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ANALYSIS OF SECONDARY TRAUMATIC STRESS AMONG PHYSICIANS

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The narrative review was important in understanding secondary traumatic stress among physicians. The primary aim of this narrative review was achieved by reviewing qualitative and quantitative studies to analyze if physicians were at-risk of being exposed to secondary traumatic stress when providing care to traumatized individuals. A review of the literature revealed a significant finding that identified 29 medical specialties that were more likely to be exposed to secondary traumatic stress associated with burnout when subjected to repetitive indirect traumatic exposures. An interesting finding showed that physicians were at a greater risk of secondary traumatic stress when they worked longer hours per day (12 hours or more), extended hours throughout the week (80 hours or more), and worked primarily overnight shifts. An unexpected finding in this narrative review revealed that physicians with dependents (e.g., a child/children) had an increased risk of being vulnerable to the effects of secondary traumatic stress. This noteworthy finding was compelling because factors that interlinked dependents to secondary traumatic stress among physicians were unanticipated. Though this narrative review contributes to the body of literature, further studies are necessary because research on secondary traumatic stress among physicians is limited and the lack of literature suggests needed future research.

Keywords: Physicians; secondary traumatic stress; vicarious trauma; second victim; indirect trauma; compassion fatigue; burnout.

1. INTRODUCTION

Secondary traumatic stress is a growing concern and there has been a recognizable focus to examine its effects on physicians [1-6]. Secondary traumatic stress is a compelling issue because of its potential risks to physicians who provide care to traumatized patients. Secondary traumatic stress, secondary trauma, vicarious trauma, second victim, and compassion fatigue are used interchangeably to describe the indirect consequential impact on healthcare professionals who work with traumatized patients, and research shows that the terms are often associated with burnout in physicians [7-10,3,11,12]. The likelihood of physicians being exposed to secondary traumatic stress is plausible and the effects of burnout may vary depending upon physicians' involvement with traumatized individuals. While the literature about burnout in physicians is extensive, research analyzing secondary traumatic stress among

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physicians is limited and the knowledge of the effects is essential to contribute to the literature [2,9,10,6,11,12].

Healthcare professionals have a higher rate of exposure to traumatized individuals in their work environments than the general population which could lead to secondary traumatic stress [8,10,3-5]. The work environment in which physicians work may pose increased challenges by traumatic and distressful situations they encounter. Thus, the high incidence of exposure to traumatic events in work environments may compromise physicians' abilities to effectively apply self-care mechanisms (e.g., coping skills) during stressful conditions. Research asserted that intense trauma at work is an inherent characteristic of occupations for some healthcare professionals [13,14,7,15]. Since traumatic exposures are apparent factors in healthcare professionals' work environments, there is a great need to analyze if physicians are exposed to secondary traumatic stress. Thus, the literature showed that the investigation of secondary traumatic stress in physicians has received little attention [16-18,4,19,20-22].

Secondary traumatic stress is a debilitating problem that affects professionals who work with traumatized populations [1,23,9]. Physicians encounter complex situations that involve life-threatening and traumatic events. Though physicians may be cognizant of secondary traumatic stress, their ability to effectively compartmentalize traumatic situations may be underscored by repeat exposures, compassion fatigue, and burnout [24,25]. Research revealed that physicians primarily working overnight shifts and working more than 80 hours per week were likely to experience burnoutand had a greater chance of suffering from compassion fatigue when working hours were 12 or more a day [26,27]. Thus, burnout may be a contributive factor to physicians' likelihood of being unable to effectively process traumatic situations which in return may subject physicians to secondary traumatic stress.

Administered tools have been implemented to assess secondary traumatic stress in healthcare professionals. Secondary Trauma Self-Efficacy is a 7-item tool that has been used to evaluate the perceived ability to cope with the challenging demands resulting from work with traumatized patients and the perceived ability to deal with the secondary traumatic stress symptoms [25]. The Secondary Traumatic Stress Scale is a 17-item tool that also has been used to measure secondary trauma effects. The self-report tool is used to analyze three domains of traumatic stress associated with secondary exposure to trauma: intrusion, avoidance, and arousal [26].

When applying the Secondary Traumatic Stress Scale, studies found secondary traumatic stress in some healthcare professionals who provide care to traumatized individuals [28]. The studies provided a rationale to expand research to analyze secondary traumatic stress in physicians. With the usage of a Secondary Traumatic Stress Scale, the research showed secondary traumatic stress of 15% in social workers [29], 19% in mental health providers treating military patients [30], 38% of oncology nurses [31], 25% of intensive care nurses [32], 20.8% of providers treating family or sexual violence [33], and during the coronavirus disease 2019 (COVID-19) outbreak from a period from May 01, 2020, to June 15, 2020, 47.5% in frontline health care workers while in healthcare workers working in other units it was 30.3% [14,3,5,34,35]. While research has examined secondary traumatic stress in other healthcare professionals, an analysis of secondary traumatic stress among physicians is necessary. Thus, literature shows that the relationship between secondary traumatic stress and physicians is relatively understudied, and the lack of literature suggested needed opportunities for research [2,9,18, 19,20,21,12,36].

2. LITERATURE REVIEW

There has been little attention focused on secondary traumatic stress among physicians. The aim of this narrative review explored if physicians were at-risk of being exposed to secondary traumatic stress when providing care to traumatized patients. Research showed that physicians come face to face with suffering daily by being exposed to repetitive episodes of patients with life-changing and traumatic events [9,18,3,4,19,21,36]. Secondary traumatic stress is a growing area of concern with the possibility of adversely affecting physicians. Physicians are exposed to difficult or disturbing images, stories, and events second-hand that place them at a high risk of secondary trauma exposure [22,8,35]. Though physicians are resilient individuals and trained to address emergencies, physicians are humans and are likely to react to traumatic events. While physicians may be reluctant to disclose psychological effects of secondary traumatic exposure due to potential stigma, and fear of jeopardizing employment or professional image, research showed that traumatic events were experienced by physicians throughout their entire careers that profoundly impacted some [4,5,12,35].

