Cross-Sectional Study on the Profiles and the Degree of Burnout among Resident Physicians in Private Tertiary Hospitals in Bacolod City: Proposed Life-Skills Program

Wendell Z. Espinosa, MD, MAHAD[1] and Glenda Leslie T. Baker, PhDODSA, LPT, ILFA, AFP[2]

ABSTRACT

Research question: What are the profiles and the degree of burnout among resident physicians in private tertiary hospitals in Bacolod City?

Background: Exhaustion from work may result into negative effects not only to the medical staff and patients. Systematic reviews revealed an association in physician burnout and suboptimal quality of care, patient safety and patient satisfaction. However, the prevalence of burnout among resident physicians in Bacolod City has not been established.

Objectives: The study aimed to determine the profiles and the degree of burnout among resident physicians in private tertiary hospitals in Bacolod City.

Study design: Cross-sectional survey

Participants: We invited all resident physicians in private hospitals in Bacolod City.

Outcome measure: This study used the 22-item Maslach Burnout Inventory-Human Services Survey.

Analysis: IBM SPSS version 22 was used in the data analysis. Mean and frequency distribution were utilized. Analysis of percentage of distribution was used to determine their difference.

Results: From December 2019 to January 2020, ninety-three resident physicians consented to participate in the study. The majority of the participants were young adults, females and single. Only a minority of the residents exercised regularly. The majority were practicing their religion. Most of the residents are in their early years of training. Residents in Internal Medicine comprised the majority of the respondents.

Among the respondents, in the Emotional Exhaustion (EE) domain: 24.7% were low, 37.6% were moderate, and 37.6% were high. While in the Depersonalization (DP) domain: 43% were low, 34.4% were moderate, and 22.6% were high. Lastly, in the Personal Achievement (PA) domain: 33.3% were low, 35.5% were moderate, and 31.2% were high. High burnout was present in 22.6% among the respondents.

Conclusions: High burn out was seen among young adults, male, single, and more senior resident physicians. Furthermore, residents who exercise regularly and practice their religion have lower burnout. And Internal Medicine residents were seen to have high burnout compared to other training specialization. Organizational- and physician-directed interventions have an essential role in preventing and reducing burnout in training institutions.

Keywords: Resident physicians, burnout, stress, private hospitals

INTRODUCTION

Burnout is an emotional and physical exhaustion brought about by work. It is a common problem, especially in positions with high mental and physical demands. It is a state of chronic stress that leads to physical and emotional exhaustion, cynicism and detachment, and feelings of ineffectiveness and lack of accomplishment.

Resident physicians are doctors under training prior to their individual medical practice. These physicians are important in health care, from childbirth to care of morbid patients and preventive medicine.[1] They are directly involved in patient care. More than three-fourths of an average residents' time is devoted to patient care.[2]

Exhaustion from work may result in adverse effects not only on the medical staff but also on the patients. Reviews had revealed an association between physician burnout

[1] Faculty, College of Medicine, University of St. La Salle, Bacolod City
[2] Program Director and Research Coordinator, Graduate School, Cebu Doctors' University, Mandaue

and substandard patient care, safety, and satisfaction.[3,4] Burnout has negative effects, thus, considered as an occupational risk. Resident physicians play an important role in patients' care; thus, their general well-being should be ensured to be fit.

Unfortunately, there have been a few studies on the impact of burnout on healthcare workers. Firstly, its existence is not commonly recognized. Secondly, there have been a few interventions that have been investigated to prevent or mitigate this condition. To the knowledge of the investigators, there has been no published data that estimated the degree of burnout among resident physicians in Bacolod City. Thus, it will be essential to establish the existence of this condition among resident physicians. Consequently, necessary measures may be formulated to address this problem.

METHODOLOGY

Aims of the study and Research Design. This study was a descriptive cross-sectional survey. The objective of this study was to determine the profile and the degree of burnout among resident physicians in private tertiary hospitals in Bacolod City. Specifically, it sought to determine the characteristic profiles of the resident physicians in terms of age, gender, marital status, regular exercise, years in training, practice of religion and specialization. It was intended to determine the degree of burnout in terms of emotional exhaustion (EE), depersonalization (DP) and personal achievement (PA). Moreover, the study desired to determine the differences with the degree of burnout when grouped according to their profile. Lastly, it intended to propose life-skills program based on the findings of the study.

Research Respondents. The majority of the respondents were graduates from medical schools in the Visayas. All resident physicians in private hospitals in Bacolod City were invited in this study. For first-year resident-physicians, we included those who have at least one-month clinical exposure in inpatient care. The exclusion criterion was applied for respondents diagnosed with any psychiatric illness with or without medications.

Research Environment. There were three private hospitals in Bacolod City which offered residency training programs: The Dr. Pablo O. Torre Memorial Hospital (DPOTMH) is a 300-bed tertiary private hospital that provides residency training in Internal Medicine, Pediatrics, Obstetrics-gynecology, Anesthesiology, and General Surgery in consortium with The Doctors' Hospital. The Adventist Medical Center-Bacolod (BAMC) is a 170-bed private tertiary hospital offering Internal Medicine, Family Medicine, General Surgery, and Pediatrics training. And The Doctors' Hospital (TDH), a 150-bed tertiary private hospital that provides training in Internal Medicine, Pediatrics, Obstetrics-gynecology, and General Surgery in consortium with DPOTMH.

Research Instrument. The Maslach Burnout Inventory-Human Services Survey (MBI-HSS) was used in the study. It has three domains: EE, DP, and PA. The psychometric properties of MBI-HSS are stable, reliable, and valid. Occupations represented in this scale development analysis included a variety of professions, including physicians. The internal reliability using Cronbach's coefficient alpha for the MBI-HSS scales was 0.90 for EE, 0.79 for DP, and .71 for PA.[5]

A separate scale measured each aspect of MBI-HSS. EE has nine questions, and the higher scores correspond to greater experienced burnout. DP has five questions, and the higher scores correspond to greater degrees of experienced burnout. And PA has eight questions, and the lower scores correspond to greater experienced burnout.[5] Scores are then termed as low: EE = 0–16, DP = 0–6, PA ≥39; moderate: EE = 17–26, DP = 7–12, PA = 32–38; or high: EE ≥27, DP ≥13, PA = 0–31.[6] Moreover, several of studies have converted a three-dimensional definition of burnout into a one-dimensional construct, the high burnout, by combining the different domains of MBI.[6-10]

The MBI-HSS is the original and most widely used version of the MBI.[5] Moreover, the original MBI-HSS was used in a cross-sectional survey of 992 physicians and 3100 nurses in 159 ICUs in 16 Asian countries, including the Philippines.[11] Further, this instrument was also used in a survey of burnout among other Asian countries.[8,12]

Data Gathering Procedure. The study protocol has been approved by the Cebu Doctors' University-Institutional Ethics Review Committee (CDU-IERC); the medical directors, and/or Ethics Review Board of DPOTMH, BAMC, and TDH, respectively. Last December 2019, a letter of invitation was sent to all resident physicians explaining the survey's purpose and nature. Informed consent and a hard copy of the survey form were distributed to training institutions. The respondents had answered the survey tool in 30 minutes or less in a single session. After which, the respondent has no further obligations in the study. There were no incentives given to the respondents for their participation. The survey was completed last January 2020.

