



Burnout and Its Related Factors among South African Dentists

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Abstract

Burnout syndrome is due to psychological exhaustion and diminished efficiency caused by prolonged exposure to stress. Dentistry is regarded as one of the most stressful occupation. The aim of the study was to investigate the prevalence of burnout and job-related stressors among dentists working in the public sector.

A cross-sectional study of 50 dentists working in the public sector was conducted through the Maslach Burnout Inventory Survey focusing on the three subscales: Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA) were used. Median and interquartile range was used to present the average of the continuous MBI scores per subscale. The Fischer's exact test was used to determine the association between two categorical variables and the p-value was set at $p < 0.05$.

The prevalence of high burnout was 14% and the mean EE score was 25.82, mean DP score was 9.82 and the mean PA score was 28.94. The high level of overall burnout was significantly associated with age and the mean scores of job-related stressors such as shortage of drugs and poor remuneration ($p < 0.05$). Although a low percentage of dentists had high prevalence of burnout, it is important for Oral Health Managers to address the job related stressors in order to improve the quality of dental care and increase the job morale of the clinicians.

Keywords: Burnout depersonalization; Emotional exhaustion; Maslach burnout inventory; Dentist

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Introduction

Burnout has been identified as a global public health concern among civil servants, teachers, oral health professionals, health care professionals and health sciences students [1]. Burnout syndrome is a chronic stress disorder caused by psychological exhaustion and diminished efficiency due to being overworked or prolonged exposure to stress [2]. Freudenberg [3] first introduced the concept of burnout in the early 1970s as a "state of fatigue or frustration that resulted from professional relationship that failed to produce the expected rewards". Later in the 1980s Maslach defined burnout as a "psychological syndrome involving emotional exhaustion, depersonalization, and a diminished sense of personal accomplishment that occurred among various professionals who work with other people in challenging situations" [4]. The most widely used measurement of burnout is the Maslach Burnout Inventory [MBI], it is labeled in three dimensions namely increased feeling of fatigue by the stress of work (Emotional Exhaustion: EE), increased development of negative and cynical attitudes (Depersonalization: DP) or reduced levels of Personal Accomplishment – PA [5].

Health professionals are exposed to high levels of chronic stress on a daily basis due to clinical errors and consequences in relation to patient care, poor clinician-patient relationship, uncertainty in the clinical practice, sense of failure and frustration in addressing the patient's health needs and inability to separate their emotions from those of the patient. Furthermore, bureaucratic structures within the health system lead to clinicians being overwhelmed by challenges such as administration and management of clinical practice [6]. Dentistry is perceived as a stressful profession, from dental school until retirement, leading to symptoms of stress such as mental, emotional or physical strain [7]. A number of factors contribute to high burnout levels amongst dentists such as high patient volume, high work load and shortage of materials and equipment. In high income countries, the prevalence of burnout has been reported to be approximately 50% for health workers and dentists [8] with United Kingdom (UK) public health dentists experiencing high levels of burnout than dental academics and hospital based dentists due to fear of litigation, dissatisfied patients and regulatory

issues [9]. Furthermore, in Europe organizational and occupational risk factors for burnout are perceived lack of job control or social support. While in Asia risk factors for burnout are individual negative perception on work and life, low social support from colleagues and supervisors, working with difficult and uncooperative patients with poor prognosis, poor psychosocial work environment, working more than 40 h per week especially in the middle aged group of 30 to 40 years old [10,11].

