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**Professional Burnout among Dentists in Saudi Arabia:
A cross sectional survey**

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Abstract

Dentists are confronted with considerable professional stressors and are highly prone to depression and professional burnout. The present study investigated the prevalence levels of burnout among dentists working in direct clinical contact with patients in Saudi Arabia and identified its relationship with the basic work-setting conditions in Saudi Arabia. The study design was cross-sectional and conducted in the central, western and eastern regions of Saudi Arabia in both public and private sectors. A self-administered questionnaire, containing the 19-item Copenhagen Burnout Inventory (CBI) included the Personal Burnout (PB), Work-Related Burnout (WRB), and Client-Related Burnout (CRB) scales and socio-demographic data, was used to determine the prevalence of burnout among dentists. To achieve this, factors such as age, gender, marital status, nationality, years of experience, professional rank, specialty and sector of work, working days per week, working hours per day and number of patients were compared regarding participant burnout levels.

Out of 880 dentists who were invited to participate in the present study, 297 completed their questionnaire giving a response rate of 33.75%. The average score on total burnout was 55.70 ± 18.05 , while average score per scales on the Copenhagen Burnout Inventory were as follows: 60.61 ± 20.66 , for personal burnout, 57.12 ± 16.96 for work-related burnout and 49.37 ± 21.25 for patient-related burnout. Just over a third (37.37%) showed No or Low levels of burnout, 48.82% showed a moderate level, 13.47% high and 0.34% severe burnout. The most alarming finding of the present study was that the majority of the participants (62.63%) demonstrated moderate and higher levels of professional burnout. The prevalence of professional burnout among dentists should be addressed by further research to determine and eliminate the causative factors and to enhance coping strategies. Longitudinal follow-up studies may further elucidate and clarify the relationships between factors related to professional burnout. A nationwide study including dentists across different dentistry specialties and ranks from other provinces in Saudi Arabia is warranted to confirm the findings of the present study.

Keywords: Personal Burnout, Work Related Burnout, Client Related Burnout, Dentist, Depersonalization, Stress, Copenhagen Burnout Inventory.

Declaration

I, the undersigned, hereby declare that the work contained in this dissertation is my original work and that it has not been previously in its entirety or in part submitted at any university for a degree.

Hamza Alkhzam

Dedication

I am dedicating this thesis to the beloved people who have meant and continue to mean so much to me: First and foremost, to my mother and father, their love and support for me knows no bounds. Without their support, I would not have achieved what I have.

My beloved brothers and sisters for their constant encouragement and unlimited support.

A special gratitude to my fiancée for being there for me throughout the entire study.

Last but not least, I am dedicating this to all my friends and colleagues who continue to stand by and support me.

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LIST OF ABBREVIATIONS

CBI	Copenhagen Burnout Inventory
WHO	World Health Organization
ICD	International Classification of Diseases
SPSS	Social Package of Statistical analyses
EE	Emotional exhaustion
DA	Depersonalization
PA	Personal Accomplishment
MBI-HSS	The Maslach Burnout Inventory
MBI-HSS MP	The Maslach Burnout Inventory - Human Services Survey for Medical Personnel
SMBM	BM and Shirom-Melamed Burnout Measure
OLBI	Oldenburg Burnout Inventory
PhBQ	Physician Burnout Questionnaire
BBI	Bergen Burnout Inventory
ANOVA	Analysis of Variance
COR	Crude Odds Ratio
AOR	Adjusted Odds Ratio
F	Frequency
SD	Standard Deviation
CI	Confidence Interval
P	Probability value
r	Correlation Coefficient
LR	Logistic Regression
PB	Personal Burnout
WRB	Work Related Burnout
CRB	Client Related Burnout

Chapter 1: Introduction

Professional burnout syndrome is a destructive health problem that can affect the work and personal life of all professionals in different specialties, but significantly and specifically those for whom their professions require taking care of fellow human beings such as health care professionals.

Dentists are faced with considerable professional stressors, beginning with dental school training to daily clinical practice that may result in negative and destructive effects both personally and professionally. They are highly prone for depression and professional burnout due to that nature of the profession and personality characteristics (Al-Mobeeriek, 2011; Azad *et al.*, 2013; Kulkarni *et al.*, 2016; Huri *et al.*, 2016; Hameed *et al.*, 2018; Aboalshamat *et al.*, 2017; Asiri, 2019; Alzahem *et al.*, 2020; Bouza *et al.*, 2020; Eun-Jung Kwak *et al.*, 2021).

There are many diverse causative factors and sources of stress and burnout that can adversely affect the dentist's health and patient safety (Shanafelt *et al.*, 2003; Shanafelt, 2011; Alfaleh, 2017; Hameed *et al.*, 2018; Alzahem *et al.*, 2020). In order to identify the most common causative factors for stress and burnout among dentists, several studies have been conducted globally and will be discussed in detail in the literature review chapter of this thesis. Many studies have shown an association between demographic and basic work characteristics and burnout with different effects on burnout levels (Al-Mobeeriek, 2011; Kulkarni *et al.*, 2016; Antoniadou, 2022). Although burnout syndrome has been widely recognized, there is a paucity of information on how to address this destructive problem. Understanding the reality of the problem at an early stage will assist in prevention or mitigate its damage. There are currently few preventive programmes focused on the underlying factors of burnout.

Chapter 2: Literature Review

2.1 Introduction

On 28 May 2019, burnout was included in the eleventh revision of the International Classification of Diseases (ICD-11). As defined in ICD-11, burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed. It is characterized by three subscales: emotional exhaustion or feelings of energy depletion; increased mental distance from one's job, or feelings of negativism or cynicism related to job and reduced professional efficacy. It is considered an occupational phenomenon rather than a medical condition (WHO, 2020) and has been identified as an occupational hazard for various professionals (Alfaleh, 2017; Hameed *et al.*, 2018).

It was first described in two scientific articles published in 1974, one by Herbert Freudenberger (1974) and another by Sigmund Ginsburg (1974). Freudenberger describes the state of being burned out as “becoming exhausted by making excessive demands on energy, strength, or resources” in the workplace (Heinemann and Heinemann, 2017). His initial work was followed by a significant number of studies by Christina Maslach and her colleagues in the late 1970s and early 1980s. Maslach was one of the pioneers in burnout research and remains one of the most prominent scholars in the field (Heinemann and Heinemann, 2017; Maslach and Schaufeli, 1993).

Burnout was identified by Maslach as an issue arising and emerging among professionals working in human services and defined as a syndrome of “work-related mental and emotional exhaustion, cynicism and low professional efficacy emerging as a prolonged psychological response to chronic job stressors which may be associated with various physical symptoms among professions whose work necessitates direct contact with clients or service recipients” (Maslach and Schaufeli, 1993; Alzahem *et al.*, 2020; Altannir *et al.*, 2019; Asiri, 2019; Bouza *et al.*, 2020).

It has also been defined as “a prolonged persistent response that results from integrated work-related dimensions, chronic emotional and interpersonal stressors leading to a loss of emotional, mental, and physical energy that denudes the professional capability and efficiency of the person”. Emotional exhaustion (EE) refers to the loss of passion and enthusiasm for work and feeling of depletion of the emotional resources. Depersonalizing (DA) refers to a negative, callous, or

excessively detached response to the recipients of one's service or care. Perceived lack of personal accomplishment (PA) refers to a decline one's feeling of competence (Shanafelt *et al.*, 2012; Kulkarni *et al.*, 2016; Bouza *et al.*, 2020).

According to Schaufeli and Enzmann (1998), burnout is defined as a work-related persistent, negative state of mind recognized by emotional exhaustion, along with distress, a feeling of ineffectiveness, diminished motivation, and the emergence of dysfunctional behaviors and attitude at work. Burnout is a hidden danger that develops gradually and may remain undiagnosed in the affected person for a long time (Azad *et al.*, 2013).

Burnout can occur in any profession (Leiter *et al.*, 1996). Healthcare workers and especially peri-operative clinicians seem to be at risk for burnout (Shanafelt *et al.*, 2003; Shanafelt, 2011). This may have significant negative personal impact (substance abuse, broken relationships and even suicide) (Dyrbye *et al.*, 2008; Shanafelt *et al.*, 2011) and also dangerous professional consequences such as:

- Lower patient satisfaction (DiMatteo *et al.*, 1993; Linn *et al.*, 1985; Haas *et al.*, 2000)
- Impaired quality of care (Grol *et al.*, 1985; Melville, 1980) and
- Medical errors (Shanafelt *et al.*, 2002; West *et al.*, 2006; Shanafelt *et al.*, 2010; Firth-Cozens *et al.*, 1997; Arora *et al.*, 2022)

All these consequences can potentially result in malpractice suits with high costs for caregivers and hospitals (Jones *et al.*, 1988). Therefore, awareness of the phenomenon with a quick diagnosis together with the development of adequate coping personal and organizational strategies is essential in dealing with this important problem in contemporary healthcare.

2.2 Symptoms

Burnout is found mainly in professions that involve an interaction with people, such as physicians, social workers, nurses, teachers and in many other professions (Kaschka *et al.*, 2001).

The symptomatology of burnout appears to be complex as the syndrome develops in several gradual consecutive stages. Firstly, Freudenberger described its development in a 12-stage model (De Hert, 2020; Freudenberger, 1982) (Figure 1). Then, this model becomes simpler and currently a 5-stage model is the most frequently used (Figure 2). (De Hert, 2020)



Figure 1: 12-Stage model for the development of burnout as described by Freudenberger
(De Hert, 2020)

The 5-stage model

The 5-stage model (Figure 2) starts with the honeymoon phase and is characterized by enthusiasm. However, over time, it becomes associated with experiencing job stresses. If at this stage, no positive coping strategies are implemented, the risks of burnout are initiated. This is then followed by a stage of stagnation characterized by the onset of stress phase (De Hert, 2020). This second stage can be recognized with awareness that there are some days that are more difficult than others. Life becomes limited to work and taking care of business, while the family, the social life and the personal priorities are repeatedly neglected - common stress symptoms start to appear, which directly affect the person emotionally and also physically.

When the chronic stress phase develops, it results in frustration: individuals start to have the feeling of failure and a sense of powerlessness. Not receiving enough acknowledgment leads to feelings of incompetence and inadequacy. This directly leads to the stage of apathy, where despair and disillusionment occur, and this is referred to as the burnout phase. Individuals do not see a way out of the situation and become resigned and indifferent (Kaschka *et al.*, 2001). The final and the most serious stage is the habitual burnout phase. Symptoms of burnout can cause significant physical or emotional problems and ultimately may lead a person to seek help and intervention. There is a long list of symptoms associated with burnout and most are not specific (Kaschka *et al.*, 2001).

Stage 1: Honeymoon phase

- Job satisfaction
- Sustained energy levels
- Commitment to the job
- Free-flowing creativity
- Accepting responsibility
- Unbridled optimism
- Compulsion to prove oneself
- High productivity levels

Stage 2: Onset of stress

- Job Dissatisfaction
- Irritability
- Reduced sleep quality
- Lower productivity
- Change in appetite
- Neglect of personal needs
- Inability to focus
- Anxiety
- Lack of social interaction
- Avoidance of decision making
- Headache
- Fatigue

Stage 3: Chronic stress

- Persistent tiredness
- Resentfulness
- Aggressive behavior
- Cynical attitude
- Feeling threatened
- Alcohol / drug consumption
- Procrastination
- Social withdrawal
- Apathy
- Denial of problems
- Feeling pressured
- Chronic exhaustion

Stage 4: Burnout

- Obsession with problems
- Physical symptoms
- Social isolation
- Chronic GI problems
- Escapist activities
- Pessimistic outlook
- Self-doubt
- Chronic headaches
- Neglect of personal needs
- Behavioral changes

Stage 5: Habitual burnout

- Chronic sadness
- Chronic physical fatigue
- Chronic mental fatigue
- Depression

Figure 2: Symptoms in different stages of burnout. (De Hert, 2020)

2.3 Prevalence

Professional burnout syndrome is a destructive health problem that can affect work and personal life of all professionals in different specialties, but is most significantly among health care professionals (Hameed *et al.*, 2018; Bouza *et al.*, 2020), who are exposed to this syndrome at variable levels (Al-Mohaisen., 2020; Alfaleh, 2017; Bouza *et al.*, 2020). The greatest risk threatens physicians in specialties in the front line of health care services (Shanafelt *et al.*, 2012).

Burnout is an occupational hazard of epidemic proportions among health care professionals. This hidden danger was recognized globally and nationally with unequal incidence between the different health specialties. Several studies have been conducted to evaluate the prevalence of burnout among healthcare professionals (Al-Mohaisen., 2020; Hameed *et al.*, 2018; Shanafelt *et al.*, 2012) and among undergraduate and postgraduate students in health care specialties (Alzahem *et al.*, 2020; Kulkarni *et al.*, 2016; Bouza *et al.*, 2020; Eun-Jung Kwak *et al.*, 2021). Those found to be at the highest risk were professionals at the front line of health care services with the greatest quantitative and qualitative work overload, due to the pressures of high care and because they deal with complex, seriously ill and difficult to manage patients on a daily basis (Alfaleh, 2017; Bouza *et al.*, 2020).

Studies have reported high burnout rates among medical professionals in different fields, from students and nurses to surgeons, specialists and consultants. Although burnout syndrome has been widely recognized, there is less information on how to address this destructive problem (Azad *et al.*, 2013; Hameed *et al.*, 2018; Alfaleh, 2017). Dentists are faced with considerable professional stressors, beginning with dental school training to daily practice which may result negative and destructive effects on their personally and professionally (Kulkarni *et al.*, 2016; Huri *et al.*, 2016; Aboalshamat *et al.*, 2017; Hameed *et al.*, 2018; Asiri, 2019; Eun-Jung Kwak *et al.*, 2021;). Both dental students and dentists are prone not only to stress and professional burnout, but also to clinical depression and anxiety (Al-Mobeeriek, 2011; Kulkarni *et al.*, 2016; Asiri, 2019; Alzahem *et al.*, 2020; Bouza *et al.*, 2020; Eun-Jung Kwak *et al.*, 2021).