The collected data was taken with utmost confidentiality and treated for research purposes only. In any report we will make public; we did not include any information that will make it possible to identify any respondent. The research records were kept in a locked file, and only the authors had access to the documents. The data will be kept for a maximum of three years before it will be shredded. Moreover, digital copies of the data will be deleted at the end of the specified period. The retention period was for data verification during publication.

Data Analysis. In this study, IBM SPSS version 22 was used in the data processing. Mean, frequency, and percentage distribution were utilized to analyze the results. Calculation of distribution percentage was used to determine the degree of burnout according to gender, age, marital status, regular exercise, religious practice, years in training, and specialization.

Definition of terms. The following terminologies were used operationally in this manuscript: the degree of

Table I. Demographic Data of Resident Physicians in Private Tertiary Hospitals in Bacolod City

N= 93	f	%
Gender		
Males	29	31.2
Females	64	68.8
Mean age in years (S.D.)	29.44 (2.815)	
Young adults (20-30 yrs old)	69	74.2
Adults (≥31 yrs old)	24	25.8
Marital status		
Single	81	87.1
Married	12	12.9
Regular exercise	14	15.1
Non-regular exercise	79	84.9
Practice of religion	76	81.7
Non-practice of religion	17	18.3
Hospitals (No. of respondents)		
BAMC	20	21.5
DPOTMH	49	52.7
TDH	24	25.8
Years in training		
First-year	35	37.6
Second-year	32	34.4
Third-year	23	24.7
Fourth-year	3	3.2
Fifth-year	0	0
Specialization		
Internal Medicine	47	52.8
Pediatrics	24	27
Obstetrics-Gynecology	8	9
General Surgery	7	7.9
Family Medicine	3	3.4
Anesthesiology	4	4.3

Table II. Distribution of Respondents by Degree of Burnout Domain

Degree	Emotional Exhaustion		Depersonalization		Personal Achievement	
	f	%	f	%	f	%
Low	23	24.7	40	43	31	33.3
Moderate	35	37.6	32	34.4	33	35.5
High	35	37.6	21	22.6	29	31.2
Total	93	100.0	93	100.0	93	100.0

Table III. Proportion of Participants with High Burnout

High burnout	f	%
Yes	21	22.6
No	72	77.4
Total	93	100.0

burnout described the level of exhaustion and being overwhelmed, cynical, detached from the job, and lacking a sense of accomplishment. It included EE, DP and PA. High degree EE referred to score more than or equal to 27. High degree DP referred to score more than or equal to 13. High degree PA referred to score less than or equal to 31. High burnout referred to an EE score of ≥27 plus a DP score ≥13 or a PA score ≤31. Private tertiary hospitals referred to a healthcare facility owned and operated by an organization other than the state which provides care funded mainly by patients or insurance. The Department of Health accredits it for training of resident physicians. In this study, it referred to TDH, BAMC, and DPOTMH. The profile of respondents referred to age, divided into young adults (20-30 years old) and adults (≥31 years old);[13] gender; marital status; regular exercise (twice or more per week for at least 30 minutes per session); practice of religion; year in training; and specialization. The proposed life-skills program is an outcome of this research to formulate recommendations based on this study's findings. It referred to suggested individual strategies and organizational interventions in managing burnout symptoms among resident physicians in Bacolod City.

RESULTS

The data presented the survey results of clinical profiles and the degree of burnout among resident physicians. Ninety-five respondents who had their training at different private hospitals in Bacolod City were invited in the study. There was a 97.9% (93 resident physicians) response rate. Two resident-physicians did not consent to participate in the survey.

Demographic profile. Table I describes the profile of the resident physicians. The majority (68.8%) of the respondents were females. Their mean age was 29.44, SD 2.815 years. More than two-thirds of the respondents were not married. Only a minority (15.1%) has reported at least twice weekly exercise. Most of the resident physicians practiced their religion. More than half of the residents are in their early years of training (1st- and 2nd-year residency training). Internal Medicine resident physicians comprised more than 50% of the respondents and followed by Pediatrics, Obstetrics-Gynecology, General Surgery, Anesthesiology, and Family Medicine, respectively.

Degree of burnout. *Table II* showed that among the respondents, 37.6% had a high degree of EE; 22.6% reported a high degree in DP; and 31.2% had a high degree in PA domain. While table III has described the distribution of resident physicians with high burnout. Further analysis of the data showed that 21 resident physicians (22.6%) had high burnout.

Degree of Burnout and Age Category. In this study, age was divided into young adults (20-30 years old) and adults (≥31 years old). *Table IV* has revealed that young adults had 5.8% more respondents with higher degree of EE; 7.9% more respondents with higher degree DP; and 14% more respondents with higher degree of PA domains compared to adults. *Table V* describes the distribution of high burnout by age category. Further analysis has revealed that more young adults had high burnout than adults (26.1% vs. 12.5%).

Degree of Burnout and Gender. Male respondents had a higher degree of EE (44.8% vs. 34.4%); higher degree in DP (31% vs. 18.8%); and higher degree in PA domains (37.9% vs. 28.1%) compared to female respondents (*Table IV*). While *Table V* shows the distribution of high burnout by gender. Further analysis of the data

Table IV. Distribution of Respondents by Degree of Burnout according to Profile, N=93

