personal and social factors are potentially associated with mental health among physicians in Thailand with MEC teaching roles. The study conducted was cross-sectional in nature and recruited Thai physicians from multiple sites in the public health sector to complete an online questionnaire concerning their mental health and contributing factors. This research was expected to be of benefit in providing more specific country-level data on physician burnout and well-being levels in Thailand, and greater insight into the specific types of internal and external factors are associated with Thai physicians in a teaching-focused context. This data was also expected to inform the Thai Ministry of Public Health in strategic planning to provide solutions to reduce burnout and promote well-being among clinician teachers employed in non-university, public health settings, and the organization might also further initiate the well-being protective plan for future health professions education.

Literature Review

Why is Physician Mental Health of Concern?

Physician mental health has been recognized as a significant issue in the healthcare system due to its various negative impacts on physicians and patients. Studies over the past decades have found that physicians with mental health issues can jeopardize patient care quality and safety (Abdulaziz et al., 2009; Dewa et al., 2017; Lacy & Chan, 2018; Lee et al., 2013; Rabatin et al., 2016; Shirom et al., 2006). Awareness and promotion of physician mental wellbeing are thus essential to an efficient healthcare system. However, mental health problems could be hard to detect since they manifest in various ways, unlike more severe psychiatric diseases that present more specific signs and symptoms. Examples of mental health problems include stress, anxiety, depression, and burnout, all of which can be elicited by the work context of physicians and may impact their well-being and quality of life. However, there remain underexplored questions in existing research on physician mean health such as: Are physicians who work as both a clinician and a clinical teacher subject to higher risks of mental health problems? Does this additional role impact their mental health? It is crucial for us to study this issue with physicians who teach because they are providing clinical care and role modelling professional and psychological aspects of medicine to their learners.

Physician burnout is an occupational hazard in medical settings, with burnout being defined as resulting from chronic workplace stress and characterized by emotional exhaustion, cynicism or depersonalization, and feelings of reduced personal accomplishment (Maslach & Zimbardo, 1982). The provision of patient care presents daily emotional challenges for physicians that can eventually develop into burnout and, in turn, mental and physical illness. For example, occupational burnout has been found to contribute to major depressive disorder, sleep disturbance, chronic myofascial pain syndrome, metabolic syndrome, type 2 diabetes, hypertension, cardiovascular diseases, inflammatory problems, immunity problems, as well as cancer and gastrointestinal problems (Melamed et al., 2006). Therefore, it is essential to evaluate and prevent burnout in physicians, and to further explore how other roles in addition to being a care provider, such as teacher, administrator, or researcher, may further contribute to work stress and ill health.

Prevalence of Physician Burnout

Many studies worldwide have shown physician burnout to vary in prevalence from 22.2 percent to 99.6 percent (Bourne et al., 2019; Galaiya et al., 2020; Grover et al., 2018; Higgins et al., 2021b; Kesarwani et al., 2020; Ma et al., 2019; Ofei-Dodoo et al., 2019; Pitanupong & Jatchavala, 2018; Rotenstein et al., 2018; Sanfilippo et al., 2017; See et al., 2018; Shanafelt et al., 2009; van der Wal et al., 2016). Galaiya et al. (2020) suggest in their systematic review that one reason for this variability may be differences in burnout definition. They mentioned, for example, that even though many studies have used the Maslach Burnout Inventory (MBI) scale to measure burnout, there were no specific standardized cut-off scores used to classify respondents. Moreover, Rotenstein et al. (2018) found in their systematic review and meta-analysis that physician burnout prevalence also varies considerably by country.

For example, a study with Dutch anesthesiologists reported a burnout prevalence of 18% (van der Wal et al., 2016), with a study of American surgeons reporting burnout prevalence at 40% (Shanafelt et al., 2009). In contrast, a study with physicians at tertiary care hospitals in Northern India reported the prevalence of burnout at 90% (Grover et al., 2018), with a study conducted in Southern Thailand reporting 99.6% burnout prevalence among physicians in tertiary and secondary care hospitals (Pitanupong & Jatchavala, 2018). Among these studies, the

authors defined the prevalence of burnout differently, even though they all used the MBI scale to measure burnout. For instance, the study with Dutch anesthesiologists used percentiles above 75 to define burnout, the study with American surgeons combined high scores in emotional exhaustion and/or depersonalization to determine burnout, and the studies from India and Thailand included scores from both the emotional exhaustion and depersonalization subscales to define the burnout prevalence.

Studies in primary care settings have also found the prevalence of burnout in physicians to vary widely based on not only burnout definition but also workplace factors (e.g., from 19% to 81% (Brown et al., 2019; Liebenberg Andrew, 2018; Rabatin et al., 2016). For example, whereas greater burnout may be due to care provider characteristics (e.g., female physicians reporting higher burnout levels), findings also show facility characteristics to predict burnout levels among primary care physicians (e.g., settings with inadequate equipment or lack of management support contributing to higher burnout). Similarly, studies also show widely varying burnout levels as a function of work context, with academic physicians reporting particularly high levels (e.g., 45.6%, Rao et al., 2020; 79%, Ganeshan et al., 2020; 26%, Summers et al., 2019; 35.2%, Giess et al., 2020).

However, it is unclear to what extent additional teaching responsibilities at these educational institutions contributed to physician burnout over and above other workplace characteristics. For example, Ganeshan et al. (2020) studied academic radiologists whereas Summers et al. (2019) studied physicians employed at military medical schools. Similarly, it is possible that physician characteristics may have accounted for these differences, with greater burnout found mainly among academic physicians with fewer years of practice, greater work overload, more concerns about promotion, greater perceived lack of appreciation from staff or patients, and perceived lack of autonomy (Ganeshan et al., 2020). Interestingly, although Ganeshan et al. found workload to be positively correlated with physician burnout, the correlation between the percentage of teaching hours and burnout was not significant. Moreover, whereas each of these studies was conducted in a university teaching setting, there is limited research exploring burnout for physicians who work in non-university teaching hospital environments.

Physician Mental Health in Thailand

Although physician mental health has been studied worldwide, there are few studies conducted in the Thai context. In 2004, Sithisarankul and colleagues surveyed the mental health of 440 Thai physicians using the Thai General Health Questionnaire (Thai GHQ-28) and found that physicians who reported abnormal mental health status (7.4%) also reported significantly lower career satisfaction (Sithisarankul, Ruksakom, et al., 2004). Related study findings nevertheless showed high overall satisfaction levels among Thai physicians (60.2% reported feeling satisfied; (Wattanasirichaigoon, Polboon, et al., 2004; Wattanasirichaigoon, Ruksakom, et al., 2004). However, findings from another survey conducted in 2004 with 327 Thai physicians showed 20% to have chronic diseases such as hypertension, diabetes mellitus, and ischemic heart disease, for which adequate treatment depends on lifestyle modifications (Sithisarankul, Piyasing, et al., 2004). Nevertheless, these authors also reported that physicians with lower longevity did not engage in regular exercise nor practice religious or recreational activities.

In 2004, Visanuyothin et al. (2004) conducted a qualitative study to investigate risk factors of suicide among 18 Thai physicians by using a "psychological autopsy method" (i.e., consulting medical records, personal documents, and in-depth interviews with close others) of doctors who committed suicide. These authors reported that the top three factors associated with psychological problems and suicide in Thai physicians were interpersonal conflict or loss (e.g., loss of loved ones, conflict with close others) and psychiatric illness. A follow-up study by Vutyavanich et al. (2007) studied risk factors that affected the quality of life among 1,700 Thai female physicians using the Thai version of the brief WHO quality of life instrument (WHOQOL-BREF-THAI). Results showed that female physicians reported fair to good quality of life scores despite an excessive average of 57.3 hours of work per week, highlighting the importance of social-psychological factors in Thai physician burnout.

A cross-sectional study by Pitanupong and Jatchavala (2018) with 245 Thai physicians working in secondary and tertiary care hospitals in the southernmost region of the country further compared the prevalence of burnout between physicians in regions with low vs. high levels of political conflict and unrest using the Maslach Burnout Inventory (Thai version). Although results showed no difference between these two type of regions, the overall prevalence of burnout was notably high (99.6%) and exceeded rates found in prior international studies (e.g., Dutch anesthesiologists as reported in van der Wal et al., 2016: 18%; American surgeons as reported by Shanafelt et al., 2009: 40%; meta-analysis by Rotenstein et al., 2018: 67%). However, the high prevalence rate reported was likely the result of the authors classifying the burnout group as having any score above zero on the MBI. Nevertheless, these authors also found burnout to be positively associated with hours worked, type of medical specialty (e.g., anesthesiology, radiology), perceptions of work-related stress, and stressful family relationships.

In summary, although studies of physician mental health in Thailand show considerable variability on measures of quality of life, only one study to date has examined physician burnout and none have focused specifically on the role of clinical teachers. The studies also vary in terms of sample characteristics and assess physicians across a range of health care contexts or in specific geographic regions, making it difficult to generalize findings to the general population of Thai physicians. Accordingly, there is a need for further research on the prevalence of Thai physician burnout across the country and the factors associated with greater burnout, particularly in teaching hospitals in the public health sector where physicians have additional teaching roles alongside their other fundamental roles as physicians in governmental non-teaching hospitals.

Physician Burnout versus Professional Fulfillment

Well-being in physicians can be assessed using both positively and negatively valenced indicators, with each aspect depending on various factors. For example, whereas burnout is defined as an adverse mental health outcome (Maslach & Leiter, 2017), professional fulfillment represents a positively valenced indicator of psychological health not unlike positive emotions such as happiness, appreciation, joy, or enthusiasm. Considering physicians' work environment and demands in clinical settings, they are prone to encountering various emotional situations that can elicit either stress or satisfaction. For instance, physicians often deal with life-or-death patient conditions and may experience pride by facilitating recovery, or be required to manage family grief or bereavement if the patient does not survive. Physicians must also deal with patients who have chronic pain or acute health challenges that require both effective medical care and communication to lead the healthcare team. As a result, physicians can experience various challenges that may lead to both fulfillment and burnout throughout the care process.

In addition to the aforementioned conceptualizations of burnout by Maslach and colleagues, there are also useful theoretical approaches for understanding professional fulfillment, a positive indicator of mental health. According to the Stanford WellMD model, the antecedents of professional fulfillment in physicians can be categorized into three domains: culture of wellness, efficiency of practice, and personal resilience (Stewart et al., 2019a). Although fostering a culture of wellness and efficiency of practice are represented as being the responsibility of the organization, personal resilience is proposed to be an attribute of the individual. This model thus emphasizes how important organizational structures are to professional fulfillment in physicians.

Figure 1





Note. The image illustrates three main factors affecting professional fulfillment in physicians. From "Conceptual Models for Understanding Physician Burnout, Professional Fulfillment, and Well-being," by Stewart et al., 2019, *Current Problems in Pediatric & Adolescent Health Care*, *49*(11), 100658. Copyright 2016 by The Board of Trustees of the Leland Stanford Junior University. Similarly, a multi-level model outlining the various factors influencing well-being in health care professionals was proposed by Penwell-Waines et al. (2018; see Figure 2). Whereas the majority of influences on well-being outlined in this model represent external sources, including social support, teamwork, rewards, culture, policies, organization, and the health care system, it also proposes that individual factors (e.g., attitudes, self-care practices) can have a significant effect on physician well-being. Following from these models of professional fulfillment and research on occupational burnout, Trockel et al. (2018) published a brief instrument for assessing both physician burnout and fulfillment referred to as the Professional Fulfillment Index (PFI).

Figure 2

Multi-level Model of Influences on Well-being in Health Care Professionals



Note. The image illustrates multi-level of factors that can influence on well-being in health care professionals. From "Perspectives on Healthcare Provider Well-being: Looking Back, Moving Forward" by Penwell-Waines et al., 2018, *Journal of clinical psychology in medical settings*, 25(3), p. 295-304. Copyright 2018 by Springer Science+Business Media, LLC, part of Springer Nature.

Factors Associated with Physician Mental Health

Studies have shown various factors to be related to physician mental health, with these influences typically categorized into internal and external factors. Internal factors include aspects of the individual, such as gender, age, and skills, whereas external factors refer to circumstances outside the individual such as family life, work environment, organization support, and system features. Findings concerning the role of each type of factor in physician mental health are outlined below.

Internal Factors

Internal factors represent all aspects of an individual, such as gender, age, skills, personality, and perceptions. With respect to *gender*, many studies have found that female physicians report more mental health issues such as burnout than do male physicians (Abdulaziz et al., 2009; Galaiya et al., 2020; Hughes et al., 2019; Lindeman et al., 2017; Patel et al., 2018; West et al., 2018) with work-home conflict proposed as a possible reason for this gender difference (Langballe et al., 2011; Patel et al., 2018; West et al., 2018). However, some studies have found no significant difference in burnout between male and female physicians (Khan Fauzia, 2019; Lindeman et al., 2017; Rotenstein et al., 2018; Sanfilippo et al., 2017), with one study showing male physicians to report higher levels burnout than their female counterparts (Hayes et al., 2019) potentially due to higher workloads (Langballe et al., 2011).

The age and years of experience of physicians have also been examined as internal factors that can influence physician burnout. Finding suggest that older age and/or greater years of experience may be a preventive factor for physician burnout (Galaiya et al., 2020; Ganeshan et al., 2020; Hayes et al., 2019; West et al., 2018), with findings from Ganeshan et al. (2020) further showing more years of experience (and resulting higher academic rank) to predict lower burnout in academic radiologists. Although it is possible that older or more experienced physicians may experience lower burnout due to greater professional fulfilment, findings from Iorga et al. (2017) showed a greater sense of personal accomplishment reported by more experienced physicians to not mediate effects on other burnout symptoms (i.e., depersonalization, exhaustion). However, other findings concerning the effects of physicians' years of experience on well-being are mixed. For example, findings from Lindeman et al. (2017) show younger physician trainees tend to report lower burnout levels, potentially due to higher emotional intelligence. Similarly, a systematic review of surgeons by Galaiya et al. (2020) found that although higher burnout was associated with more years of experience among surgeons in general, research with plastic surgeons shows greater experience to be related to lower burnout levels (Galaiya et al., 2020; Qureshi et al., 2015).