There is no place for error in the medical field, and society has entrusted physicians with the responsibility to deal with traumatic events without considering the possibility of indirect emotional distressful impacts that adversely cause secondary

trauma. Research asserted that suppressing feelings or emotions associated with trauma can have profound effects on anyone, including physicians, both professionally and personally [25,32,16,4,31]. Physicians are not immune to emotional distress but they often have to make rapid decisions under extraordinary traumatic circumstances. Research pointed out that trauma, including one-time, multiple, or long-lasting repetitive events, affects everyone differently. Several factors may cause circumstances that contribute to secondary trauma among physicians such as fear of exposure to infectious disease, workplace violence, empathy for patients, litigation/lawsuits, use of electronic health records, long work hours, death of a child, medical errors, depersonalization, deaths associated with COVID-19, circadian disturbance due to working overnight shifts, burnout, multiple fatalities, natural disasters, suicide, etc. [28,32,14,37,29,38,5,20,39,40,21,12,35,41]. Though physicians may have the intellectual capabilities to internalize a great deal of stress, exposure to secondary trauma in their work environment may present challenges for them.

Providing treatment to traumatized patients may place a toll on physicians to adapt to unbearable stressors in their work environments. The toll may be the result of secondary trauma, occupational stress, burnout, emotional exhaustion, or compassion fatigue [2,14,42-44,9,18,21,12,35,41]. The toll experienced may be reflective of the emotional distress from traumatic experiences that physicians endured despite working in different locations. Results of a study where secondary traumatic stress and compassion fatigue were used to describe the emotional toll suffered by physicians with various medical specialties (e.g., emergency medicine, family practice, internal medicine, and pediatrics) showed that physicians working in different geographical locations (urban, suburban, or rural) are exposed to secondary trauma [32].

The work environment in which physicians practice are possible causes of distress as a result of exposed indirect trauma. Thus, some physicians face continuous challenging situations at work that require immediate responses which may result in secondary traumatic stress. Physicians who work in challenging conditions are at a higher risk to be affected by secondary traumatic stress [32,16,9,18,45,6,35]. The added burden of deaths during the COVID19-pandemic may have compounded effects of secondary traumatic stress exposure. Research revealed that secondary traumatic exposure among physicians may have worsened amidst the COVID-19 due to numerous traumatic events, multiple deaths, concerns of infection exposure, catastrophic situations, natural disasters, cardiopulmonary resuscitation required for life-threatening situations, personal safety, risk of developing psychological disorders (e.g., posttraumatic stress disorder, depression, anxiety, etc.), difficulty delivering optimal care with scarce resources, personal safety, and extended working hours [1,32,14,29,46,3,5,45,47,34,35].

Physicians across various medical specialties face demanding work, endure powerful sources of stress, and face daily suffering that might be singularly life-changing and traumatic events [26,37]. Though every medical specialty area is not mentioned in this narrative research study, available literature highlighted that physicians in certain medical specialties are more likely to be exposed to secondary traumatic stress. Despite differences in specialties, physicians have a higher rate of exposure to traumatized individuals than the general population [16,46,22,6,47]. The high incidences of trauma exposures in the workplace may cause stress-induced emotional challenges which may hinder some physicians from applying necessary coping skills. Research asserted that physicians in the following medical specialties are at great risk of exposure to secondary traumatic stress [48-50].

2.1 Cardiologists

Cardiologists perform complex medical procedures that have zero margins for error. A great deal of secondary trauma may be imposed upon cardiologists due to treating patients with long-term conditions involving the heart that may result in death. Research asserted that cardiac problems have increased at a rapid rate which in turn increased the trauma exposure of and burden on cardiologists due to patient mortality inevitably being higher than many medical specialties, strenuous working conditions, performing life-saving procedures in COVID-19 situations, emotional exhaustion, highest levels of burnout, and working longer hours than other physicians [14,29,5,6,51,11,35]. Since cardiologists conduct high-risk procedures and implement actions that may result in life or death situations, their chances of exposure to repeat traumatic events may place them at significant risk of burnout which has been associated with secondary traumatic stress. Though female and male cardiologists' working conditions expose them to the same level of secondary trauma, research indicated that female cardiologists were more likely to report burnout than males, particularly those in early and mid-career, but both reported willingness to seek professional help for feelings of depression or suicidality [6,48,51,11].

2.2 Emergency Medicine Physicians

Emergency medicine physicians are essential on trauma teams in the emergency rooms in hospitals and are often exposed to repetitive traumatic exposures. Emergency physicians are indirectly exposed to many extreme traumatic life-threatening and emergent situations (e.g., severe injuries, road accidents, assaults, rape, abuse, and gunshots) [26,47,8,10,3,21,35]. Emergency medicine physicians are exposed to alarming events in their work environments that require immediate reactions. While their ability to quickly react to traumatic situations is commendable, repeat exposures may subject emergency physicians to secondary traumatic stress. Recurrent exposure to distressful situations may result in emergency medicine physicians being faced with many emotionally challenging factors, and at worst, traumatic circumstances. Research indicated that secondary traumatic stress has been prevalent in many types of healthcare providers, but emergency physicians may be particularly vulnerable [32].

2.3 Internal Medicine Physicians

Internal medicine physicians (internists) work with individuals from early adulthood to geriatrics in which exposures to trauma may be difficult to avoid. Though internists diagnose and perform non-surgical treatment of diseases and injuries, they treat adults with a wide range of complicated and uncomplicated diseases of internal organ systems which sometimes involve advising the patient of life-threatening conditions. Research revealed that physicians are exposed to traumatic situations, in particular those who work with patients with infectious diseases (e.g., HIV/AIDS), diabetes, hypertension, chronic lung disease, heart disease, cancer, and complex conditions that are traumatizing for some patients [2,32,14,30,22,10,34,40,36]. All of these are medical conditions that are treated by internists which expose internists to traumatized patients that may lead to secondary traumatic stress.

2.4 Neonatologist

Neonatologists may be at particular risk of compassion fatigue, also known as secondary traumatic stress and vicarious traumatization, by recurrent exposure to distress in infants in the intensive care unit and their families [5,12], Neonatologists may experience emotional challenges caring for infants with chronic/traumatic medical conditions. Research pointed out that caring for infants in the neonatal intensive unit can be emotionally taxing and traumatic and cause substantial physical exhaustion and emotional depletion for physicians from repeated exposure to the suffering of others [13,22,5,12].

2.5 Nephrology

Nephrology is a medical specialty that focuses on the treatment of individuals who have or are at risk of kidney diseases. Nephrologists may have an increased risk of being exposed to secondary traumatic stress. Research showed that the nephrology specialty is highly likely to be exposed to secondary traumatic stress associated with burnout when providing treatment to traumatized individuals [7,9]. The exposure may cause personal and professional effects on physicians due to secondary trauma.