Profile			Emotional Exhaustion			Depersonalization			Personal Achievement		
			Low	Mod	High	Low	Mod	High	Low	Mod	High
Age	Young Adult	f	18	24	27	29	23	17	23	22	24
		%	26.1	34.8	39.1	42.0	33.3	24.6	33.3	31.9	34.8
	Adult	f	5	11	8	11	9	4	8	11	5
		%	20.8	45.8	33.3	45.8	37.5	16.7	33.3	45.8	20.8
Gender	Male	f	4	12	13	8	12	9	6	12	11
		%	13.8	41.4	44.8	27.6	41.4	31.0	20.7	41.4	37.9
	Female	f	19	23	22	32	20	12	25	21	18
		%	29.7	35.9	34.4	50	31.3	18.8	39.1	32.8	28.1
Marital Status	Single	f	23	27	31	36	26	19	26	26	29
		%	28.4	33.3	40.3	44.4	32.1	23.5	32.1	32.1	35.8
	Married	f	-	8	4	4	6	2	5	7	-
		%	-	66.7	33.3	33.3	50	16.7	41.7	58.3	-
Regular Exercise	Yes	f	6	5	3	7	5	2	4	5	5
		%	42.9	35.7	21.4	50.0	35.7	14.3	28.6	35.7	35.7
	No	f	17	30	32	33	27	19	27	28	24
		%	21.5	38.0	40.5	41.8	34.2	24.1	34.2	35.4	30.4
Practice of Religion	Yes	f	20	31	25	35	26	15	23	29	24
		%	26.3	40.8	32.9	46.1	34.2	19.7	30.3	38.2	31.6
	No	f	3	4	10	5	6	6	8	4	5
		%	14.3	23.5	58.8	29.4	35.3	35.3	47.1	23.5	29.4
Years in Training	1st Yr	f	11	11	13	16	14	5	13	13	9
		%	31.4	31.4	37.1	45.7	40.0	14.3	37.1	37.1	25.7
	2nd Yr	f	7	13	12	16	7	9	8	12	12
		%	21.9	40.6	37.5	50	21.9	28.1	25.0	37.5	37.5
	3r Yr	f	5	10	8	8	9	6	9	7	7
		%	21.7	43.5	34.8	31.8	39.1	26.1	39.1	30.4	30.4
	4th Yr	f	-	1	2	-	2	1	1	1	1
		%	-	33.3	66.7	-	66.7	33.3	33.3	33.3	33.3
	5th Yr	f	-	-	-	-	-	-	-	-	-
		%	-	-	-	-	-	-	-	-	-
Specialization	Family Medicine	f	1	-	2	2	1	-	1	2	-
		%	33.3	-	66.7	66.7	33.3	-	33.3	66.7	-
	Internal Medicine	f	9	18	20	13	17	17	11	15	21
		%	19.1	38.3	42.6	27.7	36.2	36.2	23.4	31.9	44.7
	Obstetrics Gynecology	f	1	2	5	3	4	1	3	3	2
		%	12.5	25.0	62.5	37.5	50.0	12.5	37.5	37.5	25.0
	Pediatrics	f	8	11	5	14	7	3	10	9	5
		%	33.3	45.8	20.8	58.3	29.2	12.5	41.7	37.5	20.8
	General Surgery	f	2	2	3	4	3	-	4	3	-
		%	28.6	28.6	42.9	57.1	42.9	-	57.1	42.9	-
	Anesthesiology	f	2	2	-	4	-	-	2	1	1
		%	50.0	50.0	-	100.0	-	-	50.0	25.0	25.0

described that male respondents had high burnout more than female respondents (34.5% vs. 17.2%).

Degree of burnout and Marital Status. Single resident physicians were reported to have higher degree of EE (40.3% vs. 33.3%); higher degree in DP (23.5% vs. 16.7%); and higher degree in the PA domains (35.8%) compared to married respondents (*Table IV*). *Table V* shows the distribution of high burnout based on marital status. Further analysis of the data has revealed that single resident physicians had high burnout more than married respondents (23.5% vs. 16.7%).

Degree of Burnout and Regular Exercise. Resident physicians who are not involved in regular exercise had reported a higher degree of EE (40.5% vs. 21.4%) and higher degree in DP (24.1% vs. 14.3%) than respondents who regularly exercise (*Table IV*). Furthermore, resident physicians who regularly exercise reported a higher degree in PA than respondents who do not exercise periodically (35.7% vs. 30.4%). The distribution of high burnout based on regular exercise is shown in *Table V*. Moreover, the data suggests that resident physicians with no regular exercise had higher burnout than residents who regularly exercise (24.1% vs. 14.3%).

Degree of Burnout and Years in Training. Fourth-year resident physicians reported higher degree of EE (66.7%) and higher degree of DP domains (33.3%) than the junior residents (*Table IV*). Furthermore, table IV has shown that second-year resident physicians were more likely to report a higher degree in PA domain (37.5%) than the other residents. While table V has described the

Table V. Distribution of High Burnout according to the Profile of Resident Physicians, N=93

Profiles			High Burnout	
			Yes	No
Age	Young Adult	f	18	51
		%	26.1	73.9
	Adult	f	3	21
		%	12.5	87.5
Gender	Male	f	10	19
		%	34.5	65.5
	Female	f	11	53
		%	17.2	82.8
Marital Status	Single	f	19	62
		%	23.5	76.5
	Married	f	2	10
		%	16.7	83.3
Regular Exercise	Yes	f	2	12
		%	14.3	85.7
	No	f	19	60
		%	24.1	75.9
Practice of Religion	Yes	f	16	60
		%	21.1	78.9
	No	f	5	12
		%	29.4	70.6
Years in Training	1st Yr	f	8	27
		%	22.9	77.1
	2nd Yr	f	8	24
		%	25.0	75.0
	3rd Yr	f	4	19
		%	17.4	82.6
	4th Yr	f	1	2
		%	33.3	66.7
	5th Yr	f	-	-
		%	-	-
Specialization	Family Medicine	f	-	3
		%	-	100.0
	Internal Medicine	f	17	30
		%	36.2	63.8
	Obstetrics-Gynecology	f	2	6
		%	25.0	75.0
	Pediatrics	f	2	22
		%	8.3	91.7
	General Surgery	f	-	7
		%	-	100.0
	Anesthesiology	f	-	4
		%	-	100.0

distribution of high burnout based on year in training. Further analysis has shown that fourth-year resident physicians had high burnout (33.3%) more than their junior residents.

Degree of Burnout and Practice of Religion. The residents who do not practice their religion were more likely to report a higher degree in EE (58.8% vs. 32.9%) and DP domains (35.3% vs. 19.7%) than residents who practice their religion (*Table IV*). Furthermore, table IV has revealed that residents who practiced their religion had a slightly higher degree in the PA domain than residents who do not practice their religion (31.6% vs. 29.4%). While *Table V* has revealed the distribution of high burnout based on practice of religion. Further analysis has suggested that respondents that do not practice their religion have higher burnout than respondents who practice their religion (29.4% vs. 21.1%).

Degree of Burnout and Specialization. Family Medicine resident physicians had a higher degree in EE (66.7%) than the other specializations (*Table IV*). Moreover, it has delineated that Internal Medicine residents had a higher degree of DP (36.2%) and PA domains (44.7%) than other residents. *Table V* delineated the distribution of high burnout based on specialization. Further analysis showed that resident physicians who specialized in Internal Medicine (36.2%) had high burnout more than the residents of other specializations.

DISCUSSION

Burnout is a combination of emotional exhaustion and cynicism that is common among persons whose occupation deals with people. A key feature of burnout is emotional exhaustion. As the emotional resources are drained, affected individuals perceive they cannot give more of themselves at a psychological level. Another feature is a negative attitude towards another person. This may be associated with emotional exhaustion. These features of burnout are related. The third feature is the predilection to judge oneself negatively. Affected persons feel dejected about themselves and unsatisfied with work accomplishments.[14]

The World Health Organization has acknowledged burnout in its International Classification of Diseases (ICD) and is considered a medical condition.[15] The signs of physical and emotional exhaustion are chronic fatigue; difficulty in sleeping; forgetfulness/impaired attention; physical symptoms may include chest discomfort, heart palpitations, difficulty of breathing, abdominal distress, vertiginous, fainting, and headaches; increased illness; anorexia; anxiety; depression; and anger. Signs of cynicism are frequent sadness, negative outlook, isolation, and detachment. And signs of ineffectiveness and lack of accomplishment are apathy, despair, irritability, and decreased productivity.[16]

