The Prevalence of Physicians' Burnout Syndrome in Ibrahim Malik Teaching Hospital, Khartoum – Sudan in 2020

Huweida Arif Ali [a], Amna Omer Ali [a*], Abrar Mohammed Ali [a], Safinat Ali Alsadig [a], Zainab Isam Eldeen Ahmed [a], Sherein Osman [a], Moneer A. Abdalla [b,], Hassan I. Osman [b]

[a] hassanismail@napata.net
[a]Elrazi University, Khartoum, Sudan
[b]Public Health Institute (PHI), Federal Ministry of Health (FMOH), Khartoum, Khartoum, Sudan

Abstract

Introduction: Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: 1) Feelings of exhaustion, 2) Increased mental distance from one's job, or feelings of negativism related to one's job; and 3) Reduced professional efficacy. Emotional exhaustion includes feeling "used up" at the end of a workday. Depersonalization includes feelings of treating patients as objects and becoming more uncaring towards patients. A sense of reduced personal accomplishment encompasses feelings of ineffectiveness in helping patients and a lack of value of the results of professional activities such as patient care or professional achievements. Burnout is distinct from other related constructs such as job dissatisfaction, fatigue, occupational stress and depression. Although burnout correlates with these problems, it may be present in their absence or absent in their presence. Results: The total number of doctors enrolled in the study was 100 Physicians working in Ibrahim Malik Teaching Hospital as of October 2020. Most of the participants were female doctors, reaching up to 72% in comparison to 28% male doctors. Most of the participants belonged to the ER department, whereas the least belonged to the orthopaedic department. The majority of participants were house officers (42%) and the least were specialists (4%). Overall, all female doctors were found to have a variable risk of burnout, which ranged from moderate to severe. The highest degree of burnout that female doctors suffered from was within the "Serious" parameter (50.1%-75%), and the lowest belongs to the "severe" parameter (75%-100%). Unlike their counterparts, not all male doctors suffered from burnout, 4% having recorded exhibiting none-mild burnout symptoms. In male doctors' burnout, the majority belonged to the "serious (50.1%-75%)" parameter and the lowest belonged to the "non-mild (0%-25%)" and "severe (75.1%- 100%)" parameters, which were 67%, 4% and 4% respectively. In male and female physician burnout, males recorded 4% (lowest) in the "non-mild", while females recorded a 0%. Female doctors scored a higher "serious burnout" (68%) than male doctors (67%). Both male and female doctors had similar record of the lowest percentage being the "severe" parameter (4%). Among professional levels, the highest percentage of burnout manifested in GPs (Medical Officers) (60%) and the lowest was seen in consultants (45.20%). In specialties, the highest percentage belongs to doctors working in the ER department (81%) and lowest belongs to the Surgery department (52%). In general, most physicians were within the "serious" parameter (68%) and the lowest belongs to "none-mild" parameter (1%). Personal accomplishment was most affected in general practitioners (38.12%) and least affected in consultants (35.28%). Emotional exhaustion was most prevalent in specialists (39%) and less affected in house-officers (35.69%). Depersonalization was the highest in consultants (27.70%) and lowest in specialists (24.30%). Male doctors were the most affected in their feeling of low personal accomplishment (49%) and emotional exhaustion (42%), in opposition to female doctors, who recorded (38%) and (36%) respectively. However, female doctors had a higher percentage of depersonalization (26%) than male doctors (9%). Emotional exhaustion was the highest in ICU (37.83%) and the lowest in orthopedic doctors (32.89%). Personal accomplishment was the highest in orthopedics (40.79%) and the lowest in OB/GYN doctors (36.38%). Depersonalization was the highest in OB/GYN (27.12%) and the lowest in ICU doctors (25.7%). **Conclusion:** In conclusion, our study showed that burn out is highly prevalent among Ibrahim Malik hospital doctors (68 %), while female doctors had a higher degree burnout than males. Among the different professional levels, the highest percentage of burnout belonged to GPs and the lowest belonged to consultant's .ER doctors suffered the most from burnout, whereas surgeons suffered the least. Several factors attributing to the burnout symptoms of these doctors have been identified. The first factor being personal accomplishment, which was the most affected factor in general practitioners and the least affected in consultants. Emotional exhaustion was the highest in specialist and the least in house-officers. Depersonalization was the highest in consultants and the least in specialists. In terms of the risk factors accrediting to burnout in terms of gender, our results concluded that males got a higher percentage of low personal accomplishment and emotional exhaustion than females. Meanwhile, females scored a higher percentage of depersonalization than males. In regards to the risk factors affecting the different specialties, results have shown that emotional exhaustion was the most affected in ICU doctors and least affected in orthopedic doctors. Low personal accomplishment was the highest in orthopedics and the lowest in OB/GYN. Depersonalization, was the highest in OB/GYN and the lowest in ICU. Finally, the prevalence of symptoms of Burnout Syndrome among doctors employed at Ibrahim Malik Teaching Hospital in October 2020 was found to be very high, constituting a pressing challenge that needs to be met by organizations, individuals and society at large. **Recommendations:** Further, large-scaled researches particular high equality studies are needed to broaden the understanding of the burnout syndrome. Target intervention at work place should be considered as one of the strategies to reduce negative impact of burn out. Interventions ranging from work health and mental health education to policy changes should be considered, as the knowledge of the existence of burnout syndrome was noticed to be low among physicians while distributing the paper questionnaire. Physicians and other healthcare providers should cooperate with and seek the identification of the risk and degree of burnout among themselves. Allotting a large time period to data collection.

Keywords: Ibrahim Malik Teaching Hospital; Burnout; Physicians well-being

Introduction:

Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: 1) Feelings of exhaustion, 2) Increased mental distance from one's job, or feelings of negativism related to one's job; and 3) Reduced professional efficacy. (WHO, 2019)
Emotional exhaustion includes feeling "used up" at the end of a workday. Depersonalization includes feelings of treating patients as objects and becoming more uncaring towards patients. A sense of reduced personal accomplishment encompasses feelings of ineffectiveness in helping patients and a lack of value of the results of professional activities such as patient care or professional achievements.(1)
Burnout is distinct from other related constructs such as job dissatisfaction, fatigue, occupational stress and depression. Although burnout correlates with these problems, it may be present in their absence or absent in their presence (2)
The 2018 Survey of America's Physicians Practice Patterns and Perspectives reported a 4% increase, since 2016, in burnout rates among physicians, with 78% of physicians suffering from burnout. In a 2019 British Medical Association survey, 80% of doctors were either at high or very high risk of burnout, with junior doctors most at risk, followed by general practitioner partners. (3)
There is a scarcity of data on physician burnout in Low-and Middle-income countries (LMICs). A systematic review and meta-analysis on interventions to prevent and reduce physician burnout was published in The Lancet by Colin West and colleagues, but most of the included studies of sufficient quality were done in high-income countries. Disturbingly, physician burnout is still a hidden but rapidly growing epidemic in LMICs, given the large demands for health-care services in these countries. (3)

Problem statement:

Ideally, "A healthy workplace is a place where everyone works together to achieve an agreed vision for the health and well-being of workers and the surrounding community. It provides all members of the workforce with physical, psychological, social and organizational conditions that protect and promote health and safety. It enables managers and workers to increase control over their own health and to improve it, and to become more energetic, positive and contented." (WHO 2009)
Employee health is thus Incorporate in the WHO definition of health (physical, mental and social) and is to be far more than merely the absence of physical disease.
Currently, the burnout phenomenon is an increasingly worrying subject within the medical realm due to the rapid deterioration of medical healthcare providers' mental health. The 2013 Medscape Lifestyle Report (which was based on the survey of over 20,000 physicians in the US), depicted a national burnout rate of 40%. This was updated in 2017 to indicate a 51% burnout rate among physicians, depicting a 25% increase in a mere 4 years. The same research found that female healthcare providers are more likely to suffer from burnout than their male colleagues.
Recurrent researches are emerging in order to identify the core problems and undertake means to tackle them in order to achieve maximum doctor and patient satisfaction.
There is currently no data nor statistics discussing the issue of physicians' burnout in Sudan.

Justification:

In conclusion, several prospective and high-quality studies showed physical, psychological and occupational consequences of job burnout. The individual and social impacts of burnout highlight the need for preventive interventions and early identification of this health condition in the work environment. Provided that there is no data available in this topic in Sudan, it is important to identify the issue and its scale to start solving detected problems. (4)

Objectives:

General Objective:

To study the prevalence of physicians burnout in Ibrahim Malik Teaching Hospital 2020

Specific Objectives:

To compare the prevalence of burnout between different specialties.

To compare the prevalence between different professional levels.