Dentistry is a challenging profession and has the reputation of being a stressful profession that is characterized by exposure to physical and emotional stressors that results in the deterioration of the physical and mental health of the dentist and affects negatively health services quality and patient's safety. Dentists are highly prone for depression and professional burnout due to that nature of the profession and personality characteristics (Kulkarni *et al.*, 2016). Usually, dentists in the practice are exposed to time-consuming procedures with the potential of unpleasant complications or injury to patients during treatment. In addition, it is common for dentists to deal with patients suffering from dental phobia (Azad *et al.*, 2013; Bouza *et al.*, 2020; Eun-Jung Kwak *et al.*, 2021).

Prolonged and persistent exposures to work related stressors and the accumulation of the negative effects from stress can result in burnout (Eun-Jung Kwak *et al.*, 2021). Despite the fact that burnout may be influenced by personality traits, it is more commonly associated with work-related factors and the management of profession risks. When compared to other stressors, such as drug abuse, alcoholism and increased rate of suicide, studies on the dental profession indicates that dentistry and the life of a dentist is characterized by stress (Al-Mobeeriek, 2011; Azad *et al.*, 2013; Kulkarni *et al.*, 2016; Huri *et al.*, 2016). More than half of dentists in the United Kingdom (59.7%) and in Denmark (58.9%) and over a third in Iran and Pakistan reported being stressed out (Azad *et al.*, 2013; Alzahem *et al.*, 2020).

In order to measure daily burnout among newly graduated dentists in India, a study carried out in 2016 found that nearly half of them showed a high degree of work burnout (Kulkarni *et al.*, 2016). A cross-sectional study was conducted to compare burnout among 223 academic and non-academic dentists in central and eastern provinces in Saudi Arabia and to investigate factors affecting levels of burnout (Al-Mobeeriek, 2011). The widely used Maslach Burnout Inventory-Human Services Survey (MBI-HSS) measured the amount of burnout and found that non-academic dentists showed higher burnout levels when compared to academic dentists. Furthermore, levels of burnout were found to be affected by age, gender, rank, workload and years of experience. In regard of work type and specialty, oral surgeons and general dentists had the highest burnout level, while the lowest levels of burnout shown by orthodontists (Al-Mobeeriek, 2011).

Alzahem *et al.* (2020) sought to identify burnout among dental staff at a tertiary medical complex. They compared burnout between different dental job titles and dental specialties, and examined the effect of gender, age, and marital status on burnout and stress. Two validated questionnaires were used: MBI-HSS and the Psychological Stress Measure-9 along with a third one to collect socio-demographic and personal data. The results showed that dental consultants and dental residents had the highest level of burnout and the most stress without any difference between levels in both, regardless of the specialty, while the least stressed dental professionals were dental technicians. In this study, age, gender, marital status and specialty were not identified as risk factors for stress and burnout and recommended that other potential risk factors, such as caffeine consumption and smoking habits should be included and taken into consideration in future studies (Alzahem *et al.*, 2020).

As can be seen by the various studies, dentistry is indeed a stressful profession and studies are required to investigate the management of interventions for stressful dentists to improve not only the quality of health services, but to ensure patient safety. Future research needs to highlight and expose the underlying causes and find ways to enhance coping strategies (Al-Mobeeriek, 2011; Azad *et al.*, 2013; Kulkarni *et al.*, 2016).

2.4 Causative factors

Studies have identified diverse causative factors and sources of stress and burnout among various health care providers (Shanafelt *et al.*, 2003; Shanafelt, 2011; Alfaleh, 2017; Hameed *et al.*, 2018; Alzahem *et al.*, 2020). Dentists have been found to be more prone for professional burnout, anxiety and depression (Kulkarni *et al.*, 2016; Al-Mobeeriek, 2011; Azad *et al.*, 2013). Although it may be due to personal characteristics, such as difficulties in work-life balance, low levels of exercise, and a feeling remorse of the chosen specialty, it is more common that the main source of stress is associated with work environment-related factors such as the workplace, management of financial issues and occupational risks (Huri *et al.*, 2016; Kulkarni *et al.*, 2016); instability of working hours; night shifts leading to poor sleep; feelings isolated and loss of control in the work environment and heavy workload (Alzahem *et al.*, 2020; Alfaleh., 2017). It has also been shown that clinical requirements and demands, competition between dentists to achieve success, business and

insurance concerns, and difficulty in coping with rapidly evolution technology are all considered to be potential factors that may cultivate the first seed of professional burnout (Alfaleh, 2017; Alzahem *et al.*, 2020; Kulkarni *et al.*, 2016). Figure 3 depicts the different causative factors as external and internal.

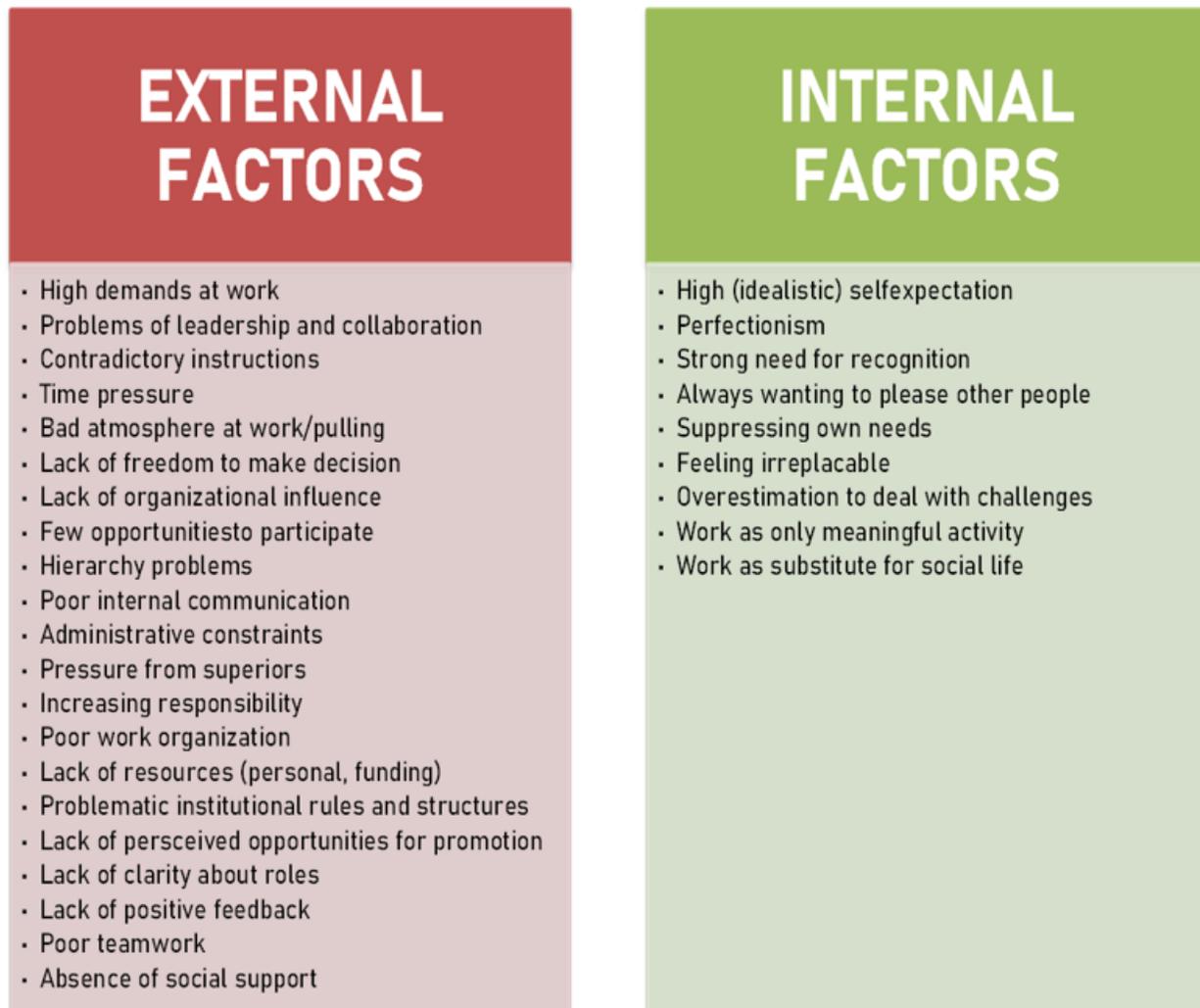


Figure 3: External (environmental) and internal (personality-related) etiological factors for burnout (De Hert, 2020).

In order to identify the common causative factors for stress and burnout among dentists, several studies were conducted globally. Among Iranian dentists, the constant high concentration and long-term pressures were the most common factors for stress; while in the United Kingdom (UK)

and New Zealand, it was treating uncooperative children, time pressures and the required constant high concentration during clinical procedures (Alzahem *et al.*, 2020). Time pressure, mainly related to poor time management, was the common reason of stress in all three countries. Another study from Nigeria showed that a heavy workload accompanied burnout (Hameed *et al.*, 2018).

In India, the most common factors that contributed to professional burnout were less energy and time for family and friends, frustrations, the working hours were long and tiring and feeling worn out at the end of the day (Kulkarni *et al.*, 2016). In Saudi Arabia and Scotland, it has been shown that increased income, higher qualifications, age and less working hours are factors that have an opposite effect on burnout levels (Azad *et al.*, 2013). Other studies have shown that burnout among dentists is as a result of depression, high expectations, teaching tasks for academic dentists, work type and the misfit between intentions and reality of career. The dual role of academic dentists between clinics and teaching tasks may have a noticeable effect in increasing stress levels leading to professional burnout (Al-Mobeeriek, 2011; Azad *et al.*, 2013).

Some studies have found an association between female gender and marital status with professional burnout (Hameed *et al.*, 2018), while other studies found conflicting results and demonstrated that factors such as age, gender, marital status, and years of experience had no considerable effect on the burnout level (Alzahem *et al.*, 2020). Furthermore, female dentists showed higher levels of burnout due to the lack of sufficient support and coping assistance with stressors. A high workload and lack of social support are essential factors that cause burnout. Family and childcare responsibilities and duties of female dentists may account for their increased workload (Al-Mobeeriek, 2011), but burnout has been found to be due mainly to inadequate coping strategies (Azad *et al.*, 2013).

This alarmingly high prevalence of professional burnout among dentists should be addressed by further investigation to determine and eliminate the causative factors in order to improve the professional's enthusiasm and morale, healthcare quality and patient outcomes (Alfaleh, 2017).

2.5 Effects and Consequences

Burnout and stress have devastating and negative effects on the personality leading to emotional, mental and physical illness, decreased motivation and energy and even deterioration of relationships with friends and family. In addition, persistent burnout can lead to other more serious mental, cognitive and physical health related problems such as depression, irritability, agitation, drug abuse, alcoholism and contribute to suicide (Azad *et al.*, 2013; Altannir *et al.*, 2019; Alzahem *et al.*, 2020; Kulkarni *et al.*, 2016; Bouza *et al.*, 2020; Al-Mobeeriek, 2011; Aboalshamat *et al.*, 2017; Shanafelt *et al.*, 2012).

At a professional level, its negative consequences include low energy and motivation, absenteeism, poor time management, poor concentration, poor job performance, high levels of turnover, cynical or negative attitude toward work colleagues and toward patients, together with an increased tendency to make medical mistakes resulting in undesirable complications during treatment and the difficulty to keep pace with new techniques are among the numerous and various effects and impacts of burnout (Shanafelt *et al.*, 2012; Azad *et al.*, 2013; Al-Mobeeriek, 2011; Kulkarni *et al.*, 2016; Aboalshamat *et al.*, 2017; Alfaleh, 2017). Burnout may cause serious indirect costs for the healthcare system and damages quality of work and clinical outcomes (Bouza *et al.*, 2020; Al-Mobeeriek, 2011; Huri *et al.*, 2016).

2.6 Prevention and Treatment

Understanding the reality of the problem at an early stage will assist in prevention and mitigate its damaging consequences. An important proactive step is its inclusion in dental educational curriculums that should highlight the importance of stress management, business management and communication skills (Kulkarni *et al.*, 2016). There are prevention strategies and treatment modalities that can assist dentists to overcome and avoid stress and burnout. “Dentists must look after their own well-being first in order to provide optimal care for others” (Hameed *et al.*, 2018).

It has been reported that socio-emotional support and practical assistance at the workplace among managers and colleagues can reduce burnout levels, especially among female professionals (Al-Mobeeriek, 2011). Many studies indicate the importance of creating a stress-free work place and

environment in order to reduce the risk of professional burnout, maintain standards of patient care and safety and to enhance quality of delivered services. This may include utilizing measures such as reducing work hours and number of patients, and implementing stress management programmes and raising awareness to mitigate work-related stress sources and prevent burnout. Findings of preventive and intervention programmes, mutual proactive strategies and reactive coping mechanisms that include both the dentist and the organization have proven to be advantageous and have positive effects preventing the onset of burnout. Therefore, such programmes should be implemented, assessed, developed and modernized (Al-Mobeeriek, 2011; Alzahem *et al.*, 2020).

The most common recommended individual strategies have included:

- Work pattern modifications (such as less daily working hours, taking more breaks, avoiding overload or overtime work, and work-personal life balance);
 - Developing coping skills (such as time management, cognitive restructuring, conflict resolution);
 - Obtaining social support from colleagues, friends and family;
 - Utilizing relaxation strategies;
 - Exercising and promoting health and fitness and
 - Developing a better self-understanding by self-analytic techniques, counseling, or therapy.
- (Maslach and Leiter, 2016)

To enjoy a satisfying dental career and personal life, dentists must be aware of the importance of maintaining and promoting good mental, emotional and physical health (Rada and Johnson-Leong, 2004). Dentistry is a stressful profession and further studies and research needs to be conducted to manage interventions, improve quality of health services and ensure patient safety (Azad *et al.*, 2013). Therefore, it is highly important to pinpoint where burnout is more likely, along with its severity, not only to protect the dentist's career and his personal life, as it will be the patient who may receive poor treatment and unpleasant complications as a result (Alfaleh, 2017).

