THESIS

ON

IDENTIFYING DETERMINANTS OF BURNOUT AMONG DENTAL PRACTITIONERS OF BANGLADESH

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RECOMMENDATION

This is to certify that Salwa Islam worked on "Identifying the determinants of burnout among dental practitioners of Bangladesh" under my supervision. I have gone through the paper and it is my pleasure to let you know that it is up to the mark and to my satisfaction**.**

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

BACKGROUND: Burnout syndrome has recently been recognized as a widespread and occupational phenomenon. The syndrome has an early age of onset and has been reported to create a path towards developing other mental health disorders like depression, suicidal ideation and social anxiety disorder. Burnout can impair family & social life of an individual and also limit their success in professional settings and academia. The significance of this disorder has led many to study its prevalence among healthcare professionals and particularly among dental practitioners. Burnout takes a toll on dentists due to its demanding physical and mental efforts as they undertake intricate work on patients who are in a highly anxious state.

OBJECTIVE: Bangladesh has been oblivious to the knowledge of burnout and the factors associated with it among the dental practitioners. The importance of addressing this issue is necessary as patient care is directly related to the mental wellbeing of a dentist. The current study seeks to determine the factors associated with development of burnout by conducting a cross-sectional study encompassing dental practitioners in Bangladesh with a sample size of 210 respondents.

METHOD: Data for the study was acquired through an online self-administered structured questionnaire. The questionnaire contained the BMS (Burnout Measure Scale) questionnaire and also the socio-demographic, academic and work-related variables under investigation. Raw data was analyzed using R software. Processed data underwent descriptive and multivariate logistic regression analysis, while statistical significance was indicated by p values less than 0.05.

RESULT: Overall, 63% of the respondents developed burnout among the study population. Socio-demographic factors like age, gender and history of smoking and academic and work-related factors like studying for civil service exams, graduation

institute and mistreatment/abuse from patient were strongly associated with the development of burnout. As the age increases the development of burnout decreases (OR= 0.86, $p<0.10$). Burnout is more prevalent in the case of females (OR= 0.22, $p<0.05$) and graduating from public dental school (OR= 0.44, $p<0.05$) Respondents who had a history of smoking (OR= 3.2, $p<0.05$) and who were studying for civil service exams (OR= 3.5, $p<0.05$) were thrice as likely to develop burnout.

CONCLUSION: These results points towards the urgent need to target early preventive interventions during the student life and training so that dentists don't suffer from burnout in their professional life. Teaching skills in stress management, self-care and psychological well-being maybe helpful in coping with burnout among the dental practitioners.

CHAPTER I

INTRODUCTION

1.1 Overview

Mental health disorders account for the second leading cause of disease burden in terms of years lived with disability (YLDs) and the sixth leading cause of disability adjusted life years (DALYs) worldwide (Sagar et al., 2017**).** One of the mental health disorders that influences the occupational or professional aspect in an individual's life is Burnout Syndrome. According to the World Health Organization (WHO) international classification of diseases "*Burnout is characterized as a syndrome of three dimensions-feeling of energy depletion or exhaustion, increased mental distance from one's job or feeling of cynicism or negativism about one's job and reduced professional efficacy"* (ICD, 2019, 11th edition). However, WHO classified burnout as an occupational phenomenon rather than a medical condition. Though WHO is the first significant health organization to legitimize burnout as a syndrome, the American psychiatric association (APA) is also considering to add burnout syndrome in their official manual of *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5, 2013, 5th edition). While burnout does not appear in the DSM-5, it has been established as a legitimate justification for sick leave in several countries, for instance Sweden (Friberg et al., 2009).

The first researcher to publish a scientific journal research on burnout was Herbert Freudenberger in 1974, where he characterized burnout by a set of symptoms that included exhaustion resulting from work's excessive demands as well as physical symptoms such as headaches, sleeplessness, irritation, closed thinking and feeling

depressed. After the publication of Freudenberger's original paper, curiosity in occupational burnout grew and the concept of burnout was explored in various ways.

To this day it is widely known that burnout found it’s etiology from the fact that an individual is unable to adjust to the chronic emotional stress from work. According to psychologist Christina Maslach, a pioneering burnout researcher, burnout has three components: overwhelming exhaustion, cynicism and detachment, and a sense of ineffectiveness and lack of accomplishment (Maslach Burnout Inventory Manual, 2016).