To assess the factors related to burnout syndrome.

To compare the prevalence between genders.

Research Methodology:

Study Design:
This is a cross sectional study to assess the prevalence of burnout amongst physicians in Ibrahim Malik Teaching Hospital, in October 2020.

Study Area:
This research was conducted in Ibrahim Malik Teaching Hospital, located in Khartoum Sate, Sudan. It was founded in 1977 and it is a governmental owned hospital providing many and various facilities to the general public. The hospital provides a 24/7 Emergency service, as well as many outpatients clinic. It also has dental clinics included in its services. It also includes residency training for doctors as well as a full vaccination program. The hospital holds a total of 326 beds with 8 different wings/departments. As of October 2020, the hospital has around 500 doctors in employment.

Study Population:
The study population for this research is the physicians that are currently employed in Ibrahim Malik Teaching Hospital as of October 2020 during the period of study.

Inclusion Criteria:
Physicians employed in Ibrahim Malik Teaching Hospital as of October 2020, (during study period) from the level of house officers extending to the level of consultants.

Exclusion Criteria:
Physicians employed in the following specialties
Oncology, Rheumatology, Dermatology, Immunology, ENT, Anesthesiology, Neurology, Ophthalmology, Geriatrics, Physicians unwilling to participate

The specialties mentioned above were excluded as they are under a different arrangement with the hospital's administration.

Sample Size and Sampling Technique:
In this research the sample size was calculated via known population, of 484 physicians as of October 2020. The sample size is 219, having using the equation for a known population to calculate it.
"$n = N/1 + N(d)2$"

n=sample size

N= Total number of Physicians working in Ibrahim Malik Teaching Hospital as of October 2020 d=error allowed, which is 0.05
n=484/1+ (484*0.0025) n=219
A random sample size of 100 physicians working at Ibrahim Malik Teaching Hospital as of October 2020 was taken.
A convenience non-probability \sampling technique was utilized, as well as snowball sampling.

Data Collection Tools and Technique:
A self -administer online English questionnaire with close-ended questionnaire was distributed amongst staff in Ibrahim Malik Teaching Hospital, as of October 2020. As well as, paper questionnaire distributed in the hospital itself and then collected later on. The questionnaire consisted of 27 questions, with 9 questions attributed to each of the 3 risk factors (Depersonalization, Emotional Exhaustion, and Personal Accomplishment). Excel was used to analyze the data collected from the physicians working in the hospital as of October 2020.
Burnout was assessed as mild, moderate, serious or severe according to the following table (33)

Table (3.5.1): The Parameters to be used for measuring burnout symptoms

Degree	Percentage	Comment
None-Mild	**0%-25%**	**This Physician is unlikely to be suffering from Burnout, and they are likely content with their professional and personal life.**
Moderate	**25.1%-50%**	**This Physician is likely to be suffering from a moderate degree of Burnout syndrome, and is recommended to seek out information on methods of self-care or increase engaging in activities to increase mental and personal wellbeing**
Serious	**50.1%-75%**	**This physician is likely suffering from a serious degree of Burnout Syndrome and should seek assistance from a trusted mental health professional**
Severe	**75.1%-100%**	**This physician is likely suffering from a severe degree of Burnout Syndrome, and should seek immediate help from a trusted mental health professional**

Disclaimer

Our questionnaires, scores, and data analysis are in no way diagnostic of Burnout Syndrome nor are they intended to be. They merely give a brief insight into the potential or suspicion that healthcare provider may possibly suffer from this syndrome. If burnout is indeed suspected, physicians should seek out a trained health care professional for aid.

Ethical Considerations:

Approval to conduct this research was given from the Head of Department of Community at El Razi University 2020, as well as the administration of the university. Approval from Khartoum State Ministry of Health-Research Department was obtained as well. Approval from the administration of Ibrahim Malik Teaching Hospital October 2020 was also obtained. All participants had the right to voluntary informed consent. All participants had the right to withdraw at any given time without any deprivation All participants had the right to anonymity, and to benefit from the questionnaire.

Literature Review:

Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three dimensions: 1) Feelings of exhaustion, 2) Increased mental distance from one’s job, or feelings of negativism related to one's job; and 3) Reduced professional efficacy (WHO, 2019). Burnout is distinct from other related constructs such as job dissatisfaction, fatigue, occupational stress and depression. Although burnout correlates with these problems, it may be present in their absence or absent in their presence (2)

Emotional exhaustion includes feeling "used up" at the end of a workday and inability to give the patients emotional support. Depersonalization includes feelings of treating patients as objects and becoming more uncaring towards patients. A sense of reduced personal accomplishment encompasses feelings of ineffectiveness in helping patients and a lack of value of the results of professional activities such as patient care or professional achievements. (1)

In 2009 a paper highlighting physician burnout syndrome had mention that the medical profession is the second largest profession in Sudan after teaching, with 32,900 registered doctors, 3955 dentists and 3197 pharmacists (5). This implicates the importance of reviewing and studying this issue in Sudan.

A study titled: "Prevalence of burnout and associated risk factors in a tertiary hospital, Riyadh, Saudi Arabia" by Turki Mohammed Aldrees and colleagues aimed to determine the level and factors associated with burnout among physicians in a tertiary hospital in Saudi Arabia between October 2010 and November 2010. The Maslach Burnout Inventory questionnaire was used in this cross- sectional study to measure burnout. Socio-demographic-, specialty-, and work-related characteristics were added to explore factors associated with burnout. The sample size was estimated at the 95% confidence level with an expected proportion of 0.5 and an acceptable margin of error of 0.05. The minimum required sample size was 341. Burnout was modeled as a binary variable (burnout or no burnout). Categorical variables were compared using the chi-square test. Student t test was used for numerical factors. The statistical analysis was performed using SPSS software. The study included 348 participants; the burnout prevalence was 76 in females and 167 among males. having a significantly increased proportion of individuals with female sex (P=.02), had an unmarried status (P=.003), were in resident employment category (P<.001), had a lower total number of years in practice (P<.001), were individuals whose current job negatively affected their family life (P<.001), and were suffering from sleep deprivation (P<.001) or back pain (P<.001) compared with those in the comparison group. The burnout prevalence across specialties was not statistically different (P=.09). However, the prevalence was highest (≥70%) among OB/GYN, surgery, family medicine, anesthesia, intensive care, internal medicine, and pediatric specialists and lowest (39%) among cardiology specialists. In addition, the prevalence of burnout syndrome was significantly higher in residents (136/159 [86%]) compared with consultants (107/189 [57%])S, <.001. (6)

A research was conducted in Qatar by Abdelhamid Afana and colleagues. The research titled "Burnout and sources of stress among medical residents at Hamad Medical Corporation, Qatar" aimed to describe the experiences of stress and burnout and sociodemographic factors associated with dimensions of stress among medical residents at Hamad Medical Corporation (HMC). One hundred and fifty (150) residents from 19 training programmes at HMC participated in a required stress management course. They were selected by their residency programmes to take the course primarily based upon rotation schedules. They were asked to complete an anonymous, self- completed survey immediately before the course as a baseline assessment for the course. The mixed- methods survey first asked residents to describe their sources of stress, main coping strategies and reactions to stressors through open-ended questions. The second part consisted of sociodemographic characteristics and the Abbreviated Maslach Inventory (AMI). This 12-item scale is composed of 9 items from the Maslach Burnout Inventory and a 3-item Satisfaction with Medicine scale. The 4 subscales have 3 items each: Personal Accomplishment, Emotional Exhaustion, Depersonalization and Satisfaction with Medicine. The AMI was scored using published instructions. Independent sample t-tests and ANOVA tests examined associations between demographic characteristics and burnout scores. There were high scores on Emotional Exhaustion. The most frequent stressors reported by the residents related to workload and working conditions. The primary coping strategies were social support. Women scored lower on Depersonalization while Men with children have a remarkable buffer as they scored better than men without children on Depersonalization and better than women with children on Emotional Exhaustion. (7)

In ''Gender differences in the effect of grief reactions and burnout on emotional distress among clinical oncologists'' research by Leeat Granek and colleagues, that aimed to examine gender differences in the effect of grief reactions and burnout on emotional distress among clinical oncologists. The participants included a convenience sample of 178 oncologists from Israel (52 of who were women) and Canada (48 of who were women). Oncologists completed a questionnaire package that included a sociodemographic survey, the General Health Questionnaire, a burnout measure, and the Adult Oncologists Grief Questionnaire. To examine the effect of grief reactions and burnout on emotional distress while controlling for country and past depression within each gender, 2 hierarchical linear regression analyses were computed. At the end of the study Female oncologists reported significantly more grief responses to patient death (mean, 47.72 [standard deviation (SD), 8.71] and mean, 44.53 [SD, 9.19], respectively), more emotional distress (mean, 12.41 [SD, 4.36]
and mean, 10.64 [SD, 3.99], respectively), and more burnout (mean, 2.59 [SD, 1.69] and mean, 1.84 [SD, 1.5], respectively). For both genders, higher levels of grief reactions were associated with greater emotional distress among those who reported high levels of burnout (P<.001). However, for men, the association between grief reactions and emotional distress also was documented at moderate levels of burnout (P<.001). (8)