Dentistry has been proven to be particularly affected by high levels of stress and burnout when compared to the general population and other professionals such as veterinary surgeons and medical doctors [12,13]. A study conducted among dentists using the MBI tool in Asian countries has reported 60% had low Personal Accomplishment (PA), approximately 14% had severe Emotional Exhaustion (EE) and 15.5% had severe Depersonalization (DP) with a significant association burnout, average hours worked per day (more than 10 h) and graduation period (more than 20 years) and employment duration [14]. Alzahem et al., [15], reported low PA levels among dental consultants at 20.75% and 21.74% for both conservative dentistry and oral and maxillofacial specialists with the high EE levels among consultants at 24.64%, with 24.24% for conservative dentistry and 9.90% for oral and maxillofacial specialists. The DP domain was the highest among 16.67% dental consultants, 28.57% among conservative dentistry and 21.43% among oral and maxillofacial specialists, and gender was significantly associated with a low PA ($p=0.0152$) and high DP ($p=0.0255$). In addition, Choy and Wong [16], reported dentists having high levels of total burnout in 7% of the participants, with EE at 25.40%, DP at 17.20% and PA at 39.00% with a significant association between high EE mean score and spousal unemployment ($p=0.024$), time related stressors ($p<0.001$) and job related stressors ($p<0.001$).

Low and middle income countries have reported 30% prevalence of burnout and 40% no job satisfaction amongst dentists due to high absenteeism and a mal distribution of health workers [17]. Furthermore in low and middle income countries burnout is more prevalent in all categories of outpatient Primary Health Care (PHC) workers namely community health workers, nurses, physicians and pharmacists compared to high levels in family medicine doctors in Europe and Canada and general medicine interns in United States [18,19]. However, there are lower levels of burnout (32%) of physicians and dentists in low and middle income countries compared to high income countries such as the United States (50%), Austria (51%) and France (49%) [20,21]. The level of job satisfaction in low, middle and high income countries is approximately 60% despite differences in organizational structures, working conditions and rewards [17]. In Sub Saharan Africa and South Africa (SA), 60% of health workers experience burnout [21], with a prevalence of 50% among dentists and dental students [22], due to poor patient's compliance, interpersonal relations, working conditions and pressure to earn more money [23].

South Africa (SA) as a middle income country has skewed distribution of dentists with majority working in the private sector with a dentist's patient ratio of 1.70 [24]. The World Health Organization [25], recommends in SA the dentist's per patient ratio of 0.13 per 1000 based on the country's GNP per capita of \$8900 and the health expenditure of 8.6%. However, in reality SA has a shortage of dentists, with a dentist's patient ratio of only 0.33 per 1000 in the public sector [24]. Furthermore, there has been a high exodus of dentists for greener pastures in high income countries [26]. This has been detrimental to the SA economy and the health care system.

There is paucity of studies on burnout and associated factors among dentists working in the public health sector in SA. Most published studies are conducted in high income countries, where oral health care system, working conditions and patient load are different from the SA context. Furthermore, work environment dynamics and regulatory issues differ globally thus this study's findings will be important to highlight the risk factor of burnout according to the context of the public health system of SA. Thus the aim of this study is to determine the prevalence of burnout among dentists working in the public health sector such as the Primary Health Care (PHC), Community Health Centers (CHC) and District Hospitals in Gauteng Province of SA.

Materials and Methods

A self-administered questionnaire was designed with addition of the Maslach Burnout Inventory (MBI) tool for assessment of burnout levels amongst dentists in the public health sector in four districts namely Johannesburg Metropolitan District, Tshwane Metropolitan District and Sedibeng District of Gauteng Province in SA. The selected districts consisted of a total of 83 dentists with 50 consenting to participate in the study with a response rate of 62%. All dentists employed for less than 3 months, interns and part time staff members were excluded in the study. The questionnaire collected information on the demographic profile of the participants, job related stressors also known as work related risk factors, human and work environment factors and a list of the twenty two items of the MBI tool which were related to the three subscales of burnout and the divided into three subscales namely the: Emotional Exhaustion (EE-9 items) – assessed feelings of being emotionally overextended and exhausted by ones work, Depersonalization (DP-5 items) - measured an unfeeling and impersonal response towards recipients to one's service, care, treatment or instruction and Personal Accomplishment (PA-8 items) - assessed feelings of competence and successful achievement in ones work with people. The degree of burnout associated with each factor was rated in a seven point Lickert frequency scale as follows: 'Absolutely no' was rated as 0; <2 to 3 times within 1 year as 1; <1 time in a month as 2; 2 to 3 times in a month as 3; once in a week as 4; 2 to 3 times in a week as 5; and every day as 6. At secondary data analysis stage, the sums of each subscale were used as the scoring criteria, for example for EE (0-54), DP (0 to 30) and PA (0 to 48) [5].