2.6 Neurosurgeons

Neurosurgeons perform highly complicated medical procedures. The chances of being exposed to secondary trauma during surgery and while providing care to traumatized patients. Research asserted that stress among neurosurgeons during surgery procedures presents many challenges and stressors can lead to dangerously increased levels of burnout [52,12,36,35,53]. Though neurosurgeons may have the mental agility to work under intense pressure to perform operations for traumatized patients, the heightened level of stress and burnout that they endure may make them receptible to being at risk of secondary trauma. Research revealed surgical specialties that operate in the head and neck region have higher psychological distress among surgeons and are exposed to serious and life-threatening traumatic conditions, high levels of stress, and increased trauma exposure, especially if a rupture occurs [52,51,12,35]. The risk of a rupture compounding with the magnitude of stressful situations may lead to secondary traumatic stress.

2.7 Obstetricians and Gynecologists

Obstetrics and gynecology providers are likely to experience secondary traumatic stress following adverse patient events similar to other medical specialties [54,55]. During childbirth delivery, obstetricians and gynecologists are prone to encounter stress with the responsibility of ensuring the safety and well-being of the two lives—a mother and a baby. Research showed, from using the Compassion Fatigue Short Scale, that obstetricians and gynecologists with 11-15 years' seniority scored higher on the job-burnout sub-dimension of compassion fatigue related to secondary trauma than their more senior counterparts; female obstetricians and gynecologists experienced more compassion fatigue than male counterparts, and both male and female obstetricians

and gynecologist who worked at private hospitals had higher compassion fatigue than those who worked in state-run hospitals [54]. Even though gynecologists may exercise appropriate due diligence to perform safe procedures, some traumatic experiences may be inevitable due to risk factors associated with childbirth delivery and gynecological surgeries. Research showed that physicians providing such medical care including sexual abuse treatment and abortions are at significant risk of secondary trauma as they extend care to patients facing life-threatening conditions [54,22,9,34,40].

2.8 Pediatricians

Pediatricians who work with infants and children with a variety of medical conditions may be exposed to a great deal of traumatic situations. When working with infants and children who have chronic or acute conditions within a pediatric unit or a pediatric neonatal intensive care unit, managing the stressful environment is complex [23]. Such stressful work environments may cause pediatricians to exhibit an emotional response to traumatic situations. In particular, losing a child is an extremely tragic event for everyone directly or indirectly involved with the patient, including the pediatrician, which can have profound and lasting effects of secondary traumatic stress exposure [37,22,9,56,32, 12,36,35].

2.9 Psychiatrists

Psychiatrists face growing challenges in providing care to traumatized and non-traumatized patients. Psychiatrists are more likely to be exposed to daily traumatic scenarios, both directly and indirectly, in their work environments. Research showed that there is a high rate of trauma exposure in the behavioral health realm (mental health and substance use) which leads psychiatrists to persistent, intense, and direct exposure to secondary trauma [30,4,31]. Such a level of exposure has the propensity to affect psychiatrists in a variety of ways due to the likelihood of reoccurrence of traumatic events.

2.10 Urologists

Urologists provide treatment to women and men which requires a vast knowledge of the urinary tract system. Though urologists are less likely to encounter daily traumatizing circumstances or emergencies, the likelihood of urologists providing care to some individuals with traumatic situations is plausible considering conditions involving bladder cancer, sexual abuse, accidents, or other factors that result in injuries to the urinary tract. The degree of trauma exposure that urologists witness may cause burnout as a result of secondary traumatic stress. According to research, urology is one of the specialties with the highest incidence and severity of burnout and intense stress whereby burnout was interlinked with secondary traumatic stress [32,7,8,40,11]. The risk of urologists being affected by traumatized patients seems highly possible in comparison to other medical specialties due to urologists are less likely to be exposed to repeat traumatizing situations.

3. METHODOLOGY

A narrative review was conducted to analyze secondary traumatic stress among physicians. A literature review search was conducted by using Saint James School of Medicine's library resources as well as PubMed, PsycINFO, and Google Scholar. The text words "secondary traumatic stress," "trauma," "vicarious trauma," "secondary trauma," "compassion fatigue," "burnout," "stress," with the use of the Boolean operator "AND" the term "physicians" was used to identify studies on secondary traumatic stress among physicians. The inclusion criteria consisted of a) scholarly or peer-reviewed sources; b) relevant articles within the last 15 years, c) articles published in the English language only; d) male and female physicians; e) physicians working in hospital emergency rooms; f) physicians working in inpatient and outpatient clinics and; g) physicians working alone and in teams. There were 234 articles identified that consisted of quantitative and qualitative studies. Of the 234 articles, 178 were excluded by abstract screening because the articles did not relate to the purpose of this narrative review's research topic. The remaining 56 articles were retrieved and discussed to evaluate if the literature focused on secondary traumatic stress among physicians. Of the 56 articles, 56 were selected because they contained literature pertinent to this narrative review. Of the 56 articles used, seven provided statistical data that was evaluated and tabulated to create Figures reflective of the retrieved data. The seven articles, in total, consisted of 2061 physicians. To expand the search for additional articles with relevant data, reference lists within the seven articles were also assessed for additional studies with applicable data, but none were found. The final inclusion of articles in this narrative review was selected based on the quality of evidence of each article and the relevancy of information about secondary traumatic stress among physicians.

4. RESULTS

This narrative review was important in understanding secondary traumatic stress among physicians. An analysis was conducted to investigate if physicians were at-risk of being exposed to secondary traumatic

stress when providing care to traumatized patients. An interpretation of the results of this narrative review is imperative to highlight the significance of the findings. The result showed that physicians within certain specialties had a greater risk of being exposed to secondary traumatic stress. The results revealed that physicians are subjected daily to repetitive traumatic events which may have profound effects. Results asserted that the frequency and intensity of a physician's interaction with traumatized individuals was a strong predictor of secondary traumatic stress [52,12]. In this narrative review, eleven Figures are used to illustrate factors identified that were correlated with secondary traumatic stress among physicians.

4.1 Secondary Traumatic Stress Score among Physicians

This narrative review identified the results of a Secondary Traumatic Stress Score study that revealed that physicians are affected by traumatic situations at low and average levels of secondary traumatic stress [28]. The results revealed in a study of 188 physicians showed that 144 physicians reported being impacted by traumatic events at a low level on the Secondary Traumatic Stress Score. The results revealed that 44 physicians reported an average level of being impacted by secondary traumatic stress. The results asserted that zero physicians reported being affected by secondary traumatic stress at a high level. Despite zero physicians scoring high on the Secondary Traumatic Stress score, overall, the results showed that physicians are indeed affected by secondary traumatic stress. Fig. 1 illustrates the results.