1.2 Burnout in dentistry

Burnout can cause numerous detrimental effects such sickness, injury, accidents, low productivity and moral conflicts on health care professionals and institutes which makes it one of the emerging challenges in the health care systems, patient care and patient safety around the world (Huri et al., 2016). Burnout is one of the sources from which health care professionals suffer from work-related stress, depression and even sudden deaths. One of the healthcare professionals who are susceptible to burnout are the dental practitioners.

Burnout takes a toll on dentists due to its demanding physical and mental efforts as they undertake intricate work on patients who are in a highly anxious state. The conundrum is that dental practitioners are typically driven individuals with jobs that can be stressful as they work in small dark places where millimeters make a big difference while attempting to do more in less time. Furthermore, the inherent drive for perfection in dental treatments also increases the likelihood that dental practitioners are more prone to experience burnout. Development of burnout in dentists can lead to early retirement, and indifference to treatment outcomes and to patient condition or needs.

Rate of burnout among dentists and its effects on their lives have been previously investigated by many researchers, it was reported in Northern Ireland that more than 26% of dental staff were at severe risk of burnout (Gorter and Freeman, 2011) and 84% of dentists in Lithuanian developed burnout (Puriene et al., 2008). Te Brake et al. (2008) studied the sequence of the three dimensions of burnout and reported that emotional exhaustion is the key dimension of burnout.

A systematic review suggested that the most prevalent and significant factors associated with burnout among dental practitioners were younger age, male, student status, working hours, those enrolled in clinical degree programs and certain personality types (Singh et al., 2016) . Moreover, a study of 307 Jordanian dental students concluded that females were more prone to burnout and clinical students experienced more burnout (53%) in particular than those enrolled in a non-clinical programs (39%) (Badran et al., 2010). A follow-up study of the causal relationship between burnout, job-strain and depression in 2555 Finnish dentists concluded that the path from burnout to depression appears to be stronger than the trail from depression to burnout (Ahola et al., 2007). All these studies suggest that the nature of development of burnout in dental practitioners is multi-factorial in nature.

Pohlmann et al. (2005) studied the Burnout syndrome in graduate students, attending their fourth and fifth year of the dentistry course, in German and Swiss universities, and found that approximately one third of the students suffered from burnout syndrome. Furthermore, Humphris et al. (2002) conducted a study with first-year undergraduate students in seven dentistry colleges in Europe, and found high levels of burnout, which shows evidence of the onset of burnout in dental practitioners at an early stage of their career and student life.

In Spain, a study conducted among 3876 dentists showed that positive work environment, high score in job satisfaction scale and more years of professional experience corresponded too limited experience of burnout (3.8%) among the dentists (Molina et al., 2021). Burnout in dental practitioners may also vary depending on the country of residency, social, economic and political stability of a nation, and the environments of private clinics in which they practice.

Studies were also conducted in Asian countries to determine the level of burnout, a research conducted in 2009 among 1000 Korean dentist showed high levels of burnout and emotional exhaustion(41.2%) especially among younger age, male gender and unwillingness to choose dentistry as a profession (Jin et al., 2015). Another study conducted on dental practitioners of Saudi Arabia concluded that dental clinicians are more likely to develop burnout (61%) compared to their colleagues who are purely involved in academics or both academics and clinical practice (Haifa et al., 2011). A similar scenario was also seen in a study conducted among dentists in India where practitioners involved in clinical practice and the ones above the age of 40 years suffered from higher level of burnout than their counterparts (Deepak et al., 2016).

There have been a number of reviews exploring the prevalence and determinants of burnout in dental health professionals in countries from North America, Europe, and south Asia. However, none to our knowledge have studied the determinants that causes development of burnout and among dental practitioners in Bangladesh. The prevalence of burnout may be higher among dental practitioners of Bangladesh since the health systems and financing models are either weak, overburdened, or rapidly developing and responding to the changing disease patterns and health status of the population. Thus, it needs to be addressed swiftly, especially in Bangladesh where the dental needs of a

large population are dependent on limited professionals

1.3 Aim and importance of the study

Although burnout is an alarmingly rising condition among healthcare professionals in different countries, Bangladesh is yet to investigate the prevalence of burnout and its associated factors more thoroughly. To this day Bangladesh has been oblivious to the concept of burnout and its impact on the mental wellbeing of an individual. Since burnout is a topic yet to be explored there is no published research that could provide us an idea of the determinants that develops burnout among dental practitioners in Bangladesh we took the initiative to conduct this study to explore the determinants that develop burnout among the dentists.