A study titled: "Differences in burnout prevalence between clinical professionals and biomedical scientists in an academic medical centre: a cross-sectional n survey" by Erick Messias and colleagues, was done to determine

the prevalence and associated factors for personal, work-related and patient/client-related burnout in clinical professionals and biomedical scientists in academic medicine

They found that the type of burnout varies across professional categories, with significant differences between clinicians and scientists. The prevalence of personal burnout was 52.7% (95%CI 50% to 55%), work-related burnout 47.5% (95%CI 45% to 49%) and patient/client-related burnout 20.3% (95%CI 18% to 22%). Overall, clinical professionals had higher personal and work-related burnout, while biomedical scientists had higher client-related burnout. Accounting for the effects of gender and age, a significantly higher risk for personal burnout was found for physicians (AOR 1.64; 95%CI

1.3 to 2.1) and nurses (AOR 1.5; 95%CI 1.03 to 2.2). Significantly higher odds of work-related burnout were found for nurses (AOR 1.5; 95%CI 1.2 to 1.9) and residents (AOR 1.9; 95%CI 1.04 to 3.6). Basic scientists (AOR 10.0; 95%CI 5.7 to 17.6), physicians (AOR 2.8; 95%CI 1.9 to 4.1) and nurses (AOR 2.1; 95%CI 1.3 to 3.5) had higher odds of patient/client-related burnout. In summary, they concluded that the types of burnout are unevenly distributed in academic medical centres. Physicians have higher risk of personal and patient/client-related burnout, residents have higher risk of work-related burnout, basic scientists are at higher risk of client-related burnout and nurses have higher odds of all three types of burnout. (9)

In the research titled; “Physician well-being: prevalence of burnout and associated risk factors in a tertiary hospital, Riyadh, Saudi Arabia” by Turki Mohammed Aldrees and colleague (6), which was done to determine level and factors associated with burnout amongst physicians in a tertiary hospital in Saudi Arabia. 348 participants were included; 252 (72%) were males, 189 (54%) were consultants, and 159 (46%) were residents. The mean (SD) age was 35 (9.8) years. The burnout prevalence was 243/348 (70%); 136 (56%) of the 243 were residents and 107 (44%) were consultants. Age, female gender, marital status, number of years in practice, sleep deprivation, presence of back pain, and a negative effect of practice on family life were associated with burnout in the univariate logistic regression analysis. The factors independently associated with burnout in the final multivariate model were as follows: suffering from back pain (odds ratio [OR]=2.1, 95%CI 1.2–3.8, P=.01), sleep deprivation (OR=2.2, 95%CI 1.2–3.8, P=.009), being a resident physician/surgeon (OR=4.9, 95%CI 1.7–14.2, P=.004), and negative effect of practice on family life (OR=2.1, 95%CI 1.1–3.9, P=.02

All consultants and residents who were undergoing training in surgery, OB/GYN, anesthesia, emergency medicine, internal medicine, family medicine, pediatrics, cardiology, psychiatry, and intensive care in King Abdulaziz Medical City, Riyadh, Saudi Arabia, were approached to participate in the study. We excluded physicians/surgeons who were not practicing clinical work and residents who were rotating in other hospitals during the study. They used the English version of the MBI to measure the prevalence of burnout. The MBI has been validated widely used as a reliable instrument to measure burnout in different medical specialties. It consists of 22 items, which are used to measure 3 domains of burnout. These domains are as follows: emotional exhaustion, (Feeling emotionally drained, tired, or fatigued by one’s career), depersonalization (tendency to view the others as objects rather than as feeling persons),and personal accomplishment, 8 items (the degree to which a person perceives doing well on worthwhile tasks).

A total of 348 questionnaires were collected. The overall response rate was 74%. The mean age (SD) of respondents was 35 (9.8) years; 72% were male, 87% of Saudi nationality, 74% married, 54% consultants, and 46% were residents. More than 50% of participants were in practice for ≤5 years, 10% worked concurrently in the private sector, and 58% were satisfied with their income. Approximately, 73% indicated that their family life were negatively affected by their current job; 86% suffered from sleep deprivation (≤6 hours/day), and 65% had back pain.

The burnout prevalence across specialties was not statistically different (P=.09). However, the prevalence was highest (≥70%) among OB/GYN, surgery, family medicine, anesthesia, intensive care, internal medicine, and pediatric specialists and lowest (39%) among cardiology specialists. Additiontally, the prevalence of burnout syndrome was significantly higher in residents (136/159 [86%]) compared with consultants (107/189 [57])S, <.001. (6).

A study titled: “Job stress and burnout in hospital employees: comparisons of different medical professions in a regional hospital in Taiwan” by Li-Ping Chou, Chung-Yi Li and Susan C Hu, prevalence and associated factors of burnout among five different medical professions in a regional teaching hospital were explored.

A total of 1329 medical professionals were recruited in a regional hospital with a response rate of 89%. These voluntary participants included 101 physicians, 68 physician assistants, 570 nurses, 216 medical technicians and 374 administrative staff.

Results included amongst the five medical professions, the prevalence of high work-related burnout from highest to lowest was nurses (66%), physician assistants (61.8%), physicians (38.6%), administrative staff (36.1%) and medical technicians (31.9%), respectively. Hierarchical regression analysis indicated that job strain, over commitment and low social support explained the most variance (32.6%) of burnout.

In summary, Physician assistant is an emerging high burnout group; its severity is similar to that of nurses and far more than that of physicians, administrative staff and medical technicians. (10)

A research published in September 2017 assessing the incidence of burnout among gynecological residents and factors associated with it in Lahore, Pakistan, titled: "Burnout among gynecological residents in Lahore, Pakistan: A cross-sectional survey", written by Khadija Waheed and colleagues. It was a cross-sectional study conducted at the University Medical and Dental College in Faisalabad, Pakistan, over a 2 month period from March to April 2016. The applicants were divided into groups based on their ABO blood groups and BMI criteria and then blood groups were detected by the conventional slide method. The blood pressure of the participants was estimated by manual auscultatory technique with a mercury sphygmomanometer and then the data was analyzed using SPSS20.