Physician burnout has also been found to be associated with *psychological factors* such as specific psychological characteristics, emotional intelligence, and work attitude (Galaiya et al., 2020; Lee et al., 2013; Lindeman et al., 2017). For example, Lee et al. (2013) reported in their meta-analysis that negative work attitudes were associated with greater physician burnout as represented by higher emotional exhaustion and depersonalization. Likewise, Lindeman et al. (2017) found that higher levels of emotional intelligence, the personality trait of agreeableness, as well as positive work attitudes (i.e., greater perceptions of autonomy, social support, feedback, and opportunities for development) were associated with low burnout levels both in the shortterm and on long-term follow-ups for physician trainees. However, this study also found that other typically beneficial personality traits (e.g., emotional stability and conscientiousness) did not predict long-term levels of burnout in physician trainees.

Similarly, Galaiya et al. (2020) found in their systematic review of surgeon burnout that higher levels of emotional intelligence and personality factors such as extraversion, agreeableness, openness, and conscientiousness were associated with lower burnout. Findings from Iorga et al. (2017) also show physicians with higher levels of neuroticism and alexithymia as personality traits to report higher burnout levels, with greater self-compassion corresponding with lower burnout levels in physicians who work as academic radiologists (Giess et al., 2020). In addition, lower desire to practice medicine and lower work ability has also been found to be associated with higher physician burnout (Hayes et al., 2019), with greater job satisfaction and positive attitudes toward their career (e.g., finding their work rewarding, enjoying talking about their work with others, and feeling contented with their career choice) instead serving as the protective factors (Ganeshan et al., 2020; Khan Fauzia, 2019).

Personal health and lifestyle issues such as sleep disturbance, back and neck pain, low frequency of exercise, and high alcohol consumption have also been found to negatively impact physician burnout and distinguish burnout from non-burnout groups (Peterson et al., 2008; Sanfilippo et al., 2017). However, in Peterson et al., their study population was not specific to physicians but included several health care professions. Nevertheless, other studies have similarly found that self-reported poor sleep/rest quality are significantly associated with higher physician burnout (Giess et al., 2020; Pitanupong & Jatchavala, 2018). High occupational stress in physicians has additionally been found to be related to lifestyle-related cancer risk factors such as obesity, heavy smoking, and lack of physical activity (Belkić & Nedic, 2007). Conversely, physicians with low lifestyle-related risk (not current smokers, body mass index \leq 28, regular physical activity, no daily alcohol drinking) tend to report lower job stress and better well-being outcomes (Belkić & Nedic, 2007; Hughes et al., 2019).

External Factors

Factors external to the individual that can affect physician mental health have also been examined as per the various circles of influence illustrated in the multi-level model shown in Figure 2. Concerning the role of *close relationships*, physicians who indicated marital status as single have been found to report higher burnout, with physicians who indicated being married (i.e., having a supportive spouse) or having children reporting lower burnout levels (Bourne et al., 2019; Galaiya et al., 2020). Other studies, however, have found no correlation between marital status nor number of children and burnout (Khan et al., 2019). Relatedly, physicians who reported having greater social support for their work from colleagues, supervisors, patients, or family members also reported lower burnout (Lee et al., 2013; Sanfilippo et al., 2017; West et al., 2018), with Lindeman et al. (2017) also showing greater perceived social support to be associated with lower burnout.

Lack of autonomy at work has been found to correspond with higher physician burnout in multiple studies (Ganeshan et al., 2020; Langballe et al., 2011; Lee et al., 2013; West et al., 2018). Likewise, Lindeman et al. (2017) also reported that higher perceptions of autonomy, meaningful feedback, and opportunities for development at work were linked to lower burnout. Physicians with greater authority or leadership positions have been found to report lower burnout and greater fulfillment (Hughes et al., 2019; Shanafelt et al., 2020), with academic physicians

who experienced conflicts with hospital leaders also reporting higher burnout (Ganeshan et al., 2020).

Similarly, many studies report that *high workloads* and long work hours are linked to high burnout or poor quality of life in physicians (Ganeshan et al., 2020; Khan Fauzia, 2019; Langballe et al., 2011; Lee et al., 2013; Pulcrano et al., 2016; Sanfilippo et al., 2017). Physicians providing outpatient care have also reported higher emotional exhaustion than physicians focusing on inpatient care (Roberts et al., 2013). Physicians who perceive their work demands as infringing on their home life have also been shown to report greater burnout (Ganeshan et al., 2020; Langballe et al., 2011; Lee et al., 2013). Moreover, work-related pressure has been found to indirectly predict stronger intentions to quit the medical profession among physicians due to the mediational role of greater burnout (Khan et al., 2018).

Physicians who have *multiple roles* at work are also at risk of poor mental health. Role ambiguity or conflict has been shown to negatively affect emotional exhaustion in physicians (Lee et al., 2013), with findings showing more hours spent on additional administrative duties to predict higher burnout (Rao et al., 2017). However, in one qualitative study of academic physicians, most interviewees reported positive feelings about their multiple roles (van den Berg et al., 2015). This study indicated that physicians may use specific coping strategies to help them fulfill their different roles; for instance, cognitively reappraising their teaching roles as helping them becoming a better educator and mentor. Interestingly, other findings suggest that physicians may in fact experience greater burnout related to their role as a clinician than their role as a teacher (Dembitzer et al., 2012), with other results suggesting that physicians who also teach may report lower stress levels (Rutter et al., 2002). When considering the *type of specialty*, emergency physicians were found to have the highest burnout, whereas preventive and occupational medicine physicians reported the lowest burnout (Rothenberger, 2017; Shanafelt et al., 2015). Pitanupong and Jatchavala (2018) also found that physicians who practiced in a specialized medical field (e.g., ophthalmology, dermatology, anesthesiology) reported higher burnout as compared to physicians who practiced in more generalized fields (e.g., internal medicine, pediatrics). The authors further suggest that this variation across fields of practice might be due to differences in personal readiness after residency training, clinical skills requirements, workloads, work environment (e.g., specific patient conditions, work atmosphere, surrounding emotions), or types of patient outcomes (e.g., recovery vs. chronic decline). Finally, *job security* has also been shown to be empirically associated with lower burnout among physicians (Ganeshan et al., 2020). Conversely, inadequate or unstable income, and inadequate incentives, have also been linked to greater burnout among physicians (Pulcrano et al., 2016; West et al., 2018).

To summarize, a wide variety of both internal and external factors have been empirically observed to influence burnout and professional fulfillment among physicians. However, there to date exists limited research investigating both internal and external factors in relation to mental health among Thai physicians (cf. Pitanupong and Jatchavala (2018). Moreover, there is no published research exploring how Thai physicians are currently dealing with national challenges, most notably increased workload and additional roles pertaining to novel requirements to engage in instruction in addition to clinical work at non-university teaching hospitals (see Nithiapinyasakul et al., 2016, for more on the development and impact of recent projects aiming to increase physician education in rural areas).

Clinical Instruction and Mental Health

Whereas the antecedents of mental health in K-12 and post-secondary teachers have been studied for decades (for reviews, see García Carmona et al., 2019; Ghanizadeh & Jahedizadeh, 2015; Sabagh et al., 2018), there is markedly limited research on the psychological demands of clinical teaching for physicians. Most notably, teaching-related self-efficacy (i.e., selfconfidence) has consistently been examined as an internal psychological resource that protects against burnout for educators in both K-12 settings (e.g., Klassen et al. (2009) and postsecondary contexts (e.g., Hall et al., 2019b). For example, Skaalvik and Skaalvik (2010) showed significant negative correlations between teaching self-efficacy and burnout (both emotional exhaustion and depersonalization), with Wang et al. (2015) also finding teachers with high selfefficacy specifically for student engagement and classroom management to report lower exhaustion. Similarly, research shows external supports for educators to predict better well-being levels. For example, findings suggest that greater perceived autonomy from administrators corresponds with lower burnout in both K-12 teachers (e.g., Wang & Hall, 2019) and postsecondary educators (e.g., Gavrilyuk et al., 2013; Schaufeli & Bakker, 2004). In contrast, research exploring how internal and external factors (e.g., self-efficacy, support) may mitigate the challenges of additional teaching roles faced by physicians is lacking.

In medical training, clinical education is mandatory and includes three essential participants: a teacher, a learner, and a patient. Clinical teaching and learning can occur in various locations depending on the learning objectives, such as in a hospital, clinic, or community where the patients reside. Clinical teaching can also occur in a simulation setting involving manikins or virtual patients (for a review, see Wiseman & Snell, 2008) and in various real-world contexts including bedside, ambulatory, procedural, and home-care teaching. Whereas some contexts allow for the teacher and learner to spend more time teaching and learning (e.g., bedside teaching in an inpatient care unit), other contexts require instruction to be conducted in a more restrictive manner (e.g., ambulatory teaching at a crowded outpatient care unit; Dent, 2005).

Physicians who teach in clinical settings, known as clinician teachers, thus typically have more roles and responsibilities than physicians working primarily as clinicians. Clinical encounters can be challenging even without the educational component (e.g., due to time constraints, or complicated patients requiring a high degree of care coordination and responsiveness to unpredictable clinical deterioration) and require clinical teachers to have exceptional communication with patients and learners while monitoring both patient treatment and learner education. Clinical instruction further involves effective collaboration with other healthcare teams such as nurses, occupational therapists, and pharmacists while utilizing the leadership skills necessary for conveying a professional role model for physician trainees. Serving as a role model is critical for clinician teachers to satisfy the core competencies of medical training pertaining to professionalism in the clinical setting.

Clinician teachers must thus contend with the work-related stress of maintaining up-todate medical knowledge, care delivery, and teaching capabilities, while also faced with high workload and often limited support or resources (Harden, 1999). For example, clinician teachers may be required to provide high-quality instruction to trainees when dealing with unclear disease diagnosis and an angry patient during a limited period of time with insufficient resources (e.g., testing equipment is in use). In such contexts it becomes exceedingly difficult to maintain a focus on the learners while also prioritizing a challenging patient, possibly resulting in inadequate teaching and work-related stress. On the other hand, if clinician teachers can manage such situations successfully, they may perceive additional clinical roles as professionally fulfilling (e.g., van den Berg et al., 2015).

Trends in clinical instruction in a medical training context have been transforming over time. Following the Flexner (1990) Report in the early 1990s, medical training in the United States initiated additional clerkship years to broaden inpatient clinical experience for medical learners. However, in recent decades the focus of competency outcomes in medical graduates has shifted to include not only increasing medical knowledge but also training them to become "doctors of society" (Frenk et al., 2010). As part of this paradigm change, medical curriculum and the assessment methods have become more complex to ensure newly graduated medical doctors are safe and effective care providers as well as "change agents" in managing population health. As a result, clinician teachers need to adopt both a continually up-to-date and holistic approach to their clinical teaching that can lead to overload and burnout.

Some clinician teachers also have a role as training program managers, such as program directors, course directors, or deans of an educational institution. These additional administrative responsibilities can thus further contribute to the workload of clinician teachers as they are often undertaken without sufficient compensation or support (e.g., Rao et al., 2017). However, given contradictory findings from Rutter et al. (2002) showing clinician teachers with more authority in their jobs to have lower stress levels, the extent to which additional administrative teaching roles impact physician well-being is unclear. A mixed-method study exploring tensions in qualified clinician educators by Sethi et al. (2017) also did not observe additional pressure or anxiety in more experienced clinician educators (i.e., 45+ years old) who instead perceived such administrative instructional roles as personally valuable. Thus, current findings on the impact of

administrative instruction on well-being in clinician teachers are mixed and suggest that such roles may in fact be positively associated with professional fulfillment.

In some settings, clinician teachers may additionally be required to receive basic training in instructional principles pertaining to medical education before starting their teaching responsibilities (Hodgson & Wilkerson, 2014; McLean et al., 2008). For examples, clinician teachers may be required to complete lessons on teaching techniques in clinical settings, standardized evaluation in medical teaching, or providing constructive feedback. Such professional development programs should help new clinician teachers gain essential instructional and mentorship skills; however, it places an additional learning burden on physicians who are typically expected to maintain their clinical practice. Moreover, although such faculty development programs are often well-established features of established university teaching hospitals, they may not be available in newly established teaching sites thus requiring novice clinician teachers at those locations to begin clinical instruction without sufficient preparation.

Considering the added complexity and responsibility of clinical teaching, it is reasonable to expect that physicians' internal perceptions of incompetence or low self-efficacy could significantly impact their well-being, particularly for novice clinician teachers. Similarly, although findings on the psychological demands of taking on additional teaching roles as a physician are mixed (e.g., Rutter et al., 2002; van den Berg et al., 2015), published research on this topic is limited and may not adequately reflect current trends in medical education. Relatedly, whereas existing research on clinician teachers suggests that exploring internal and external factors may be useful for understanding the experiences of physicians who teach, this topic has yet been examined in empirical research with Thai clinician teachers.

The Present Study

The present study was conducted in Thai context as part of the Collaborative Project to Increase Rural Doctor (CPIRD) initiative of the Thai Ministry of Public Health representing a collaboration of 37 Medical Educational Centres (MECs) across 36 provinces. The CPIRD MECs are non-university teaching centres housed within the government's medium to largesized public hospitals, with these previously non-teaching hospitals now responsible for delivering undergraduate and postgraduate medical programs. Although the primary responsibility of physicians in these government hospitals was previously to simply provide care, the CPIRD faculty development program now additionally requires clinicians to prepare to teach. However, no empirical research has yet been conducted on how internal factors (e.g., teachingrelated self-efficacy) or external factors (e.g., additional teaching roles) may be impacting jobrelated stress and the quality of life in Thai clinician teachers in this unique work environment.