2.7 Professional Burnout Measurements

There are various measures available to determine burnout (Table 1). The Maslach Burnout Inventory for Medical Personnel (MBI - MP) is the most used instrument for evaluating burnout amongst medical practitioners. Although its widespread use, the Maslach Burnout Inventory is a commercial product that has been criticized for many reasons such as indefinite relationship between the tool and the concept of burnout, since it that would probably not be generalized in the same sense into other populations as it uses questions mainly related to American culture. Furthermore, the subscales of MBI have been characterized as coping strategies rather than components of burnout (Kristensen, *et al.*, 2005; Antoniadou, 2022; Arora, 2022).

The Copenhagen Burnout Inventory (CBI) include a 19-item scale that measures burnout based on 3 criteria: work-related burnout (7 items), client (patient) burnout (6 items), and personal burnout (6 items).

CBI has established validity and reliability and is a popular, public-domain burnout inventory. The CBI has good psychometric properties in studies on dentists indicating that it is at least equivalent to the MBI. CBI was selected due to its good validity and reliability, whilst incorporating questions about the individual, work environment, and patients (Thrush *et al.*, 2021; Kristensen, *et al.*, 2005; Arora, 2022; Kamran *et al.*, 2020; Muzafar *et al.*, 2015; Winwood *et al.*, 2004).

<p>The Maslach Burnout Inventory (MBI-HSS)</p>	<ul style="list-style-type: none"> - The most used tool to measure burnout. - 22 items gold standard self-reported questionnaire. - Measuring three scales: Emotional Exhaustion (EE), Depersonalization (DP) and Personal Accomplishment (PA). - Heavy focus on the emotional process instead of behavioral and cognitive aspects. - Ignores other components such as the meaning of work and loss of resources.
<p>The Maslach Burnout Inventory - Human Services Survey for Medical Personnel (MBI-HSS MP)</p>	<ul style="list-style-type: none"> - A variation of the MBI tool adapted for medical personnel to measure burnout.
<p>BM and Shirom-Melamed Burnout Measure (SMBM)</p>	<ul style="list-style-type: none"> - Subscales of MBI. - Both consider exhaustion as the core measurement of physician burnout.
<p>Copenhagen Burnout Inventory (CBI)</p>	<ul style="list-style-type: none"> - 19 items scale which measures burnout based on 3 criteria: work related burnout, client burnout, and personal burnout, and is commonly used in Europe.
<p>Oldenburg Burnout Inventory (OLBI)</p>	<ul style="list-style-type: none"> - Measures two parts of burnout: exhaustion and disengagement.
<p>Physician Burnout Questionnaire (PhBQ)</p>	<ul style="list-style-type: none"> - Newly presented measurement survey module.
<p>Bergen Burnout Inventory (BBI)</p>	<ul style="list-style-type: none"> - Examines exhaustion, occupational inadequacy, and cynicism about the significance of work.

Table 1: Measures to assess burnout (Maslach and Leiter, 2016, Al-Mohaisen 2020).

Chapter 3: Aim & Objectives

3.1 Aim

The aim of the present study was to identify and assess burnout levels among dentists in the private and public sector.

3.2 Objectives

1. To determine the prevalence of burnout among different ranks and specialties of dentists in both public and private sectors;
2. To determine and compare burnout levels between dentists in private sector and dentists in public sector;
3. To determine the factors affecting burnout levels in both the private and public sectors and
4. To determine approaches to mitigate the effects of burnout based on the influencing risk factors.

Chapter 4: Methodology

4.1 Introduction

This chapter presents the research design and methodology implemented in this study. The research method chosen was related to the aims and the objectives of study.

4.2 Study design: A quantitative cross-sectional analytical study design was used for the present study.

4.3 Study population consisted of

- Dentists working in public hospitals and public health centers
- Dentists working in private hospitals and clinics

4.4 Study sites: Central, Western and Eastern Provinces of Saudi Arabia

4.5 Stratification

Due to the difference in several factors in the dental work environment between the private and public sectors in Saudi Arabia and based on this predictor variable, the population were divided into two strata, private or public, to ensure that each subgroup of a given population is adequately represented within the whole sample population of the research.

4.6 Sample Size

According to the most recent annual statistical report published by Ministry of Health in Saudi Arabia, 16600 dentists from all specialties and ranks were working in both public and private sector in 2020. The sample size was calculated by using Raosoft system which calculated the minimum recommended sample size for the study and was based on the margin of error that can be accepted in the study; the confidence level, population size and the response distribution.

The margin of error used was 5%, the confidence level 90% and the response distribution 50%. The population size is 16752 dentists from all specialties and ranks are on the job in Saudi Arabia

according to Ministry of Health statistical yearbook 2018 (M.O.H 2018). In terms of the numbers selected above, the sample size n and margin of error E are given by:

$$\begin{aligned}x &= Z(c/100)^2 r(100-r) \\n &= N x / ((N-1)E^2 + x) \\E &= \text{Sqrt}[(N-n)x/n(N-1)]\end{aligned}$$

where N is the population size, r is the fraction of responses that you are interested in, and $Z(c/100)$ is the critical value for the confidence level c . Based on this data, a sample size of 276 was recommended.

4.7 Inclusion criteria

- Dentists that directly clinically interacted with patients

4.8 Exclusion criteria

- Dentists without direct clinical interactions with patients
- Dental students

4.9 Data collection instruments

All prospective participants were given an information sheet detailing the researchers' credentials and a description of what the study entails (Appendix 1). All participants completed and sign an informed consent form electronically before being able to complete and submit the electronic questionnaire (Appendix 2).

A structured questionnaire was used to collect basic personal and socio-demographic data such as gender, age, marital status, nationality, sector, rank, specialty, work hours, work sector and years of experience, working days per week, working hours per day and number of patients per week (Appendix 3) and a close-ended questionnaire was used to measure burnout (Copenhagen Burnout Inventory) CBI (Appendix 4).

The Copenhagen Burnout Inventory (CBI) was chosen to measure burnout in the present study. CBI has established validity and reliability and is a popular, public-domain burnout inventory. The CBI has good psychometric properties in studies on dentists indicating that it is at least equivalent to the MBI. CBI was selected due to its good validity and reliability, whilst incorporating questions about the individual, work environment, and patients (Thrush *et al.*, 2021; Kristensen, *et al.*, 2005; Arora, 2022; Kamran *et al.*, 2020; Muzafar *et al.*, 2015; Winwood *et al.*, 2004).

Criterion variables included (PB) Personal Burnout (PB), Work-Related Burnout (WRB) and Client-Related Burnout (CRB). The control variables were gender, marital status, age, nationality, work experience, work hours per week, number of patients per week, rank and specialty. The predictor variable was work sector (public or private).

4.9.1 Measures and Procedures

For the pilot study, 26 dentists completed the draft questionnaire and provided feedback on whether the instructions and questions were clear and relevant to the objectives of the research. Thereafter relevant changes were made and the final questionnaire designed. A verified Arabic translation for the questionnaires was attached and tested prior to the data collection.

In addition, a quantitative cross-sectional analytical study was conducted among dentists working in the central, western and eastern provinces of Saudi Arabia. The survey was conducted with a validated and reliable questionnaire that included the CBI as well as questions about demographic factors and basic work setting factors.

4.10 Validity and Reliability

The CBI instrument has an established validity and reliability and is a popular, public-domain burnout inventory. It has good psychometric properties in studies on dentists indicating that it is at least equivalent to the MBI. Evidence for the validity of the CBI in assessing dentist burnout has

been provided by various studies on dentists in different countries (Arora *et al.*, 2022; Thrush *et al.*, 2021; Kamran *et al.*, 2020; Muzafar *et al.*, 2015; Kristensen *et al.*, 2005; Winwood *et al.*, 2004).

4.11 Data storage

All information and documents related to the study were stored securely in locked cabinet. Electronic responses were stored on cloud storage secured with passwords that were not shared with anyone or nor left written on paper at work stations, desks and any other place.

Computers used for data analysis were protected with passwords, an adequate firewall and a virus protected program and configured to turn off the display and lock automatically after 2 minutes of inactivity.

4.12 Data Analysis

Firstly, data cleaning and exploration was performed to investigate for missing values and wrong data entry. Secondly, normality distribution of the dependent variables (i.e., personal burnout, work related burnout, and client related burnout) was assessed using the histogram plot. All the histogram plots had a bell shape appearance (Figure 4 – 6), indicating that the data was normally distributed. Hence, parametric tests were performed.

The statistical analysis employed in the present study was descriptive analysis and inferential statistics. The descriptive analysis presents the mean, standard deviation, frequency and percentages. The inferential statistics focused on independent t-test, one-way analysis of variance (ANOVA), Pearson's correlation, and Binary logistic regression analysis. Independent t-test was performed to determine the mean difference of personal burnout, work related burnout and client related burnout on gender, nationality, sector of work, and work type.

The ANOVA was performed to determine mean difference of personal burnout, work related burnout and client related burnout on age group, marital status, professional rank, specialties, working hours/day, number of patients/week, work experience, and province in Saudi Arabia.

Pearson's correlation was performed to determine the relationship between personal burnout, work related burnout and client related burnout with working days/week. Logistic regression analysis was performed to identify significant factors associated with the rate of personal burnout, work related burnout, and client related burnout. In the logistic regression analysis, simple logistic regression was initially performed to obtain the crude odds ratio (COR) of the predictors, and those with the p-values of less than 0.25 were considered important factors and included in the multiple logistic regression to obtain their adjusted odds ratio (AOR).

The forward LR and back LR method were used in the multiple logistic regression, and the final model was run using the Enter method to obtain the final model. All statistical analyses were conducted using statistical product and service solution (SPSS) version 26.