Descriptive summary statistics was used for the continuous variables and measures of central tendencies. Chi square test was used to compare and test for associations between two categorical variables and bivariate test was used to compare and test for association between more than two categorical variables at a significance level set at $p<0.05$. Regarding data on burnout, coefficients were formed by weighing each dimension so that the scores corresponded to the original response scale ($0.4 \times$ exhaustion + $0.3 \times$ depersonalization + $0.3 \times$ diminished personal accomplishment). Burnout was categorized as follows: No burnout (scores 0 to 1.49), mild burnout (scores 1.50 to 3.49), and severe burnout (scores 3.50 to 6). Burnout was regarded as severe when symptoms were experienced approximately daily or once a week, regarded as mild when symptoms existed monthly, and no burnout when the symptoms were experienced only a few times a year or never [5]. Ethical approval was obtained from the Gauteng Department of Health Provincial offices and the Research Ethics Committee of the University of Liverpool (H00032894).

Results and Discussion

Majority of the participants were females (90%) and majority were

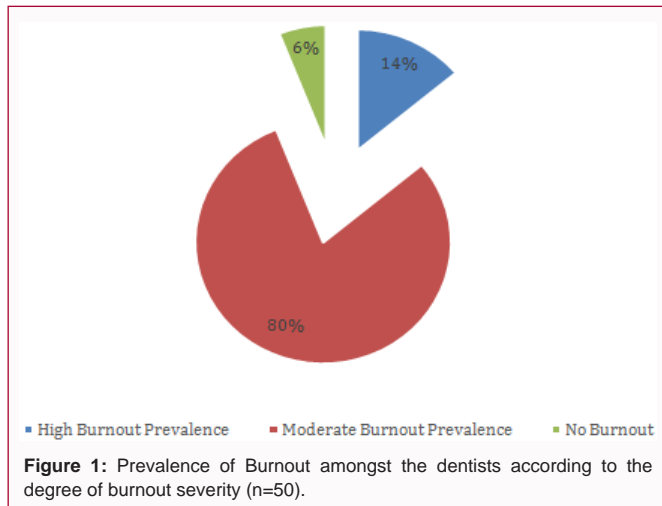


Figure 1: Prevalence of Burnout amongst the dentists according to the degree of burnout severity (n=50).

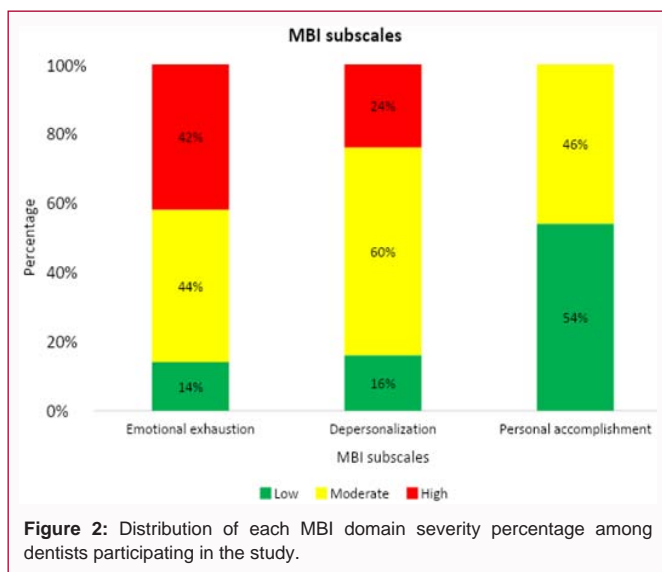


Figure 2: Distribution of each MBI domain severity percentage among dentists participating in the study.

between 36 and 45 years of age (44%). The prevalence of moderate burnout was 80% with 14% of the participants exhibiting symptoms of high prevalence of burnout due to high EE and high DP and low PA. Six percent of the dentists had no burnout due to low EE, DP and no PA (Figure 1).