Although, there are many studies on physician mental health worldwide, there is limited research conducted in Thailand (cf. Pitanupong & Jatchavala, 2018). Moreover, existing related research with Thai physicians has focused specifically on physicians' experiences in regions of political unrest (e.g., Pitanupong & Jatchavala, 2018), and have used general mental health assessments (e.g., Thai General Health Questionnaire) that do not address job-related stress or teaching responsibilities (e.g., Sithisarankul, Ruksakom, et al., 2004). Accordingly, the present study explored three main factors as potential predictors of clinician teachers' mental health in the Thai MEC context: teaching self-efficacy (internal motivation), multiple roles and teaching support (external pressures).

As noted in the preceding literature review, there is substantial evidence in previous studies that greater teaching self-efficacy can predict lower burnout in educators (e.g., K-12

teachers: Klassen et al. (2009); post-secondary faculty: Hall et al., 2019b). Previous evidence also shows mixed effects of physicians having an additional teaching role (Dembitzer et al., 2012; Rutter et al., 2002; van den Berg et al., 2015) thus requiring more research to address how instructional settings might moderate these effects (e.g., the Thai MEC context). There is also occupational research showing that support can serve as a resource to counteract the demands of multiple roles (e.g., Schaufeli & Bakker, 2004) suggesting that the supportive external factor might also mitigate burnout and improve well-being in Thai physician teachers.

The present study thus had two main study objectives: 1) to identify the prevalence of burnout and professional fulfillment in Thai physicians who teach in an MEC context, and 2) to determine critical internal and external factors related to their mental health outcomes. More specifically, this research examined four types of mental health outcomes specifically related to the medical profession including professional fulfillment, quality of life, burnout, and quitting intentions to assess both positive and negative indicators. It was anticipated that this research initiative would provide useful evidence with which to better understand the mental health situation of clinical teachers in non-university teaching hospitals in Thailand, and allow responsible organizations to better design MEC environments based on critical internal and external factors to allow Thai physician educators to teach more effectively.

Method

Participants and Procedure

The participants in this study included 297 physicians working in one of 37 Medical Educational Centre (MEC) hospitals in the Thai public health sector. All physicians employed at an MEC in Thailand are clinician teachers having additional teaching roles beyond providing care to patients. The MECs are responsible for training doctors for rural practice and were developed to specifically address the shortage of physicians in Thailand's rural and remote areas. Of the total participants, 70 were excluded from further analysis due to substantial missing data (i.e., responding to less than 35% of the questionnaire), resulting in 227 participants being assessed in the main analyses. This sample size was considered sufficient as it was between the estimated sample sizes from power analyses (*n4studies* application) based on Ganeshan et al. (2020) infinite population proportion, p = .79, error = .035, power = .80, alpha = .05 and Pitanupong and Jatchavala (2018) infinite population proportion, p = .99, error = .035, power = .80, alpha = .05.

The cross-sectional study design included a one-time online questionnaire hosted by Qualtrics with all study protocols approved by research ethics committees at Surat Thani Hospital in Thailand and McGill University (approval numbers: 020/2564, 20-12-027, respectively; see Appendix A). Online data collection was conducted from April through June 2021, with clinician teachers being recruited from all 37 MECs as approved by the CPIRD office coordinating the national collaborative effort to increase production of rural doctors in Thailand. The recruitment letter and the link to the online questionnaire were distributed from the directors and educational officers at each MEC. An initial informed consent page outlined confidentiality of responses and anonymity (see Appendix B) with the questionnaire consisting of five sections: 1) demographic information (e.g., age, gender, relationship status, income, work hours, chronic disease); 2) teaching experience (e.g., role in teaching, subject, supports available); 3) quality of life (EQ5D5L questionnaire, Thai version); 4) Professional Fulfillment Index (PFI) scale; and 5) teacher self-efficacy (Maastricht Clinical Teacher Questionnaire, MCTQ). The questionnaire was translated from English into the Thai language using forward-backward translation.

Study Measures

As the present study focused on both positive and negative indicators of mental health in Thai physicians, The Professional Fulfillment Index Scale (PFI) was used to assess professional fulfillment, and the Thai version of the EURO Quality of life – five-dimension – five-level (EQ5D5L) was further administered to evaluate physicians' quality of life. Conversely, physician burnout was assessed using the PFI measure and physicians' intentions to quit the profession was also assessed as indicators of psychological maladjustment using intention to quit scale. The Maastricht Clinical Teacher Questionnaire (MCTQ) was used to assess clinical teacher self-efficacy, with all study items presented in Appendix C. Descriptive statistics for all study measures are presented in the Results section.

Professional Fulfillment Index (PFI)

The PFI scale was developed by Trockel et al. (2018) to assess the mental health among physicians in their professional career. The scale contains three measures assessed on a five-point Likert scale including professional fulfillment (six items; e.g., sample item: "my work is satisfying to me"; 0 = not at all true, 4 = completely true) as well as burnout subscales assessing work exhaustion (four items; e.g., sample item: "I have felt emotionally exhausted at work") and interpersonal disengagement (six items; e.g., sample item: "my job has contributed to me feeling less empathetic with my colleagues"; 0 = not at all, 4 = extremely). As recommended by Trockel et al., an overall burnout measure was calculated by combining the work exhaustion and interpersonal disengagement subscales.

As outlined in Trockel et al. (2018), construct validity of the PFI has been confirmed in correspondence with the Maslach Burnout Inventory, the WHOQOL-Brief version, and PROMIS short-form depression, anxiety, and sleep-related impairment scales. Trockel et al. further report

strong Cronbach's alpha values for professional fulfillment (.91) and overall burnout (.92), and high test-retest reliability for professional fulfillment (.82) and overall burnout (.80). The authors also provided the ROC analysis for a cut-off point to determine professional fulfillment at a mean score of 3, with values at or above this score reflecting "very good" quality of life (sensitivity: .73, specificity: .79). The cut-off point for burnout was established in ROC analyses by the authors as scores higher than 1.33 based on three comparison scales including the MBI (sensitivity: .72 - .85, specificity: .76 - .84). The PFI has been being used not only in studies to identify burnout and professional fulfillment (Higgins et al., 2021b; Piracha et al., 2019; Zhang et al., 2021) but also in studies to evaluate interventions for promoting physician wellness (Heeter et al., 2021; Jung et al., 2021; Quan et al., 2019).

EURO Quality of Life Five-Dimension–Five-Level Scale (EQ5D5L)

The EQ5D5L developed by the EuroQOL group (Herdman et al., 2011) assesses perceived quality of life along five dimensions including mobility, self-care, usual activities (e.g., work, study, housework, leisure activities), pain/discomfort, and anxiety/depression (scale preamble: "How challenging of each of these health issues for you TODAY?"). Each dimension is then assessed by respondents according to five response levels (no, slight, moderate, severe, extreme). Accordingly, higher scores on this measure indicate *poorer* quality of life. The EQ5D5L has been used internationally to assess general health status, including in Thailand using the validated Thai version of the EQ5D5L (Pattanaphesaj et al., 2018).

Intentions to Quit

The quitting intentions scale was adapted from a work commitment scale by Hackett et al. (2001) to reflect the work conditions of governmental-employed physicians. This scale consisted of three items assessed on a five-point scale ($1 = strongly \ disagree$, $5 = strongly \ agree$)

including "I have considered quitting one or more of my professional roles (e.g., teaching, administration)," "I have considered leaving public practice for private practice," and "I have considered leaving the medical profession for another profession."

Clinical Teaching Self-efficacy

As there is currently no scale developed specifically to measure clinical teaching selfefficacy in medical education contexts, a modified version of the Maastricht Clinical Teacher Questionnaire (MCTQ) was administered to assess physicians' self-efficacy pertaining to clinical teaching. The 14-item, five-point MCTQ (Bajwa et al., 2020) assessed clinical teachers' perceived ability to coach learners, articulate concepts, explore themes, and provide meaningful feedback (1 = *strongly disagree*, 5 = *strongly agree*). Sample items include "I consistently demonstrate how to perform clinical tasks," "I serve as a role model as to the kind of health professional students would like to become," and "I give useful feedback during or immediately after direct observation of the student's patient encounters." The MCTQ has been validated to use as an instrument for the evaluation of clinical teachers (Stalmeijer et al., 2010).

Teaching Support and Experience

Perceived *teaching support* as provided one's organization was assessed using a single item with three response options: 1 = I independently prepared teaching materials without organizational support, 2 = I was partially supported by educational personnel, and 3 = I was fully supported. *Teaching experience* was measured by asking participants to indicate the number of years and months since they started their teaching roles (months were indicated as many had been required to teach for less than a year).

Multiple Work and Family Roles

The additional *work roles* of physicians, in addition to their required teaching role, were assessed using a checklist on which participants selected multiple occupational roles (e.g., care provider, hospital director, medical education centre director, head of service department, program director). The final work roles score was calculated by summing together the total number of additional professional roles indicated. To assess potential overload due to multiple *family roles*, participants similarly selected multiple options regarding possible roles in their personal life with family members (e.g., responsible for important family decision-making, breadwinner, food preparation, housekeeping, caregiving).

Results

Descriptive Statistics

Demographic Variables

Demographic data for study participants is illustrated in Table 1. Most participants were female (67.7%) with a mean age of 42.81 years (SD = 7.71). This proportion is similar to the statistics reported from the Thai Medical Council that the number of female physicians was greater than males in the age group of 31 to 50 years old (Thailand, 2021). Participants reported a variety of certified medical specialties (see Figure 3). The top three main roles the participants had in their family were breadwinner (55.9%), caretaker (e.g., housekeeping, food preparation; 50.2%), and being the primary family decision-maker ("leader"; 38.3%), with physicians reporting an average of 1-2 family roles (M = 1.74, SD = 0.97). Most participants reported not having a private practice (70.9%) and not working part-time job at a private hospital (68.1%). Although just over half of the participants (50.7%) indicated working in their hometown, a small number (3.5%) reported having recently relocated to a new workplace.

Participants also typically reported having 1-2 additional roles at work (M = 1.89, SD =

1.14) other than serving a clinical teacher. Those additional roles most often consisted of

providing care (84.6%), hospital administration (e.g., hospital director, head of healthcare teams;

51.6%), and educational administration (e.g., medical educational centre (MEC) director,

program director; 23.8%). More than one-third of the participants reported having a chronic

disease (39.6%) with the most common chronic health issues being musculoskeletal problems

Table 1

Demographic	Variables
-------------	-----------

	M(SD)	%
Gender		
Male		31.9
Female		67.7
Age	42.81(7.71)	
Roles in family	1.74(0.97)	
Family leader [†]		38.3
Breadwinner		55.9
Caretaker		50.2
Caregiver		22.0
Other roles		7.0
Income		
Sufficient and left-over money		68.3
Sufficient, but no left-over money		17.2
Insufficient, but no debt		6.2
	M(SD)	%
--	-------------	------
Insufficient, with debt		8.4
Having private practice		
Yes		29.1
No		70.9
Work hours per week in private practice	7.24(14.40)	
Having a part-time job at a private hospital		
Yes		31.9
No		68.1
Work hours per week in private hospital	5.34(11.83)	
Location of current workplace		
Working in hometown (where the family reside)		50.7
Working not in the hometown for more than five years		45.8
Working not in the hometown less than five years		3.5
Roles in the hospital other than teaching*	1.89(1.14)	
Hospital director		0.9
Medical education centre director		5.7
Head of a department		17.2
Other administrative roles in hospital		33.5
Program director		18.1
Care provider		84.6
Other jobs within the Ministry of Public Health		22.5
Other roles		7.0

	M(SD)	%
Having chronic disease		
Yes		39.6
No		60.4
Perceived severity of the disease	1.59(0.70)	
Mild		24.2
Moderate		18.9
Severe		3.1
Very severe		0.9
Overall health status	2.61(0.60)	
Poor		1.8
Fair		38.3
Good		52.9
Excellent		4.0
Self-care or health promotion plans achievement	2.88(1.00)	
I never follow my plans		9.3
I rarely follow my plans		22.9
I sometimes follow my plans		37.9
I regularly follow my plans		22.9
I always follow my plans		3.5

Note. [†]Family leader refers to the head of the family who is primarily responsible for decisionmaking, managing family crises, or manage home finances; ^{*}Every physician employed in an MEC is also a clinical teacher.

Figure 3



Certified Medical Specialties of Participants

Note. PM&R = Physical medicine and rehabilitation.

(29%), allergies or autoimmunity conditions (19%), and hypertension (12%). The majority of the participants rated their overall health status as good (52.9%); however, 70.1% of participants reported being unable to follow their self-care or health promotion plans on a regular basis.

Teaching Experience

As outlined in Table 2, the mean duration of participants' teaching experience was 10.82 years (SD = 6.51). The top three most common types of learners taught were undergraduate medical students (99.1%), postgraduate learners (78.4%), and newly graduated medical doctors (70%). The mean duration of teaching hours per week was 4.54 hours (SD = 4.16), with the majority of the participants teaching in-class lectures (94.3%). Most participants reported preparing materials to teach after office hours (84.6%) and without assistance (75.3%). The

Table 2

Teaching Experience Variables

	M(SD)	%
Teaching experience (years)	10.82(6.51)	
Type of learners [†]		
Undergraduate medical students		99.1
Postgraduate learners		78.4
Internship / newly graduated physicians		70.0
Colleagues / multidisciplinary team		52.9
Clinical teachers		20.7
Other		9.3
Teaching settings [†]		
In-class lecture		94.3
Case discussion / case conference		84.1
Ambulatory / out-patient department		81.9
Bedside teaching		72.7
Procedure teaching		69.2
Community-based teaching [‡]		31.3
Other settings		13.2
Teaching hours per week	4.54(4.16)	
Teaching preparation		
Timing of preparation		
During office hours		15.4

	M(SD)	%
After office hours		84.6
Support for teaching		
Prepare all teaching materials independently		75.3
Prepare most teaching materials independently		22.5
Receive assistance preparing most teaching materials		2.2
Proportion of job requirements (%)		
Medical service	63.95(19.89)	
Clinical teaching	17.24(9.27)	
Administrator	15.59(16.34)	
Research	3.23(4.83)	
Also functioning as a clinician-educator		28.2

Note. [†]Participants were permitted to select multiple teaching settings; ‡Community-based teaching refers to teaching in community settings such as home visits, community participation, and public health.

average reported proportion of job requirements devoted to teaching was 17.2%, with the primary job description being to provide medical services (64%). Almost one-third of the participants were also clinician-educators (28.2%), with the clinician-educator role differing from that of a clinical teacher further requiring physicians to design curricula, lead programs, engage in education research, and provide faculty development.