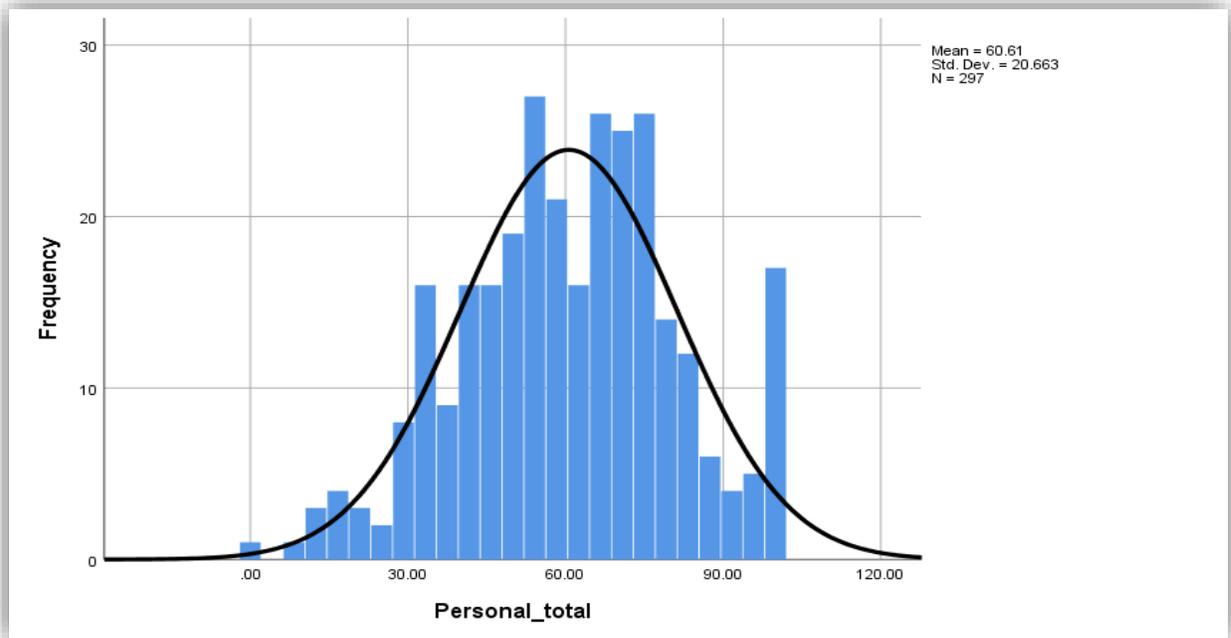


Figure 4: Histogram plot of the personal burnout score

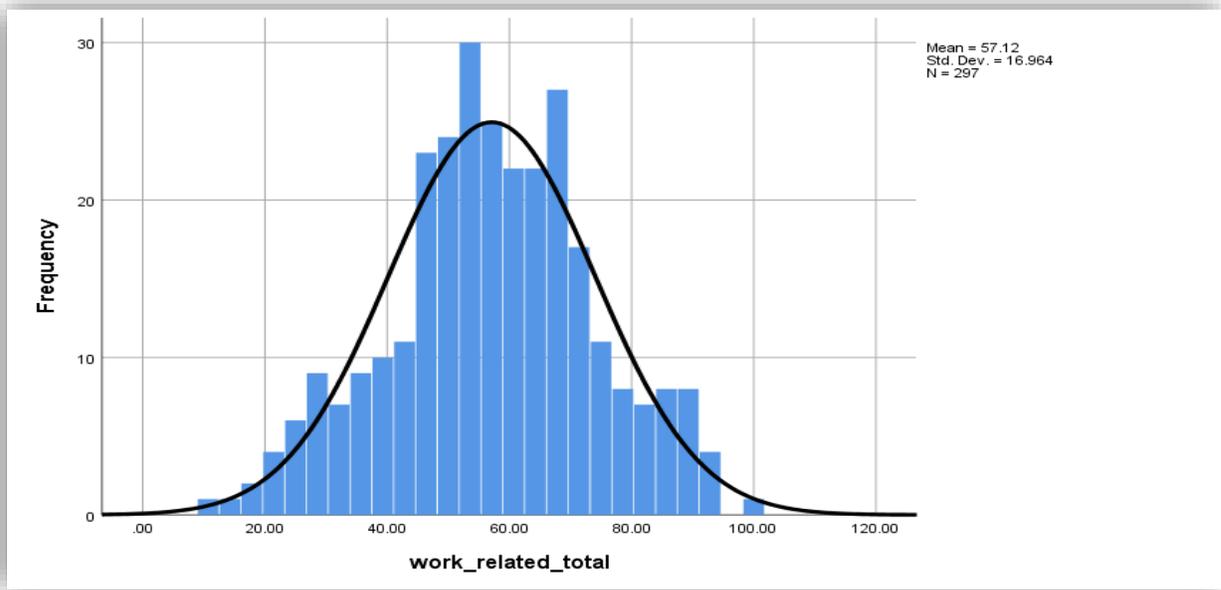


Figure 5: Histogram plot of the work-related burnout score

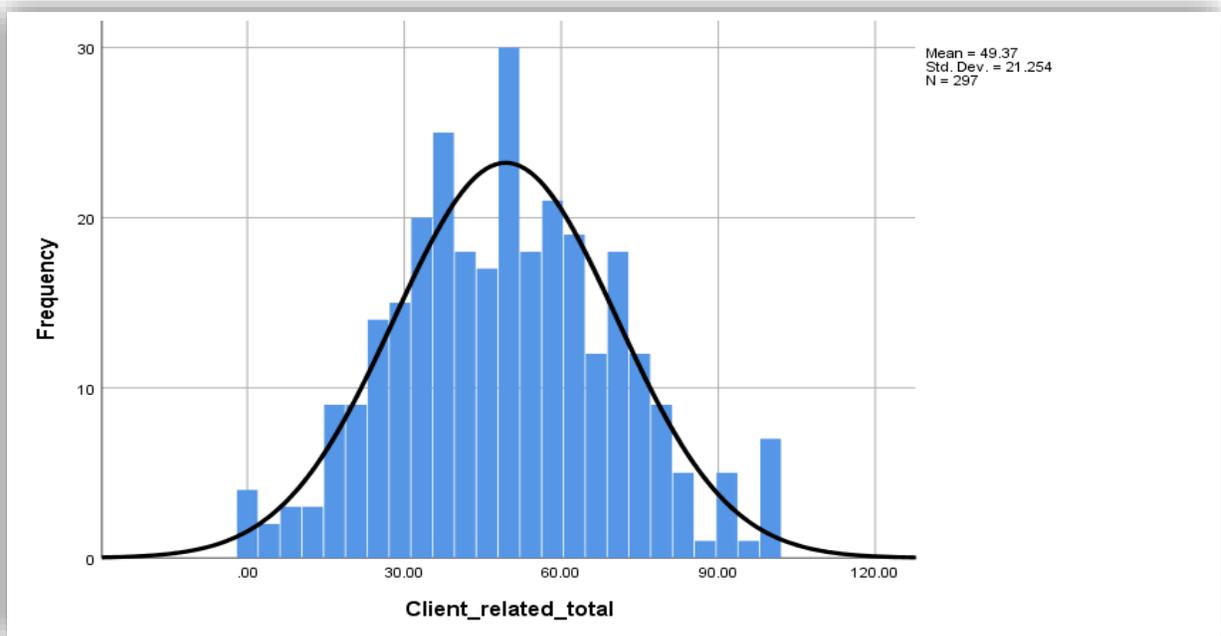


Figure 6: Histogram plot of the client related burnout score

The CBI included 3 scales: (a) personal burnout (6 items); (b) work-related burnout (7 items); and (c) patient-related burnout (6 items). Each scale is considered a continuous variable. Participants responded using 5-point Likert scales with the following labels: 5 = “to a very high degree,” 4 = “to a high degree,” 3 = “somewhat,” 2 = “to a low degree,” and 1 = “to a very low degree” (for scales 1 and 3) and 5 = “always,” 4 = “often,” 3 = “sometimes,” 2 = “seldom,” and 1 = “never/almost never” (for scale 2).

4.13 Ethical considerations

The study protocol was approved to the Biomedical Research Ethics Committee (BMREC) of the University of Western Cape (Ref. No. BM21/3/17). An information sheet (Appendix 1) was provided and informed consent was obtained from each participant prior to the study being conducted (Appendix 2). Participation in this study was entirely voluntary and the participants were allowed to withdraw from the study at any time should they wish to do so without incurring any penalties. The data was treated anonymously, and all identifiable information were eliminated. It was emphasized that strict confidentiality will be maintained at all times and that none of their names or personal details will be mentioned in the write up of the study.

4.14 Referral process

All participant in this study that experienced burnout were referred to a clinical psychologist with information about outcomes in order to get professional guidance by helping them to identify causes, explore coping methods, and navigate any factors contributing to burnout.

Chapter 5: Results

5.1 Response rate

Of the 880 dentists that received an email, a phone call or were interviewed, 297 agreed to participate and completed the questionnaire giving a response rate 33.75%.

5.2 Demography and descriptive characteristics

The demographic characteristics of the study participants are shown in Table 2. The majority were male (n=167, 56.2%) [Figure 9] and more than half (58.2%, n = 173) were aged between 20 and 29 years old [Figure 8]. The majority of the participants (83.2%, n = 247) were Saudi nationals. Just over two thirds (67.0%, n = 199) worked in the private sector, were general dental practitioners (81.8%, n = 243) and had 1-5 years of working experience. The mean number of working days per/week was 5.5 (SD = 0.79). Nearly all (92.3%, n = 274) worked full time for between 6 to 9 hours (81.8%, n = 243).

Table 2: Individual characteristics of the participants

Variables	F (%)	Mean (SD)
<u>Gender</u>		
Female	130 (43.8)	
Male	167 (56.2)	
<u>Age</u>		
20 – 29	173 (58.2)	
30 – 39	99 (33.3)	
40 – 49	20 (6.7)	
50 – 59	5 (1.7)	
<u>Marital status</u>		
Single	155 (52.2)	
Married	133 (44.8)	
Divorced	9 (3.0)	
<u>Nationality</u>		
Non-Saudi	50 (16.8)	
Saudi	247 (83.2)	

<u>Sector of work</u>		
Government	98 (33.3)	
Private	199 (67.0)	
<u>Rank</u>		
Consultant	19 (6.4)	
General	243 (81.8)	
Specialist	35 (11.8)	
<u>Working days/week</u>		5.5 (0.79)
<u>Specialty</u>		
Endodontics	10 (3.4)	
General dentistry	223 (75.1)	
Oral maxillofacial surgery	11 (3.7)	
Orthodontics	11 (3.7)	
Other specialty	13 (4.4)	
Pediatric dentistry	9 (3.0)	
Periodontics	2 (0.7)	
Prosthodontics	7 (2.4)	
Restorative dentistry	11 (3.7)	
<u>Work type</u>		
Full time	274 (92.3)	
Part time	23 (7.7)	
<u>Working hours/day</u>		
< 4	6 (2.0)	
4 – 6	40 (13.5)	
> 6 – 9	243 (81.8)	
> 9	8 (2.7)	
<u>Number of patients/week</u>		
< 10	41 (13.8)	
10 – 20	78 (26.3)	
21 – 40	99 (33.3)	
> 40	79 (26.6)	
<u>Work experience</u>		
1 – 5	195 (65.7)	
> 5 – 10	61 (20.5)	
> 10 – 15	17 (5.7)	
> 15 – 20	11 (3.7)	
> 20	13 (4.4)	
<u>Province in Saudi Arabia</u>		
Central	182 (61.3)	
Eastern	45 (15.2)	
Western	70 (23.6)	

F = Frequency, SD = Standard Deviation

5.2.2 The effect of demographic and basic work characteristics on means personal burnout, work related burnout, and client related burnout

Table 3 shows the effect of demographic and basic work characteristics on mean personal burnout, work related burnout, and client related burnout.

Personal burnout: females showed a significantly higher mean of personal burnout (68.81) than males (58.11), $p=0.018$ and there was a significantly mean difference of personal burnout between marital status groups ($p=0.024$); however, none of the pairs was statistically significant after Bonferroni adjustment ($p>0.05$); those in the private sector had a significantly higher mean of personal burnout (62.52) than those in the government sector (56.72), $p=0.024$. There was a significant mean difference of personal burnout between professional ranks ($p=0.029$), and the post-hoc analysis using Bonferroni adjustment showed that general dentists have a significantly higher mean of personal burnout (61.80) than the consultants (49.12), $p<0.05$; and there was a significant and positive relationship between number of working days/week and personal burnout ($r = 0.17$, $p=0.003$).

Work-related burnout: those in the private sector had a significantly higher mean of work-related burnout (58.88) than those in the government sector (53.54), $p=0.015$.

Client-related burnout: there was a significant mean difference of client-related burnout between the number of patients seen per week ($p=0.003$), and the post-hoc analysis using Bonferroni adjustment showed that those who saw more than 40 patients/week had a significantly higher mean of client-related burnout (56.07) than those who see 21 – 40 patients/week (44.19), $p<0.05$.

Table 3: Effect of factors on Copenhagen Burnout Inventory Questionnaires scores

Factors	Personal burnout		Work-related burnout		Client-related burnout	
	Mean (SD)	p value	Mean (SD)	p value	Mean (SD)	p value
<u>Gender</u> Female Male	68.81 (18.94) 58.11 (21.64)	0.018	58.90 (15.15) 55.73 (18.18)	0.102	51.12 (19.61) 48.00 (22.41)	0.210
<u>Age</u> 20 – 29 30 – 39 40 – 49 50 – 59	62.09 (19.63) 59.97 (22.52) 55.00 (17.81) 44.17 (22.17)	0.131	58.57 (15.96) 56.20 (18.28) 51.43 (17.36) 47.86 (18.67)	0.152	48.89 (20.93) 50.63 (22.07) 49.58 (22.04) 40.00 (13.69)	0.705
<u>Marital status</u> Single Married Divorced	62.90 (19.83) 57.27 (21.65) 70.37 (9.87)	0.024	58.69 (16.26) 55.16 (18.09) 59.13 (6.47)	0.199	49.70 (20.43) 48.31 (22.40) 59.26 (16.96)	0.315
<u>Nationality</u> Non-Saudi Saudi	57.75 (17.80) 61.18 (21.18)	0.233	55.21 (13.31) 57.50 (17.61)	0.299	51.67 (19.07) 48.90 (21.68)	0.403
<u>Sector of work</u> Government Private	56.72 (20.90) 62.52 (20.32)	0.024	53.54 (18.52) 58.88 (15.89)	0.015	47.28 (23.18) 50.40 (20.22)	0.258
<u>Rank</u> Consultant General Specialist	49.12 ^a (21.50) 61.80 ^b (20.67) 58.57 (18.55)	0.029	49.81 (17.91) 57.97 (16.93) 55.20 (16.03)	0.101	43.64 (21.76) 49.64 (20.98) 50.60 (22.98)	0.465
<u>Working days/week</u>	0.17	0.003	0.11	0.051	0.06	0.276

<u>Specialty</u>						
Endodontics	59.58 (23.90)	0.146	53.57 (14.87)	0.202	47.50 (22.33)	0.116
General dentistry	61.60 (20.46)		58.04 (17.09)		50.19 (21.24)	
Oral maxillofacial surgery	65.91 (22.19)		59.42 (15.59)		50.00 (18.45)	
Orthodontics	60.23 (14.83)		58.77 (12.20)		50.76 (22.11)	
Other specialty	51.92 (20.17)		51.10 (16.26)		41.35 (21.75)	
Pediatric dentistry	63.43 (19.52)		60.71 (11.57)		54.63 (18.10)	
Periodontics	58.33 (5.89)		53.57 (5.05)		35.42 (38.30)	
Prosthodontics	63.69 (25.99)		56.12 (21.10)		61.31 (16.27)	
Restorative dentistry	42.80 (20.08)		43.18 (20.73)		32.58 (19.17)	
<u>Work type</u>						
Full time	60.77 (20.83)	0.645	57.35 (17.04)	0.416	49.39 (21.29)	0.949
Part time	58.70 (18.88)		54.35 (16.15)		49.09 (21.24)	
<u>Working hours/day</u>						
< 4	47.92 (23.39)	0.190	48.81 (18.02)	0.388	49.31 (21.64)	0.542
4 – 6	57.60 (23.07)		54.64 (18.20)		53.65 (22.65)	
> 6 – 9	61.01 (20.15)		57.58 (16.83)		48.56 (20.97)	
> 9	72.92 (17.25)		61.61 (13.19)		52.60 (23.88)	
<u>Number of patients / week</u>						
< 10	58.43 (19.15)	0.176	58.54 (15.02)	0.251	48.48 (21.42)	0.003
10 – 20	58.23 (21.52)		55.91 (18.58)		49.63 (21.31)	
21 – 40	59.97 (20.88)		55.23 (16.42)		44.19 ^a (19.90)	
> 40	64.87 (20.00)		59.95 (16.79)		56.07 ^b (21.29)	
<u>Work experience</u>						
1 – 5	49.68 (20.16)	0.292	48.63 (19.54)	0.347	40.06 (20.24)	0.363
> 5 – 10	61.86 (20.50)		58.13 (16.76)		49.04 (21.32)	
> 10 – 15	59.80 (24.74)		57.35 (18.41)		54.17 (20.52)	
> 15 – 20	56.06 (26.24)		54.22 (19.35)		46.21 (22.63)	
> 20	59.97 (18.78)		56.15 (16.15)		51.64 (21.14)	
<u>Province in Saudi Arabia</u>						
Central	60.46 (20.86)	0.531	57.32 (17.02)	0.508	49.47 (21.65)	0.781
Easter	63.52 (19.51)		59.05 (16.93)		50.93 (19.50)	
Western	59.11 (20.98)		55.36 (16.90)		48.10 (21.51)	

5.2.3 Factors associated with personal burnout (PB) among professional dentist

Table 4 depicts the logistic regression analysis. Two variables (i.e., working days/week and province in Saudi Arabia) were retained in the final model, and therefore, considered important predictors of personal burnout. It was found that for a 1 day increase in working days/week, the odds of personal burnout increased by 58% (AOR=1.58, p=0.006). Participants from the central province were 40% more likely to have personal burnout than those in the western province (AOR=1.40, p=0.280), while those from the eastern province were 2.3 times more likely to have personal burnout than those in the western province (AOR=2.32, p=0.007).