This study found that of the 102 participants, 57(55.9%) were satisfied after choosing gynecology as career. Emotional exhaustion and depersonalization were found to be markedly higher among residents working in government institutions than private institutions ($p<0.05$). The participants that had more than 2 years of post-graduate experience had significantly higher depersonalization than those with lesser experience ($p=0.016$).Another contributing factor to these results was the number of work hours, which was about 50-60 hours/week, increased the feeling of dissatisfaction in the participants chosen specialty. This was linked to higher emotional exhaustion and depersonalization ($p<0.05$).
Burnout is not restricted to physicians only, as a 2001 study showed a 43% burnout in nurses working is US hospitals. Within this, a 2011 research found that 37% of nurses providing in-house patient care suffer from burnout, as opposed to 33% in hospital nurses. (11)
"Burnout in Australasian Younger Fellows" was the title of a study conducted in March 2008, in order to study the factors contributing to Burnout in Australasian Younger Fellow. It was written by Sarah Benson and colleagues The method by which this was conducted was by sending an email to 1287 Younger Fellows, answering survey questions according to the Copenhagen Burnout Inventory, and to estimate of social desirability (Marlowe-Crowne Social Desirability Scale - Form C). The results concluded that females exhibited higher levels of personal burnout ($P < 0.001$) and work- related burnout ($P < 0.025$), but no significant difference in patient-related burnout. Younger Fellows in hospitals with less than 50 beds reported significantly higher patient-related burnout levels (mean burnout 37.0 versus 22.1 in the rest, $P = 0.004$). An equal work division between public and private practice resulted in higher work-related burnout than concentration of work in one sector ($P < 0.05$). Younger Fellows working more than 60 hours per week reported significantly higher personal burnout than those who worked less than this ($P < 0.05$). There was no significant correlation between age, country of practice, surgical specialty and any of the burnout subscales. This concluded that female surgeons, surgeons that work in smaller hospitals, those that work more than 60 h per week, and those with practice division between the private and public sectors, are at a particularly high risk of burnout. (12)
"Burnout in anesthesiology and intensive care: is there a problem in Germany?", A 2011 study written by W Heinke and colleagues, was conducted to review the risk for anesthetist in Germany from burnout and whether it was of larger incidence that in other occupations. Another objective of the study was to learn the factors that may influence or increase the risk of anesthetists suffering from this issue. The methodology used was by sending 3,541 questionnaires to be completed by German anesthetists for a study on work satisfaction by the CBI (Copenhagen Burnout Inventory, part of the Copenhagen Psychosocial Questionnaire, COPSOQ) were analyzed. Apart from calculating the number of participants with a high risk of developing burnout syndrome, the data were used to calculate a generalized burnout score for all participants. The score was compared with data from both a random sample representing a wide variety of occupations from among the general population in Germany ($n = 4,709$) and a random sample of German hospital doctors ($n = 616$). In addition, subgroups were formed by gender, function (senior consultant, senior physician, specialist, junior doctor) and type and place of work (university hospital, public hospital, private clinic, GP surgery, freelance work) and the proportion of each group with a high risk of burnout syndrome was calculated. In addition, general burnout scores were compared statistically for differences among the various groups.
The results of this study showed that the participants with a high risk of burnout were 40.1%. Differences were found to exist between genders (male 37.2% versus female 46%), qualifications (senior consultant 28.9%, senior physician 38%, specialist 41.5%, junior doctor 46.7%) and working in a hospital (41.3%) compared to a GP surgery (33.2%). The random sample of hospital doctors ($n = 616$) showed a burnout score of 49 ± 19 (mean ± standard deviation), compared to 44 ± 19 for a random sample of the German population ($n = 4,709$) and 42 ± 19 for anesthetists ($p < 0.01$). Of the subgroups formed, the highest score (49.1 ± 19) was recorded for female junior doctors working in anesthesia. The type of hospital did not influence the burnout score (university hospital 43.8 ± 19.8 versus public hospital 42.9 ± 19.1 versus private hospital 42.4 ± 18.7, $p > 0.05$). Working in a hospital was found to result in higher burnout scores than in a GP surgery or freelance work (43 ± 19.2 versus 38.1 ± 20.5; $t (3531) = 5.0$, $p < 0.001$) (13)
"Comparison of stress levels between physicians working in public and private hospitals in Johor, Malaysia" is a 2018 study written by AmirulHafi and colleagues. It had the main objective to compare stress levels between physicians working in public and private hospitals in the state of Johor, Malaysia. Participants were selected via

stratified sampling. Participants completed an online questionnaire comprising demographic details and the Health Professional Stress Inventory. Scores on each domain and the aggregate scores were compared between physicians in public and private hospitals using a univariate analysis adjusted for potential confounders
The participants from the public and private hospitals were similar in terms of sex, ethnicity, and motivation to become physicians ($p > 0.05$). However, most of the participants from private hospitals were consultants and specialists, and none were medical officers ($p < 0.05$). Participants from private hospitals were also older and had a higher monthly income compared to those from public hospitals ($p < 0.05$).
The results concluded that the overall stress level between physicians in public and private hospitals was similar. However, physicians in private hospitals experienced a higher stress level related to patient care responsibilities and professional uncertainty as compared to those in public hospitals. (14)
A cross-sectional study measured burnout among 266 physicians and 284 nurses working in the emergency hospital of Tanta University in Egypt showed that 66% of participant had a moderate level of burnout and 24.9% of them had a high level of burnout (15). Physicians reported high levels of burnout. For example, among physicians at 36 rural district hospitals in South Africa, 81% of participants reported burnout, with 31% reporting high burnout on all three of the MBI-HSS subscales (16). On the MBI-HSS subscales, 65.2% out of 491 physicians in southern Ethiopia reported high emotional exhaustion, 91% low personal accomplishment, and 85.1% high depersonalization (17). 204 Physicians undergoing residency training at a hospital in Nigeria reported a high prevalence of burnout according to the MBI, in which 45.6% of residents reporting burnout on emotional exhaustion, 57.8% depersonalization, and 61.8% reduced personal accomplishment (18). In a web based survey, the study titled: “Career satisfaction and burnout among Ghanaian Physicians” was done in Ghana in which 200 physicians participated, burnout measures were high on the emotional exhaustion (mean ± standard deviation (SD): 9.1 ± 2.6), personal accomplishment (5.8 ± 1.6), anddepersonalization (5.2 ± 2.1) subscales of the abbreviated MBI (19).
In 2015 a study titled: “Burnout among anesthetists in South Africa” by Van Der Walt N and colleagues. South African physicians in 93 public sector emergency centers had high burnout scores on all subscales of the MBI-HSS (20). At a university hospital in South Africa, 45.2% physician anesthetists reported high emotional exhaustion, 50% reported high depersonalization, and 46% reported low personal accomplishment on the MBI-HSS (21). 126 junior physicians in South Africa, 77.8% had experienced burnout, with 52.4% experiencing burnout at their current job with significantly higher scores on the Physician Stress Inventory (22). In a small mixed-methods study of 22 junior physicians at a children’s hospital in South Africa, all participants experienced high levels of burnout on at least 1 MBI subscale, and mean scores on the emotional exhaustion and depersonalization subscales were significantly higher than those in a normative comparison group ($p < 0.001$) (23). Among 520 healthcare workers providing clinical care for HIV-positive patients in Malawi 62% met the MBI criteria for burnout. (24). The prevalence burnout risk among 373 Polish anesthesiologists was almost 70%. The percentage of participants who indicated very high levels of burnout was 18%; 5.9% of whom fell into profile 2 considered to be clinical (25). Out of 109 health care professionals working in obstetrics and gynecology department 53.2% experienced high depersonalization, 21.1% experienced high emotional exhaustion and 57.8% experienced burnout (26) .In a small study in an obstetrics and gynecology departments in France 36.1% experienced burnout (27). In another study in the plastic surgery discipline in France, 25% and 13.5% of residents scored highly on the depersonalization and high-level emotional exhaustion burnout subscales, respectively(28). In a study conducted in Hungary on 43 internal medicine health workers, 41.9% experienced high depersonalization, 25.6% experienced high emotional exhaustion and 97.7% experienced low personal accomplishment (29).
18.1 % out of 116 Greek health workers experienced burnout syndrome (30).In Finland, Some 73% of a sample of 7,964 respondents participated in at least one phase of the study. The findings suggested that 3% of female and 2% of male respondents were suffering from severe burnout, where burnout symptoms (as defined by the Maslach Burnout Inventory) occur at least once a week. Meanwhile, 24% of women and 23% of men showed symptoms of milder burnout, with symptoms occurring at least once a month (31)
More than 50% of medical healthcare providers in the United States (US) experience symptoms of burnout, twice as much as professionals in other fields of work. Furthermore, according to the research being conducted, the rate of burnout amongst healthcare providers seems to be very rapidly increasing. A survey that was conducted in 2013 by the Medscape Lifestyle Report, garnering a sample size of over 20,000 reported a countrywide burnout rate of 40%. This was then repeated in 2017, and the result was a 51% burnout rate, depicting a 25% increase in a mere 4 fours. Also, another study was conducted and it showed a 9% increase in burnout between the years 2011 and 2014. The same research found that healthcare professionals providing first line care (Emergency medicine, Internal medicine, OB/GYN and family medicine) have a higher percentage of burnout compared to their peers in a different specialization. Also, further research found that female healthcare providers are more likely to experience burnout than their male colleagues.
In Conclusion, a lot of factors contribute to the increase of the incidence of Burnout Syndrome worldwide. Certain specialties appear to be more affected than others, with higher burnout rates appearing amongst critical

care physicians and, followed by those in various fields of internal medicine. The prevalence of Burnout Syndrome was higher in females according to the studies conducted above, and it was found out to be mostly due to more emotional exhaustion and they reported more grief in response to a patient's death. In addition, studies have shown that the incidence of work-related burnout is relatively higher in residents but also physician assistant or medical practitioners also have an increasing percentage of Burnout Syndrome. As for the main factors pertaining to Burnout Syndrome, studies have indicated that it varies between a lack of feeling adequate personal accomplishment and depersonalization.