Self-report Measures

Five self-report Likert scales were assessed in the study to assess teaching self-efficacy, professional fulfillment, quality of life, physician burnout, and quitting intentions. As indicated

in Table 3, Cronbach's alpha values were greater than .80 for four measures demonstrating strong internal reliability, with the internal reliability for quitting intentions being satisfactory (see Table 3). The prevalence of professional fulfilment and occupational burnout as determined by the cut-off thresholds (3 and 1.33 respectively) was 20% for fulfillment and 30.7% for burnout.

Table 3

	α Μ	М	SD	п	No. of	Actual
		IVI			items	range
Teacher self-efficacy	.91	53.98	6.66	203	14	1-5
Fulfillment	.85	15.18	4.22	212	6	0-4
Quality of life	.82	7.79	2.74	208	5	1-5
Burnout	.90	10.98	6.57	208	10	0-4
Quitting intentions	.71	6.61	2.65	211	3	1-5

Descriptive Statistics for Study Measures

Preliminary Analyses

Statistical Assumptions

Critical statistical assumptions (normality, linearity, and homogeneity of variance) were evaluated prior to the main analyses. The univariate normality of dependent and independent variables (e.g., teaching experience, family roles, hospital roles, teaching self-efficacy, fulfillment, burnout, quality of life, and quitting intention) was assessed using standardized scores of skewness and kurtosis, with violations within the range between -.86 and 3.85 (*z* scores). In multivariate assumption checks, histograms of the regression standardized residuals showed bell shaped patterns with probability plots falling close to the diagonal. Scatter plots of regression standardized predicted values by regression standardized residuals showed a low violation of variance pattern. The correlation matrix, variance inflation factor (VIF), and tolerance were evaluated for multicollinearity. The VIF values were less than 1.20 and the tolerance values were greater than .80, which is considered evidence of lack of multicollinearity.

Initial Differences to Identify Covariates

Independent samples *t*-tests were used to evaluate initial differences in the background, independent, and dependent variables as a function of categorical background variables including gender and chronic disease. Results showed significant gender differences such that male physicians had greater years of teaching experience (t(223) = 2.465, p = .014) and a greater number of family roles (t(223) = 2.619, p = .009) than females. Based on this finding, and previous literature showing gender to be associated with physician mental health (Abdulaziz et al., 2009; Galaiya et al., 2020; Hayes et al., 2019; Hughes et al., 2019), gender was included as a covariate in Step 1 of the main regression model. Physicians who reported having one or more chronic diseases were also found to report having more family roles (t(213) = -2.515, p = .013), more hospital roles (t(218) = -2.185, p = .0305), lower professional fulfillment (t(213) = 2.423, p = .006), and stronger quitting intention (t(209) = -2.810, p = .005). As these significant results demonstrated that chronic diseases can impact physician mental health, this background variable was also included as a covariate in our regression model.

Zero-order correlations between the continuous background variables (i.e., age, teaching experience, family roles) and the main study variables were also conducted to identify potentially critical covariates to be included as background variables in the main analysis. Results showed having more family roles to correlate with lower quality of life (p = .002) as well as more hospital roles (p = .027) and higher teacher self-efficacy (p = .013). Results also showed significant positive correlations between teaching experience and professional fulfilment (p = .031) as well as between age and teaching experience (r = .794, $p \le .001$). As the latter correlation was notably high and indicative of multicollinearity, teaching experience was selected over age as background covariate because it was more specific to participants' role as a clinical teacher. Correlations between the selected continuous covariates and between all main study variables are presented in Table 4.

Main Regression Analysis

Results of the main hierarchical linear regression analyses on the four mental health outcomes are shown in Table 5. As outlined in Figure 4, the first step included the background variables of gender, years of teaching experience, family roles, and chronic disease. In the second step, the predictor variables of numbers of roles at work, teaching support, and clinical teaching self-efficacy were additionally included. Results showed R^2 for all outcomes to be statistically significant, with the highest proportion of variance explained for quality of life (R^2 = .100, $p \le .001$). Results also revealed statistically significant R^2 changes from the first to second step for professional fulfillment ($\Delta R^2 = .101$, $p \le .001$) and burnout ($\Delta R^2 = .044$, p = .022).

Of three predictor variables added in Step 2, only clinical teaching self-efficacy significantly predicted mental health outcomes. Specifically, higher self-efficacy for teaching positively predicted professional fulfillment ($\beta = .292, p \le .001$) and negatively predicted burnout ($\beta = -.206, p = .003$). In contrast, multiple roles at work and organizational teaching support did not significantly predict any mental health outcome assessed. Concerning the effects of background variables when assessed alongside the main predictor variables in Step 2, being

Table 4

Zero-order Correlations among Study Variables

					_		_	
Variables	1	2	3	4	5	6	7	8
1. Teaching experience	-							
2. Family roles	.222***	-						
3. Teaching self-efficacy	.077	.173*	-					
4. Work roles	.257***	.147*	.182**	-				
5. Teaching support	106	017	078	052	-			
6. Fulfillment	.147*	.032	.287***	.126	.000	-		
7. Quality of life [†]	030	.210**	058	.018	.084	294***	-	
8. Burnout	085	.066	171*	016	.005	544**	.306***	-
9. Quitting	084	.039	047	059	.065	473***	.346***	.414***

Note. *p < .05. **p < .01. ***p < .001; [†]Higher EQ5D5L scores indicate poorer quality of life.

Table 5

Hierarchical Linear Regressions on Clinician Teachers' Mental Health

Variablas	Fulfillment	Quality of life [†]	Burnout	it Quitting	
variables	β	β	β	β	
Step 1					
Gender (Female)	.110	.063	156*	064	
Years of teaching experience	.166*	030	126	091	
Multiple family roles	.050	.230**	.056	.030	
Chronic disease	188**	.182**	.161*	.201**	
R^2	.064**	.100***	.061*	.051*	
Step 2					
Gender (Female)	.119	.059	163*	063	
Years of teaching experience	.144*	015	121	069	
Multiple family roles	004	.250***	.088	.050	
Chronic disease	213**	.189**	.173*	.213**	
Clinical teaching self-efficacy	.292***	102	206**	051	
Multiple work roles	.100	031	022	104	
Organizational teaching support	.066	.055	057	.024	
R^2	.165***	.115	.106*	.066	
ΔR^2	.101***	.016	.044*	.015	

Note. [†]Higher score refers to poorer quality of life in Euro Quality of life scale (EQ5D5L); * p < .05. ** p < .01. ***p < .001

Figure 4

Hierarchical Regression Model



a female physician was a significant predictor of lower burnout, with greater years of teaching experience predicting more professional fulfillment. Moreover, having multiple family roles was a significant predictor of poorer quality of life, while having a chronic disease was found to significantly predict poorer levels of each of the four mental health outcomes assessed.

Discussion

The present research focused on the experiences of physicians employed as clinician teachers in public-service hospitals in Thailand. As physicians who work and teach in nonuniversity public-service hospitals have different work contexts and conditions than academic physicians in university settings (e.g., Ganeshan et al., 2020), it is important to specifically examine this population to determine how recently implemented medical educational centers (MECs) are impacting their psychological well-being. To address this research gap, this study assessed the prevalence of burnout and fulfillment in clinician teachers in Thai MEC contexts, and to what extent both internal, psychological factors (teaching self-efficacy) and external, structural factors (multiple work roles, teaching support) affected their mental health outcomes with respect to burnout, fulfillment, quality of life, and intentions to quit.

The present study findings based on the Professional Fulfillment Index (PFI) created specifically for physicians showed the prevalence of physician burnout to be 30.7%. This burnout rate is similar to those reported by Summers et al. (2019b), Giess et al. (2020), and Burns et al. (2021) with academic physicians. This finding is also notable as although the study from Burns et al. (2021) also used the PFI scale to determine burnout, similar levels of prevalence were also observed using the MBI (Maslach Burnout Inventory) in the other two studies. However, the burnout prevalence found in the present study differs considerably from that previously reported among Thai physicians by Pitanupong and Jatchavala (2018). By way of explanation, this discrepancy is likely the result of differences in the burnout scales assessed and cut-off points used to classify burnout. Whereas this prior study used the MBI and classified burnout as any total score higher than zero, the present study used the PFI and classified burnout more conservatively as total averaged scores of 1.33 or higher; a cut-off value identified by an ROC analysis (Trockel et al., 2018).

With respect to prevalence rates for the positive indicator of physician well-being, study results showed the prevalence of professional fulfillment to be 20%. This rate is lower than found in a previous recent finding with the PFI (35.6%) from Higgins et al. (2021a) who studied academic radiologists in the United States. Moreover, this positive work-related mental health outcome was found in the present study to be less prevalent than burnout, suggesting that mental health in Thai physicians remains a cause for concern particularly when they are being

additionally burdened with teaching responsibilities. This result also highlights the importance of using positively valenced scales to assess physician mental health in Thailand, as although results on negative indicators may be consistent with other populations, results on positive indicators may help to provide a more complete perspective on how Thai physicians are coping with teaching demands.

The main study findings further reiterated the importance of examining both internal and external factors that may predict Thai clinician teachers' mental health outcomes after controlling for critical background variables (i.e., gender, years of teaching experience, number of family roles, and chronic disease). Although clinical teaching self-efficacy predicted higher levels of professional fulfillment and lower burnout, it did not significantly predict their quality of life or quitting intentions. The relationship between teacher self-efficacy and burnout is thus similar to previous findings with K-12 teachers (Skaalvik & Skaalvik, 2010) and with non-medical university faculty (Hall et al., 2019a) and underscores the importance of clinical teaching self-efficacy as a critical internal psychological resource for clinician teachers.

According to Bandura's (1999) social learning theory, self-efficacy is defined as beliefs concerning one's personal capacity to effectively perform specific actions in a given achievement setting, with these beliefs further proposed to correspond with subsequent behaviours and environmental outcomes. As such, the present findings suggest that when a clinician teacher perceives low self-efficacy in teaching, they are more likely to teach more poorly and receive more negative feedback from students and impair well-being. On the other hand, when the clinician teacher perceives greater self-efficacy, the anticipated self-confidence they convey while teaching and positive feedback from students is expected to positively contribute to their well-being. According to Kunter and Holzberger (2014), greater teaching selfefficacy should also indirectly impact student outcomes such as learning-related motivation and enjoyment. Hence, this finding showcases the importance of supporting and promoting teacher self-efficacy in Thai MEC settings considering the potential benefits for teaching effectiveness, student learning, and the well-being of both clinician teachers and students.

Although previous literature reports mixed effects of multiple roles at work and teaching support on physician burnout and professional fulfillment (Rao et al., 2017; Rutter et al., 2002; Sethi et al., 2017; van den Berg et al., 2015), our findings showed both multiple roles and organizational teaching support to not significantly correspond with any of the four mental health outcomes assessed. A possible reason for these findings may involve the specific context of the work environment and the organizational system experienced by the study participants. For instance, as working in non-university teaching hospitals as a physician in Thailand has long been a demanding profession, it is possible that study participants may have already developed sufficient resilience to the stress of their workload and were less impacted by multiple roles than would be Thai physician in less demanding environments. Concerning the lack of results for teaching support, it is possible that this finding may be due to the still developing nature of teaching supports at MEC institutions. More specifically, as MEC hospitals are relatively recent, available teaching resources may not yet be sufficient to match the teaching demands of clinician teachers (e.g., workshops, materials) thus potentially accounting for limited variability and relations for the present perceived support measure (i.e., 75% preparing materials alone).

To summarize, the present findings primarily highlight the role of clinical teaching selfefficacy in physicians' mental health as an internal psychological factor. This result is aligned with the Stanford WellMD model of professional fulfillment (Stewart et al., 2019b) showing psychological resilience to represent a key contributor to professional fulfillment in physicians. This finding is also consistent with the multi-level model of influences on well-being in health care professionals (Penwell-Waines et al., 2018) in which the core predictors are internal and psychological in nature (i.e., knowledge, skills, and attitudes). Additionally, these results support theories in which the cognitive determinants of health behaviour are featured (e.g., health belief model, salutogenesis, social cognitive theory; see Conner, 2010; Lindström & Eriksson, 2005; Haugan & Eriksson, 2021), and thus reiterate the importance of professional development initiatives for Thai physicians in educational contexts in which internal factors like self-efficacy are supported.

In addition to the significant results for clinical teaching self-efficacy, it is interesting to note that the background variables assessed in the first step of the hierarchical regression model also produced consistently significant results. For example, physicians who reported having current chronic disease reported higher burnout, poorer quality of life, lower fulfillment, and stronger quitting intentions as compared with their counterparts without chronic health problems. This finding highlights that physical illness plays an important role in physician well-being, and is consistent with previous research showing health problems to correspond with greater burnout in healthcare professions (Peterson et al., 2008). Results also showed physicians with multiple family roles to report poorer quality of life, female physicians to experience lower burnout, and greater years of experience to be associated with higher professional fulfillment. However, the strongest study findings showed teaching self-efficacy to significantly predict both professional fulfillment and burnout in our physician sample demonstrating the importance of internal, psychological factors in predicting physician mental health in an MEC context over and above the effects of critical background factors.