Table 4: Factors associated with personal burnout among professional dentist

Variables	COR (95% CI)	p value	AOR (95% CI)	p value
<u>Gender</u> Female Male	1.73 (1.01, 2.95) 1	0.046		
<u>Age</u> 20 – 29 30 – 39 40 – 49 50 – 59	2.29 (0.37, 14.20) 1.40 (0.22, 8.77) 1.56 (0.21, 11.83) 1	0.373 0.722 0.669		
<u>Nationality</u> Non-Saudi Saudi	1.04 (0.52, 2.07) 1	0.916		
<u>Sector of work</u> Government Private	0.55 (0.32, 0.94) 1	0.028		
<u>Rank</u> Consultant General Specialist	0.44 (0.14, 1.42) 1.22 (0.55, 2.69) 1	0.171 0.621		
<u>Working days/week</u>	1.60 (1.16, 2.20)	0.004	1.58 (1.14, 2.17)	0.006

Variables	COR (95% CI)	p value	AOR (95% CI)	p value
<u>Specialty</u>				
Endodontics	7.00 (0.97, 50.57)	0.054		
General dentistry	5.48 (1.54, 19.43)	0.008		
Oral maxillofacial surgery	4.67 (0.77, 28.47)	0.095		
Orthodontics	4.67 (0.77, 28.47)	0.095		
Other specialty	2.04 (0.40, 10.55)	0.394		
Pediatric dentistry	6.13 (0.83, 45.02)	0.075		
Periodontics	-	-		
Prosthodontics	4.38 (0.56, 33.95)	0.158		
Restorative dentistry	1			
<u>Work type</u>				
Full time	1.23 (0.49, 3.11)	0.665		
Part time	1			
<u>Working hours/day</u>				
< 4	1			
4 – 6	5.27 (0.84, 32.99)	0.076		
> 6 – 9	5.71 (1.02, 31.96)	0.047		
> 9	14.00 (0.94, 207.60)	0.055		
<u>Number of patients/week</u>				
< 10	1			
10 – 20	0.93 (0.41, 2.13)	0.866		
21 – 40	0.99 (0.45, 2.22)	0.998		
> 40	1.92 (0.79, 4.66)	0.149		
<u>Work experience</u>				
1 – 5	1.86 (0.58, 5.96)	0.295		
> 5 – 10	1.62 (0.46, 5.64)	0.451		
> 10 – 15	1.15 (0.26, 5.12)	0.858		
> 15 – 20	2.81 (0.42, 18.74)	0.285		
> 20	1			
<u>Province in Saudi Arabia</u>				
Central	1.50 (0.83, 2.72)	0.183	1.40 (0.76, 2.56)	0.280
Easter	2.41 (0.97, 5.99)	0.058	2.32 (0.91, 5.87)	0.077
Western	1			

COR = crude odds ratio, AOR = adjusted odds ratio, CI = confidence interval

5.2.4 Factors associated with work related burnout (WRB) among professional dentist

Logistic regression analysis showed that the variables sector of work and working hours/day were retained in the final model, and therefore, considered important predictors of work-related burnout (Table 5). Participants working in the government sector were 48% less likely to have work related burnout than those in the private sector (AOR=0.52, p=0.015).

Study participants that worked for 4 to 6 hours were 5.6 times more likely to have work-related burnout compared those that work for less than 4 hours (AOR=5.62, p=0.067); those that work for more than 6 to 9 hours were 6.2 times more likely to have work related burnout compared to those that work for less than 4 hours (AOR=6.15, p=0.040); and those that work for more than 9 hours were 15.5 times more likely to have work related burnout compared those that work for less than 4 hours (AOR=15.45, p=0.0648).

Table 5: Factors associated with work related burnout among professional dentist

Variables	COR (95% CI)	p value	AOR (95% CI)	p value
<u>Gender</u> Female Male	1.44 (0.86, 2.43) 1	0.166		
<u>Age</u> 20 – 29 30 – 39 40 – 49 50 – 59	1.84 (0.30, 11.37) 1.61 (0.26, 10.14) 1.56 (0.21, 11.83) 1	0.511 0.612 0.669		
<u>Nationality</u> Non-Saudi Saudi	1.46 (0.71, 3.00) 1	0.306		
<u>Sector of work</u> Government Private	0.53 (0.32, 0.90) 1	0.019	0.52 (0.30, 0.88)	0.015

Variables	COR (95% CI)	p value	AOR (95% CI)	p value
<u>Rank</u>				
Consultant	0.69 (0.21, 2.25)	0.533		
General	1.07 (0.49, 2.35)	0.861		
Specialist	1			
<u>Working days/week</u>	1.56 (1.20, 2.06)	0.011		
<u>Specialty</u>				
Endodontics	2.80 (0.46, 16.93)	0.262		
General dentistry	3.19 (0.94, 10.83)	0.063		
Oral maxillofacial surgery	5.40 (0.78, 37.51)	0.088		
Orthodontics	5.40 (0.78, 37.51)	0.088		
Other specialty	1.92 (0.38, 9.80)	0.433		
Pediatric dentistry	4.20 (0.59, 30.10)	0.153		
Periodontics	-	-		
Prosthodontics	3.00 (0.40, 22.71)	0.287		
Restorative dentistry	1			
<u>Work type</u>				
Full time	1.42 (0.58, 3.47)	0.449		
Part time	1			
<u>Working hours/day</u>				
< 4	1		1	
4 – 6	4.67 (0.75, 29.01)	0.098	5.62 (0.89, 35.66)	0.067
> 6 – 9	5.36 (0.96, 29.98)	0.056	6.15 (1.08, 34.92)	0.040
> 9	14.00 (0.94, 27.60)	0.055	15.45 (1.02, 23.18)	0.048
<u>Number of patients/week</u>				
< 10	1			
10 – 20	0.65 (0.26, 1.52)	0.315		
21 – 40	0.74 (0.32, 1.70)	0.482		
> 40	1.18 (0.48, 2.87)	0.721		
<u>Work experience</u>				
1 – 5	1.48 (0.46, 4.70)	0.510		
> 5 – 10	2.10 (0.59, 7.45)	0.252		
> 10 – 15	2.03 (0.42, 9.89)	0.380		
> 15 – 20	2.81 (0.42, 18.74)	0.285		
> 20	1			
<u>Province in Saudi Arabia</u>				
Central	1.50 (0.83, 2.72)	0.183		
Easter	1.44 (0.63, 3.27)	0.391		
Western	1			

COR = crude odds ratio, AOR = adjusted odds ratio, CI = confidence interval

5.2.5 Factors associated with client (patient) related burnout among professional dentists

Table 6 depicts the logistic regression analysis and shows that none of the factors were retained in the final model of client-related burnout. Therefore, no AOR was computed. However, females were 11% more likely to have client-related burnout than the males (COR=1.11, p=0.666). For marital status, divorced participants were 2.9 times more likely to have client-related burnout than single participants (COR=2.88, p=0.196); and those married were 19% less likely to have client-related burnout than unmarried participants (COR=0.81, p=0.377)

Table 6: Factors associated with client (patient) related burnout among professional dentist

Variables	COR (95% CI)	p value
<u>Gender</u> Female	1.11 (0.70, 1.75)	0.666
Male	1	
<u>Age</u> 20 – 29	1.52 (0.25, 9.31)	0.652
30 – 39	1.95 (0.31, 12.21)	0.474
40 – 49	2.79 (0.37, 20.82)	0.318
50 – 59	1	
<u>Marital status</u> Divorced	2.88 (0.58, 14.32)	0.196
Married	0.81 (0.51, 1.29)	0.377
Single	1	
<u>Nationality</u> Non-Saudi	1.15 (0.62, 2.11)	0.663
Saudi	1	
<u>Sector of work</u> Government	0.83 (0.51, 1.34)	0.438
Private	1	
<u>Rank</u> Consultant	0.94 (0.31, 2.87)	0.907
General	0.95 (0.47, 1.94)	0.894
Specialist	1	

<u>Working days/week</u>	1.24 (0.93, 1.67)	0.148
<u>Specialty</u>		
Endodontics	2.67 (0.43, 16.39)	0.290
General dentistry	3.16 (0.82, 12.24)	0.095
Oral maxillofacial surgery	3.20 (0.54, 18.98)	0.200
Orthodontics	4.67 (0.77, 28.47)	0.095
Other specialty	1.67 (0.29, 9.45)	0.564
Pediatric dentistry	3.33 (0.52, 21.58)	0.206
Periodontics	2.67 (0.12, 57.62)	0.532
Prosthodontics	6.67 (0.81, 54.96)	0.078
Restorative dentistry	1	
<u>Work type</u>		
Full time	1.05 (0.45, 2.45)	0.918
Part time	1	
<u>Working hours/day</u>		
< 4	1	
4 – 6	1.11 (0.20, 6.15)	0.909
> 6 – 9	1.13 (0.22, 5.72)	0.881
> 9	1.67 (0.20, 14.27)	0.641
<u>Number of patients/week</u>		
< 10	1	
10 – 20	0.86 (0.41, 1.84)	0.704
21 – 40	0.75 (0.36, 1.56)	0.439
> 40	1.57 (0.73, 3.39)	0.247
<u>Work experience</u>		
1 – 5	1.65 (0.52, 5.22)	0.394
> 5 – 10	2.47 (0.72, 8.44)	0.150
> 10 – 15	2.29 (0.52, 10.01)	0.273
> 15 – 20	2.80 (0.53, 14.74)	0.224
> 20	1	
<u>Province in Saudi Arabia</u>		
Central	0.95 (0.55, 1.66)	0.863
Easter	1.34 (0.63, 2.86)	0.452
Western	1	

5.3 The Overall score of Burnout on CBI scales

Table 7: Overall Burnout scores on CBI scales

CBI	Mean (SD)	Prevalence cut-off n (%)	Subscale Cronbach's alpha
Personal burnout	60.61 (20.66)	No/Low (<50) = 79 (26.6) Moderate (50 – 74) = 134 (45.1) High (75 – 99) = 67 (22.6) Severe (100) = 17 (5.7)	0.86
Work related burnout	57.12 (16.96)	No/Low (<50) = 83 (27.9) Moderate (50 – 74) = 167 (56.2) High (75 – 99) = 46 (15.5) Severe (100) = 1 (0.3)	0.72
Client related burnout	49.37 (21.25)	No/Low (<50) = 139 (46.8) Moderate (50 – 74) = 118 (39.7) High (75 – 99) = 33 (11.1) Severe (100) = 7 (2.4)	0.84

(No/Low (<50) – Moderate (50 – 74) – High (75 – 99) – Severe (100))

Figures (7 – 17) demonstrate the overall burnout scores based on the demographic and basic work characteristics

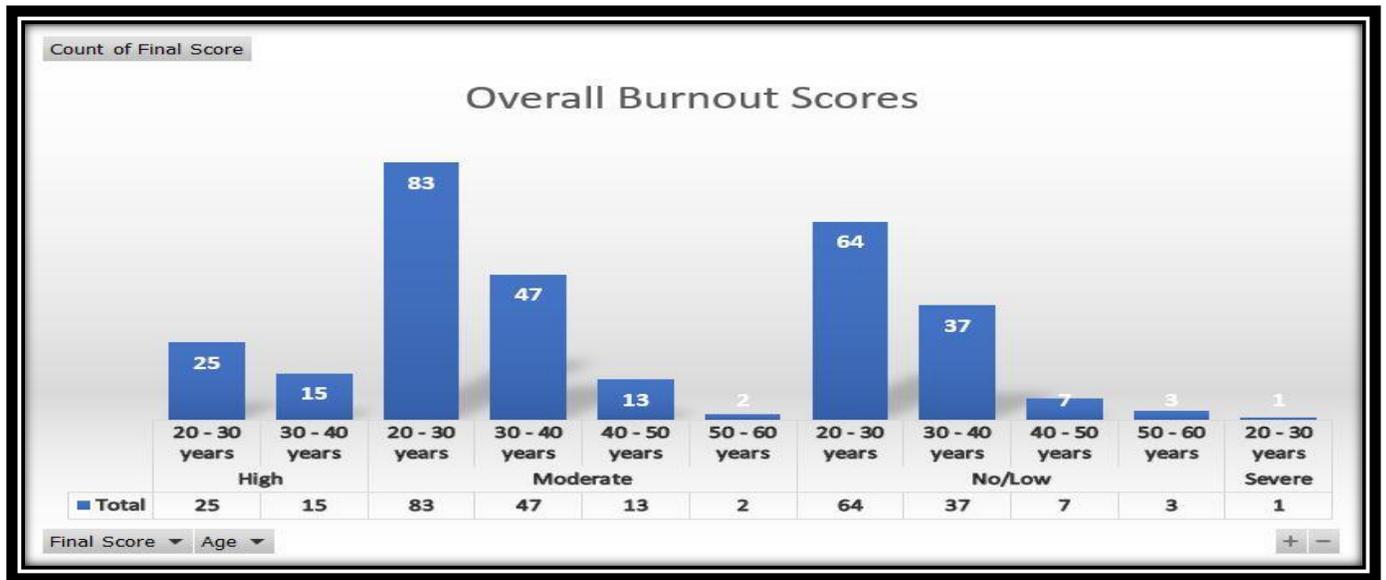


Figure 7: Age

The highest levels were found in the groups below 30 years of age for both high and moderate levels and the lowest in those above 50 years of age.