A research was conducted under the title "An analysis of the relationship between burnout, socio- demographic and workplace factors and job satisfaction among emergency department health professionals" by Menderes Tarcan and colleagues in 2017 [32]. It aimed to investigate the relationship between the perceptions of burnout and job satisfaction of those working in two different hospital's emergency departments assessing the effect of burnout dimensions and additional factors (age, position, marital status, annual income, employment type, gender, patient encounters, and household economic well-being) on job satisfaction. In this cross-sectional survey two hundred and fifty participants was interviewed, using validated instruments (the Maslach Burnout Scale and the Minnesota Satisfaction Questionnaire). Participants include 38 physicians, 89 nurses, and 84 medical technicians, and 39 information technicians. The Maslach Burnout Inventory Scale, which assesses emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA), and the Minnesota Satisfaction Questionnaire (MSQ), which assesses intrinsic satisfaction (IS), extrinsic satisfaction (ES) and overall satisfaction (OS), were used for data collection. Study findings indicate that significant relationship exists between burnout and job satisfaction; annual income and household economic-well-being had a positive association with job satisfaction, whereas gender, age, education, marital status had no significant effect on any form of satisfaction. Moreover, this study reveals that emotional exhaustion (EE) is a significant predictor of all three dimensions of job satisfaction while depersonalization (DP) had no significant showing. To sum up burnout didn't show significant variation among genders regarding job satisfaction (32).

Results:

The total number of doctors enrolled in the study was 100 Physicians working in Ibrahim Malik Teaching Hospital as of October 2020.

Table (4.1.1): The Distribution of age from 100 samples at Ibrahim Malik Teaching Hospital, October 2020

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	73	73.0	73.0	73.0
	31-40	20	20.0	20.0	93.0
	41-50	5	5.0	5.0	98.0
	51+	2	2.0	2.0	100.0
	Total	100	100.0	100.0	100.0

The majority of participants were of the (20-30) year old age group, whereas the least belonged to the 50+ age group. Both ranged from 73% to 2% respectively.

Table (4.1.2): The Distribution of gender from 100 samples at Ibrahim Malik Teaching Hospital, October 2020

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	72	72.0	72.0	72.0

Male	28	28.0	28.0	100.0
Total	100	100.0	100.0	100.0

Most of the participants were female doctors, reaching up to 72% in comparison to 28% male doctors.

Table (4.1.3): The Distribution of Specialty Department from 100 samples at Ibrahim Malik Teaching Hospital, October 2020

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Internal Medicine	14	14.0	14.0	14.0
	ICU	13	13.0	13.0	27.0
	Surgery	10	10.0	10.0	37.0
	OB/GYN	19	19.0	19.0	56.0
	Pediatrics	18	18.0	18.0	74.0
	ER	21	21.0	21.0	95.0
	Orthopedics	5	5.0	5.0	100.0
	Total	100	100.0	100.0	100.0

Most of the participants belonged to the ER department, whereas the least belonged to the orthopedic department.

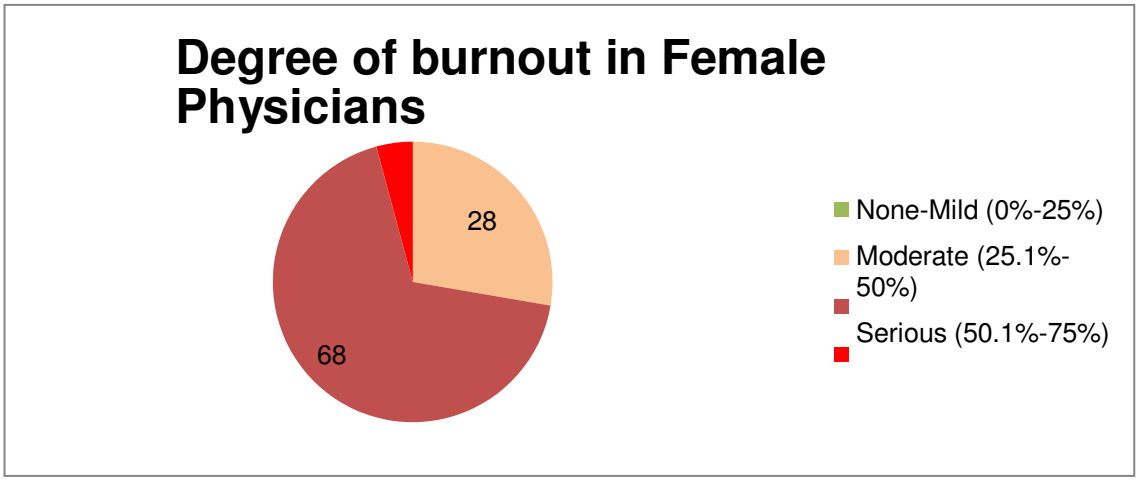
Table (4.1.4): The Distribution of the level of profession from 100 samples at Ibrahim Malik Teaching Hospital, October 2020

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	House officer	42	42.0	42.0	42.0
	Registrar	32	32.0	32.0	74.0
	Specialist	4	4.0	4.0	78.0
	Consultant	7	7.0	7.0	85.0
	GP	15	15.0	15.0	100.0
	Total	100	100.0	100.0	100.0

The majority of participants were house officers (42%) and the least were specialists (4%).

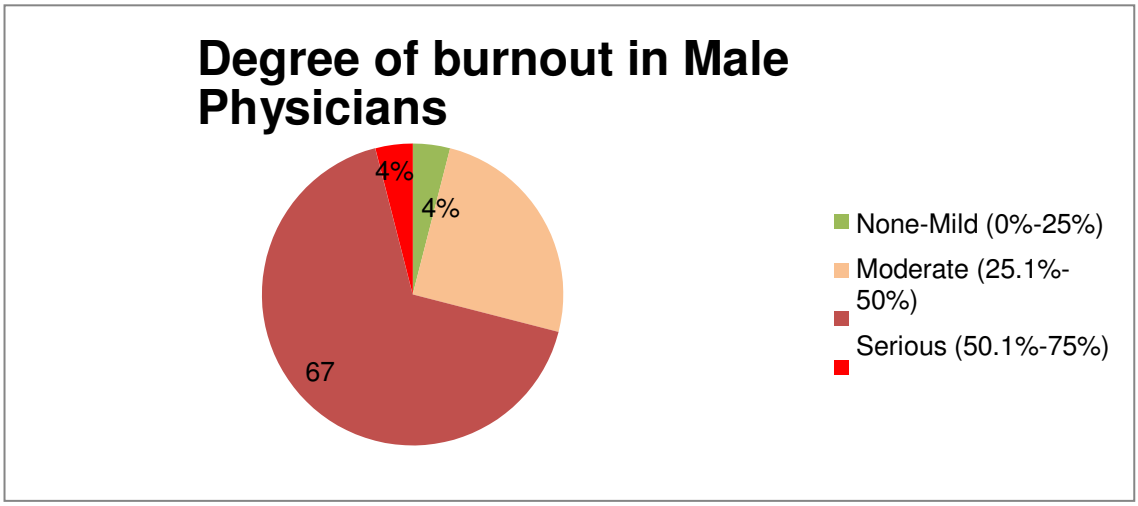
Analysis of Burnout Data

Figure (4.2.1): The Degree of burnout in female physicians from a sample of 72 female physicians working at Ibrahim Malik Teaching Hospital, October 2020.