Limitations and Future Directions

Despite the significant results observed, it is important to also acknowledge three primary limitations that may have impacted the study findings. First, although the present prevalence analyses adopted the common practice of categorizing responses from the PFI scale into two groups, this dichotomization ignores a third "intermediate" category that could prove useful for better understanding burnout and fulfillment prevalence (e.g., avoid classifying less problematic "moderate" burnout physicians as simply "burned out"). Second, as all study measures were selfreport in nature, future studies are encouraged to include qualitative data (e.g., focus groups, indepth interview) to provide a more in-depth perspective on the study findings (e.g., what types of support are available vs. being used). Third, as the present data collection was conducted during COVID-19, it is possible that challenges specific to the pandemic may have negatively affected the mental health of the participants (Lou et al., 2021), availability of teaching supports, or physicians' willingness to participate in the study (i.e., contributing to reduced power to detect effects).

These limitations notwithstanding, the present study findings clearly show clinical teaching self-efficacy to be an essential predictor of burnout and professional fulfillment in physicians working in the Thai MEC context thus warranting continued efforts to implement faculty development (FD) programs for physicians that effectively assess and increase teaching self-efficacy. In addition to such programs involving both individual and organizational levels (e.g., providing physicians sufficient time and resources to benefit sufficiently from FD activities), it is encouraged to also assess participants' self-efficacy beliefs to ensure FD activities are having the expected psychological benefits. For example, Bajwa et al. (2020) evaluated a FD program for junior clinician teachers over a five-year period, with findings

showing personal coaching by qualified clinician-educators to improve self-efficacy, teaching performance, as well as institutional learning climate. Similarly, Tenzin et al. (2019) found that physicians reported a significant increase in teaching self-efficacy after an intensive one-year FD program, particularly in teaching relevant subject contents and in creatively coping with system constraints. This FD program included multiple components such as lectures, workshops, experiential learning, reflection, peer coaching, feedback, and workplace-based learning; a continuous, multifaceted approach that could be adapted to assist MEC physicians.

Conclusion

The present study aimed to identify the prevalence of burnout and professional fulfillment, as well as how internal and external predictive factors correspond with varied mental health outcomes for Thai physicians who have in recent years been required teach as per a government initiative to improve physician education across the country. Study findings showed a burnout prevalence of 30.7% equivalent to prior research with academic physicians internationally, however the observed professional fulfillment prevalence of 20% indicated that Thai physician well-being in MEC settings remains a cause for concern. Teaching self-efficacy was also found to be a significant predictor of lower burnout and higher professional fulfillment in Thai clinician teachers controlling for gender, years of teaching experience, family roles, and chronic disease indicating the importance of internal psychological factors for promoting wellbeing in clinical education. It is expected that faculty development programs that enhance teaching self-efficacy could help to improve professional fulfillment and reduce burnout among physicians tasked with clinical teaching at public-service hospitals in Thailand.

References

- Abdulaziz, S., Baharoon, S., & Al Sayyari, A. (2009). Medical residents' burnout and its impact on quality of care. *The Clinical Teacher*, 6(4), 218-224. <u>https://doi.org/10.1111/j.1743-</u> 498X.2009.00310.x
- Bajwa, N. M., De Grasset, J., Audétat, M.-C., Jastrow, N., Richard-Lepouriel, H. l. n., Dominicé Dao, M., Nendaz, M. R., & Junod Perron, N. l. (2020). Training junior faculty to become clinical teachers: The value of personalized coaching. *Medical Teacher*, 42(6), 663-672. https://doi.org/10.1080/0142159X.2020.1732316
- Bandura, A. (1999). Social Cognitive Theory: An Agentic Perspective. Asian Journal of Social Psychology, 2(1), 21-41. <u>https://doi.org/10.1111/1467-839X.00024</u>
- Belkić, K., & Nedic, O. (2007). Workplace Stressors and Lifestyle-Related Cancer Risk Factors among Female Physicians: Assessment Using the Occupational Stress Index. *Journal of Occupational Health*, 49(1), 61-71. <u>https://doi.org/10.1539/joh.49.61</u>
- Bourne, T., Shah, H., Falconieri, N., Timmerman, D., Lees, C., Wright, A., Lumsden, M. A.,
 Regan, L., & Van Calster, B. (2019). Burnout, well-being and defensive medical practice among obstetricians and gynaecologists in the UK: Cross-sectional survey study
 [Article]. *BMJ Open*, 9(11), Article e030968. <u>https://doi.org/10.1136/bmjopen-2019-030968</u>
- Brown, P. A., Slater, M., & Lofters, A. (2019). Personality and burnout among primary care physicians: an international study. *Psychology Research & Behavior Management*, 12, 169-177. <u>https://doi.org/10.2147/PRBM.S195633</u>

- Burns, K. E. A., Pattani, R., Lorens, E., Straus, S. E., & Hawker, G. A. (2021). The impact of organizational culture on professional fulfillment and burnout in an academic department of medicine. *PLOS ONE*, *16*(6), e0252778. <u>https://doi.org/10.1371/journal.pone.0252778</u>
- Conner, M. (2010). Cognitive Determinants of Health Behavior. In A. Steptoe (Ed.), Handbook of Behavioral Medicine: Methods and Applications (pp. 19-30). Springer New York. <u>https://doi.org/10.1007/978-0-387-09488-5_2</u>
- Dembitzer, A., Gillespie, C., Hanley, K., Crowe, R., Zabar, S., Yeboah, N., Grask, A.,
 Nicholson, J., Kalet, A., & Schwartz, M. D. (2012). Clinician-educators are more burned out as clinicians than as educators: Implications for teaching (and practice). *Journal of General Internal Medicine*, 27(SUPPL. 2), S143.
 http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed13&NEWS=N&

AN=71296542

- Dent, J. A. (2005). AMEE Guide No 26: clinical teaching in ambulatory care settings: making the most of learning opportunities with outpatients. *Medical teacher*, *27*(4), 302-315.
- Dewa, C. S., Loong, D., Bonato, S., & Trojanowski, L. (2017). The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: a systematic review. *BMJ Open*, 7(6), e015141. <u>https://doi.org/10.1136/bmjopen-2016-</u> 015141
- Flexner, A. (1990). Medical education in the United States and Canada : a report to the Carnegie Foundation for the Advancement of Teaching (Special edition. ed.). Classics of Medicine Library.
- Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S.,

Scrimshaw, S., Sepulveda, J., Serwadda, D., & Zurayk, H. (2010). Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet (London, England)*, *376*(9756), 1923-1958. https://doi.org/10.1016/S0140-6736(10)61854-5

- Galaiya, R., Kinross, J., & Arulampalam, T. (2020). Factors associated with burnout syndrome in surgeons: a systematic review. *The Annals of The Royal College of Surgeons of England*, 102(6), 401-407. <u>https://doi.org/10.1308/rcsann.2020.0040</u>
- Ganeshan, D., Rosenkrantz, A. B., Bassett, R. L., Williams, L., Lenchik, L., & Yang, W. (2020). Burnout in Academic Radiologists in the United States [Article]. *Academic Radiology*, 27(9), 1274-1281. <u>https://doi.org/10.1016/j.acra.2019.12.029</u>
- García Carmona, M., Marín, M., & Aguayo, R. (2019). Burnout syndrome in secondary school teachers: a systematic review and meta-analysis. *Social Psychology of Education*, 22. <u>https://doi.org/10.1007/s11218-018-9471-9</u>
- Gavrilyuk, O. A., Loginova, I. O., & Buzovkina, N. Y. (2013). Relations of perceived autonomy and burnout syndrome in university teachers. *International Journal of Applied Psychology*, 3(3), 52-62.
- Ghanizadeh, A., & Jahedizadeh, S. (2015). Teacher Burnout: A Review of Sources and Ramifications. *British Journal of Education, Society & Behavioural Science*, 6, 24-39. <u>https://doi.org/10.9734/BJESBS/2015/15162</u>
- Giess, C. S., Ip, I. K., Cochon, L. R., Gupte, A., Dudley, J. C., Boland, G. W., & Khorasani, R.
 (2020). Predictors of Self-Reported Burnout Among Radiology Faculty at a Large
 Academic Medical Center. *Journal of the American College of Radiology*, *17*(12), 16841691. <u>https://doi.org/10.1016/j.jacr.2020.01.047</u>

Grover, S., Sahoo, S., Bhalla, A., & Avasthi, A. (2018). Psychological problems and burnout among medical professionals of a tertiary care hospital of North India: A cross-sectional study. *Indian Journal of Psychiatry*, 60(2), 175-188.

https://doi.org/10.4103/psychiatry.IndianJPsychiatry_254_17

- Hackett, R. D., Lapierre, L. M., & Hausdorf, P. A. (2001). Understanding the Links between Work Commitment Constructs. *Journal of Vocational Behavior*, 58(3), 392-413. <u>https://doi.org/https://doi.org/10.1006/jvbe.2000.1776</u>
- Hall, N. C., Lee, S. Y., & Rahimi, S. (2019a). Self-efficacy, procrastination, and burnout in postsecondary faculty: An international longitudinal analysis. *PLOS ONE*, 14(12), e0226716. <u>https://doi.org/10.1371/journal.pone.0226716</u>
- Hall, N. C., Lee, S. Y., & Rahimi, S. (2019b). Self-efficacy, procrastination, and burnout in postsecondary faculty: An international longitudinal analysis. *PLOS ONE*, 14(12). https://doi.org/10.1371/journal.pone.0226716
- Harden, R. M. (1999). Stress, Pressure and Burnout in Teachers: Is the Swan Exhausted? Medical teacher, 21(3), 245-247.
- Haugan, G., & Eriksson, M. (2021). *Health promotion in health care vital theories and research*. Springer. <u>https://doi.org/10.1007/978-3-030-63135-2</u>
- Hayes, B., Prihodova, L., Walsh, G., Doyle, F., & Doherty, S. (2019). Doctors don't Do-little: A national cross-sectional study of workplace well-being of hospital doctors in Ireland [Article]. *BMJ Open*, 9(3), Article e025433. <u>https://doi.org/10.1136/bmjopen-2018-025433</u>
- Heeter, C., Allbritton, M., Lehto, R., Miller, P., McDaniel, P., & Paletta, M. (2021). Feasibility, Acceptability, and Outcomes of a Yoga-Based Meditation Intervention for Hospice

Professionals to Combat Burnout. *International Journal of Environmental Research and Public Health*, *18*(5). <u>https://doi.org/10.3390/ijerph18052515</u>

- Herdman, M., Gudex, C., Lloyd, A., Janssen, M., Kind, P., Parkin, D., Bonsel, G., & Badia, X. (2011). Development and preliminary testing of the new five-level version of EQ-5D (EQ-5D-5L). *Qual Life Res*, 20(10), 1727-1736. <u>https://doi.org/10.1007/s11136-011-9903-x</u>
- Higgins, M., Nguyen, M. T., Kosowsky, T., Unan, L., Mete, M., Rowe, S., & Marchalik, D.
 (2021a). Burnout, Professional Fulfillment, Intention to Leave, and Sleep-Related
 Impairment Among Faculty Radiologists in the United States: An Epidemiologic Study. J
 Am Coll Radiol, 18(9), 1359-1364. <u>https://doi.org/10.1016/j.jacr.2021.04.005</u>
- Higgins, M., Nguyen, M. T., Kosowsky, T., Unan, L., Mete, M., Rowe, S., & Marchalik, D.
 (2021b). Burnout, Professional Fulfillment, Intention to Leave, and Sleep-Related
 Impairment Among Faculty Radiologists in the United States: An Epidemiologic Study. *Journal of the American College of Radiology : JACR*.
 https://doi.org/10.1016/j.jacr.2021.04.005

<u>maps.//doi.org/10.1010/j.j.doi.2021.01.000</u>

- Hodgson, C. S., & Wilkerson, L. (2014). Faculty Development for Teaching Improvement. In Y.
 Steinert (Ed.), *Faculty Development in the Health Professions: A Focus on Research and Practice* (pp. 29-52). Springer Netherlands. <u>https://doi.org/10.1007/978-94-007-7612-8_2</u>
- Hughes, F., Francis, A. P., & Sciscione, A. C. (2019). Physician Burnout among Members of the Society for Maternal-Fetal Medicine. *American Journal of Perinatology*, 06, 06.
- Iorga, M., Socolov, V., Muraru, D., Dirtu, C., Soponaru, C., Ilea, C., & Socolov, D.-G. (2017). Factors Influencing Burnout Syndrome in Obstetrics and Gynecology Physicians.

BioMed research international, 2017, 9318534-9318534.

https://doi.org/10.1155/2017/9318534

- Jung, M. J., Libaw, J. S., Manuel, S. P., Kathiriya, I. S., Srejic, U., & Gandhi, S. D. o. A. U. o. C. S. D. M. C. G. D. L. J. C. A. U. S. A. (2021). Interactive anesthesiology educational program improves wellness for anesthesiologists and their children. *Journal of Clinical Anesthesia*, 70. <u>https://doi.org/10.1016/j.jclinane.2021.110192</u>
- Kesarwani, V., Husaain, Z. G., & George, J. (2020). Prevalence and Factors Associated with Burnout among Healthcare Professionals in India: A Systematic Review and Meta-Analysis. *Indian journal of psychological medicine*, 42(2), 108-115.

https://doi.org/10.4103/IJPSYM_J87_19

- Khan, A., Teoh, K. R. H., Islam, S., & Hassard, J. (2018). Psychosocial work characteristics, burnout, psychological morbidity symptoms and early retirement intentions: A crosssectional study of NHS consultants in the UK [Article]. *BMJ Open*, 8(7), Article 018720. <u>https://doi.org/10.1136/bmjopen-2017-018720</u>
- Khan, F. A., Shamim, M. H., Ali, L., & Taqi, A. (2019). Evaluation of Job Stress and Burnout Among Anesthesiologists Working in Academic Institutions in 2 Major Cities in Pakistan. *Anesthesia and Analgesia*, *128*(4), 789-795.

https://doi.org/10.1213/ANE.000000000004046

- Khan Fauzia, A. F. (2019). Evaluation of Job Stress and Burnout Among Anesthesiologists
 Working in Academic Institutions in 2 Major Cities in Pakistan. *Anesthesia and Analgesia*, 128(4), 789-795.
- Klassen, R. M., Bong, M., Usher, E. L., Chong, W. H., Huan, V. S., Wong, I. Y. F., & Georgiou,T. (2009). Exploring the validity of a teachers' self-efficacy scale in five countries.