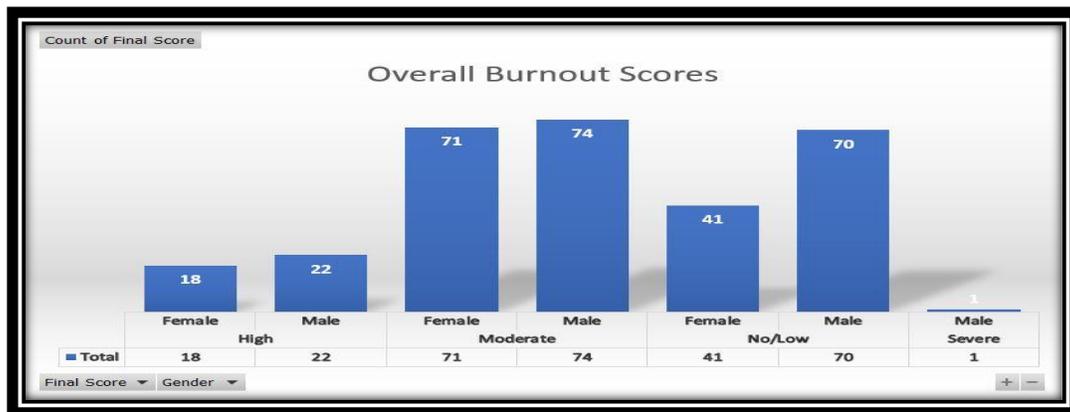


Figure 8: Gender

Males represent 56.2% of the sample while females 43.8%. Females had higher levels of burnout than males in all three scales of burnout. The majority of them demonstrated moderate and high levels.

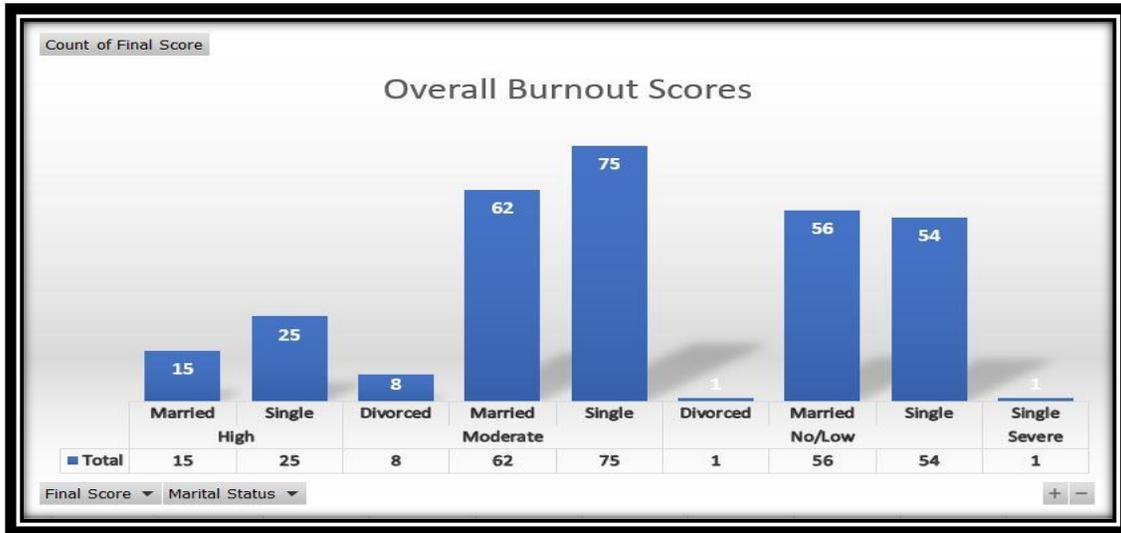


Figure 9: Marital status

Among 297 participants; 155 were single, 133 were married and 9 divorced. Married participants demonstrated the lowest levels while the highest level scored by the divorced participants.

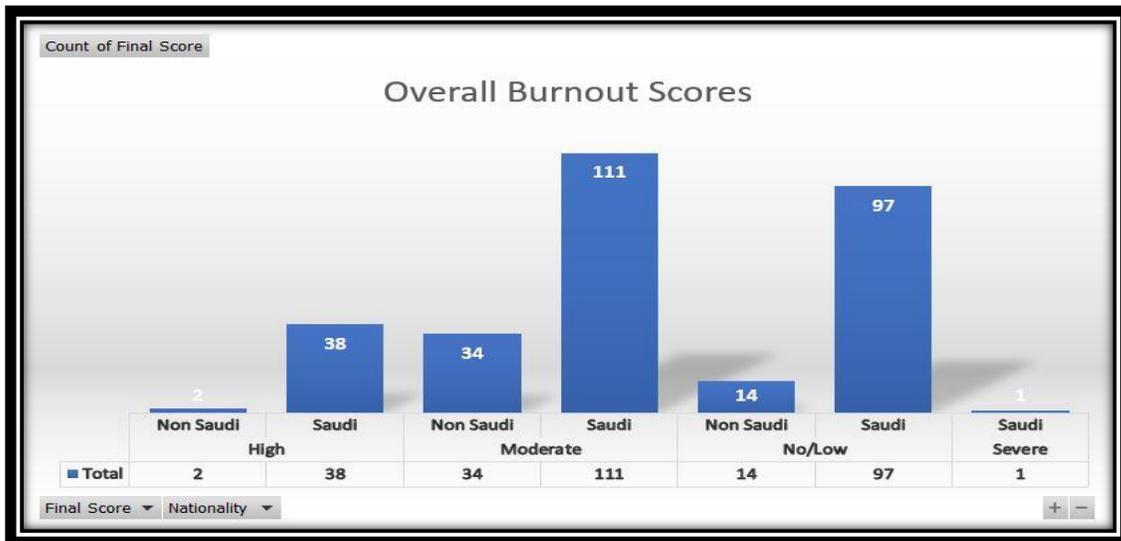


Figure 10: Nationality

Saudi dentists, (83.2%) represented the majority of the sample, and had higher levels of burnout when compared to non-Saudi practitioners.

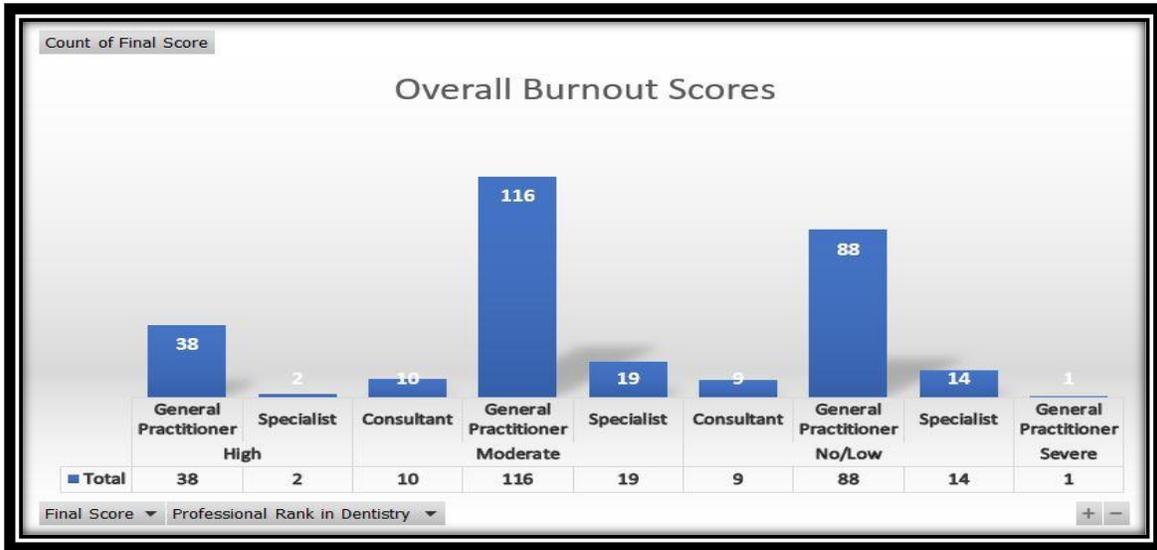


Figure 11: Professional Rank in Dentistry

General dentists represented the majority of the sample (81.8%) and had higher levels of burnout when compared to specialists (11.8%) and consultants (6.4%). Consultants demonstrated the lowest levels.

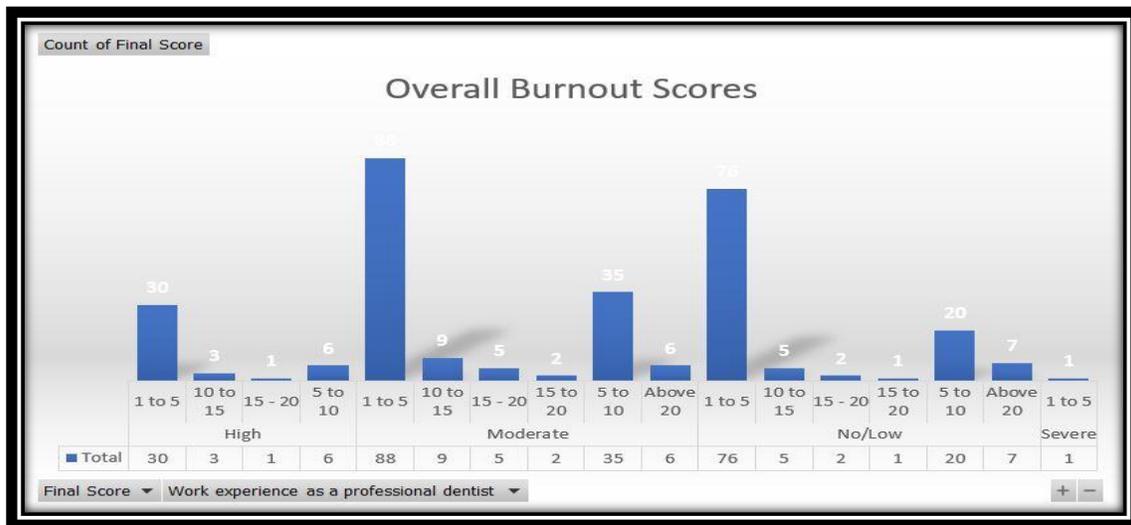


Figure 12: Work experience as a professional dentist

The highest levels scored by the group with 10-15 years of experience, while the lowest scored by those with 15-20 years of experience.

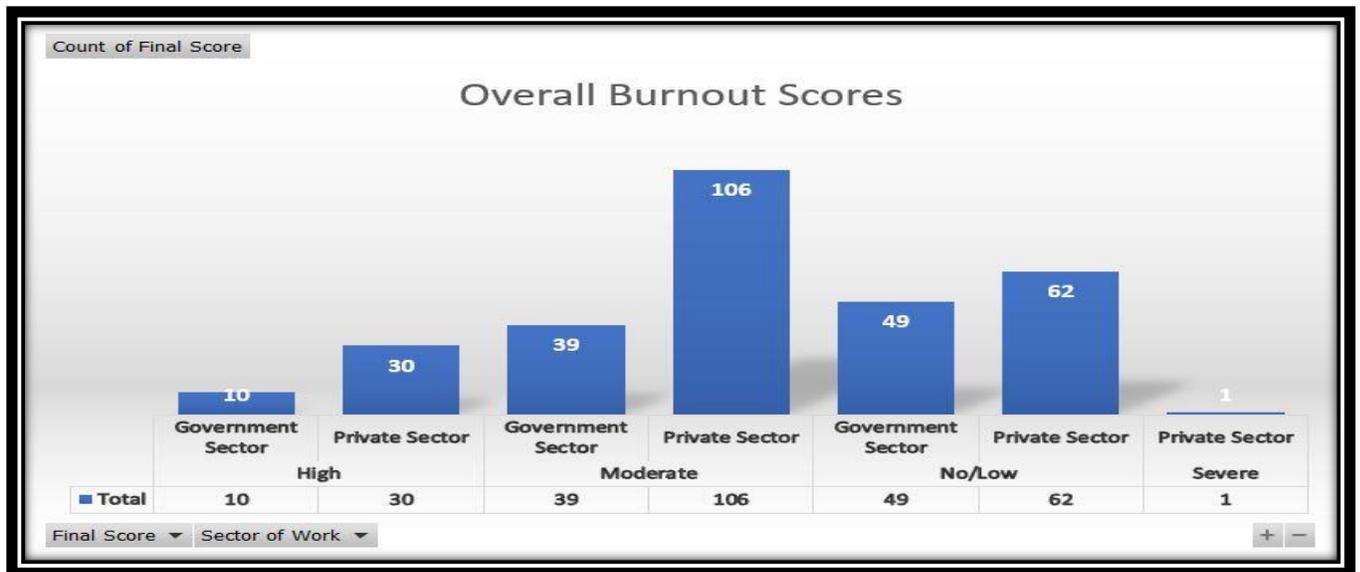


Figure 13: Sector of work

Participants working in the private sector, represented over two thirds of the sample, had a significantly higher mean of all CBI scales of burnout when compared to those working in the government sector, who represented 33.3% of the sample.