4.2 Physicians' Gender Associated with Secondary Trauma

This narrative review found that a physician's gender may contribute to the likelihood of being at risk of secondary traumatic stress. The results of studies revealed that female physicians were less prone to experiencing secondary traumatic stress than male physicians. A review of studies with a total of 1,877 physicians showed that 936 female physicians were affected by secondary trauma compared to 941 male physicians [28,32,54,43,22,12]. Despite the difference, the results provided insight to learn that both males and female physicians were at risk of secondary traumatic stress when exposed to traumatized patients or events. The results are shown in Fig. 2.

4.3 Physicians' Marital Status Associated with Secondary Traumatic Stress

The results collected from studies revealed that a physician's marital status might correlate with secondary traumatic stress. Research showed that burnout is interlinked with secondary traumatic stress [32,7,8,11] and increased levels cause consequences of disruptions in family and couple relationships [40]. The results from studies using a total of 647 physicians suffering from secondary traumatic stress show that out of 647, 581. physicians were married and had a greater impact of burnout from trauma exposures as compared to the 66 affected physicians who were single [54,12]. Fig. 3 reveals results that show that married physicians were more likely to experience burnout associated with secondary traumatic stress with a probability of causing a degree of disruption in families.

4.4 Physicians with a Child/Children, Secondary Traumatic Stress, and Physicians

The results of studies with a total of 1,242 physicians showed that physicians with children reported being more affected by secondary trauma. The results revealed that 809 physicians who had dependents (child/children) reported secondary traumatic stress whereas 433 physicians without a child/children revealed being impacted [28,32,12]. The results revealed a higher correlation between physicians with a child or children being more likely to encounter secondary traumatic stress. Furthermore, the results revealed in the study using the Professional Quality of Life Scale with subscales for the three components of compassion satisfaction, burnout, and secondary traumatic stress among physicians with medical specialties in emergency medicine, neurology, orthopedics, family medicine, pediatrics, obstetrics, and general surgery showed that physicians, as a whole, with child dependents had a higher score of secondary traumatic stress than those without children [28,32,54,12]. Fig. 4 indicates the data about secondary traumatic stress associated with physicians with dependents (e.g., a child/children).

4.5 Physicians' Race/Ethnicity Associated with Secondary Traumatic Stress

The results of a study revealed the probability of secondary traumatic stress among physicians may correlate with race/ethnicity. The results of a study with 418 physicians revealed that secondary trauma can be experienced regardless of a physician's race/ethnicity. The results revealed that of the 418 physicians in the study, 364 Caucasian (white), nine African-American (black), two Hispanic, 42 Asian, and one physician identified as other reported encountering secondary traumatic stress [12]. The results showed that Caucasian (white) physicians had a higher reporting of secondary traumatic stress in

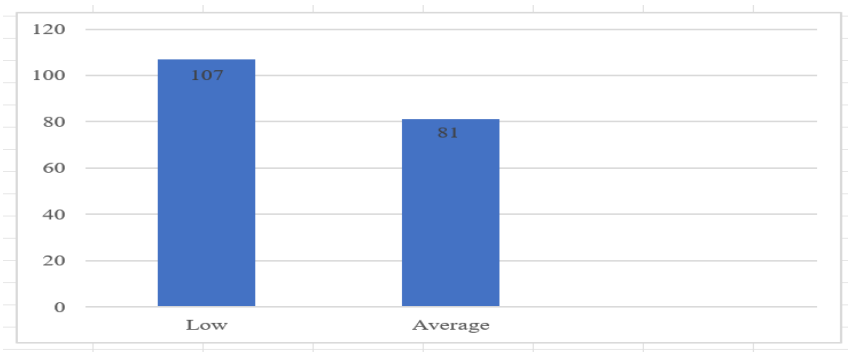

Fig. 1. Secondary traumatic stress score among physicians

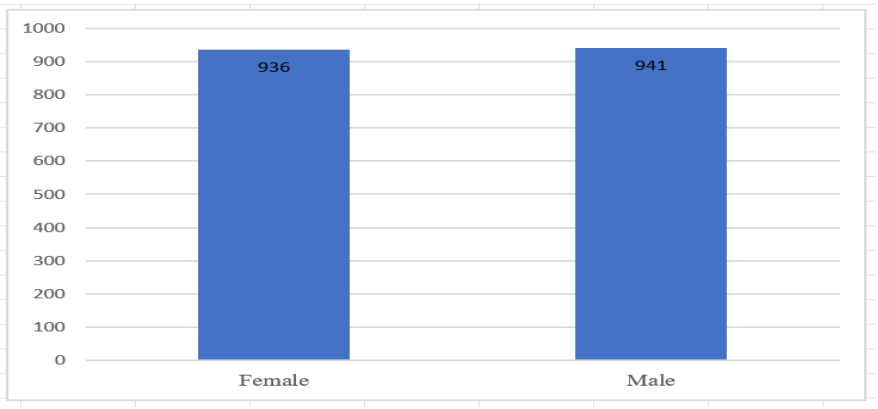

Fig. 2. Gender

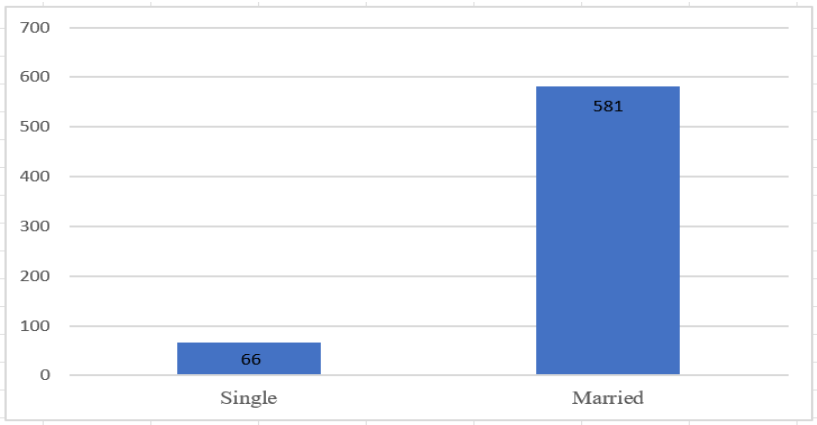

Fig. 3. Marital status

comparison to non-white physicians. The results can be seen in Fig. 5.