Contemporary Educational Psychology, 34(1), 67-76.

https://doi.org/https://doi.org/10.1016/j.cedpsych.2008.08.001

- Kunter, M., & Holzberger, D. (2014). Kunter, M., & Holzberger, D. (2014). Loving teaching:
 Research on teachers' intrinsic orientations. In P. W. Richardson, S. Karabenick, & H. M.
 G. Watt (Eds.), Teacher Motivation: Theory and Practice (pp. 83-99). New York:
 Routledge. In (pp. 83-99). <u>https://doi.org/10.4324/9780203119273-6</u>
- Lacy, B. E., & Chan, J. L. (2018). Physician Burnout: The Hidden Health Care Crisis [Review]. Clinical Gastroenterology & Hepatology, 16(3), 311-317.
- Langballe, E. M., Innstrand, S. T., Aasland, O. G., & Falkum, E. (2011). The predictive value of individual factors, work-related factors, and work-home interaction on burnout in female and male physicians: a longitudinal study. *Stress and Health*, 27(1), 73-87. https://doi.org/10.1002/smi.1321
- Lee, R. T., Seo, B., Hladkyj, S., Lovell, B. L., & Schwartzmann, L. (2013). Correlates of physician burnout across regions and specialties: A meta-analysis [Article]. *Human Resources for Health*, 11(1), Article 48. <u>https://doi.org/10.1186/1478-4491-11-48</u>
- Liebenberg Andrew, R. A. (2018). Burnout among rural hospital doctors in the Western Cape: Comparison with previous South African studies. *African Journal of Primary Health Care Family Medicine*, 10(1), 1.
- Lindeman, B., Petrusa, E., McKinley, S., Hashimoto, D. A., Gee, D., Smink, D. S., Mullen, J. T.,
 & Phitayakorn, R. (2017). Association of Burnout With Emotional Intelligence and
 Personality in Surgical Residents: Can We Predict Who Is Most at Risk? *Journal of Surgical Education*, 74(6), e22-e30.

https://doi.org/https://doi.org/10.1016/j.jsurg.2017.11.001

- Lindström, B., & Eriksson, M. (2005). Salutogenesis. *Journal of epidemiology and community health*, *59*(6), 440-442.
- Lou, N. M., Montreuil, T., Feldman, L. S., Fried, G. M., Lavoie-Tremblay, M., Bhanji, F., Kennedy, H., Kaneva, P., & Harley, J. M. (2021). Nurses' and Physicians' Distress, Burnout, and Coping Strategies During COVID-19: Stress and Impact on Perceived Performance and Intentions to Quit. *J Contin Educ Health Prof.* https://doi.org/10.1097/ceh.00000000000365
- Ma, S., Huang, Y., Yang, Y., Ma, Y., Zhou, T., Zhao, H., Chen, L., Zhou, N., & Zhang, L.
 (2019). Prevalence of Burnout and Career Satisfaction Among Oncologists in China: A
 National Survey. *The Oncologist*, 24(7). <u>https://doi.org/10.1634/theoncologist.2018-0249</u>
- Maslach, C., & Leiter, M. P. (2017). New insights into burnout and health care: Strategies for improving civility and alleviating burnout [Professional Education & Training 3410]. *Medical teacher*, 39(2), 160-163.

https://doi.org/http://dx.doi.org/10.1080/0142159X.2016.1248918

- Maslach, C., & Zimbardo, P. G. (1982). Burnout : the cost of caring.
- McLean, M., Cilliers, F., & Van Wyk, J. (2008). Faculty development: Yesterday, today and tomorrow. *Medical teacher*, 30(6), 555-584.
- Melamed, S., Shirom, A., Toker, S., Berliner, S., & Shapira, I. (2006). Burnout and risk of cardiovascular disease: Evidence, possible causal paths, and promising research directions. *Psychological Bulletin*, 132(3), 327-353. <u>https://doi.org/10.1037/0033-</u> 2909.132.3.327

- Nithiapinyasakul, A., Arora, R., & Chamnan, P. (2016). Impact of a 20-year collaborative approach to increasing the production of rural doctors in Thailand. *Int J Med Educ*, *7*, 414-416. <u>https://doi.org/10.5116/ijme.582f.4d3b</u>
- Ofei-Dodoo, S., Callaway, P., & Engels, K. (2019). Prevalence and Etiology of Burnout in a Community-Based Graduate Medical Education System: A Mixed-Methods Study.
 Family Medicine, 51(9), 766-771. <u>https://doi.org/10.22454/FamMed.2019.431489</u>
- Patel, R. S., Bachu, R., Adikey, A., Malik, M., & Shah, M. (2018). Factors Related to Physician Burnout and Its Consequences: A Review. *Behavioral sciences (Basel, Switzerland)*, 8(11), 98. <u>https://doi.org/10.3390/bs8110098</u>
- Pattanaphesaj, J., Thavorncharoensap, M., Ramos-Goñi, J. M., Tongsiri, S., Ingsrisawang, L., & Teerawattananon, Y. (2018). The EQ-5D-5L Valuation study in Thailand. *Expert Rev Pharmacoecon Outcomes Res*, 18(5), 551-558.

https://doi.org/10.1080/14737167.2018.1494574

- Penwell-Waines, L., Ward, W., Kirkpatrick, H., Smith, P., & Abouljoud, M. (2018). Perspectives on Healthcare Provider Well-Being: Looking Back, Moving Forward. *Journal of clinical psychology in medical settings*, 25(3), 295-304. <u>https://doi.org/10.1007/s10880-018-</u> 9541-3
- Peterson, U., Demerouti, E., Bergström, G., Samuelsson, M., Åsberg, M., & Nygren, A. k.
 (2008). Burnout and physical and mental health among Swedish healthcare workers. *Journal of Advanced Nursing*, 62(1), 84-95. <u>https://doi.org/10.1111/j.1365-</u>2648.2007.04580.x

- Piracha, S., Maqsood, U., Saleem, M., Ganaie, M., & Raza, A. (2019). P45 A study of burnout and professional fulfillment among respiratory physicians (RP) in united kingdom. *Thorax*, 74(Suppl 2), A114.
- Pitanupong, J., & Jatchavala, C. (2018). A Study on the Comparison of Burnout Syndrome, Among Medical Doctors in the Restive Areas and Non-Restive Areas of the South Thailand Insurgency. *Journal of Health Science and Medical Research*, 36. https://doi.org/10.31584/jhsmr.201825
- Pulcrano, M., Evans, S. R., & Sosin, M. (2016). Quality of Life and Burnout Rates Across Surgical Specialties: A Systematic Review. JAMA Surg, 151(10), 970-978. https://doi.org/10.1001/jamasurg.2016.1647
- Quan, S. F., Weaver, M. D., Barger, L. K., O'Brien, C. S., Viyaran, N., Qadri, S., & Czeisler, C.
 A. (2019). 0996 Interim Findings from a Sleep Health and Wellness Program to Reduce
 Occupational Burnout. *SLEEP*, *42*(Supplement_1 33rd Annual Meeting of the Associated
 Professional Sleep Societies), A401-A401. <u>https://doi.org/10.1093/sleep/zsz067.993</u>
- Qureshi, H. A., Rawlani, R., Mioton, L. M., Dumanian, G. A., Kim, J. Y. S., & Rawlani, V.
 (2015). Burnout phenomenon in U.S. plastic surgeons: risk factors and impact on quality of life. *Plast Reconstr Surg*, *135*(2), 619-626.

https://doi.org/10.1097/prs.00000000000855

Rabatin, J., Williams, E., Baier Manwell, L., Schwartz, M. D., Brown, R. L., & Linzer, M.
(2016). Predictors and Outcomes of Burnout in Primary Care Physicians. *Journal of Primary Care & Community Health*, 7(1), 41-43.
https://doi.org/10.1177/2150131915607799

- Rao, S., Ferris, T. G., Hidrue, M. K., Lehrhoff, S. R., Lenz, S., Heffernan, J., McKee, K. E., &
 Del Carmen, M. G. (2020). Physician Burnout, Engagement and Career Satisfaction in a
 Large Academic Medical Practice. *Clinical Medicine & Research*, 20, 20.
- Rao, S. K., Kimball, A. B., Lehrhoff, S. R., Hidrue, M. K., Colton, D. G., Ferris, T. G., & Torchiana, D. F. (2017). The Impact of Administrative Burden on Academic Physicians: Results of a Hospital-Wide Physician Survey. *Academic medicine : journal of the Association of American Medical Colleges*, 92(2), 237-243. https://doi.org/10.1097/ACM.00000000001461
- Roberts, D. L., Cannon, K. J., Wellik, K. E., Wu, Q., & Budavari, A. I. (2013). Burnout in inpatient-based versus outpatient-based physicians: A systematic review and metaanalysis. *Journal of Hospital Medicine*, 8(11), 653-664. https://doi.org/10.1002/jhm.2093
- Rotenstein, L. S., Torre, M., Ramos, M. A., Rosales, R. C., Guille, C., Sen, S., & Mata, D. A.
 (2018). Prevalence of Burnout Among Physicians: A Systematic Review. *JAMA*, *320*(11), 1131-1150.
- Rothenberger, D. A. (2017). Physician Burnout and Well-Being: A Systematic Review and Framework for Action. *Diseases of the Colon and Rectum*, 60(6), 567-576. https://doi.org/10.1097/DCR.000000000000844
- Rutter, H., Herzberg, J., & Paice, E. (2002). Stress in doctors and dentists who teach. *Medical Education*, *36*(6), 543-549. <u>https://doi.org/10.1046/j.1365-2923.2002.01229.x</u>
- Sabagh, Z., Hall, N. C., & Saroyan, A. (2018). Antecedents, correlates and consequences of faculty burnout. *Educational Research*, 60(2), 131-156. <u>https://doi.org/10.1080/00131881.2018.1461573</u>

Sanfilippo, F., Noto, A., Foresta, G., Santonocito, C., Palumbo, G. J., Arcadipane, A., Maybauer,
D. M., & Maybauer, M. O. (2017). Incidence and Factors Associated with Burnout in
Anesthesiology: A Systematic Review. *Biomed Res Int*, 2017, 8648925.
https://doi.org/10.1155/2017/8648925

- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study [https://doi.org/10.1002/job.248]. *Journal of Organizational Behavior*, 25(3), 293-315. https://doi.org/https://doi.org/10.1002/job.248
- See, K. C., Zhao, M. Y., Nakataki, E., Chittawatanarat, K., Fang, W.-F., Faruq, M. O., Wahjuprajitno, B., Arabi, Y. M., Wong, W. T., Divatia, J. V., Palo, J. E., Shrestha, B. R., Nafees, K. M. K., Binh, N. G., Al Rahma, H. N., Detleuxay, K., Ong, V., Phua, J., Investigators, S. S., & the Asian Critical Care Clinical Trials, G. (2018). Professional burnout among physicians and nurses in Asian intensive care units: a multinational survey. *Intensive Care Medicine*, *44*(12), 2079-2090. <u>https://doi.org/10.1007/s00134-018-5432-1
 </u>
- Sethi, A., Ajjawi, R., McAleer, S., & Schofield, S. (2017). Exploring the tensions of being and becoming a medical educator. *BMC medical education*, 17(1), 62. https://doi.org/10.1186/s12909-017-0894-3

 Shanafelt, T. D., Balch, C. M., Bechamps, G. J., Russell, T., Dyrbye, L., Satele, D., Collicott, P., Novotny, P. J., Sloan, J., & Freischlag, J. A. (2009). Burnout and Career Satisfaction Among American Surgeons. *Annals of Surgery*, 250(3).
 <u>https://journals.lww.com/annalsofsurgery/Fulltext/2009/09000/Burnout_and_Career_Satisfaction_Among_American.15.aspx</u>

- Shanafelt, T. D., Hasan, O., Dyrbye, L. N., Sinsky, C., Satele, D., Sloan, J., & West, C. P. (2015). Changes in Burnout and Satisfaction With Work-Life Balance in Physicians and the General US Working Population Between 2011 and 2014. *Mayo Clinic proceedings*, 90(12), 1600-1613. <u>https://doi.org/10.1016/j.mayocp.2015.08.023</u>
- 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 Network Open*, 3(6), e207961.
 https://doi.org/10.1001/jamanetworkopen.2020.7961
- Shirom, A., Nirel, N., & Vinokur, A. D. (2006). Overload, autonomy, and burnout as predictors of physicians' quality of care. *Journal of Occupational Health Psychology*, *11*(4), 328-342. <u>https://doi.org/10.1037/1076-8998.11.4.328</u>
- Sithisarankul, P., Piyasing, V., Boontheaim, B., Ratanamongkolgul, S., & Wattanasirichaigoon,
 S. (2004). Longevity of Thai physicians [Research Support, Non-U.S. Gov't]. *Journal of the Medical Association of Thailand*, 87 Suppl 4, S23-32.
- Sithisarankul, P., Ruksakom, H., Polboon, N., Boontheaim, B., Visanuyothin, T., &
 Wattanasirichaigoon, S. (2004). Survey of mental health status of Thai physicians.
 Journal of the Medical Association of Thailand, 87 Suppl 4, S9-13.
- Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, 26(4), 1059-1069. <u>https://doi.org/https://doi.org/10.1016/j.tate.2009.11.001</u>
- Stalmeijer, R. E., Dolmans, D. H., Wolfhagen, I. H., Muijtjens, A. M., & Scherpbier, A. J. (2010). The Maastricht Clinical Teaching Questionnaire (MCTQ) as a valid and reliable

instrument for the evaluation of clinical teachers. Acad Med, 85(11), 1732-1738.