The mean Emotional Exhaustion (EE) score was 25.82 (7.55) with 42% having high EE. The mean depolarization (DP) score was 9.82 (4.30) with 24% having a high DP. The mean Personal Accomplishment (PA) score was 28.94 (7.23) with none of the dentists reporting low PA. The overall prevalence of high burnout (high EE and DP and low PA) in the population was 14% (Table 1 and Figure 2).

The mean scores of EE, and PA were not significantly associated with gender ($p>0.05$). Age was significantly associated with mean scores of EE (32.8) and the mean score of DP (29.86) [$p<0.05$] with young dentists below 25 years of age suffering from symptoms of increased EE and increased DP. Work experience, hours worked per week, patients seen per day were not significantly associated with the mean scores of the different MBI domains ($p>0.05$). Long work shifts, breakdowns, and shortages of equipment, shortages of staff and patient overload were not significantly associated with the mean scores of EE, DP and PA ($p>0.05$). Poor communication and

management style were not significantly associated with the mean scores of the different MBI domains ($p>0.05$); however low levels of PA with mean scores (31.09) were significantly associated with poor remuneration. Dentists exhibited symptoms of poor personal accomplishment significantly associated with shortage of drugs with low level PA mean scores of 24.67 ($p<0.05$) (Table 2).

The prevalence of high burnout was 14% these findings were in line with a study conducted in Ireland which reported approximately 16% of dental staff experiencing high burnout [27]. However Jugale et al. [28] reported a high burnout among only 5.15% dentists in India and Zini et al., [29], reported high burnout prevalence among 3% of dentists in Israel. The difference in the prevalence of high burnout could be due to the economic environmental difference between the countries and between the private and public dental practice setting. The mean scores of the three MBI subscales were 25.85 for EE, 9.82 for DP and 28.94 for PA. These scores varied globally with reports by Dwivedi et al., [30], in India reporting EE (24.75), DP (15.94) and PA (19.66) and PA (33.3) and EE (2.0), DP (1.2) and PA (4.8) in the United States [31]. The difference in the subscales could be due to the fact that there is a high patient load for dentists in the public sector of Gauteng. Furthermore, in SA there is 0.02 dentists per 1,000 population ratio which is below the World Health Organization [32], recommendation target ratio of 1 per 1,000 population [33]. Approximately more than a third of the participants had high EE (42%) and less than a third had high DP (24%) levels and none had high levels of PA. This was inconsistent with the findings reported by Choy et al. [16], in Hong Kong with high levels of EE (25.4%), DP (17.2%) and low PA (39.0%). Twenty percent of dentists in this study had worked for more than 5 years and this was not significantly associated with any of the MBI subscales. Dwivedi et al., [30], also reported no significant relationship between dental experience and general stress ($p>0.05$). However, Huri et al., [34], on the other hand reported a significant relationship between increased EE and lower levels of PA among dentist with more than 15 year’s work experience exhibiting more unfavorable outcomes compared to older dentists [23]. Sixty six percent of dentists in this study work for more than 20 h per day (66%) and this are in line with the public sector working 40 h per week in SA. Interestingly majority of the sample experienced symptoms of EE, DP and PA subscales in the working less than 20 h per week group, however there was no significant association between hours worked per week and any of the MBI subscales ($p>0.05$).

The number of patients seen per day by each dentist were ranging mostly between 10 to 20 patients per day and 21 to 30 patients per day with no significant association between the number of patients seen a day and any of the MBI subscales. However, a similar study conducted in Turkey indicated a significant association between the number of patients seen per day with high EE and DP levels [34]. As dentists in Turkey complained of not having sufficient

Table 1: Mean score (standard deviation) and the prevalence of each MBI domain.