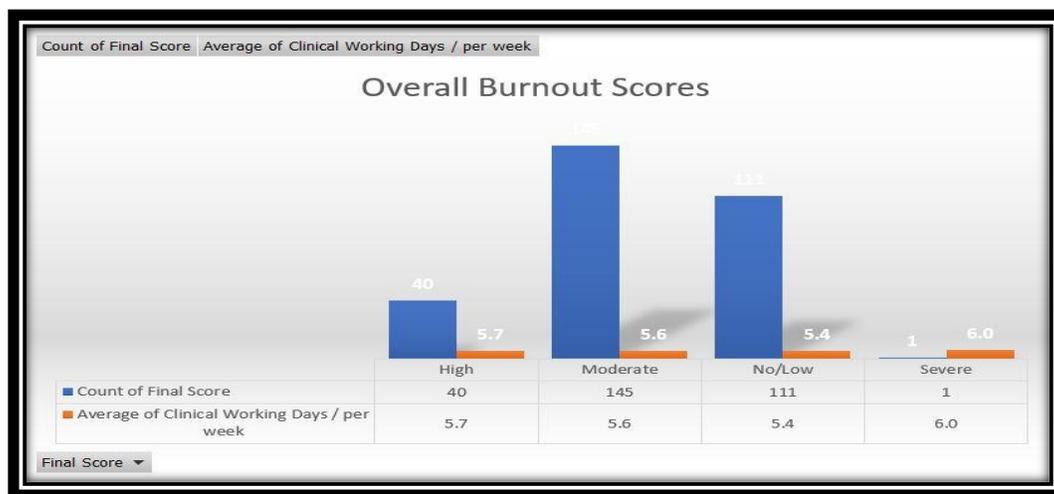


Figure 14: Average clinical working days / week

The mean number of working days per/week was 5.5 (SD = 0.79). The present study demonstrated a significant and positive relationship between number of working days per week and personal burnout.

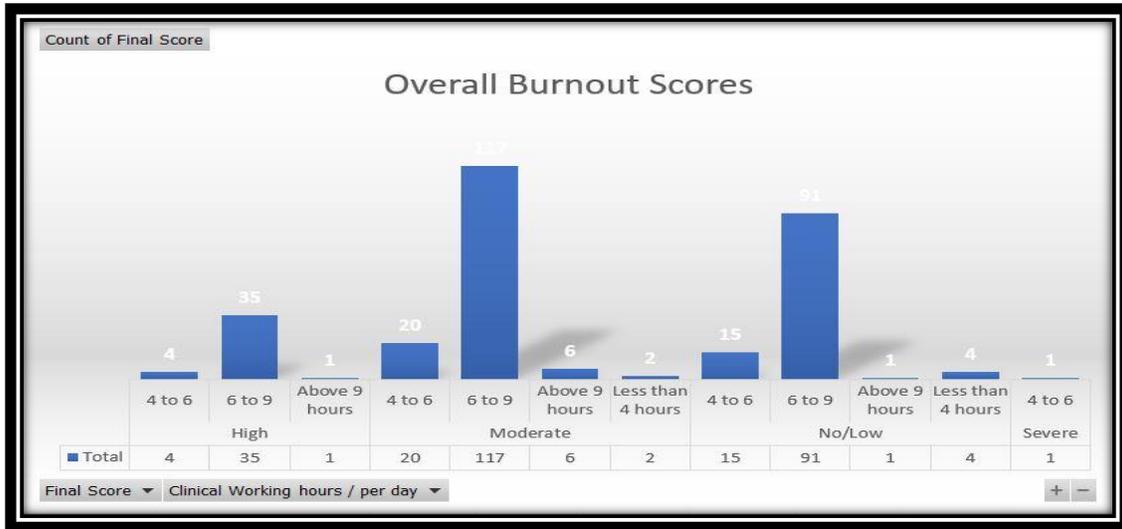


Figure 15: Clinical working hours / day

The highest levels were demonstrated by those who work more than 9 hours per day, while those who work less than 4 hours scored the lowest levels. The overall scores were increased with the number of hours per day.

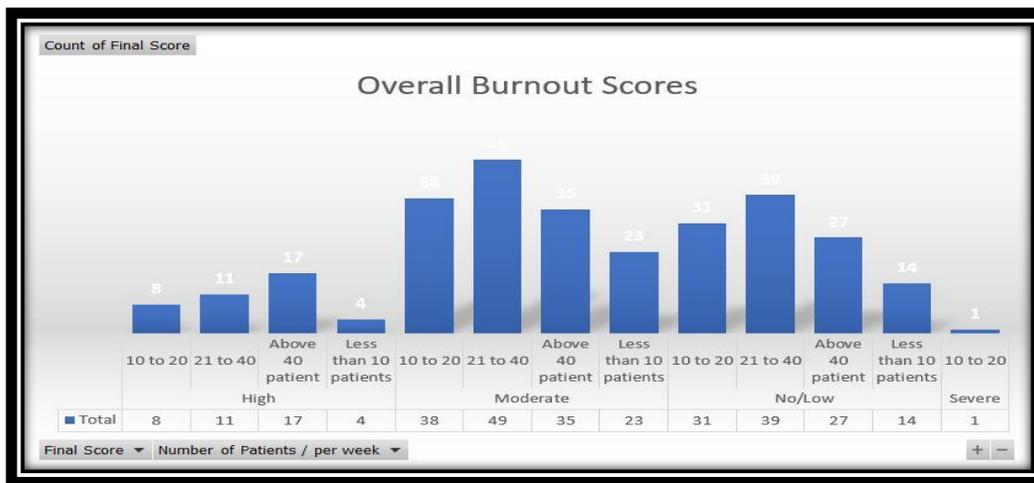


Figure 16: Number of patients / week

In terms of number of patients per week, those who used to see above 40 patient per week scored the highest level of overall burnout, followed by the group whom see less than 10 patients.

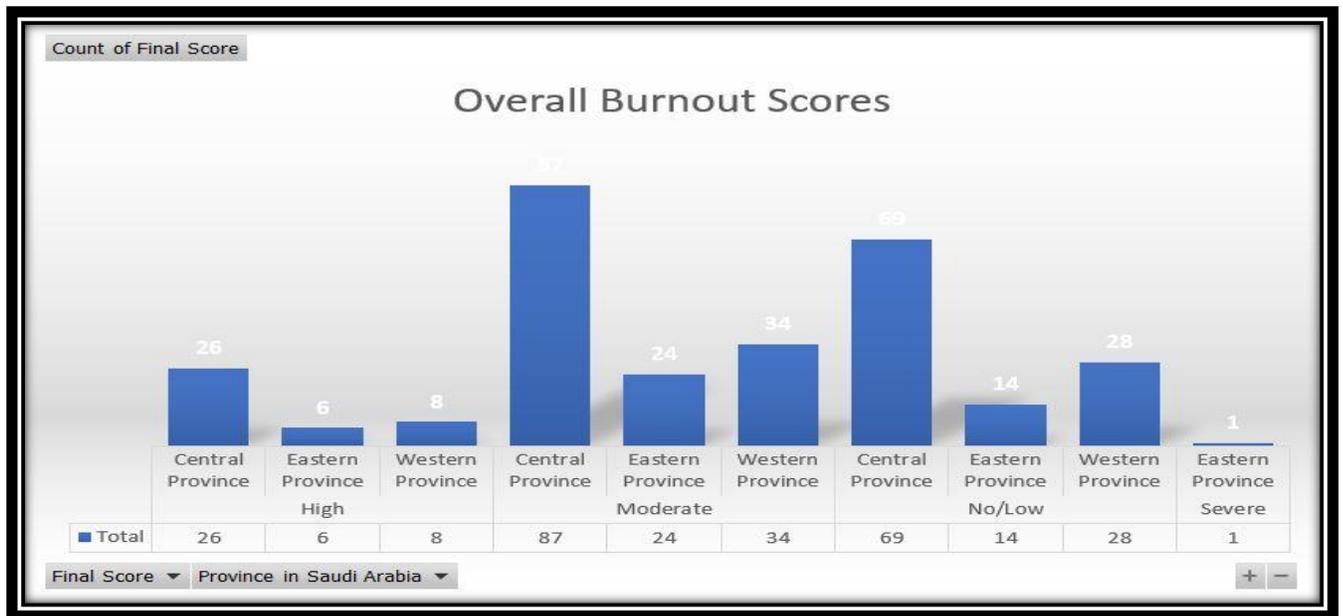


Figure 17: Province in Saudi Arabia

Geographic work province was considered an important predictor of personal burnout in the present study. The eastern province scored the highest, followed by the central province, and finally the western province.

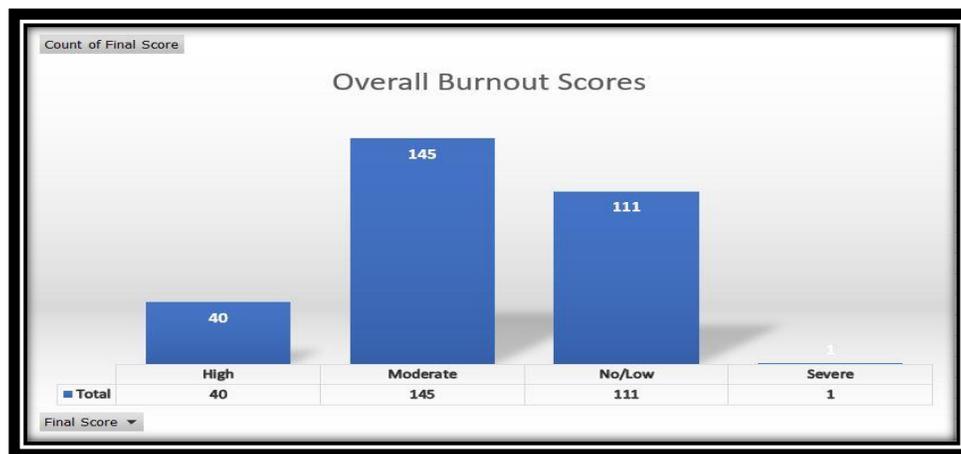


Figure 18: Distribution of participants based on the overall burnout level

The majority of the participant dentists demonstrated moderate and higher levels of overall burnout scores.

Chapter 6: Discussion

Professional burnout is a destructive health problem that affects both work and personal life of all professionals, more especially those who take care of human beings such as healthcare professionals (Al-Mohaisen., 2020; De Hert, 2020). Several studies have been conducted to evaluate the prevalence of burnout among healthcare professionals (Bouza *et al.*, 2020; Hameed *et al.*, 2018; Shanafelt *et al.*, 2012; Al-Mohaisen., 2020; Alfaleh, 2017) as described in the review of the literature in Chapter 2.

Dentistry is a challenging profession characterized by exposure to integrated stressors. Dentists are highly prone to depression and burnout due to that nature of the profession (Al-Mobeeriek, 2011; Azad *et al.*, 2013; Huri *et al.*, 2016; Kulkarni *et al.*, 2016; Aboalshamat *et al.*, 2017; Hameed *et al.*, 2018; Asiri, 2019; Alzahem *et al.*, 2020; Bouza *et al.*, 2020; Eun-Jung Kwak *et al.*, 2021).

Burnout is more commonly associated with work-related factors and the management of profession risks. In order to identify the most common causative factors for stress and burnout among dentists, several studies were conducted globally (Al-Mobeeriek, 2011; Azad *et al.*, 2013; Kulkarni *et al.*, 2016; Asiri, 2019; Alzahem *et al.*, 2020; Bouza *et al.*, 2020; Eun-Jung Kwak *et al.*, 2021)

The present study investigated the prevalence levels of burnout among dentists working with direct clinical contact with patients in Saudi Arabia. Levels of burnout were compared between different dental specialties and ranks, together with factors such as age, gender, marital status, nationality, years of experience, professional rank, work sector, and geographic work location on burnout levels of the participants. The study sample comprised two hundred ninety-seven dentists in several public and private hospitals and clinics in the central, western and eastern provinces of Saudi Arabia.

The most alarming finding of this study was that the majority of the participants (62.63%) showed moderate to high levels of professional burnout. This finding does however concur with previous research on the prevalence of burnout among dentists (Aboalshamat *et al.*, 2017; Asiri, 2019; Eun-Jung Kwak *et al.*, 2021; Hameed *et al.*, 2018; Huri *et al.*, 2016; Azad *et al.*, 2013; Kulkarni *et al.*, 2016; Al-Mobeeriek, 2011; Alzahem *et al.*, 2020; Bouza *et al.*, 2020).

Consistent with other studies, the findings from the present study demonstrated that the overall levels of burnout were found to be affected by age, gender, professional rank, workload and years of experience. (Al-Mobeeriek, 2011; Hameed *et al.*, 2018; Brake *et al.*, 2003; Kulkarni *et al.*, 2016). On the other hand, other studies showed conflicting results and demonstrated that factors such as age, gender, marital status, and years of experience had no considerable effect on the burnout level (Alzahem *et al.*, 2020; Nettam *et al.* 2018).

Arora *et al.* (2022) found no significant differences between males and females in reporting burnout, but in the present study females had higher levels of burnout than males in all three scales of personal burnout, work-related burnout and patient-related burnout. This aligns with studies conducted by Brake *et al.*, (2003), Al-Mobeeriek (2011) and Kulkarni *et al.*, (2016). Yet another study that found an association between female gender and marital status with professional burnout (Hameed *et al.*, 2018).

Interestingly, in the present study, the levels of burnout were found to decrease with increasing age. The highest levels were found in the 20 – 29 year age group and the lowest in those above 50 years of age. These results concur with Arora *et al.*, (2022), but contrast to the findings of Alzahem *et al.* (2019) and Nettam *et al.* (2018) where age had no considerable effect on the burnout level.

Risk factors for dental burnout include, but are not limited to the number of working days, working hours, and number of patients. In Saudi Arabia, the number of working days in the public sector is 5 days per week and two days for the weekend, while those in the private sector usually work for 6 days per week and one day as a weekend. The present study found that dentists working in the private sector have a significantly higher mean of all CBI scales for personal burnout, work-related burnout and client-related burnout when compared to those working in the government sector. Dentists in the government sector showed 48% less likely to have work-related burnout than those in the private sector and factors such as sector of work and working hours per day are considered important predictors in work-related burnout.