https://doi.org/10.1097/ACM.0b013e3181f554d6

- Stewart, M. T., Reed, S., Reese, J., Galligan, M. M., & Mahan, J. D. (2019a). Conceptual models for understanding physician burnout, professional fulfillment, and well-being. *Current Problems in Pediatric & Adolescent Health Care*, 49(11), 100658.
- Stewart, M. T., Reed, S., Reese, J., Galligan, M. M., & Mahan, J. D. (2019b). Conceptual models for understanding physician burnout, professional fulfillment, and well-being [Article]. *Current Problems in Pediatric and Adolescent Health Care*, 49(11), Article 100658. https://doi.org/10.1016/j.cppeds.2019.100658
- Summers, S. M., Nagy, C. J., April, M. D., Kuiper, B. W., Rodriguez, R. G., & Jones, W. S. (2019a). The Prevalence of Faculty Physician Burnout in Military Graduate Medical Education Training Programs: A Cross-Sectional Study of Academic Physicians in the United States Department of Defense. *Military Medicine*, *184*(9/10), e522-e530. https://doi.org/10.1093/milmed/usz055
- Summers, S. M., Nagy, C. J., April, M. D., Kuiper, B. W., Rodriguez, R. G., & Jones, W. S. (2019b). The prevalence of faculty physician burnout in military graduate medical education training programs: A cross-sectional study of academic physicians in the United States Department of Defense [Professional Personnel Attitudes & Characteristics 3430]. *Military Medicine*, 184(9-10), e519-e527.

https://doi.org/http://dx.doi.org/10.1093/milmed/usz055

Tenzin, K., Dorji, T., Choeda, T., & Pongpirul, K. (2019). Impact of faculty development programme on self-efficacy, competency and attitude towards medical education in

Bhutan: a mixed-methods study. BMC medical education, 19(1).

https://doi.org/10.1186/s12909-019-1904-4

- Trockel, M., Bohman, B., Lesure, E., Hamidi, M. S., Welle, D., Roberts, L., & Shanafelt, T. (2018). A Brief Instrument to Assess Both Burnout and Professional Fulfillment in Physicians: Reliability and Validity, Including Correlation with Self-Reported Medical Errors, in a Sample of Resident and Practicing Physicians. *Academic psychiatry : the journal of the American Association of Directors of Psychiatric Residency Training and the Association for Academic Psychiatry, 42*(1), 11-24. https://doi.org/10.1007/s40596-017-0849-3
- van den Berg, J. W., Verberg, C. P. M., Berkhout, J. J., Lombarts, M. J. M. H., Scherpbier, A. J. J. A., & Jaarsma, A. D. C. (2015). A qualitative interview study on the positive well-being of medical school faculty in their teaching role: job demands, job resources and role interaction. *BMC research notes*, 8(1).
- van der Wal, R. A. B., Bucx, M. J. L., Hendriks, J. C. M., Scheffer, G.-J., & Prins, J. B. (2016).
 Psychological distress, burnout and personality traits in Dutch anaesthesiologists: A survey. *European Journal of Anaesthesiology* | *EJA*, 33(3).
 https://journals.lww.com/ejanaesthesiology/Fulltext/2016/03000/Psychological distress,

burnout_and_personality.4.aspx

Wang, H., & Hall, N. C. (2019). When "I care" is not enough: An interactional analysis of teacher values, value congruence, and well-being. *Teaching and Teacher Education*, 86, 102906. <u>https://doi.org/https://doi.org/10.1016/j.tate.2019.102906</u>

- Wang, H., Hall, N. C., & Rahimi, S. (2015). Self-efficacy and causal attributions in teachers: Effects on burnout, job satisfaction, illness, and quitting intentions. *Teaching and Teacher Education*, 47, 120-130. <u>https://doi.org/10.1016/j.tate.2014.12.005</u>
- Wattanasirichaigoon, S., Polboon, N., Ruksakom, H., Boontheaim, B., Sithisarankul, P., &
 Visanuyothin, T. (2004). Thai physicians' career satisfaction. *Journal of the Medical* Association of Thailand, 87 Suppl 4, S5-8.
- Wattanasirichaigoon, S., Ruksakom, H., Polboon, N., Sithisarankul, P., & Visanuyothin, T.
 (2004). Thai physicians health survey. *Journal of the Medical Association of Thailand*, 87 Suppl 4, S1-4.
- West, C. P., Dyrbye, L. N., & Shanafelt, T. D. (2018). Physician burnout: contributors, consequences and solutions [Review]. *Journal of Internal Medicine*, 283(6), 516-529.
- Wiseman, J., & Snell, L. (2008). The Deteriorating Patient: a realistic but 'low-tech' simulation of emergency decision-making [<u>https://doi.org/10.1111/j.1743-498X.2008.00213.x</u>]. *The Clinical Teacher*, 5(2), 93-97. <u>https://doi.org/https://doi.org/10.1111/j.1743-</u> 498X.2008.00213.x
- Zhang, J. Q., Dong, J., Pardo, J., Emhoff, I., Serres, S., Shanafelt, T., & James, T. (2021).
 Burnout and Professional Fulfillment in Early and Early-Mid-Career Breast Surgeons.
 Annals of surgical oncology. <u>https://doi.org/10.1245/s10434-021-09940-w</u>

Appendix A

Ethic Approval Letters

🐯 McGill

Research Ethics Board Office James Administration Bldg. 845 Sherbrooke Street West. Rm 325 Montreal, QC H3A 0G4

Tel: (514) 398-6831

Website: www.mcgill.ca/research/research/compliance/human/

Research Ethics Board 2 Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 20-12-027

Project Title: Quality of Life, Well-Being, Burnout and Professional Fulfillment of Thai Physicians: A Nationwide Survey

Principal Investigator: Arunee Tipwong

Department: Educational and Counselling Psychology

Status: Master's Student

Supervisor: Professor Nathan C. Hall

Co-Investigator: Dr.Parinya Chamnan, MD, CPIRD, Ministry of Public Health, Thailand

Approval Period: January 26, 2021- January 25, 2022

The REB 2 reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

Georgia Kalavritinos Ethics Review Administrator

^{*} Approval is granted only for the research and purposes described.

^{*} Modifications to the approved research must be reviewed and approved by the REB before they can be implemented.

^{*} A Request for Renewal form must be submitted before the above expiry date. Research cannot be conducted without a current ethics approval. Submit 2-3 weeks ahead of the expiry date. * When a project has been completed or terminated, a Study Closure form must be submitted.

^{*} Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay

 ^{*} The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
 * The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this study.

^{*} The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.



เอกสารรับรองจริยธรรมทางการวิจัย

เอกสารฉบับนี้ เพื่อแสดงว่า โครงการวิจัย

เรื่อง คุณภาพชีวิต สุขภาวะ ภาวะหมดไฟในงาน และการเติมเต็มทางวิชาชีพของแพทย์ไทยและปัจจัย ที่เกี่ยวข้อง : การสำรวจในบริบทสาธารณสุขภาครัฐไทย

ผู้วิจัย คือ แพทย์หญิงอรุณี ทิพย์วงศ์

หน่วยงาน โรงพยาบาลสุราษฎร์ธานี

ได้ผ่านการพิจารณาจากคณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสุราษฎร์ธานีแล้ว และเห็นว่า ผู้วิจัยต้องดำเนินการตามโครงการวิจัยที่ได้กำหนดไว้แล้ว หากมีการปรับเปลี่ยนหรือแก้ไขใด ๆ ควรผ่าน ความเห็นชอบหรือแจ้งต่อคณะกรรมการจริยธรรมทางการวิจัยอีกครั้ง

ออกให้ ณ วันที่ ๑๐ เดือนมิถุนายน พ.ศ. ๒๕๖๒

ลงชื่อ

an (นายดามพ์ มุกด์มณี) นายแพทย์ ระดับชำนาญการ ประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์

ลำดับที่ ๒๗/๒๕๖๒

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสุราษฎร์ธานี ถ.ศรีวิชัย อ.เมือง จ.สุราษฎร์ธานี ๙๙๐๐๐ โทร. (กฟฟ) สดสีอออ หือ ดสออ, โทรสาร (อฟฟ) สดสอสอ

COA 020/2564



คณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสุราษฎร์ธานี

เอกสารฉบับนี้ เพื่อแสดงว่า โครงการวิจัย

 ชื่อโครงการ : คุณภาพชีวิต สุขภาวะ ภาวะหมดไฟในงาน และการเติมเต็ม ทางวิชาชีพของแพทย์ไทย Quality of life, well-being, burnout and professional fulfillment of Thai physicians
 เลขที่โครงการวิจัย: 27/2562 ออกให้ ณ วันที่ 10 มิถุนายน 2563 ผู้วิจัย: แพทย์หญิงอรุณี ทิพย์วงศ์ สังกัดหน่วยงาน โรงพยาบาลสุราษฏร์ธานี

ได้ผ่านการพิจารณาขอเปลี่ยนแปลงชื่อโครงการวิจัยจากคณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสุราษฎร์ธานี หากมีการปรับเปลี่ยนหรือแก้ไขใดๆ ควรผ่านความเห็นชอบหรือแจ้งต่อ คณะกรรมการจริยธรรมทางการวิจัยอีกครั้ง

วันที่รับรอง 10 มิถุนายน 2564 **วันหมดอายุ** 10 มิถุนายน 2565

ลงนาม

la

(นายประกอบ ลือซาเกียรติศักดิ์) นายแพทย์ทรงคุณวุฒิ (ด้านเวชกรรมสาขาศัลยกรรม) ประธานคณะกรรมการจริยธรรมการวิจัยในมนุษย์

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลสุราษฎร์ธานี 56 ถนนศรีวิชัย อำเภอเมือง จังหวัดสุราษฎร์ธานี 84000 โทร 077 915 600 ต่อ 2296,3105 โทรสาร 077 915 642
Human Research Ethics Committee

Surat Thani Hospital

This document is to show that the research project:

Project title: Quality of life, well-being, burnout and professional fulfillment of Thai physicians

Research project number: 27/2019 Issued as of June 10, 2020

Researcher: Arunee Tipwong, MD

Under workplace agency: Surat Thani Hospital

Has been considered to change the name of the research project from the Human Research Ethics Committee, Surat Thani Hospital. If there is any other modification or correction, it should notify the research ethics committee once again.

Approval date: June 10, 2021

Expiration date: June 10, 2022

McGill University

ETHICS REVIEW AMENDMENT REQUEST FORM

This form can be used to submit any changes/updates to be made to a currently approved research project. Changes must be reviewed and approved by the REB before they can be implemented.

Significant or numerous changes to study methods, participant populations, location of research or the research question or where the amendment will change the overall purpose or objective of the originally approved study will require the submission of a complete new application.

REB File #: 20-12-027 Project Title: Project Title: Quality of Life, Well-Being, Burnout and Professional Fulfillment of Thai

Physicians: A Nationwide Survey

Principal Investigator: Arunee Tipwong Email: Arunee.tipwong@mail.mcgill.ca Faculty Supervisor (for student PI): Dr. Nathan C. Hall, Prof.

1) Explain what these changes are, why they are needed, and if the risks or benefits to participants will change.

Four main changes of the project include:

- 1) the study title (no longer a national study)
- 2) the anticipated sample size (smaller)
- 3) the number of participating data collecting sites (fewer)
- 4) the name of the Thai REB approval board (hospital-specific vs. national board)

These changes downgrade the scope of the study from a national survey of teaching and community hospitals, to a smaller-scale survey of physicians at teaching hospitals. This change is proposed to ensure data collection is completed in time to permit timely degree completion. These changes will not affect the risks or benefits of participants other than those that have been mentioned in the previous submission.

2) Attach relevant additional or revised documents such as questionnaires, consent forms, recruitment ads.

All relevant documents are attached in the submission email.

Principal Investigator Signature:	อรณี พิพย์วงศ์	Date:	01/04/2021
Faculty Supervisor Signature:	Lation Fall	Date:	2021-04-02

Submit by email to <u>lynda.mcneil@mcgill.ca</u>. REB Office: James Administration Building, 845 Sherbrooke Street West suite 429, fax: 398-4644 tel: 398-6831/6193; www.mcgill.ca/research/researchers/compliance/human (August 2014)

REB#20-12-027(0421)

For Administrative Use : REB#20-12-027 (0421)	REB:REB-IREB-IIIREB-III
Delegated Review Full Review	
$\underline{}$ This amendment request has been approved.	lynda.mcn Digitally signed by ymda.mcnell@mcgill.a cn=ymda.mcnell@mcgill.c
Signature of REB Chair/ delegate:	caDate: 2021.04.12 11:41:07Date:
Project Approval Expires: January-25-2022	

Submit by email to <u>lynda.meneil@megill.ca</u>. REB Office: James Administration Building, 845 Sherbrooke Street West suite 429, fax: 398-4644 tel: 398-6831/6193; www.megill.ca/research/researchers/compliance/human (August 2014)

Appendix B

Recruitment Letter and Consent Form

Recruitment letter for Thai physicians

Sent on behalf of Dr.Arunee Tipwong, MA student and Principal Investigator, Dr.Parinya Chamnan, Co-investigator, and Dr.Nathan C. Hall, Faculty supervisor, Department of Educational and Counseling Psychology

Dear All physicians,

This letter informs you of an opportunity to participate in a survey of quality of life, wellbeing, professional fulfillment and burnout in physicians working in Thai public health sectors where teaching is one of the role responsibilities. We also would like to inform you of the rationale for this thesis project.