A theory that may explain burnout is the Multidimensional Theory. It conceives burnout in terms of its core components: emotional exhaustion, depersonalization, and reduced personal accomplishment. Burnout is an individual experience of strain within social relationships. These relationships are the origin of emotional stress and rewards, coping mechanisms, and it is also associated with adverse effects of burnout.[17] Another theory that may explain burnout is the Grand Theory. It specifies that individuals have expectations that their needs will be met in exchange for their efforts at work. But when needs are not satisfied, emotional depletion or exhaustion will result. When emotional depletion continues, the person experiences a threat of danger. As the threats continue, the individual has been emotionally depleted and resorts to active solution-seeking; thus, burnout starts.[18] Burnout is a result of the loss of existential meaning. Viktor Emil Frankl

proposed that the existential purpose is essential to mental health. He defined existential vacuum as a loss of interests and proactiveness, which may result in being senseless. He has characterized the physical sphere, mental sphere, and noetic sphere as the dimensions of human existence. Signs of burnout can manifest in all the dimensions. Particularly, the deficit in the noetic field may result in burnout.[19]

The term burnout was first described by Freudenberger to depict the declining performance of professionals.[20] Burnout was found to affect personality. Many studies have explored the demographic features related to burnout. Several researches has associated burnout with adverse patient care and medical errors.[21-27] Several factors have been identified as risk factors: age, gender, marital status, number of years in practice, regular exercise, medical profession specialization, and religion.[9,28-31] In this study most of the respondents were females, young adults, and single. Only a few of the respondents had exercised regularly. Majority of the resident physicians practiced their religion. More than half of the residents were in 1st- and 2nd-year residency training. Majority of the respondents were Internal Medicine resident physicians.

More than one-third of the resident physicians were emotionally over-extended. One-fifth of the respondents thought they were insensitive towards other people. Moreover, one-third of these residents felt that they are ineffective and have not done enough for others' problems. In a similar local survey, 48.6% of resident physicians at The Medical City (TMC) reported a high degree of EE, 51.4% reported an average degree of DP, and 43.2% reported a high degree of PA. The TMC residents had reported a moderate degree of burnout.[32] Moreover, in a meta-analysis among resident physicians in several countries, the overall prevalence rate of high EE was 38.9%; prevalence estimate of high DP for all specialties was 43.6%; and the overall value for low PA was equal to 34.3%.[33]

High burnout encapsulates the results of the three domains of MBI-HSS and identifies the respondents with a high degree of burnout.[6-9] Further analysis of the data showed that 22.6% resident physicians had high burnout. Burnout affects 30% to 78% of physicians and residents.[21,22,34] In a meta-analysis, it is prevalent in 51% among medical and surgical residents.[35] Increased professional burnout is associated with absenteeism, physical illness, emotional problems, poor job performance, and negative attitudes towards health care professionals in general.[36] Health care recipients can decrease the quality of care provided and poor communication from healthcare providers due to the healthcare professional's burnout. In a similar local survey, the quality of care was negatively affected by the degree of burnout as residents reported suboptimal patient care attitude and practices, which were mostly correlated to EE and DP.[32]

This study described the difference in percentages of distribution of burnout on EE, DP, and PA based on age. More young adults had a higher degree of EE than adults. Another study has reported a similar association in EE.[37] The researcher has observed a transition from theoretical learning to more practical and hands-on work. This may overwhelm the young respondents. Doctors at this stage of personal development were experiencing changes in their social roles. Many had just married, and some might have had children. These personal psychosocial changes were often coupled with the need to sit for professional examinations and balance professional training, clinical duties, career advancement, and family life. Young, moderately experienced doctors feel they need to fulfill their seniors' higher expectations and provide training or supervision to juniors. Some might need to participate in research, audits, or administrative work.[9]

Moreover, more young adults had higher degree DP than adults. Another study has reported a similar association in the area of DP.[32] Depersonalization may be a form of defense mechanism for these residents to shield them from stress. This defensive function of depersonalization is most evident in stressful situations. During a panic, depersonalization comes into effect. Depersonalization appears as a protective mechanism in the human mind. Depersonalization is a very complex defense system that requires a high level of mental organization.[38]

Furthermore, more young adults had higher degree of PA than adults. The mounting expectations and the pressure to prove oneself may make them believe that they are ineffective. Moreover, they were still new to the program and may even be in the adaptation period. Hence, they may feel some apprehension.

Further analysis has revealed that more young adults had high burnout than adults. Similarly, a study in Africa found that age was associated with burnout in the area of reduced personal accomplishment, where burnout was reported more in the younger resident physicians.[39] In the early stages of their careers, younger workers develop an initial mastery of their work requirements and demands, and as a result, may be at more significant risks of experiencing depleted resources and exhaustion.[40] Also, younger workers may have to juggle work–family conflicts, a known risk factor for burnout.[41]

This study described the difference in distribution of percentages of the degree of burnout on EE, DP, PA based on gender. More male respondents had a higher degree of emotional exhaustion than female respondents. When stress strikes, cortisol and epinephrine induce hypertension and hyperglycemia. Also, cortisol lowers the effectiveness of the immune system. In women, oxytocin counters the effect of cortisol and epinephrine, resulting in relaxation. While in men, oxytocin is produced in smaller amounts.[42]

Moreover, more male respondents had higher degree in DP than female respondents. There was a difference in the stress response exhibited by men and women. It was characterized by fight-or-flight in men and tend-and-befriend in women. Tending involved nurturing activities

designed to protect the self and offspring that promote safety and reduce distress; befriending created and maintained social networks that may aid in this process.[43]

Furthermore, more male respondents had higher degree in PA more than female respondents. Academic competition is high among residents. Because male self-esteem was often built around adequacy of performance, and female self-esteem was often built around adequacy of relationships, over-demand and insufficient self-maintenance tend to cut somewhat different ways for women and for men. Thus the most significant stressor in men was performance failure and relationship loss in women.[42]

In the present survey more male respondents had high burnout than females. Studies about the prevalence of burnout among men and women are inconsistent. In a meta-analysis, the prevalence of burnout was more common among male resident physicians.[35] And yet, in another meta-analysis, women were more likely to have burnout and may tend to be more emotionally exhausted than men. Still, men tend to be more depersonalized than women.[44] In an extensive national survey among general surgery residents, females were more likely to have burnout than males.[45] It was proposed that female surgical residents are more likely than nonsurgical residents to perceive stereotyped bias against women.[46] Another study among emergency medicine attending physicians and residents noted that male providers tend to have lower empathy scores but higher burnout scores than females.[47] Men tended to select avoidance coping strategies.[48] The construct of depersonalization may also be considered an avoiding coping strategy, which may quickly be adopted by men to deal with a stressful situation. A study indicated that for men, depersonalization leads to emotional exhaustion. This underlined the idea that psychological withdrawal can be an ineffective and dysfunctional coping strategy. A detached physician's behavior may cause patients to become more demanding and may cause stress to the former. However, it should be noted that a certain detachment level can be a beneficial strategy for the prevention of ill-health and malfunctioning.[49]

This study described the difference in distribution of percentages according to the degree of burnout on EE, DP, PA based on marital status. More single resident physicians were reported to have higher degree of EE than the married respondents. Previous studies had shown that married people tend to be more resilient and apply better-coping strategies when dealing with the adverse effects of stress than unmarried people.[50] Moreover, more single resident physicians were reported to have higher degree in DP than the married residents. A study indicated that never-married people tend to relate to higher depressive and interpersonal stress.[51] Furthermore; single resident physicians were recorded to have a high degree in the PA sphere. A study has concluded that married people generally possess higher job-satisfaction than their single counterparts.[52]