There was a significant and positive relationship between the number of working days/week and personal burnout. For a 1 day increase in working days/week, the odds of personal burnout increased by 58%. The present study demonstrated a significant and positive relationship between number of working days per week and personal burnout. Previous studies in Saudi Arabia and

Scotland demonstrated that less working hours have an opposite effect on burnout levels Azad *et al.*, (2013). In terms of number of patients per week, those who used to see above 40 patient per week scored the highest level of overall burnout, followed by the group whom see less than 10 patients. A similar result was shown by Arora *et al.* (2022) where CBI scale scores were highest with the dentists with very low or very high number of patients.

Prosthodontist specialists demonstrated the highest levels of burnout among the specialties, while Restorative dentistry specialists and consultants had the lowest scores. Al-Mobeeriek (2011) found in two different provinces in Saudi Arabia that oral surgeons and general dentists had the highest burnout level, while the lowest levels of burnout shown by orthodontists. In the present study, general dentists showed higher levels of burnout when compared to specialists and consultants, concurring with the findings of Al-Mobeeriek (2011), but differing with Alzahem *et al.* (2019) who found that consultants had the highest level of burnout along with the dental residents. Arora *et al.* (2022) found that Specialists reported the lowest burnout levels.

Similar to the findings of Asali *et al.* (2021), Saudi dentists showed higher levels of burnout when compared to non-Saudi practitioners. Geographic work province was considered an important predictor of personal burnout in the present study. Dentists in the eastern province were 2.3 times likely to have personal burnout than those in the western province, while the participants in the central province were 40% more likely to have personal burnout when compared to those working in western province. In the overall levels of burnout, the eastern province scored the highest, followed by the central province, and finally the western province. This may be due to the differences in population between the provinces that affect the patients flow and increase the competition between dentists to achieve success in business. The eastern province had the lowest population when compared to the central and the western provinces. Furthermore, other variables may play a role regarding this finding, as nearly all the participants working in the eastern region were general dentists and 88% of them were Saudis who showed higher level of personal burnout in both variables as depicted in Table 3.

6.1 Conclusion and Recommendations

In general, 297 dentists that participated in the present study showed an overall burnout mean of 55.70 (SD = 18.05) and the majority (62.63%) demonstrated moderate to high levels of burnout. The findings of the present study demonstrate that dentistry is a stressful profession and dental practitioners working in Saudi Arabia are subjected to moderate and higher levels of burnout. Future research is required to elucidate the underlying factors and to formulate coping strategies to improve the quality of health services and ensure patient safety. A larger nationwide study that includes dentists from other provinces in Saudi Arabia is warranted to confirm the findings of the present study. Furthermore, the number of participants from each specialty should be increased and other potential risk factors should also be taken into consideration.

This study was a cross-sectional study. Therefore, no causal relationship between burnout and depression was identified, however longitudinal studies may serve to clarify the relationships between the variables and other factors related to professional burnout.

Burnout may cause serious indirect costs for the healthcare system, affect the quality of work and clinical outcomes. Therefore, awareness for the phenomenon with quick recognition together with the development of adequate coping personal and organizational strategies is imperative to manage this important problem in contemporary healthcare timeously (De Hert, 2020). Preventive and intervention programmes, mutual proactive strategies and reactive coping mechanisms that include both the dentist and the organization are recommended as they have been shown to be advantageous and have positive effects on limiting burnout.

Understanding the reality of the problem at an early stage will assist in prevention or mitigate its damage, therefore an important proactive step would be to highlight the importance of stress and burnout management in dental school curriculums.

“Dentists must look after their own well-being first in order to provide optimal care for others” (Hameed *et al*, 2018). To enjoy a satisfying dental career and personal life, dentists must be aware of the importance of maintaining and promoting good mental, emotional and physical health. Fortunately, prevention strategies and treatment modalities can help to overcome and avoid stress and burnout as a result. The prevalence professional burnout among dentists should be addressed

by further research investigations to determine and eliminate the causative factors in order to improve quality of health services and ensure patient safety.

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Appendix 1: Information Sheet



Faculty of Dentistry & WHO Collaborating Centre for Oral Health



UNIVERSITY OF THE WESTERN CAPE

Private Bag X1, Tygerberg, Cape Town
REPUBLIC OF SOUTH AFRICA

Project Title: Professional Burnout among Dentists in Saudi Arabia: A cross sectional survey

What is this study about?

This is a research project being conducted by Dr Hamza Al-Khzam (an MSc student) under the supervision of Prof. Sudeshni Naidoo at the University of the Western Cape in South Africa. We are inviting you to participate in this research project because you meet the criteria for the population we are investigating and your participation will help others in the profession. The study will investigate the levels of professional burnout among dentists in Saudi Arabia.

What will I be asked to do if I agree to participate?

You will be asked to sign a consent form agreeing to take part in the study. Your participation will require you to complete two questionnaires. The first questionnaire will collect basic personal and socio-demographic data such as gender, age, marital status, nationality, sector, rank, specialty, work hours, work sector and years of experience. The second questionnaire will measure burnout. These questionnaires will be conducted at a time and location that is convenient to you. Dentists that interact directly with patients will be asked to participate.

Would my participation in this study be kept confidential?

All the information, including any personal information you provide will be kept strictly confidential. Your real name will not be included on the data capture sheet and all information collected will be locked in secure password protected files on the computer. Additionally, access to any information will be restricted to me and my research supervisor only. At the end of the study, all data will be kept for as long as legally required and thereafter will be properly disposed of, deleted or destroyed.

What are the risks of this research?

There are no foreseeable risks associated with participation. As described above, all precautions (coding of data, restricted access, storage in locked cabinets and/or password protected computers) to protect anonymity and identity will be strictly applied.

What are the benefits of this research?

This research will provide much needed literature on the prevalence of burnout among different ranks and specialties of dentists in both public and private sectors, it will compare burnout levels and determine factors affecting it between dentists in private sector and dentists in public sector. Importantly we aim to find approaches to mitigate the effects of burnout based on the influencing risk factors. At the end of this study, the results and findings of the study will be presented and published in a reputable scientific journal.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate, you have the right to withdraw at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized in any way.

Is any assistance available if I am negatively affected by participating in this study?

If at any time of the study, you feel uncomfortable and need assistance, the researcher will refer you for counselling through social welfare office in your area.

What if I have questions?

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please do not hesitate to contact:

1. **Researcher: Dr Hamza Al-Khzam**
MSc Dental Public Health (Community Dentistry)
Faculty of Dentistry, UWC
Tel: +966553533767
Email: 3689890@uwc.ac.za
2. **Supervisor: Prof S. Naidoo**
Email: suenaidoo@uwc.ac.za
3. **Head of Department: Prof N Myburgh**
Email: nmyburgh@uwc.ac.za
4. **Research Ethics Committee**
Biomedical Research Ethics Committee (BMREC), University of the Western Cape
Private Bag x17, Bellville, 7535
Tel: + 27 21 959 4111
Email: research-ethics@uwc.ac.za

Appendix 2: Informed Consent Form



Faculty of Dentistry & WHO Collaborating Centre for Oral
Health



UNIVERSITY OF THE WESTERN CAPE

Private Bag X1, Tygerberg, Cape Town
REPUBLIC OF SOUTH AFRICA

Title of Research Project: Professional Burnout among Dentists in Saudi Arabia: A cross sectional survey

Principal Investigator: Dr Hamza Al-Khzam (MSc Student)

Supervisor: Prof. S. Naidoo, PhD, DSc

Department: Community Oral Health

Telephone: +966553533767

Email: 3689890@uwc.ac.za

Dear

You are being invited to participate in the above-mentioned research study. Please take time to read the information that is presented below.

The study entitled “**Professional Burnout among Dentists in Saudi Arabia: A cross sectional survey**” will investigate, identify and assess burnout levels among dentists in the private and public sector in the Province of Saudi Arabia. Your participation will involve the completion of two questionnaires. The first questionnaire is a structured to collect basic personal and socio-demographic data such as gender, age, marital status, nationality, sector, rank, specialty, work hours, work sector and years of experience. The second questionnaire will measure burnout. Your participation is completely voluntary and you have the right to withdraw at any time or to refuse to participate entirely without the risk of penalty or prejudice. There are no risks associated with participation in the study. Please indicate your willingness to participate through completion of the attached declaration on the next page.

Thank you for taking time to read this information sheet. Should you have any queries relating to participation or the nature of the study, please do not hesitate to speak to the researcher. You will receive copies of this informational sheet and consent form for your records.

Yours Sincerely
Dr Hamza Al-Khzam



Faculty of Dentistry & WHO Collaborating Centre for Oral Health



UNIVERSITY OF THE WESTERN CAPE

Private Bag X1, Tygerberg, Cape Town
REPUBLIC OF SOUTH AFRICA

Title of Research Project: Professional Burnout among Dentists in Saudi Arabia: A cross sectional survey

Declaration by the Participant

I (full name)

- Declare that the study has been described to me in language that I understand;
- Have read, understood and received a copy of the foregoing informational sheet and consent form, written in a language with which I am fluent;
- Have had the opportunity to ask questions regarding the study and my questions have been answered to my satisfaction;
- Understand that my identity will not be disclosed and that I have the right to withdraw from the study at any stage without giving a reason and without the risk of penalty; and that it will not negatively affect me in any way and that I
- Freely and voluntarily agree to participate in this study.

Signature of participant: _____ **Date:** _____

Signature of Investigator: _____ **Date:** _____

We thank you for your contribution to our research

Appendix 3: Draft Questionnaire



Faculty of Dentistry & WHO Collaborating
Centre for Oral Health



UNIVERSITY OF THE WESTERN CAPE

Private Bag X1, Tygerberg, Cape Town
REPUBLIC OF SOUTH AFRICA

Project Title: Professional Burnout among Dentists in Saudi Arabia

I have read the Information Sheet and signed the Consent Form agreeing to participate in the above-mentioned study that has been approved by the University Western Cape. I understand that my responses to this questionnaire are voluntary and that I can choose not to answer certain questions. Furthermore, I understand that I will not be identified by name in any research or publications resulting from this study.

Demography

First Name: _____

Last Name: _____

Gender:

- Male
 Female

Age:

- 20 - 30 years 30 – 40 years 40 – 50 years
 50 – 60 years 60 – 70 years > 70 years

Marital status:

- Single Married Divorced

Nationality:

- Saudi Non-Saudi

Professional

Work sector:

- Government sector Private sector
-

Professional Rank in Dentistry:

- General Practitioner Specialist Consultant
-

Specialty:

- Endodontics Periodontics Oral maxillofacial surgery
 Prosthodontics Pedodontics General practitioner Other:
-

Work Type:

- Full time Part time
-

Clinical working days per week:

- 1 2 3 4 5 6 7
-

Clinical working hours per day:

- Less than 4 hours 4 to 6 hours 6 to 9 hours > 9 hours
-

Number of patients per week:

- Less than 10 10 to 20 21 to 40 > 40
-

Work experience as a professional dentist:

- 1-5 years 5 – 10 years 10 – 15 years 15 – 20 years > 20 years

Appendix 4: Professional Burnout Measurement (CBI)



Faculty of Dentistry & WHO Collaborating
Centre for Oral Health



UNIVERSITY OF THE WESTERN CAPE

Private Bag X1, Tygerberg, Cape Town
REPUBLIC OF SOUTH AFRICA

How often do you feel tired?

- Always Often Sometimes Seldom Never/Almost Never
-

Are you exhausted in the morning at the thought of another day at work?

- Always Often Sometimes Seldom Never/Almost Never
-

Are you tired of working with patients?

- Always Often Sometimes Seldom Never/Almost Never
-

Do you feel that every working hour is tiring for you?

- Always Often Sometimes Seldom Never/Almost Never
-

How often do you feel worn out?

- Always Often Sometimes Seldom Never/Almost Never
-

How often do you feel weak and susceptible to illness?

- Always Often Sometimes Seldom Never/Almost Never
-

Does your work frustrate you?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree
-

Do you feel worn out at the end of the working day?

- Always Often Sometimes Seldom Never/Almost Never
-

How often do you think: "I can't take it anymore"?

- Always Often Sometimes Seldom Never/Almost Never
-

Do you sometimes wonder how long you will be able to continue working with patients?

- Always Often Sometimes Seldom Never/Almost Never
-

Do you have enough energy for family and friends during leisure time?

- Always Often Sometimes Seldom Never/Almost Never
-

Do you find it hard to work with patients?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree
-

How often are you emotionally exhausted?

- Always Often Sometimes Seldom Never/Almost Never
-

Do you find it frustrating to work with patients?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree
-

Does it drain your energy to work with patients?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree
-

Do you feel that you give more than you get back when you work with patients?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree
-

Is your work emotionally exhausting?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree
-

How often are you physically exhausted?

- Always Often Sometimes Seldom Never/Almost Never
-

Do you feel burnt out because of your work?

- To a very high degree To a high degree Somewhat
 To a low degree To a very low degree

Appendix 5: Ethical Approval



UNIVERSITY of the
WESTERN CAPE



10 June 2021

Dr H Alkhzam
Community Oral Health
Faculty of Dentistry

Ethics Reference Number: BM21/3/17

Project Title: Professional burnout among dentists in Saudi Arabia: A cross-sectional study.

Approval Period: 08 June 2021 – 08 June 2024

I hereby certify that the Biomedical Science Research Ethics Committee of the University of the Western Cape approved the scientific methodology and ethics of the above mentioned research project.

Any amendments, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

Please remember to submit a progress report annually by 30 November for the duration of the project.

Permission to conduct the study must be submitted to BMREC for record-keeping.

The Committee must be informed of any serious adverse event and/or termination of the study.

A handwritten signature in black ink, appearing to read 'Josias'.

*Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape*

NHREC Registration Number: BMREC-130416-050

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FROM HOPE TO ACTION THROUGH KNOWLEDGE.