4.6 Physicians' Religious Affiliation Associated with Secondary Traumatic Stress

The results of a study evaluating the prevalence of burnout, secondary traumatic stress, and well-being of physicians included 218 physicians who disclosed their religious affiliation. The results showed that there is a high possibility of burnout interlinking with secondary trauma that impacted physicians despite religious affiliation. The results of the study using the Secondary Traumatic Stress Scale, Maslach Burnout Inventory, and the Personal Wellbeing Index revealed that of the 218 physicians in the study, 124 physicians affiliated with the Christian religion, 56 physicians with no religious affiliation, 26 physicians with the Jewish religion,

eight physicians with the Hindu religion, and seven physicians with the Muslim religion had some reaction to secondary traumatic stress in which 46% experienced emotional exhaustion and 44% endured emotional drainage [22]. Fig. 6 depicts the results.

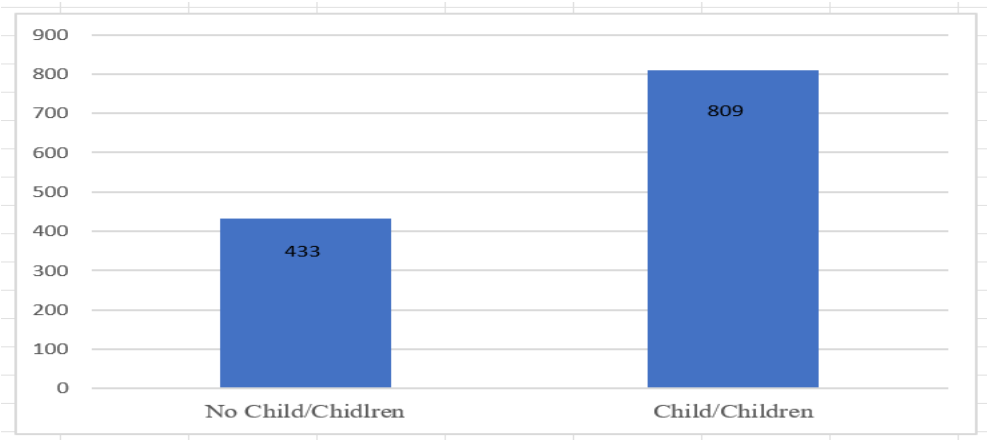

Fig. 4. Child/Children and No Child/Children

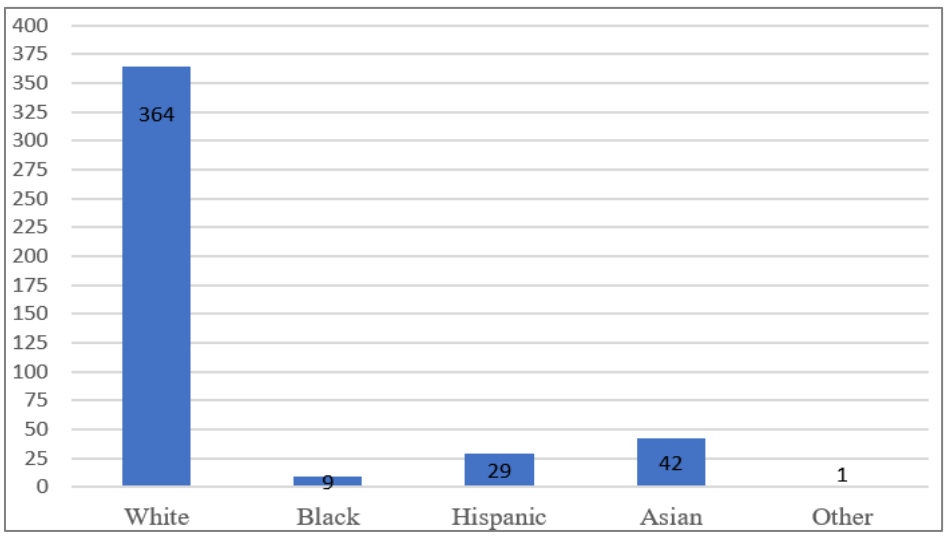

Fig. 5. Race/Ethnicity

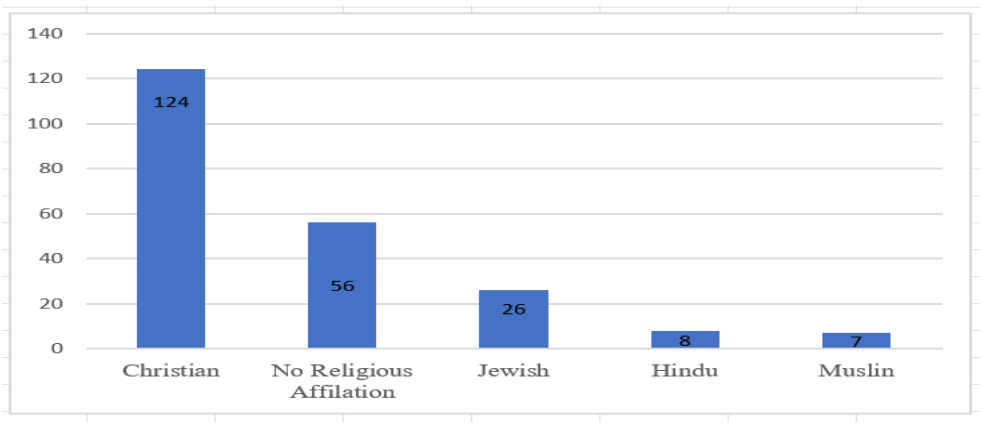

Fig. 6. Religious affiliation

4.7 Physicians' Daily Patients Associated with Secondary Traumatic Stress

The findings from studies revealed that there is a probability that physicians who provide care to several patients daily may be at greater risk of being exposed to secondary traumatic stress. Studies with a total of 107 physicians showed that 31 physicians provided care to two to 20 patients daily, 36 physicians provided care to 21 to 45 patients daily, and 40 physicians provided care to 46 to 100 patients daily [28]. Thus, areview of literature promulgated that physicians who provide care to several patients daily are likely to work extended hours which may lead to burnout and consequently result in secondary traumatic stress. Inasmuch, it is reasonable to point out that physicians who work extended hours to provide treatment to several patients daily most likely treat traumatized patients during their work shifts. Furthermore, the results of a study asserted that the burnout score for physicians who worked greater than 80 hours per week or primarily worked overnight shifts were higher than those who worked less than 80 hours or did not work overnights [28,29]. The results further showed that secondary traumatic stress scores for physicians who worked greater than 80 hours a week were higher than those who worked less than 80 hours, as well as, physicians were more likely to be affected by compassion fatigue when working hours were 12 or more a day [28,29]. Based on the findings, there is a high probability that physicians who work longer hours and treat several patients daily, whereby many may be traumatized patients, are more likely to be affected by secondary trauma. Fig. 7 shows the results for the number of patients correlated with secondary traumatic stress.