Further analysis of the data has revealed that single resident physicians had high burnout more than married respondents. In a meta-analysis among nurses, subjects without a partner had higher levels of depersonalization. This could be because the family environment of a couple's lifestyle is a factor that provides security and support, and which protects the subject from developing impersonal, cynical, and negative attitudes towards colleagues at the workplace. The correlation between marital status and emotional exhaustion was more robust for those nurses with high low personal accomplishment scores.[53] Moreover, in a meta-analysis among educational stakeholders, single subjects had higher DP than the married respondents. A possible explanation for this result is that a healthy family environment may support the partners experiencing burnout at school/work.[54]

The study described the difference in distribution of percentages according to the degree of burnout on EE, DP, PA based on regular exercise. Resident physicians who were not involved in regular exercise had reported a higher degree of EE than respondents who have exercised regularly. In a pilot study, aerobic exercise training might have contributed to improved sleep and recovery, which could have resulted in a decrease in emotional exhaustion.[55] Moreover, resident physicians who were not involved in regular exercise have reported a higher degree in DP than respondents who regularly exercise. A study has concluded that close contact with the exercise trainers and the promotion of personal and social resources might have contributed to the reduced depersonalization due to increased social support.[55] Furthermore, resident physicians who regularly exercise reported a higher degree in PA than respondents who do not exercise periodically. Exercise training did not directly affect the working-conditions of the participants. Therefore, feelings of satisfaction may remain low in a climate of high job-pressures, low autonomy, and lack of recognition.[55]

The data has revealed that resident physicians with no regular exercise had higher burnout than respondents who regularly exercise. The findings of this investigation suggest that residents who exercise at least twice per week had low scores in EE and DP. The effect of physical activity on burnout may be ascribed to psychological changes. Physical activity may also involve a complex interaction of psychological and neurobiological mechanisms.[56] It can be seen as a behavioral distraction from stressful situations, and with this degrade the psychological impact of a problem.[57] It fosters the development of perceptions like mastery and self-efficacy[58] and has, therefore, the ability to diminish sensitivity to negative stimuli. Physiological changes by physical activity could reduce the persons' physiological sensitivity to chronic stress.[59]

In a related analysis, residents who met physical activity guidelines were significantly less likely to be burned out than their fellow residents.[60] A systematic review has demonstrated a significant negative relationship between physical activity and the critical burnout

component (exhaustion). It was found that engagement in physical activity once or twice a week for four weeks to 18 weeks has promising effects on preventing and reducing burnout symptoms.[61-64] One study concluded that higher-intensity physical activity (not more than twice a week) effectively prevents burnout. In contrast, others found that low-intensity physical activity yields positive results.[61]

The study described the difference in percentages according to the degree of burnout on EE, DP, PA based on the year level of training. Fourth-year resident physicians reported higher degree of EE than the junior residents. Only residency training programs that involved surgery; Obstetrics-Gynecology and General Surgery, had 4th- and 5th-year levels, respectively, wherein they have the same number of hours of duty with the other departments' residents, but they handle cases that may entail surgical operations. Also, administrative tasks may be delegated, as well. Moreover, fourth-year resident-physicians were reported to have a higher degree of DP than the junior residents. When a physician has started his training as a first-year resident, the researcher has observed that the majority was still idealistic and possessed an ardent desire to serve. But as their year level advances, the focus shifts to acquiring more skills, knowledge, and fulfilling requirements and empathy for patients is sometimes lost. In a survey among emergency medicine residents, self-reported empathy declined throughout the residency training and later improved after graduation.[47] Furthermore, second-year resident physicians were more likely to report a higher degree in PA than the other residents. Resident physicians in the middle of their training were started to be given more complicated cases. These trainees were sometimes overwhelmed and felt inadequate for the job. Further analysis has shown that fourth-year (no fifth-year resident physicians were enrolled at the time of the survey) resident physicians had high burnout more than their junior residents. In an analogous study, early years in the residency training were less likely to develop burnout than the latter year of training in a study among resident physicians in the Middle East, 35% of the senior residents have burnout.[12]

On the contrary, a study conducted in a university hospital in Pakistan has concluded that there was no difference between burnout levels among junior and senior residents.[65] In the latter part of their training, resident physicians may handle more complicated cases that demand more skills and are more likely to develop exhaustion. And these residents may have some administrative roles in addition to patient care, which may be an added burden.

The study described the difference in distribution of percentages according to the degree of burnout on EE, DP, PA based on the practice of religion. Residents who do not practice their religion were more likely to report a higher degree in the EE and DP domains than residents who practice their religion. Furthermore, residents who practiced their religion had a slightly higher degree in the PA domain than residents who do not practice their religion. Further analysis has revealed that respondents that do not practice their religion have more high burnout than respondents who practice their religion. In a study among Jewish school principals, there was a significant negative correlation between religiosity and burnout; thus, the degree of religiosity significantly affects burnout level. The burnout level of ultra-Orthodox principals was found to be the lowest of the other research groups. The authors suggested that religion induces the processing of relevant information and consistently assimilates the stimuli and overlaps with the existing scheme, thus rendering the discovery of meaning and solutions when faced with unfavorable circumstances.[66] In a survey among medical students, the study demonstrated significant inverse relationships between both measures of spirituality and both measures of psychological distress and burnout. They concluded that substantial spiritual resources and daily spiritual experiences are associated with higher life satisfaction and lower psychological distress and burnout. The presence of high spirituality may be protective against burnout in medical students.[67] However, in a study among emergency medicine physicians, they observed no significant associations between burnout and any religion/spirituality predictors.[68]

The study described the difference in percentages according to the degree of burnout on EE, DP, PA based on specialization. Family Medicine resident physicians had higher degree in EE than the other specializations. The Family Medicine residents of the Bacolod Adventist Medical Center who participated in this survey were in their first four months since their establishment. The researcher surmised that both the administrators and trainees of this program are still adjusting to their work environment; hence they felt more strained and tired. A study has identified several aspects of burnout that may be unique to family medicine training, including frequent off-service training, devaluing of family medicine in the medical culture, and discrepancy between learning goals and actual learning on non-family medicine rotations.[69]

Moreover, Internal Medicine residents had higher degree of DP compared to other specializations. In a similar survey among Internal medicine residents in the University of British Columbia, 46% reported high in this domain.[10] Furthermore; Internal Medicine residents had a higher degree of burnout in the PA domain than other residents. In a similar survey among Internal Medicine residents at the University of British Columbia, 32.5% reported high levels in this domain.[10] Further analysis has shown that resident physicians who specialized in Internal Medicine had high burnout more than the residents of other specializations. In this cohort, Family Medicine resident physicians had higher degree of Emotional Exhaustion, while Internal Medicine residents had a high degree in Depersonalization and Personal Achievement domains. In a recent report among physicians, specialties that have been among the top in burnout over the past five years are critical care, emergency medicine, family medicine, internal medicine, neurology, and urology.[70] However, in a survey

among resident physicians in the United States, training in urology, neurology, emergency medicine, ophthalmology, or general surgery were independently associated with symptoms of burnout. This study suggested that the increased burnout among physicians in these specialties may be attributable, in part, to unique characteristics of the work intrinsic to these specialties. Alternatively, the high prevalence of burnout symptoms among supervising physicians in these specialties may adversely affect the learning environment. These supervising physicians may model burnout to resident physicians, placing them at greater risk.[71]