MBI Domain	Mean (SD)	Low (total?)		Moderate		High	
		n	%	n	%	n	%
Emotional exhaustion	25.82 (7.55)	7	14	22	44	21	42
Depersonalization	9.82 (4.30)	8	16	30	60	12	24
Personal accomplishment	28.94 (7.23)	27	54	23	46		

Table 2: Mean burnout scores of sociodemographic characteristics and the Maslach Burnout Inventor (n=50).

		Emotional Exhaustion	Depersonalization	Personal Accomplishment
Gender	Male	30.8 (7.5)	11.2 (6.5)	30.6 (7.5)
	Female	25.27 (7.45)	9.67 (4.45)	28.76 (7.45)
	p-value	0.131	0.756	0.745
Age	< 25	32.57 (9.76)	13.57 (5.56)	29.86 (6.26)
	26-35	27 (5.85)	9 (2.86)	28.45 (5.82)
	36-45	22.36 (5.85)	8.59 (3.85)	29.59 (7.83)
	46-55	28.43 (8.88)	12 (4.87)	28.86 (8.85)
	> 56	25 (10.85)	8 (2.86)	24 (10.83)
	p-value	0.026*	0.027*	0.832
Work experience	< 5 years	24 (5.79)	9.67 (2.25)	27.5 (7.79)
	5 -10 years	26.85 (9.30)	10.15 (5.46)	28.08 (8.40)
	10 – 15 years	24.7 (7.58)	9.2 (2.93)	30.3 (5.92)
	15 – 20 years	24.54 (6.34)	9.54 (4.70)	29.08 (6.98)
	> 20 years	29 (7.89)	10.63 (4.89)	29.5 (8.14)
	p-value	0.717	0.897	0.98
Hours worked per week	Less than 20	26.36 (8.79)	10.09 (4.69)	27.91 (6.89)
	20-40	26.21 (7.69)	9.82 (3.99)	29.7 (6.99)
	>40	22.67 (4.39)	9.33 (6.29)	26.67 (9.79)
	p-value	0.545	0.478	0.6
Patients per day	< 10	27 (0)	14 (0)	22 (0)
	10-20	26.79 (6.35)	10.32 (4.73)	28.05 (6.56)
	21-30	24.8 (8.47)	10.2 (4.65)	29.05 (7.63)
	31-40	27.25 (8.71)	8.13 (1.36)	29.38 (8.02)
	> 40	20.5 (7.78)	6 (1.41)	38 (0)
	p-value	0.57	0.252	0.194
Poor remuneration	Yes	25.73 (9.82)	9.82 (5.11)	31.09 (7.06)
	No	25.89 (5.34)	9.82 (3.64)	27.25 (7.02)
	p-value	0.563	0.434	0.035*
Long shifts	Yes	23.67 (7.45)	9.50 (2.81)	26.83 (3.82)
	No	26.11 (7.60)	9.86 (4.49)	29.23 (7.56)
	p-value	0.549	0.629	0.336
Breakdown of equipment	Yes	27 (8.95)	10 (4.79)	28 (7.58)
	No	24 (6.11)	8 (3.71)	28 (7.06)
	p-value	0.458	0.119	0.953
Shortage of staff	Yes	25.17 (6.83)	9.58 (3.94)	29.00 (7.28)
	No	27.50 (9.23)	10.43 (5.23)	28.79 (7.35)
	p-value	0.454	0.852	0.983
Staff communication	Yes	25.90 (9.27)	9.90 (4.61)	29.55 (6.90)
	No	25.77 (6.32)	9.77 (4.16)	28.53 (7.52)
	p-value	0.889	0.936	0.591
Supervision/Issues of authority	Yes	25.72 (6.61)	10.72 (4.84)	27.78 (8.13)
	No	25.88 (8.13)	9.31 (3.96)	29.59 (6.72)
	p-value	0.935	0.336	0.36
Patient overload	Yes	25.68 (7.40)	9.79 (4.54)	28.91 (7.18)
	No	26.13 (8.11)	9.88 (3.88)	29.00 (7.55)
	p-value	0.892	0.494	0.975