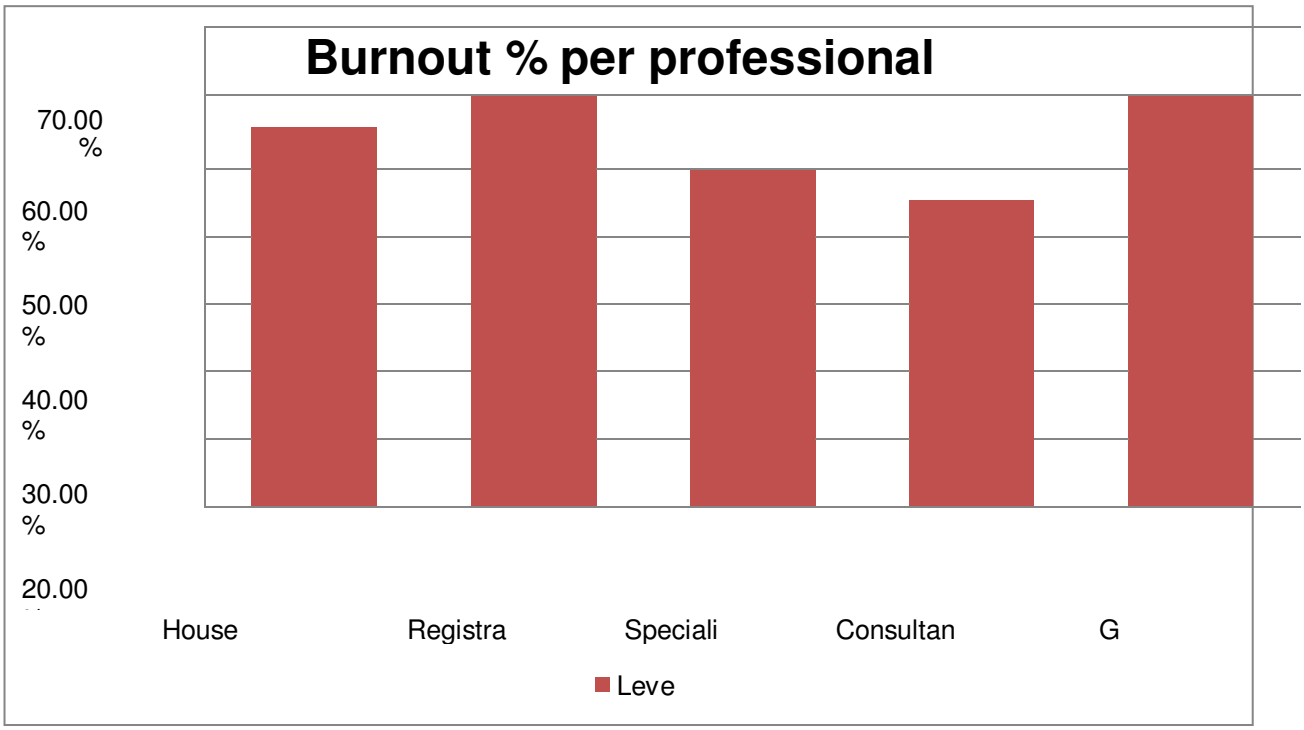
Overall, all female doctors were found to have a variable risk of burnout, which ranged from moderate to severe. The highest degree of burnout that female doctors suffered from was within the "Serious" parameter (50.1%-75%), and the lowest belongs to the "severe" parameter (75%-100%).

Figure (4.2.2): The Degree of burnout in male physicians from a sample of 28 male physicians working at Ibrahim Malik Teaching Hospital, October 2020.



Unlike their counterparts, not all male doctors suffered from burnout, 4% having recorded exhibiting none-mild burnout symptoms. In male doctors' burnout, the majority belonged to the "serious (50.1%-75%)" parameter and the lowest belonged to the "non-mild (0%-25%)" and "severe (75.1%- 100%)" parameters, which were 67%, 4% and 4% respectively.
In male and female physician burnout, males recorded 4% (lowest) in the "non-mild", while females recorded a 0%. Female doctors scored a higher "serious burnout" (68%) than male doctors (67%). Both male and female doctors had similar record of the lowest percentage being the "severe" parameter (4%).

Figure (4.2.3): The percentage of burnout in different professional levels, from a sample of 100 physicians working at Ibrahim Malik Teaching Hospital, October 2020.



Among professional levels, the highest percentage was seen in GP (60%) and the lowest was seen in consultant (45.20%).

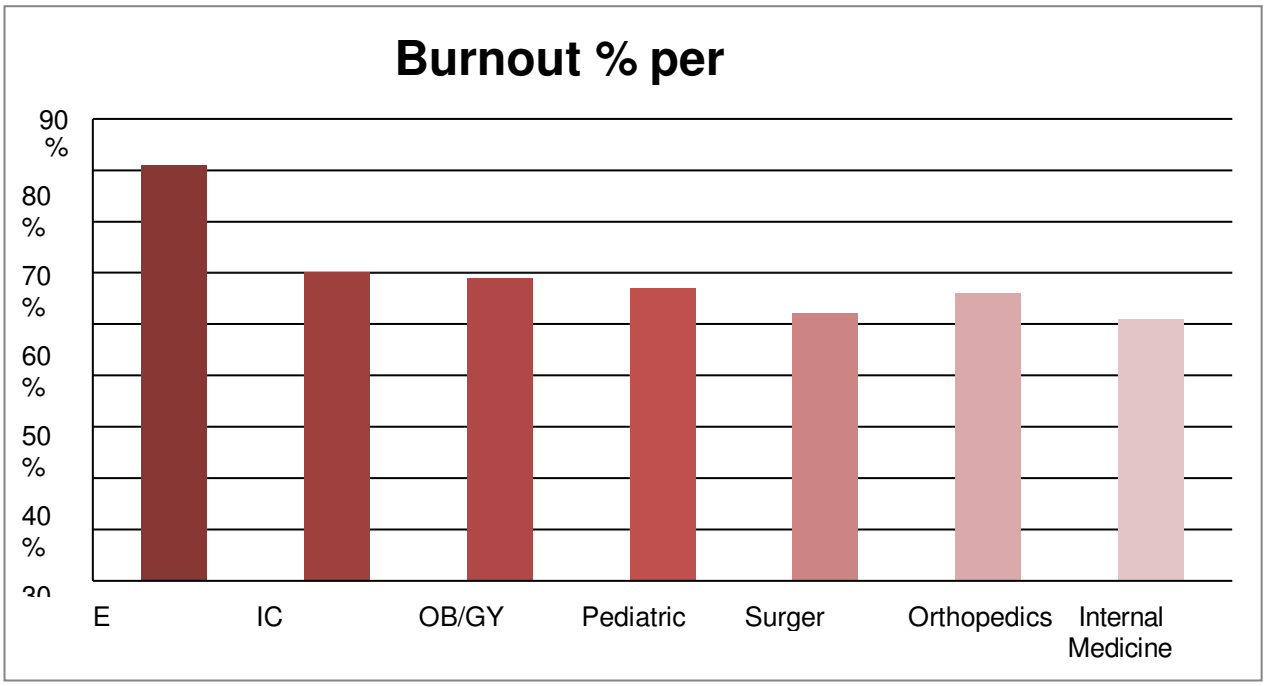
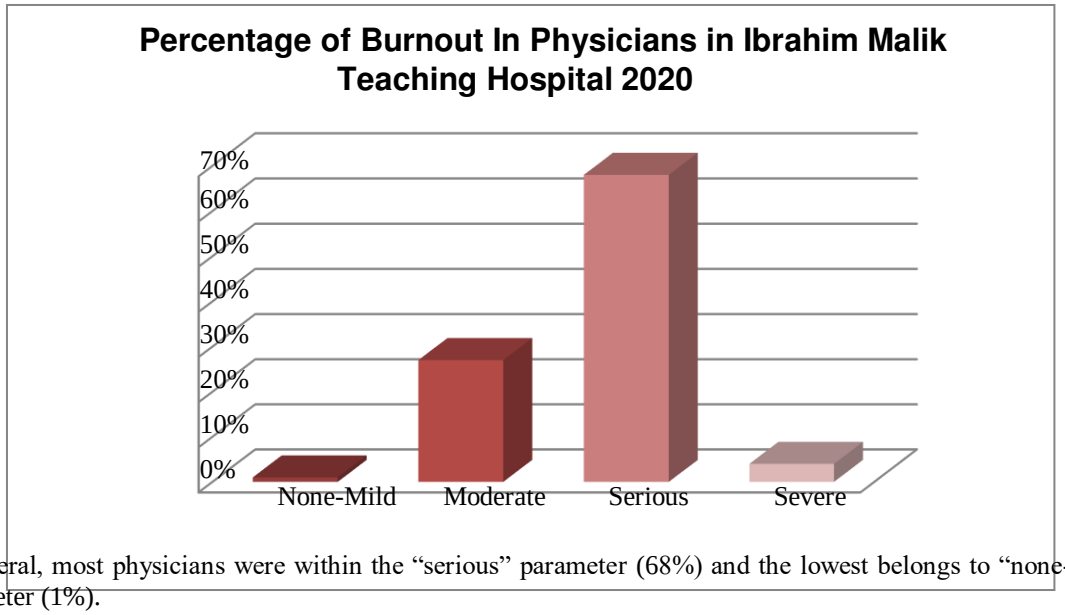


Figure (4.2.4): The percentage of burnout in different specialties, from a sample of 100 physicians working at Ibrahim Malik Teaching Hospital, October 2020.