4.8 Physicians' Daily Operations Associated with Secondary Traumatic Stress

There may be a correlation between the number of daily operations performed by physicians and the likelihood of exposure to secondary traumatic stress. The results of a study revealed that of 107 physicians, 34 reported performing one operation daily, 42 performed two operations daily, and 31 performed between three to 10 operations daily [28]. There is a logical thinking process that the higher number of operations performed daily may increase the risk of a physician being exposed to traumatized patients which may lead to secondary traumatic stress. Thus, performing multiple operations daily may potentially cause burnout which has been paralleled with secondary traumatic stress. Hence, a study found that using a Compassion Fatigue Short Scale that levels of compassion fatigue related specifically to secondary trauma and job burnout in physicians [28]. The results are illustrated in Fig. 8.

4.9 Physicians' Military Experience Associated with Secondary Traumatic Stress

There is a possibility that physicians with military experience may have a greater chance of suffering from secondary traumatic stress due to prior exposed trauma while serving in the military. For physicians exposed to military-related traumatic situations (e.g., war, natural disaster, serious injury, etc.), there is a plausible inference that repeated indirect exposure to traumatized patients in a hospital/non-hospital setting may make some physicians more susceptible to being affected by secondary trauma. The results of a study showed that of 526 physicians, 460 reported not having military experience whereas 66 had experience. In recognition of a growing body of literature suggesting secondary traumatic stress has a profound effect on some individuals working in certain fields, the 2013 update to the Diagnostic and Statistical Manual of Mental Disorders (fifth edition) (DSM-5) added repeated indirect exposure as an exposure class for posttraumatic stress disorder [32]. The results suggested that physicians with prior direct trauma as a victim or indirect trauma exposure may have a higher chance of being vulnerable to the effects of secondary traumatic stress whereby further research with a larger pool of physicians with military experience may be needed. The results are indicated in Fig. 9.

4.10 Burnout among Physicians' Medical Specialties Associated with Secondary Traumatic Stress

This narrative review found results showing burnout among physicians with different medical specialties. Research showed that burnout factors were associated with compassion fatigue (e.g., secondary traumatic stress) [32,7,17,8,9,40]. In a study analyzing 29 medical specialties, the results showed that urology experienced the highest incidence and severity of burnout (54%) as well as intense levels of stress [7,9,40]. The results revealed that neurology was the second highest (50%) whereas nephrology was third (49%) [7,9]. Furthermore, results showed that public health and preventive medicine specialty ranked the lowest (29%) [33]. Fig. 10 displays the results.

4.11 Physicians' Self-Care Activities Associated with Secondary Traumatic Stress

Physicians who treat traumatized patients may benefit from utilizing self-care concepts to help them to cope with distressful situations to lessen the chances of

being affected by secondary traumatic stress. The results of a study using Survey Monkey showed that self-care activities were utilized among physicians (e.g., neonatologists). The life of an infant is undoubtedly precious and must be tended to with the utmost care whereby the usage of self-care coping skills is essential. The results of a study surveying physicians about self-care activities about secondary traumatic stress revealed 1014 responses. In the study with 1014 responses, 276 responded to efforts to talk about distressing issues, 256 used exercise, 156 used prayer/meditation, 169 used creative arts, and 157 used reading as self-care activities. Fig. 11 reveals the results.