Shortage of Dental material	Yes	28.44 (8.66)	12.00 (5.79)	27.44 (9.52)
	No	25.24 (7.28)	9.34 (3.83)	29.27 (6.73)
	p-value	0.368	0.184	0.525
Shortage of Drugs	Yes	26.00 (4.87)	9.89 (3.52)	24.67 (6.48)
	No	25.78 (8.07)	9.80 (4.49)	29.88 (7.11)
	p-value	0.694	0.664	0.021*
Shortage of Equipment	Yes	26.24 (6.93)	9.76 (3.85)	29.00 (7.57)
	No	25.61 (7.95)	9.85 (4.57)	28.91 (7.17)
	p-value	0.636	0.709	0.984
Shortage of Soap and hand spray	Yes	25.78 (6.61)	9.48 (3.65)	28.96 (7.21)
	No	25.87 (8.68)	10.22 (5.01)	28.91 (7.41)
	p-value	0.792	0.844	0.906

time in between patients and limited relaxation time in the work environment. The difference with these two studies could be that the SA population dynamics are different compared to developed countries, with 80% of the population relying on an under resourced public sector as the majority of South Africans do not have health insurance. Furthermore, there is a high caries burden dentists are prone to treat, a high percentage of dental complaints related to pain and sepsis, with a low percentage of treatment rendered focusing on restorations. However, patients seen per day were not significantly associated with any of the three MBI domains.

Dental Material shortages were recorded by less than 20% of dentists and there was no significant association between dental material and any of the MBI subscales. However, it should be noted that the shortage of dental materials negatively impact on restorative dental treatment being offered in the communities of low and middle income countries. In addition, dentists reported shortage of drugs in the public oral health centers. This is in line with studies conducted in low income and middle income countries including SA [35-38]. But, there was a significant association between the PA subscale of the MBI tool and shortage of drugs. This is undesirable as it implies that dentists were unable to meet the oral health needs of the patients leading to possible poor professional self-esteem. Shortages of equipment were reported by the dentists with no significant association in this study between the MBI subscales and shortages of equipment. This is in line with other studies conducted in SA that reported shortages of dental equipment within the public oral health sector [39,40]. In addition, studies in Eastern Africa have also reported a shortage of dental equipment [41]. This ultimately compromises the availability of quality dental preventative treatment to the general public of SA.

Dentists indicated shortages of hand sanitizers in their various dental facilities. This is in line with a global perspective research conducted by Oosthuysen et al. [40]. However, there was no significant association with any of the three MBI subscales. The shortages of hand sanitizer in this study are of great concern since it leads to non-compliance of the dental clinicians with the PPE protocols in developing countries including SA. As other studies in low income and medium income countries have also indicated, poor PPE compliance due to shortages of hand sanitizers [40]. In this study poor remuneration was reported by less than 50% of the dentists and was significantly associated with low PA ($p < 0.05$) this is in line with studies conducted in Brazil that found salaries to be significantly associated with job dissatisfaction amongst oral health workers [41]. Choy et al., [16] reported poor earnings lead to low

levels of PA among dentists. Furthermore, this is worsened by the shortage of health staff members and filling of vacant posts within the overburdened public health sector [42]. Thus, it's not surprising that the majority of dentists in this study felt they were overburdened by patients in the public dental facilities, although this was not associated with any of the MBI subscales. A study conducted in Turkey reported a significant association between patient overload and burnout among dentists [34].