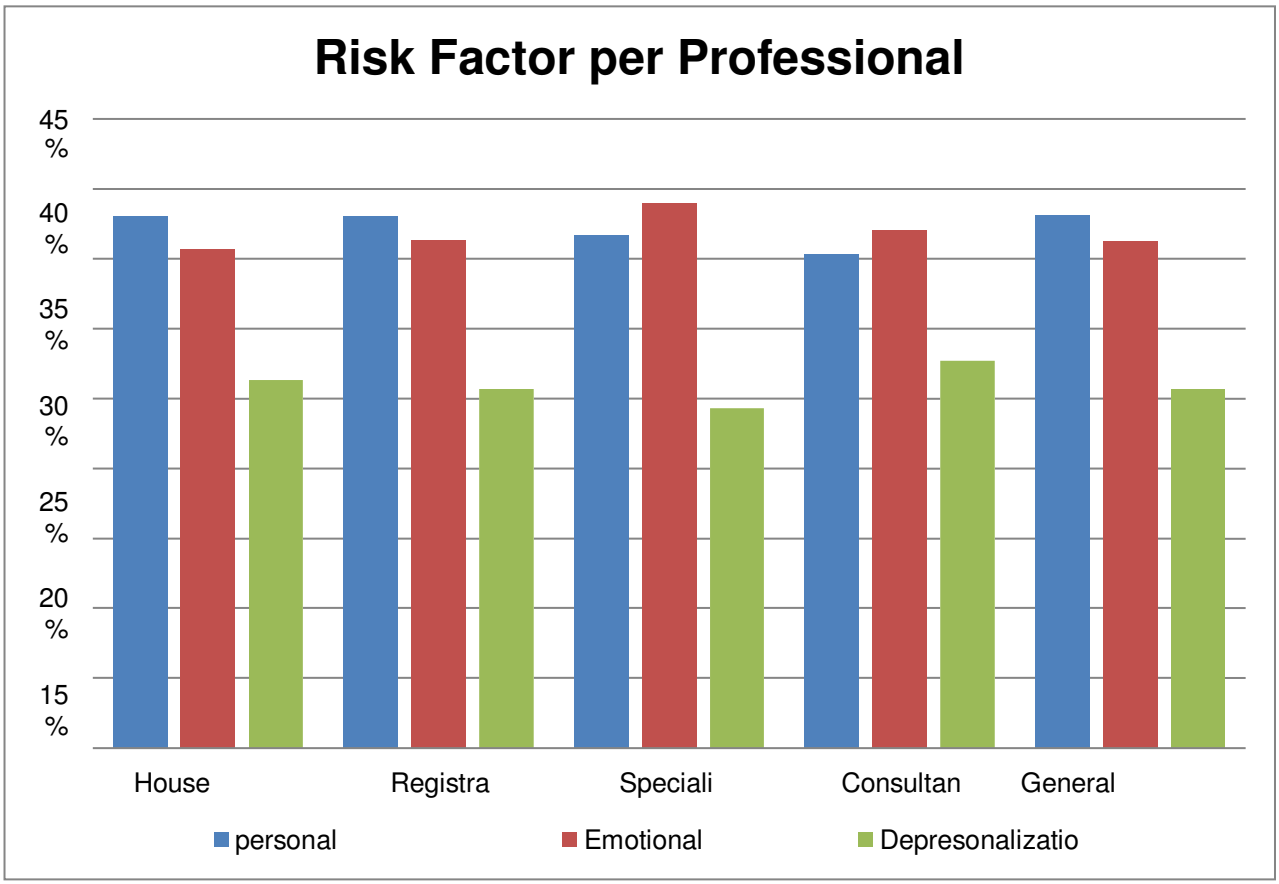
In specialties, the highest percentage belongs to doctors working in the ER department (81%) and lowest belongs to the Surgery department (52%).

Figure (4.2.5): The percentage of burnout in a sample of 100 physicians working at Ibrahim Malik Teaching Hospital, October 2020.



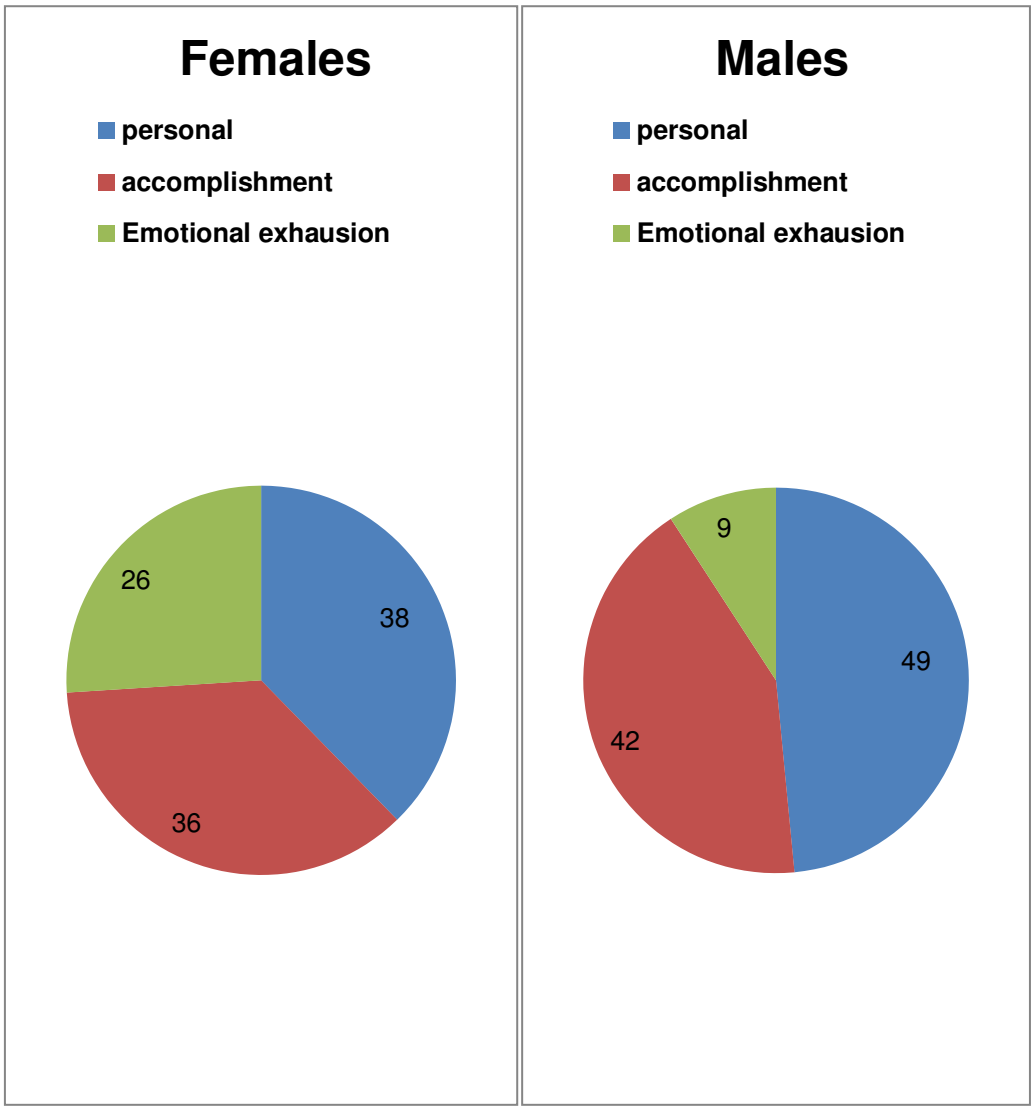
In general, most physicians were within the “serious” parameter (68%) and the lowest belongs to “none-mild” parameter (1%).

Figure (4.2.6): The percentage of risk factors attributing to burnout, in different professional in a sample of 100 physicians working at Ibrahim Malik Teaching Hospital, October 2020.