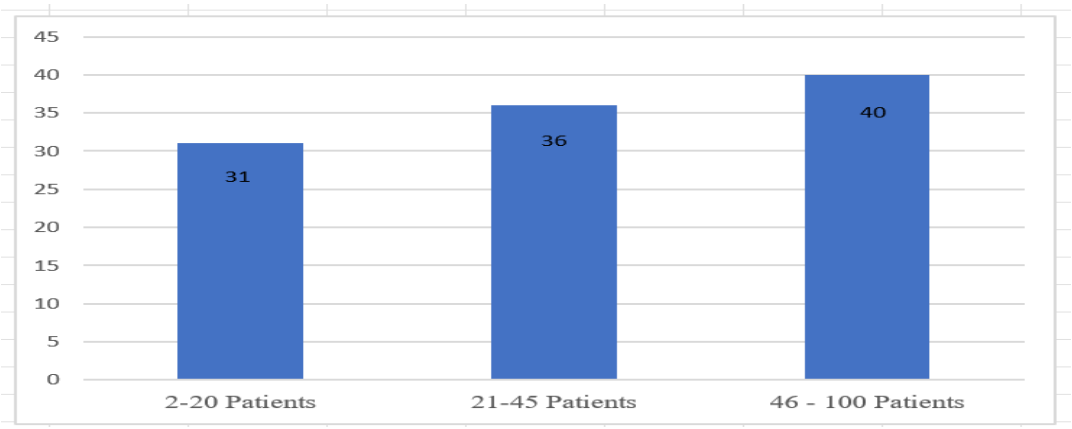

Fig. 7. Number of patients seen daily

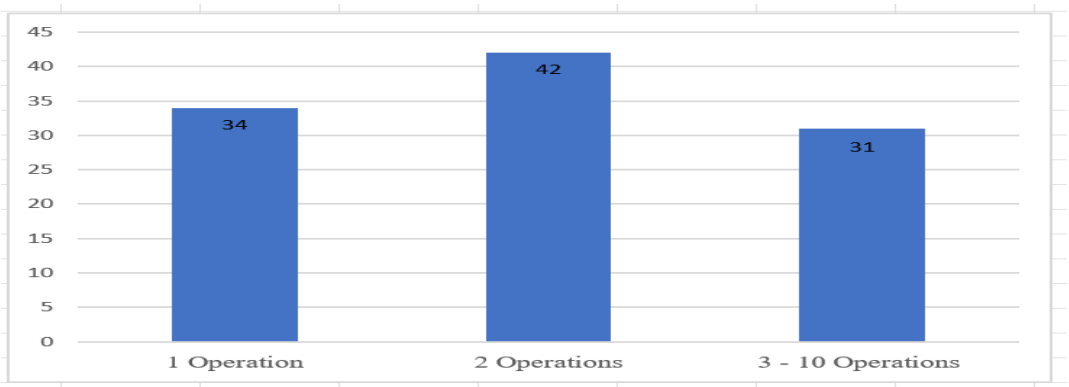

Fig. 8. Daily operations by physicians

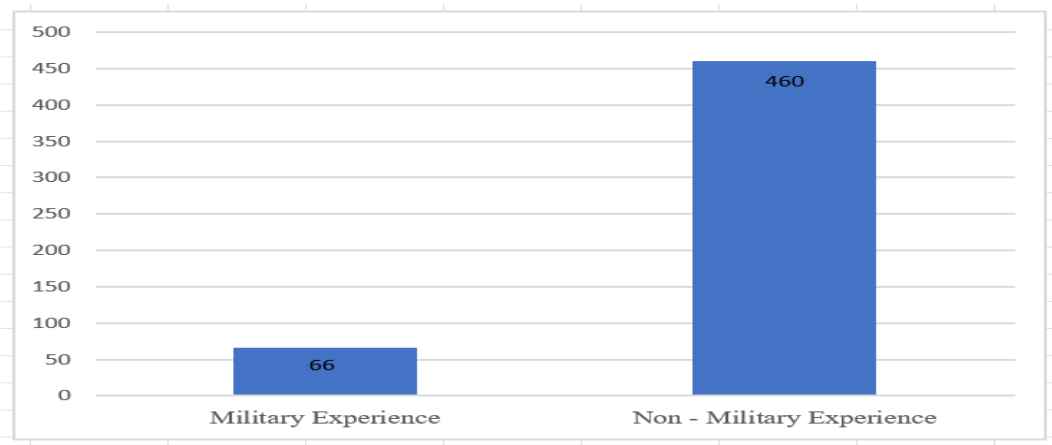

Fig. 9. Military experience / non-military experience

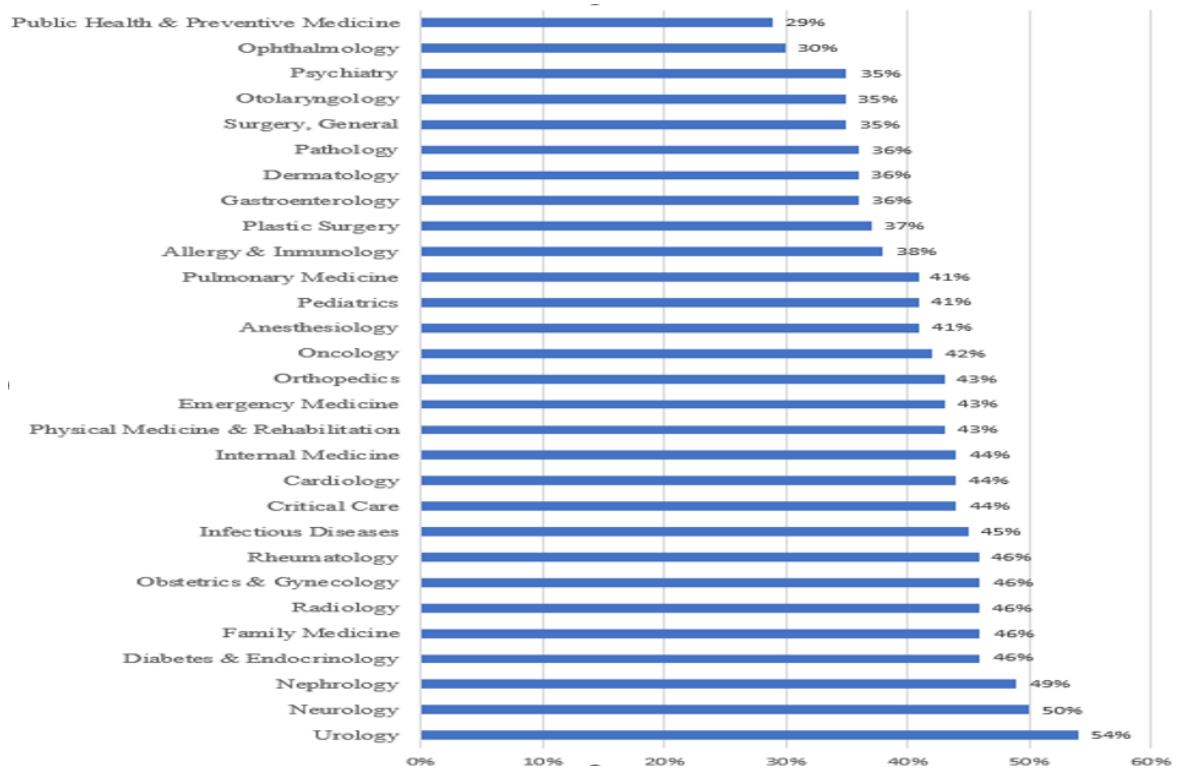

Fig. 10. Burnout among physicians' medical specialties
Note: Adapted from Medscape [9]; Guest & Riches [7]

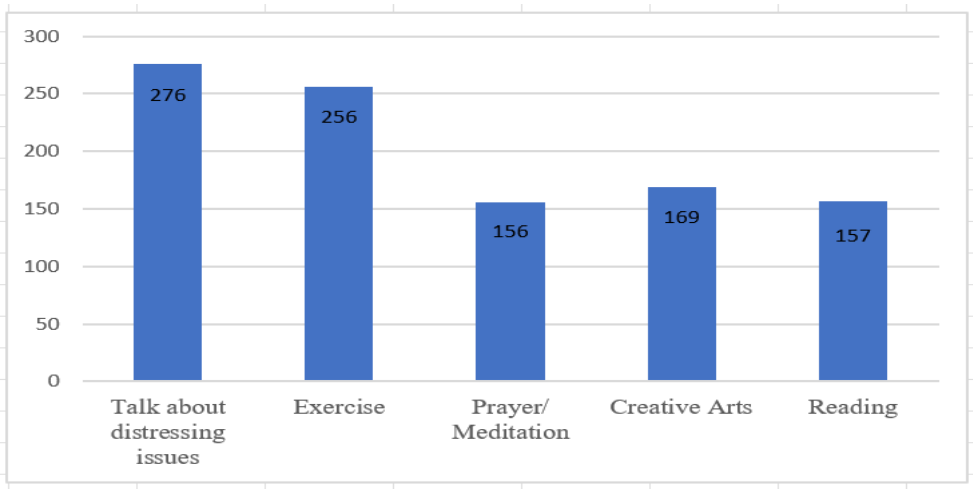

Fig. 11. Self-care activities

5. DISCUSSION

The purpose of this narrative review was to analyze secondary traumatic stress among physicians. The interpretation of findings and a discussion of the practical implications of this narrative review is imperative to contribute to the literature. This narrative review makes no claims that the findings are transferable or generalizable to a larger target population of physicians as a whole. Qualitative and quantitative studies were explored to analyze available literature pertinent to investigating if physicians suffered from indirect trauma while providing care to traumatized patients.