In a review, interventions to prevent burnout can be classified into individual, group, and organizational approaches. Some other interventions to address burnout have been suggested, as meditation and self-care workshops were found to be effective.[72] Individual responses included yoga, supervision, a web-based stress management program, meditation, cognitive evaluation, and cognitive coping strategy. Interventions for groups involved communication skill training, intervention centered on the meaning of work, compassionate fatigue combat program, program of psycho-oncological training, mental attention training, intervention office, spiritual pain assessment sheet, cognitive-behavioral interventions, psychological empowerment program, psychosocial intervention, incentives to exercise, consumption of diet, relaxable, reduction of stress and improvement of interpersonal relationships, professional identity development program, the intervention focused on the meaning of job satisfaction, and meditation course while organizational response included the development of teamwork and improvement courses, changes in work environments, strategies for managing stress, improving job satisfaction, Reiki, healing touch, therapeutic massage, primary nursing care, and public management policies in nursing.[73]

Burnout adversely affects the physicians, the patients as recipients of the healthcare services and has significant repercussions for the whole healthcare organization. This widespread impact justifies why physicians' wellness is increasingly proposed as a quality indicator in health care delivery.[74] Despite the evidence that the prevalence of burnout is high among resident physicians and that there are potentially severe consequences of burnout, there appear to be few intervention studies aimed at decreasing burnout or improving the well-being of resident physicians. It requires physician-directed and organization-embedded approaches.

Based on the findings of the study, respondents who were older (adults); female, married, specializations other than Internal Medicine; early years of training; those who exercise regularly; and practice their religion have a lower prevalence of high burnout. Specific profiles of the respondents are modifiable, wherein interventions may result in a decrease of burnout. There were four areas of concern that may apply to institutions or organizations: resident physicians who do not exercise regularly; those who do not practice their religion; non-married residents; and residents of Internal Medicine. For the individual resident physicians, there were three areas of concern: exercise, practice of religion, and single residents.

Exercise will bolster individual wellness;[75] it will create behavioral distraction from stressful situations and degrade the psychological impact of a situation.[57] Exercise may decrease emotional exhaustion and improve sleep and recovery.[55] In the institutional level, annual sports fests may be organized to encourage physical exercise. On the individual level, resident physicians should dedicate time for physical activity such as regular use of the gym or adopt simple exercises like brisk walking.

Moreover, religious activity may offer higher life satisfaction and lower psychological distress and;[67] and improve emotional exhaustion.[76] It may induce discovery and solution when faced with unfavorable circumstances,[66] and they may find meaning in their work. In the institutional level, regular spiritual retreats or recollections maybe organized to encourage religious activity. On the individual level, attendance to religious services on days of obligation and daily personal prayer or meditation maybe useful in preventing burnout.

Companionship may play a factor in mitigating exhaustion. It may provide security and support, and which protect the subject from developing impersonal, cynical, and negative attitudes towards colleagues at the workplace,[77] and build group support. It may decrease emotional exhaustion and depersonalization; and improve qualitative measures such as self-awareness, community, and willingness to explore feelings.[76] In the institutional level, organizing regular team building may promote cohesiveness among residents. On the individual level, get-togethers like journal clubs or event celebrations maybe beneficial to form group support.

Lastly, for training institutions with Internal Medicine specialization, the creation of a committee to formulate and monitor the prescribed resident-to-patient ratio maybe beneficial. However, this should be balanced since reducing hours may be the first step to minimize burnout but it may affect education and quality of care.[7] This may decrease the emotional exhaustion component of burnout.

This study has several limitations. The findings were derived from a small sample size and included private hospitals only, thus, the generalizability of the findings may be limited. Moreover, the recommendations were not tested during the conduct of this study, although, it was found to be effective in other investigations. Thus, further and more exhaustive research maybe needed to confirm the findings and recommendations of this research.

In conclusion, based on the findings of the study, there is evidence of a high degree of burnout among resident physicians in Internal Medicine, fourth-year level, young adult, single and male residents, who do not exercise regularly and do not practice religion; thus,

organizational-directed and physician-directed interventions could be beneficial in the prevention and reduction of burnout among resident physicians.

Conflict of Interest: The authors expressed no conflict of interest in the conduct of this study.