Long working hours was reported by less than 15% of the participants and there was no significant association between long working hours and any of the MBI subscales. In SA, public oral health centers operating hours are regulated by the National Department of Health including overtime hours and are mostly according to the PHC facilities and district hospitals are operating hours in which most of our participants are employed. Thus it is not surprising that only a few of the participants reported burnout associated with long shifts. However global studies on burnout among doctors and nurses have reported a significant association between burnout and long shifts of more than 12-h shift [43]. A majority of the dentists reported shortages of staff in the public oral health centers in Gauteng. This is in line with other global trends of undersupply of dental and medical health personnel in low and middle income countries as a majority of them migrate to well-resourced high income countries [44]. However, there was no significant association between shortages of staff and any of the MBI subscales. The shortage of doctors and dentists including specialists in the public sector is a well-researched and published topic in low to middle income countries. In SA it is worsened by the failure to absorb newly qualified dentists into the public health sector due to poor human resources policy planning and implementation, lack of finances to fill the vacant posts, pay salaries and poor working conditions [24]. Furthermore, a systemic review conducted by Saborita et al., [17] found that dentists were experiencing feelings of burnout due to inadequate salaries and poor working conditions which inversely had a negative impact on the quality of patient care. Staff communication was rated the highest with 60% of the dentists agreeing that they could easily communicate with other staff members on a daily basis. Communication was not significantly associated with the burnout MBI subscales. This finding is in line with the study conducted in Central India by Dwivedi et al. [30]. The dentists indicated a healthy relationship with their supervisors (64%) and colleagues. Interpersonal relationships with supervisors were not significantly associated with the burnout MBI subscales. This finding is in line with as study conducted in Central India [30].

Limitations

There is limited literature published on the burnout of dentists in low and middle income countries. The current existing literature is more than ten years old and it focuses mostly on dental students, medical students and medical personnel. More research on the topic needs to be conducted and published in Sub Saharan Africa in order to be able to make a more valid global comparison on the level of burnout among dentists. This is a cross-sectional study design, thus was not possible to establish a causality relationship between the burnout, demographics and job related stressors. Furthermore, the cross-sectional data did not distinguish the sequence of events. For example, did not assess if burnout had an impact on the quality of dental care offered to patients. It also did not determine the impact of burnout on the dentists that might lead to depression or thoughts of suicide. Thus longitudinal studies should be conducted in the future in order to investigate the impact of burnout on patient care and dentists. Studies have shown that participants in such studies are usually dentist who is already experiencing burnout thus it's difficult to compare the difference between participants and non-participants.

Public Health Significance

This study has identified the evidence of burnout amongst dentists in SA. Furthermore, it has identified job related stressors which are possible risk factors to burnout of dentists within the public oral health system. It is expected that oral health managers will utilize the findings of these studies to develop future programs specifically designed to address the specific work-related risk factors associated with burnout among dentists. This study has shown the need to expand the evaluation of burnout and its job related risk factors into other provinces, private sectors and academic sectors in order to allow all dentists within SA to benefit from the evaluation of burnout covered in this project. It is crucial that the findings of this study are used to create awareness amongst oral health managers and staff on the short, medium and long term impact of burnout among dentists and the job-related risk factors. Furthermore, it would be interesting to conduct more burnout studies in the COVID-19 era.

Future Research Implications

Burnout is dynamic and complex in nature and it fluctuates over a period of time thus longitudinal studies should be conducted in the future to show the long term impact of burnout and the causation of burnout among dentists.

Recommendations

Ensure adequate dental resources such as drugs, dental material and equipment are available in the clinics as these impacts negatively on the type of treatment offered to the patient and the morale of the dentists. Oral Health managers and immediate supervisors should encourage co- and peer support within the work environment as it has been proven to be a protective intervention against burnout on a long term basis. Encourage relaxation and sport activities to the dentists during work breaks as evidence has proven that it reduces the level of chronic stress. Design and implementation of stress management workshops in order to train dentists to develop their own coping strategies towards stress. Encouragement and support of dental specialty short courses and ensure the relevant resources are available in the clinics as this has been found to be important in improving the level of self-worth (PA) of the dentists [29].

Conclusion

This study highlights that the overall burnout among the dentists was low and dentists were happy with staff communication and supervisor relations within the public oral health sector. This study has identified risk factors for burnout among dentists as age with the younger dentists being more prone to burnout, poor remuneration and shortage of drugs. Thus it's important for oral health managers to address all of the reported risk factors highlighted in the study. Longitudinal studies are required in the future to demonstrate the casual and affect relationships and to determine the long time effects of burnout.

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