Data analyzed through this narrative review provided insights into understanding that physicians exposed to repetitive indirect trauma may be affected by secondary traumatic stress. The data in Figs. 1 through 10 provide relevant information to enhance

knowledge of factors that are important to consider when analyzing secondary trauma among physicians (e.g., Secondary Traumatic Stress score, gender, marital status, dependents (e.g., a child/children), race/ethnicity, religious affiliation, number of patients seen daily, daily operations by physicians, physicians with military experience, and burnout). Figs. 1 through 10 provide a visual illustration of the data which is beneficial when discussing information identified in the studies. Fig. 11 broadens awareness of self-care activities used among physicians (neonatologists) which exemplifies the importance of applying coping mechanisms when exposed to indirect trauma. Moreover, Fig. 11 delineates specific self-care activities that neonatologists reported using to help manage the effects of secondary traumatic stress (e.g., talking about distressing issues, exercise, prayer/meditation, creative arts, and reading). Though Fig. 11 provides specific self-care activities used among neonatologists, knowledge about activities that physicians with other medical specialties utilize would have been beneficial.

This narrative review discovered several interesting findings which are important to highlight for discussion. An important finding was that physicians who worked long hours per day (12 hours or more), extended hours per week (80 or more) [28,29], and worked primarily overnight shifts were more likely to be affected by secondary trauma [28,29]. There was no literature showing the frequency of breaks during the work shift or days off from work to allow physicians to process traumatic exposures.

This research revealed that 29 medical specialties were prone to endured effects of secondary traumatic stress associated with burnout [7,9]. A significant finding revealed that the urology specialty ranked first, consisting of the highest incidences of experiencing secondary traumatic stress associated with burnout in comparison to other specialties [7,9]. Such findings may exist due to urologists are less likely to be exposed to daily direct trauma and are not accustomed to reacting to repetitive emergencies, unlike other medical specialists such as emergency medicine, psychiatry, neurosurgeons, obstetrics and gynecology, etc. which often require prompt attention and reaction to some life-threatening situations. Findings also showed that the neurology specialty ranked second and nephrology was third whereas public health and preventive medicine ranked lowest among the 29 medical specialties [7,9]. Interestingly, the emergency medicine specialty ranked fourteenth out of 29 medical specialists although research showed that emergency hospital departments were subjected toextreme traumatic life-threatening and emergent situations whereby emergency physicians should be more adaptive to withstanding traumatizing situations than other medical specialists [7,9]. The 29 specialties identified in this narrative review were substantial findings that greatly highlight the prevalence of secondary trauma among physicians across specialties.

The unexpected finding in this narrative review revealed that physicians with dependents (e.g., a child/children) had a higher risk of being vulnerable to the effects of secondary traumatic stress [28,32,54,12]. This noteworthy finding was compelling because factors that interlinked dependents to secondary traumatic stress among physicians were unanticipated. Though the most consistent findings revealed that some physicians indeed are affected by secondary trauma, further knowledge about the impact of dependents on physicians according to specialties may undoubtedly yield interesting research opportunities.

6. RECOMMENDATIONS FOR FUTURE RESEARCH

This narrative review was important to analyze secondary traumatic stress among physicians. Though research showed that physicians are at risk of being exposed to secondary trauma when providing care to traumatized patients [22,8,10,3,19], there is a continued need to expand research opportunities because secondary trauma in physicians has received little attention. Future research should analyze the adverse effects of secondary traumatic stress among physicians to increase literature to help identify interventions (e.g., coping skills, etc.) beneficial for physicians with and without children, spouses, leadership roles, military experience, and pets (e.g., emotional support animals). Research opportunities are needed to explore self-care concepts that are designed specifically for medical specialty areas, gender, and length in the medical field. Future research may add a wealth of knowledge by investigating the effectiveness of programs and policy implications to reduce and/or eliminate the effects of secondary traumatic stress among physicians (e.g., emotional debriefing, one-on-one peer support programs, mentorship, crisis intervention training, resilience training, lifestyle balance, etc.). Furthermore, studies correlating physicians' ages with secondary traumatic stress may yield interesting findings. Groundbreaking research may be presented by evaluating physicians' willingness to disclose physical health impairments, substance use (alcohol and drugs), and mental health illnesses caused by secondary traumatic stress without fear of reprisal or adverse employment outcomes.

7. LIMITATION OF RESEARCH

This narrative review was beneficial in exploring literature to analyze secondary traumatic stress among physicians. Though this narrative review contributes to the literature on secondary trauma in physicians, there were limitations. There was limited literature on secondary trauma in physicians regarding interventions effective to prevent or reduce the likelihood of exposure to secondary traumatic stress. There was a lack of availability of literature to draw a definite conclusion that secondary traumatic stress impacted physicians across medical specialties. An increased number of participants (physicians) in the studies may have been more beneficial to illustrate the significance of secondary trauma. Thus, this narrative review yielded a low number of available research to extrapolate data sufficient to make a broader contribution to the body of literature.

8. CONCLUSION

The narrative review was essential for analyzing secondary traumatic stress among physicians. The results of this narrative review highlight that research analyzing secondary stress among physicians has received little attention. Secondary traumatic stress associated with burnout appeared to be more prevalent among physicians with certain medical specialties, who are exposed to repetitive episodes of traumatic life-threatening and emergent situations. Interestingly, physicians who worked long hours per day, extended hours per week, worked primarily overnight shifts, and those who had children had a higher risk of developing secondary traumatic stress. Though this narrative review contributes to literature, future research, preventative interventions, and policy implications should be explored and assessed for effectiveness to address secondary traumatic stress among physicians when providing care to traumatized individuals.

CONSENT AND ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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