Funding Source: None

REFERENCES

1. Ogunyemi B. Understanding the crucial roles of resident doctors. [Internet]. February 2016. Accessed Aug 2019 from https://www.huffingtonpost.ca/boluwaji-ogunyemi/resident-doctor-medicine_b_9260534.html.
2. Silberger A, Thran S, Marder W; The changing environment of resident physicians. Health Affairs, 7(2 Suppl): 121-133, 1988.
3. Hall LH, Johnson J, Watt I, Tsipa A, O'Connor DB; Healthcare staff wellbeing, burnout, and patient safety: A systematic review. PloS One, 11: e0159015, 2016.
4. Salyers MP, Bonfils KA, Luther L, Firmin RL, White DA, Adams EL, Rollins AL; The relationship between professional burnout and quality and safety in healthcare: A meta-analysis. J Gen Intern Med, 32:475-482, 2017.
5. Maslach C, Jackson S, Leiter M. Maslach Burnout Inventory Manual 4th Edition. n.p. Mind Garden Inc, 2018.
6. O'Kelly F, Manecksha R, Quinlan D, Reid A, Joyce A, O'Flynn K, Speakman M, Thornhill A; Rates of self-reported 'burnout' and causative factors amongst urologists in Ireland and the UK: a comparative cross-sectional study. British Journal of Urology International, 117: 363-372, 2016.
7. Gopal R, Glasheen JJ, Miyoshi TJ, Prochazka AV; Burnout and internal medicine resident work-hour restrictions. Archives of Internal Medicine,165(22), 2595–2600, 2005.
8. Aldrees, T, Badri, M, Islam, T, Alqahtani, K; Burnout among otolaryngology residents in Saudi Arabia: A multicenter study. Journal of Surgical Education, 72: 844-848, 2015.
9. Siu C, Yuen SK, Cheung, A; Burnout among public doctors in Hong Kong: cross-sectional survey. Hong Kong Med J, 18: 186-192, 2012.
10. Sajjadi, S., Norena, M., Wong, H., & Dodek, P; Moral distress and burnout in internal medicine residents. Canadian medical education journal, 8(1), e36–e43, 2017.
11. See K, Zhao M, Nakataki E, Chittawatanarat K, Fang W, Faruq M, Wahjuprajitno B, Arabi T, Wong W, Divatia J, Palo J, Shrestha B, Nafees K, Binh N, Al Rahma H, Detleuxay K, Ong V, Phua J. SABA Study Investigators and the Asian Critical Care Clinical Trials Group; Professional burnout among physicians and nurses in Asian intensive care units: a multinational survey. Intensive Care Med, 44: 2079–2090, 2018.
12. Abdulrahman M, Muhammad Farooq M, Kharmiri A, Marzooqi F, Carrick F; Burnout and depression among medical residents in the United Arab Emirates: A multicenter study. Journal Family Medicine and Primary Care, 7: 435-441, 2018.
13. Steijn W; A developmental perspective regarding the behaviour of adolescents, young adults, and adults on social network sites. Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 8(2),article 5,2014.
14. Maslach, C., Leiter, M. Maslach Burnout Inventory Manual. n.p.Consulting Psychologists Press, 1996.
15. Philippine Daily Star. [May 31,2019]. 'Burn-out' recognized as medical condition by WHO. Accessed June 2019 from https://www.philstar.com/lifestyle/health-and-family/2019/05/28/1921585/burn-out-recognized-medical-condition-who.
16. Carter, S. [Nov 2013]. The telltale signs of burnout…Do you have them? Accessed August 2019 from https://www.psychologytoday.com/us/blog/high-octane-women/201311/the-tell-tale-signs-burnout-do-you-have-them.
17. Maslach, C. Multidimensional Theory of Burnout. In Cooper, C.L., Theories of Organizational Stress. Oxford, England: Oxford University Press, 1998, 68-85.
18. Blankert, JP. Grand theory of burnout. Pathogenesis of burnout, progress of illness, framing of burnout in psychological and immunological theory. Physical measurement of burnout through immunology. Reconciliation of 'burnout as psychological concept' with 'main stream medical theory'. Psychoneuroimmunology of burnout. Accessed October 2019 from https://www.researchgate.net/publication/265601154 1964.
19. Riethof N, Bob P; Burnout Syndrome and Logotherapy: Logotherapy as Useful Conceptual Framework for Explanation and Prevention of Burnout.Frontiers in Psychiatry, 10:382, 2019.
20. Freudenberger, H. Staff burn-out. J Soc Issues, 30, 159–165, 1974.
21. Spickard, Jr., A., Gabbe, S., Christensen, J; Mid-career burnout in generalist and specialty physicians. JAMA, 288(12): 1447–1450, 2002.
22. Lloyd, S., Streiner, D., Shannon, S; Burnout, depression, life and job Satisfaction among Canadian emergency physicians. Journal of Emergency Medicine, 12(4): 559–565, 1994.
23. Thomas, N; Resident burnout. JAMA, 292(23), 2880–2889, 2004.
24. Winefield, H., & Anstey, T; Job stress in general practice: practitioner age, sex and attitudes as predictors. Family Prac, 8(2), 140–144, 1991.
25. Grassi L., Magnani K; Psychiatric morbidity and burnout in the medical profession: an Italian study of general practitioners and hospital physicians. Psychother Psychosom, 69, 329–334, 2000.
26. Shanafelt, T., Bradley, K., Wipf, J., Back, A; Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med, 136, 358–367, 2002.
27. Fahrenkopf, A., Sectish, T., Barger, L., Sharek, P., Lewin, D., Chiang, V. et al; Rates of medication errors among depressed and burnt-out residents: prospective cohort study. British Medical Journal, 336, 488–491,2008.
28. Guntupalli, K., Wachtel, S., Mallampalli, A., Surani, S; Burnout in the Intensive care unit professionals. Indian Journal of Critical Care Medicine, 18:139-143, 2014.
29. Zhang,X., Huang, D., Guan, P; Job burnout among critical care nurses from 14 adult intensive care units in northeastern China: a cross-sectional survey. BMJ Open, 4:e004813, 2014.
30. Shanafelt, T., Gradishar, W., Kosty, M., Satele, D., Chew, H., Horn, L., Clark, B., Hanley, A., Chu, Q., Pippen, J., Sloan, J., Raymond, M; Burnout and career satisfaction among US oncologists. Journal of Oncology, 32: 678-686, 2014.
31. Doolittle, B., Windish, D., Seelig, C. Burnout, Coping, and Spirituality Among Internal Medicine Resident Physicians. Journal of Graduate Medical Education, 5: 257-261, 2013.
32. Monforte MR. Prevalence of burnout and self-reported patient care attitudes and practices of residents in training at The Medical City in 2005. The Philippine Journal of Psychiatry, 33: 20-29, 2011.
33. Rodrigues H, Cobucci R, Oliveira A, Cabral JV, Medeiros L, Gurgel K, Souza T , Gonçalves AK; Burnout syndrome among medical residents: A systematic review and meta-analysis. PloS one, 13(11), e0206840, 2018.
34. Williams, E., Konrad, T., Linzer, M., McMurray, J., Pathman, D., Gerrity, M. et al; Refining the measurement of physician job satisfaction: results from The physician worklife survey. Med Care, 37(11):1140–1154, 1999.
35. Low ZX, Yeo KA, Sharma VK, Leung GK, McIntyre RS, Guerrero A, Lu B, Sin Fai Lam CC, Tran BX, Nguyen LH, Ho CS, Tam WW, Ho RC; Prevalence of Burnout in Medical and Surgical Residents: A Meta-Analysis; Int J Environ Res Public Health, 26;16(9). pii: E1479, 2019.
36. Schaufeli, W., Maslach, C; Burnout: Thirty-five years of research and practice. Career Dev Int, 14: 204-220, 2009.