According to the increasing rate of physician burnout worldwide, this issue becomes more concerned regarding the physicians' well-being and its indirect effect on patients' outcomes. In Thai public health hospitals, there are a large number of workloads. Many physicians have more than one responsibility, which combines roles of care provider, administrator, teacher, researcher, etc. These multiple responsibilities can cause an imbalance in life and lead to burnout and low quality of life. Having identified the problem's size and its associated factors might help policymakers and health organizations better solve and manage the issue. Currently, the situation of physician burnout still lacks evidence in the national level. Therefore, our research team plan to survey and determine the size of this problem and identify the associated factors that can be used later as input information to develop better strategies to solve the issue and support the physicians in the Thai public health sector. This study, with a one-time online survey questionnaire, will be done with confidentiality concerns. It will require approximately 30 minutes of your time to complete the questionnaire. If you have any question about the study, please feel free to contact the Principal Investigator, Dr. Arunee Tipwong, at arunee.tipwong@mail.mcgill.ca.

Thank you for your contribution!

Sincerely yours,

Dr.Arunee Tipwong, MD Surat Thani Hospital, Thailand MA Student, Department of Educational and Counseling Psychology Achievement Motivation and Emotion Research Group McGill University, Canada

Dr.Parinya Chamnan, MD

The Collaborative Project to Increase Rural Doctor (CPIRD), Ministry of Public Health, Thailand

Dr.Nathan C. Hall, Associate Professor Department of Educational and Counseling Psychology McGill University, Canada Consent Form: Information Statement

CONSENT TO ACT AS A HUMAN RESEARCH SUBJECT

CLINICIAN TEACHERS' MENTAL HEALTH: THAI PHYSICIANS

You are being asked to participate in a survey, which the participation is completely voluntary. Please read the information below and ask questions about anything that you do not understand before deciding if you will to participate. I will be happy to answer your questions.

TITLE OF THE STUDY

Quality of Life, Well-Being, Burnout and Professional Fulfillment of Thai Physicians

RESEARCH TEAM

Dr. Arunee Tipwong, MD

Surat Thani Hospital, Thailand

MA student at Department of Educational and Counselling Psychology, McGill University Email: arunee.tipwong@mail.mcgill.ca or arunee.ti@cpird.in.th

Dr. Parinya Chamnan, MD

The Collaborative Project to Increase Rural Doctor (CPIRD), Ministry of Public Health,

Thailand

Email: parinya.chamnan@cardiomet-res.org or princdos04@gmail.com

Research Co-Ordinator

The Collaborative Project to Increase Rural Doctor (CPIRD), Ministry of Public Health,

Thailand

Email: thanjira@cpird.in.th

Dr. Nathan C. Hall, Associate Professor

Faculty Supervisor at Department of Educational and Counselling Psychology, McGill

University

Email: nathan.c.hall@mail.mcgill.ca

PURPOSE OF THE STUDY

The purpose of the study is to identify the prevalence of physician burnout, professional fulfillment and its associated factors.

ELIGIBLE SUBJECTS

Physicians who work as clinical teacher in Thai public health sectors (total of 37 hospitals, where having medical educational centre for undergraduate medical training program) are eligible to participate in this study. Consent to participate is provided by clicking the button below.

PROCEDURES

This online survey is completed entirely over the internet through Qualtrics platform and consists of a one-time questionnaire. The questionnaire should take approximately 30 minutes to complete.

COMPENSATION, COSTS AND REIMBURSEMENT

There is no compensation or reimbursement available in this study.

CONFIDENTIALITY

Subject Identifiable Data:

Information will be collected through Qualtrics online survey platform (<u>www.qualtrics.com</u>) and transferred to an encrypted file online. Data collection will be conducted in an entirely anonymous manner with all potentially identifying information for study participants to be removed at the end of the data collection (estimated: July 2021). No identifiable information about participants will be included in any publications resulting from this study.

Data Storage:

All study data will be stored electronically on two secure computers, one in the McGill Education building and the other in the Collaborative Project to Increase Rural Doctor Office with password protection.

Data Access:

Only the research team and the faculty thesis supervisor (Dr. Arunee Tipwong, Dr. Parinya Chamnan, and Dr. Nathan C. Hall) will have access to your study records. Any information derived from this research that could be personally identifying will not be voluntarily disclosed by the research team without your separate consent.

Data retention:

The researchers intend to keep the research data in an electronic format for at least 7 years following the initial publication of the study findings and then securely destroyed.

Dissemination of results:

The results of this study will be presented as part of a master's thesis, at the Thai Ministry of Public Health, at national conferences in Thailand, at international conferences, and in medical journal publications. All results will be presented at the inferential group level without identifying information.

RISKS AND DISCOMFORTS

There are risks involved in all research studies. This study is expected to include only minimal risks. The possible risk that could happen is negative emotion, which might be elicited in participants who already experiencing stressful occupational or life circumstances. If you have been experiencing difficulty to adjust all kind of negative emotions during this survey, it would be helpful for you to call for help at mental health *hotline* **1323**, provided by department of mental health, the Thai Ministry of Public Health.

POTENTIAL BENEFITS

Participating in this research will provide physicians the opportunity to assess their mental health issues: well-being, quality of life, professional fulfillment and burnout as well as their clinical

teaching competency. It is anticipated that findings from the study will also be used across the country to develop strategies to help prevent the physician burnout and provide greater targeted support to teaching activities in Thai medical contexts.

VOLUNTARY PARTICIPATION STATEMENT

Your participation in this study is voluntary. You may choose to refuse to answer any question or may withdraw from the survey at any time. Due to the anonymous nature of the study, participants' responses cannot be withdrawn once the survey is submitted. Similarly, if you choose to exit the survey before completing all responses, your incomplete data will be retained by the researchers. Your decision to participate will not affect your future relationships with the Thai Ministry of Public Health or McGill University.

IF YOU HAVE QUESTIONS

If you have any questions or concerns regarding the conduct of this research, please contact the researchers listed above via email.

If you have any ethical concerns or complaints about your participation in this study, and want to speak with someone not on the research team, please contact the Associate Director, Research Ethics at 1(514)398-6831 or lynda.mcneil@mcgill.ca citing REB file number 20-12-027. You may also direct any concerns or complaints to the Human Research Ethics Committee, Surat Thani Hospital at (66)77-915-600 ext. 2296 or 3105 or ethicssrth@gmail.com citing REB file number 020/2564.

PARTICIPANT CONSENT

By entering the survey, I indicate that I have read the information provided and agree to participate in this study by clicking "next" button to enter the questionnaire. Please ensure that you print or save a copy of this consent form for your records.

Appendix C

Questionnaire items

[Demographic information]

Age (year-old)

Gender identity (male/female/other)

Relationship status (single/married/divorced/widowhood/In a long-term relationship without

married/In a complicated relationship)

Number of children

Roles and responsibility in family

- 1 = Leader of the family (decision-making)
- 2 = Breadwinner of the family (highest earner)
- 3 = Caretaker of family members (e.g., prepare food, housekeeping)
- 4 = Caregiver of family members (e.g., illness, special needs, disability)
- 5 = Other, please specify_____

Income/expenditure assessment (include only the income from public sector)

- 1 = Sufficient, and additional funds
- 2 = Sufficient, but no additional funds
- 3 = Insufficient, but no debt
- 4 = Insufficient, with debt

Do you have your own private practice? (1 = No, 2 = Yes)

Specify average work hours per week _____ hrs./wk.

Do you have a part-time position in a private hospital? (1 = No, 2 = Yes)

Specify average work hours per week _____ hrs./wk.

Do you have any occupation other than medical practice? (1 = No, 2 = Yes)

Specify average work hours per week _____ hrs./wk.

Duration of working in government service _____years _____months (month)

Location of current workplace (hometown)

- 1 = Working in hometown (where family resides)
- 2 = Working not in the hometown more than 5 years
- 3 = Working not in the hometown less than 5 years

Certified medical specialty (choose from list below)

- 1 = Internal medicine
- 2 =Surgery
- 3 = Obstetrics and gynecology
- 4 = Pediatric
- 5 = General practice / family medicine
- 6 = Orthopedic
- 7 = Radiology
- 8 =Anesthesiology
- 9 = Medical educator
- 10 = Preventive medicine
- 11 = Other, please specify_____
- 12 = Junior doctor (just graduate and work in community hospital, not yet been trained in

specialist program)

Your roles in the hospital (can select more than one)

1 = Hospital director

- 2 = Medical education centre director
- 3 = Head of department
- 4 = Other administrative roles in hospital
- 5 = Program director
- 6 = Clinical teacher
- 7 = Physician/ Care provider
- 8 = Other roles, please specify_____

[Teaching experiences]

Do you have a teaching role? (1 = No, 2 = Yes)

Duration of role as teacher _____ months

Teaching settings (can be more than one choice)

- 1 In-class lecturing
- 2 Bedside teaching
- 3 Ambulatory/OPD teaching
- 4 Case discussion/conference
- 5 Procedure teaching
- 6 Community-based teaching (e.g., home visit, community participation, public health)
- 7 Other, please specify_____

Average teaching duration per week _____hours

Your teaching preparation: Timing of preparation

- 1 =During office hours
- 2 =After office hours

Your teaching preparation: Support system by organization

- 1 = Prepare all teaching materials independently
- 2 = Prepare most teaching materials independently, rest prepared by educational officer
- 3 = Educational officer prepares most teaching materials

Proportion of job description (medical service/ clinical teaching/ administrative work) (average

hours per week in percentage) _____ %

[Well-being]

When was your latest periodic health check-up?

1 = Last 6 months

- 2 = Last 12 months
- 3 = Last 2 years
- 4 = Last 3 years
- 5 = More than 3 years

Do you have any chronic illness?

1 = No

2 = Yes, if yes, please specify _____

1 = Cardiovascular diseases

2 = Cancer

3 = Allergy/immune problems (e.g., Allergic Rhinitis, Systemic Lupus,

Erythematosus)

4 = Musculoskeleton problems (e.g., Myofascial Pain Syndrome, muscle strain,

low back pain)

- 5 = Mental illness
- 6 = Others

When was the onset of your chronic illness ____years____months

How severe is your chronic illness?

1 = Mild

2 = Moderate

- 3 =Severe
- 4 =Very severe

Please rate your overall health status

1 = Poor

- 2 = Fair
- 3 = Good
- 4 = Excellent

When you make self-care or health promotion plans, how closely do you follow them?

1 = I never follow my plans

- 2 = I rarely follow my plans
- 3 = I sometimes follow my plans
- 4 = I regularly follow my plans
- 5 = I always follow my plans

[EuroQuality of life-five dimension-five level scale]

How challenging of each of these health issues for you TODAY?

Mobility

Selfcare

Usual activities (e.g., work, study, housework, leisure activities)

Pain/discomfort

- Anxiety/depression
- 1 = Not at all
- 2 =Somewhat
- 3 = Moderately
- 4 = Significant
- 5 =Very severe

[Intention to quit scale]

I have considered quitting one or more of my professional roles (e.g., teaching, administration)

I have considered leaving public practice for private practice

I have considered leaving the medical profession for another profession

- 1 = Strongly disagree
- 2 = Somewhat disagree
- 3 = Neither agree nor disagree
- 4 = Somewhat agree
- 5 = Strongly agree

[Professional Fulfillment Index]

How true do you feel the following statements are about you at work during the past two weeks?

- 1 = Not at all true
- 2 = Somewhat true
- 3 = Moderately true
- 4 =Very true
- 5 =Completely true
- I feel happy at work

I feel worthwhile at work

My work is satisfying to me

I feel in control when dealing with difficult problems at work

My work is meaningful to me

I'm contributing professionally (e.g., patient care, teaching, research, and leadership) in

the ways I value most

To what degree have you experienced the following?

During the past two weeks I have felt...

1 = Not at all

- 2 = Very little
- 3 = Moderately
- 4 = A lot
- 5 = Extremely

A sense of dread when I think about work I have to do

Physically exhausted at work

Lacking in enthusiasm at work

Emotionally exhausted at work

During the past two weeks my job has contributed to me feeling...

1 = Not at all
2 = Very little
3 = Moderately
4 = A lot

5 = Extremely

Less empathetic with my patients

Less empathetic with my colleagues

Less sensitive to others' feelings/emotions

Less interested in talking with my patients

Less connected with my patients

Less connected with my colleagues

Please indicate the most recent time you experienced each of the following things:

1 = Never

2 =In my lifetime

- 3 =In the last year
- 4 =In the last 3 months
- 5 =In the last month
- 6 =In the last week

I made a major medical error that could have resulted in patient harm

I made a medical error that did result in patient harm

I ordered the wrong medication

I ordered the wrong lab test

[Maastricht clinical teacher questionnaire]

Please respond to each of the questions by considering the combination of your current ability,

resources, and opportunity to do each of the following in your present position.

- 1 =fully disagree
- 2 = disagree

3 = neutral

4 = agree

5 =fully agree

I consistently demonstrate how to perform clinical tasks

I clearly explain the important elements for the execution of a given task

I create sufficient opportunities for students to observe me

I serve as a role model as to the kind of health professional students would like to become

I observe my students multiple times during patient encounters

I give useful feedback during or immediately after direct observation of students' patient encounters

I help students understand which aspects they need to improve

I adjust my teaching activities to the level of experience of students

I offer sufficient opportunities to students to perform activities independently

I support students in activities that they find difficult to perform

I gradually reduce the support given to allow students to perform certain activities more independently

I ask students to provide a rationale for their actions

I help students become aware of gaps in their knowledge and skills

I ask students questions aimed at increasing their understanding

I encourage students to ask me questions to increase their understanding

I stimulate students to explore their strengths and weaknesses

I stimulate students to consider how they could improve their strengths and weaknesses

I encourage students to formulate learning goals

I encourage students to pursue their learning goals I encourage students to learn new things I create a safe learning environment I take sufficient time to supervise students I am genuinely interested in the students I show respect to students