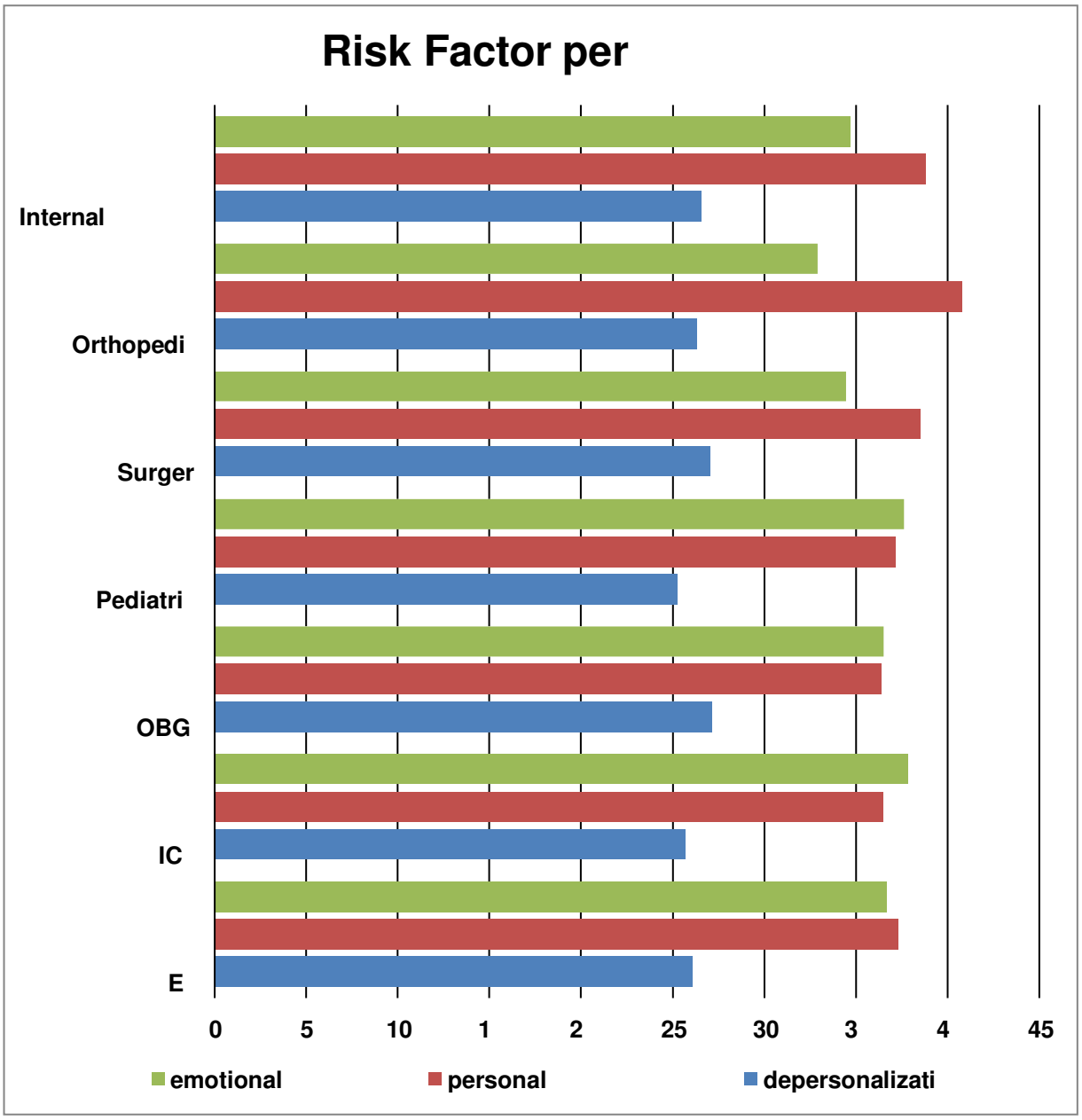
Personal accomplishment was most affected in general practitioners (38.12%) and least affected in consultants (35.28%). Emotional exhaustion was most prevalent in specialists (39%) and less affected in house officers (35.69%). Depersonalization was the highest in consultants (27.70%) and lowest in specialists (24.30%).

Figure (4.2.7): A comparison of the percentage of risk factors attributing to burnout per gender in a sample of 100 physicians working at Ibrahim Malik Teaching Hospital, October 2020.



Male doctors were the most affected in their feeling of low personal accomplishment (49%) and emotional exhaustion (42%), in opposition to female doctors, who recorded (38%) and (36%) respectively. However, female doctors had a higher percentage of depersonalization (26%) than male doctors (9%)

Figure (4.2.8): A comparison of the percentage of risk factors attributing to burnout per specialty in a sample of 100 physicians working at Ibrahim Malik Teaching Hospital, October 2020.



Emotional exhaustion was the highest in ICU (37.83%) and the lowest in orthopedic doctors (32.89%). Personal accomplishment was the highest in orthopedics (40.79%) and the lowest in OB/GYN doctors (36.38%). Depersonalization was the highest in OB/GYN (27.12%) and the lowest in ICU doctors (25.7%).

Discussion:

The findings of this study indicate that the burnout syndrome has an alarming high prevalence in the population it was made on, which could indicate the need for further assessments and interventions for the 32,900+ registered doctors in Sudan (5). This supported most of the previous studies made in Africa (16) (15) (18).
Contradicting the "Burnout in Australasian Younger Fellows" study (12) and "Physician well-being: prevalence of burnout and associated risk factors in a tertiary hospital, Riyadh, Saudi Arabia" research (6) results, surgeons in Ibrahim Malik Teaching Hospital had the second lowest probable risk of burnout, which, however, was only relatively lower than other speciality. Burnout within the Internal Medicine department, had-relatively- the lowest prevalence, which was against the "Physician well-being: prevalence of burnout and associated risk

factors in a tertiary hospital, Riyadh, Saudi Arabia" research (6) results. Despite the dissimilarity of the relative differences between specialities, this difference may not exactly contradict the findings of those studies, due to the overall high prevalence of probable burnout among all specialities, with the prevalence ranging from 51% to 81%.
Slightly similar to the "Burnout among gynaecological residents in Lahore, Pakistan: A cross- sectional survey", the prevalence of burnout in gynaecologists was almost 60% (11). Nevertheless, this resultant percentage included all specialty levels of Obstetrics and Gynecology; hence comparison to that study could be relatively invalid, since it only included Gynaecological residents.
Alarmingly, the most affected physicians were those at the early stage of their medical career. Supporting the "Physician well-being: prevalence of burnout and associated risk factors in a tertiary hospital, Riyadh, Saudi Arabia" research, the prevalence was higher in residents than consultants (6).

The results also supported the similar pattern of higher burnout in junior doctors in opposition to a decreased risk with high specialization levels shown in the "Burnout in anaesthesiology and intensive care: is there a problem in Germany?" research (13). Both could be linked to the allegedly decreased workload and hours of consultants in contrast to the prolonged GPs' and residents' workload and work hours.
Dissimilar to the "Burnout and sources of stress among medical residents at Hamad Medical Corporation, Qatar" research, women scored worse in depersonalization (26%) unlike their counterparts which scored much better (9%) (7).
A slight difference from some of the previous studies made in Africa (18) (17), in which the results showed that depersonalization was relatively more affected than emotional exhaustion when comparing levels. Personal accomplishment was the least affected factor in opposition to the result of one of the previous studies (17), which could be due to the developing nature of the country with, an allegedly, increased number of people with low socioeconomic status presenting to governmental hospital to seek medical help (due to lower prices), which could increase the feeling of accomplishment in doctors.
Similar to The 2013 Medscape Lifestyle Report (which was based on the survey of over 20,000 physicians in the US), "Burnout in Australasian Younger Fellows" study, and ''Gender differences in the effect of grief reactions and burnout on emotional distress among clinical oncologists'' research, burnout in female doctors was higher than their male colleagues (12) (8), with all female participants likely suffering from burnout in comparison to 98% of male participants. This could be linked to the hormonal changes women undergo during ovulation, menstruation, pregnancy and menopause or even due to the increased cultural burden regarding women's responsibilities in the Sudanese society, hence, precipitating to the increased risk of burnout. However, this is a risk that was not studied in this research.

Conclusion:

In conclusion, our study showed that burn out is highly prevalent among Ibrahim Malik hospital doctors (68 %), while female doctors had a higher degree burnout than males. Among the different professional levels, the highest percentage of burnout belonged to GPs and the lowest belonged to consultants. ER doctors suffered the most from burnout, whereas surgeons suffered the least. Several factors attributing to the burnout symptoms of these doctors have been identified. The first factor being personal accomplishment, which was the most affected factor in general practitioners and the least affected in consultants. Emotional exhaustion was the highest in specialist and the least in house-officers. Depersonalization was the highest in consultants and the least in specialists.
In terms of the risk factors accrediting to burnout in terms of gender, our results concluded that males got a higher percentage of low personal accomplishment and emotional exhaustion than females. Meanwhile, females scored a higher percentage of depersonalization than males.
In regards to the risk factors affecting the different specialties, results have shown that emotional exhaustion was the most affected in ICU doctors and least affected in orthopaedic doctors. Low personal accomplishment was the highest in orthopaedics and the lowest in OB/GYN. Depersonalization, was the highest in OB/GYN and the lowest in ICU.
Finally, the prevalence of symptoms of Burnout Syndrome among doctors employed at Ibrahim Malik Teaching Hospital in October 2020 was found to be very high, constituting a pressing challenge that needs to be met by organizations, individuals and society at large.

Recommendations:

1. Further, large-scaled researches particular high equality studies are needed to broaden the understanding of the burnout syndrome.
2. Target intervention at work place should be considered as one of the strategies to reduce negative

impact of burn out. Interventions ranging from work health and mental health education to policy changes should be considered, as the knowledge of the existence of burnout syndrome was noticed to be low among physicians while distributing the paper questionnaire.

3. Physicians and other healthcare providers should cooperate with and seek the identification of the risk and degree of burnout among themselves.
4. Allotting a large time period to data collection.

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