37. Brewer, E.B., Sharpard, L; Employee burnout: a meta-analysis of the relationship between age or years of experience. Human Resource Development Review, 3: 102–123, 2004.
38. Bezzubova E. [Feb 2016]. The "Airbag" of Depersonalization: Shield or Disorder? Psychology Today. Accessed Sept 2019 from https://www.psychologytoday.com/us/blog/the-search-self/201602/the-airbag-depersonalization-shield-or-disorder.
39. Ogundipe, O, Olagunju, A, Lasebikan ,V, Coker, A; Burnout among doctors in residency training in a tertiary hospital. Asian Journal of Psychiatry, 10: 27-32, 2014.
40. Lim N, Kim EK, Kim H, Yang E, Lee SM; Individual and work-related factors influencing burnout of mental health professionals: a meta-analysis. J Employment Couns, 47: 86–96, 2010.
41. Ahola K, Honkonen T, Isometsa E et al; Burnout in the general population Results from the Finnish Health 2000 Study. Soc Psychiatry Psychiatr Epidemiol, 41: 11–17, 2006.
42. Nazario B. [2005]. Why Men and Women Handle Stress Differently. Accessed Sept 2019 from https://www.webmd.com/women/features/stress-women-men-cope#1.
43. Taylor SE, Klein LC, Lewis BP, Gruenewald TL, Gurung RA, Updegraff JA; Biobehavioral responses to stress in females: Tend-and-befriend, not fight or-flight. Psychol Rev, 107: 411–429, 2000.
44. Purvanova R, Muros J; Gender differences in burnout: A meta-analysis. Journal of Vocational Behavior, 77: 168–185, 2010.
45. Elmore L, Jeffe D, Jin L, Awad M, Turnbull I; National Survey of Burnout among US General Surgery Residents. J Am Coll Surg, 223(3): 440–451, 2016.
46. Salles A, Mueller CM, Cohen GL; Exploring the relationship between stereotype perception and residents' well-being. J Am Coll Surg, 222:52–58, 2016.
47. Wolfshohl JA, Bradley K, Bell C, Bell S, Hodges C, Knowles H, Chaudhari B, Kirby R, Kline J, Wang H; Association Between Empathy and Burnout Among Emergency Medicine Physicians. J Clin Med Res,11(7): 532-538, 2019.
48. Eaton RJ, Bradley G; The role of gender and negative affectivity in stressor appraisal and coping selection. Int J Stress Manage, 15: 94-115, 2008.
49. Houkes I, Winants Y, Twellaar M, Verdonk P; Development of burnout over time and the causal order of the three dimensions of burnout among male and female GPs. A three-wave panel study. BMC Public Health, 11: 240, 2011.
50. Alang SM, McAlpine DD,Henning-Smith CE; Disability, health insurance and psychological distress among US adults: An application of the stress process. Society and Mental Health, 4(3): 164–178, 2014.
51. Jolobova D. Does "Happy Wife" Really Mean "Happy Life?": A Survey Study on Stress between Marital Status and Gender. Available: www.academia.edu
52. Knerr MA; An empirical analysis of the relationship between marital status and job satisfaction. Undergraduate Research Journal for Undergraduate Studies, 4, 2005.
53. Cañadas-De la Fuente GA, Ortega E, Ramirez-Baena L, De la Fuente-Solana EI, Vargas C, Gómez-Urquiza JL; Gender, Marital Status, and Children as Risk Factors for Burnout in Nurses: A Meta-Analytic Study. Int J Environ Res Public Health, Sep 25, 15(10), 2018.
54. Kis A; Marital status differences in burnout among educational stakeholders: A meta-analysis. International Journal of Human Sciences, 11(2): 543-558, 2014.
55. Gerber, M, Brand, S, Elliot C, Holsboer-Trachsler, E, Pühse, U, Beck, J; Aerobic exercise training and burnout: a pilot study with male participants suffering from burnout. BMC Res Notes; 6: 78, 2013.
56. Strohle A; Physical activity, exercise, depression and anxiety disorders. J Neural Transm, 116(6): 777–784, 2009.
57. Altshuler JL, Ruble DN; Developmental changes in children's awareness of strategies for coping with uncontrollable stress. Child Development 60(6): 1337-1349, 1989.
58. Salmon, P; Effects of physical exercise on anxiety, depression and sensitivity to stress - a unifying theory. Clinical Psychology Review 21(1): 33-61, 2001.
59. Forcier, K., Stroud, L.R., Papandonatos, G.D., Hitsmann, B., Reiches, M., Krishnamoorthy, J. and Niaura, R; Links between physi- cal fitness and cardiovascular reactivity and recovery to psycho- logical stressors: A meta-analysis. Health Psychology 25(6): 723-739, 2006.
60. Olson S, Odo N, Duran A, Pereira A, Mandel J; Burnout and Physical Activity in Minnesota Internal Medicine Resident Physicians. J Grad Med Educ, 6(4): 669–674, 2014.
61. Bernaards CM, Jans MP, Van den Heuvel SG, Hendriksen IJ, Houtman IL, Bongers PM; Can strenuous leisure time physical activity prevent psychological complaints in a working population? Occup Environ Med, 63: 10-16, 2006.
62. Bretland RJ, Thorsteinsson EB; Reducing workplace burnout: the relative benefits of cardiovascular and resistance exercise. Peer J, 9: e891, 2015
63. Lindegard A, Jonsdottir IH, Börjesson M, Lindwall M, Gerber M; Changes in mental health in compliers and non-compliers with physical activity recommendations in patients with stress-related exhaustion. BMC Psychiatry, 15: 272, 2015.
64. Van Rhenen W, Blonk RW, Van der Klink JJ, Van Dijk RJ, Schaufeli WB; The effect of a cognitive and a physical stress-reducing programme on Psychological complaints. Int Arch Occup Environ Health, 78: 139-148, 2005.
65. Zubairi AJ, Noordin S; Factors associated with burnout among residents in a developing country. Annals of Medicine and Surgery, doi:10.1016/j.amsu.2016.01.090, 2016.
66. Somech A, Miassy-Maljak N; The relationship between religiosity and burnout of principals: the meaning of educational work and role variables as mediators. Social Psychology of Education, 6: 61–90, 2003.
67. Wachholtz A, Rogoff M; The relationship between spirituality and burnout among medical students. J Contemp Med Educ, 1(2): 83–91, 2013.
68. Salmoirago-Blotcher E, Fitchett G, Leung K, Volturo G, Boudreaux E, Crawford S, Ockene I, Curlin F; An exploration of the role of religion/spirituality in the promotion of physicians' wellbeing in Emergency Medicine. Preventive Medicine Reports, 3: 189–195, 2016.
69. Rutherford, K., Oda, J. Family medicine residency training and burnout: a qualitative study. Canadian medical education journal, 5(1), e13–e23,2014.
70. Kane L. [2020]. Medscape National Physician Burnout & Suicide Report 2020: The Generational Divide. Accessed Aug 2020 from http://www.medscape.com.
71. Dyrbye LN, Burke SE, Hardeman RR, Herrin J, Wittlin NM, Yeazel M, Dovidio JF, Cunningham B, White RO, Phelan SM, Satele DV, Shanafelt TD, van Ryn M; Association of Clinical Specialty With Symptoms of Burnout and Career Choice Regret Among US Resident Physicians. JAMA, 320(11): 1114-1130, 2018.
72. Busireddy K, Miller J, Ellison K, Ren V, Qayyum R, Panda M; Efficacy of Interventions to Reduce Resident Physician Burnout: A Systematic Review. Journal of Graduate Medical Education, 294-301, 2017.
73. Medeiros de Oliveira, S, de Alcantara Sousa L.V., do Socorro Vieira Gadelha M, do Nascimento V.B; Prevention Actions of Burnout Syndrome in Nurses: An Integrating Literature Review. Clinical Practice and Epidemiology in Mental Health, 15: 64-73, 2019.
74. Wallace JE, Lemaire JB, Ghali W A; Physician wellness: a missing quality indicator. Lancet (London, England), 374(9702), 1714–1721, 2009.

75. Swensen S, Shanafelt T; An Organizational Framework to Reduce Professional Burnout and Bring Back Joy in Practice. Jt Comm J Qual Patient Saf, 43 (6), 308-313, 2017.
76. McCray L, Cronholm P, Bogner H, Gallo J, Neill R; Resident Physician Burnout: Is There Hope? Fam Med, 40(9), 626–632, 2008.
77. Cañadas-De la Fuente GA, Ortega E, Ramirez-Baena L, De la Fuente-Solana EI, Vargas C, Gómez-Urquiza JL. Gender, Marital Status, and Children as Risk Factors for Burnout in Nurses: A Meta-Analytic Study. Int J Environ Res Public Health, Sep 25, 15(10), 2018.