The current study was conducted with the aim to find whether socio-demographic factors, academic and work-related factors were crucial in developing burnout among dental practitioners in Bangladesh. The association of development of burnout with these factors were also evaluated and reported in this study. The study was conducted to lead us towards a better understanding of the magnitude of burnout among dentists which will be necessary to develop possible interventions to combat and prevent mental disorders and illness among these healthcare professionals.

CHAPTER II
MATERIALS AND METHODS

2.1 Operational scale and its characteristics

To measure burnout among the respondents we used a short-version of Burnout Measure Scale developed by Pines and Aronson. This scale has been proved to be effective, economical and reliable to measure burnout among professionals.

2.1.1 Burnout measure scale-short version (BMS)

There are various definitions, but the most widely used definition seems to be the Pines and Aronson's definition where burnout is defined as a "*state of physical, mental and emotional exhaustion caused by a long involvement in emotionally demanding situation*" (Pines and Aronson., 1988) and it from this concept the Burnout measure scale was created. Burnout measure (BM) scale assess the degree of exhaustion in three category:

a) *Physical*: A set of complaints expressed by the subject, linked to its physical state (e.g.: the feeling of physical weakness, fatigue, sleep-related problems).

b*) Mental*: A set of complaints related to physical weakening and mental fatigue expressed by the individual (e.g.: the feeling of despair or abandonment).

c) *Emotional*: It corresponds to the person's feeling of not efficiently responding to the social environment demands anymore.

BM scale is defined on the basis of these three criteria. The BM-scale is a one-dimensional measure which originally included a 21-items self-report questionnaire evaluated on 7-point frequency scales, assessing the level of an individual's physical, emotional, and mental exhaustion. But for this study we will be using a shorter, 10-

item version of BM (BMS) developed by Malach-Pines (Pines et al.,2005).This scale measures burnout with a 10-item self-report questionnaire which is evaluated on a 7 point frequency scale (1=never, 2=almost never, 3=rarely, 4=sometimes, 5=often, 6=very often and 7=always) in order to calculate the burnout score all the points of the 10-item questionnaire are added and then divided by 10.The burnout score is then determined by the following criteria:

a) Score less than 2.4 - "*No burnout*"
b) Score between 2.4 to 3.4 - "*Risk of burnout*"
c) Score more than 3.4 - "*Burnout*"
d) Score between 4.5 to 5.4 – *"High Burnout"*
e) Score above 5.4 - *"Very High Burnout"*

2.1.2 Validity and reliability of burnout measuring tool, BMS

The English version of BMS will be used in this study. Studies have shown very satisfactory psychometric properties of BMS, the Cronbach's alpha for this scale is 0.87 which reflects a good internal consistency (Malach-Pines, 2005). Data from two national samples (Israeli Jewish and Arab) and 3 occupational samples attest to the validity and reliability of the BMS. Its ease of use and high face validity make the BMS attractive for use in case of studies related to stress management. BMS was created in response to researchers' and practitioners' need for an easy-to-use instrument requiring less questionnaire space and less time for administration and scoring (Pines et al.,2005).

2.2 Study design and sample

A cross-sectional study design was adopted for this study. Due to the current pandemic situation, data were collected using online questionnaires, which has 2-part self-administered structured questionnaires. The first part of the questionnaire consisted of

a form, in which socio-demographic, lifestyle, behavioral, academic achievements and work-related factors were recorded and the second part consisted of Burnout Measure Scale (a shorter 10-item version) developed by Malach - Pines to measure burnout level (Pines et al., 2005).

In this cross-sectional study, 300 dental practitioners were reached out and asked to fill out the questionnaire, among which 210 dentists volunteered to participate and fill out the questionnaire. The sample of the study included BMDC (Bangladesh medical and dental council) registered dentists in hospitals, private clinics and dental trainees and excluded dentists who were uncooperative, unavailable or inaccessible at the time of data collection and who did not fill the form completely. The collection of the data from the participants commenced from January 2021 to April 2021. An online link to fill the questionnaire was made available and send to the respondents by email. Prior to sending emails the respondents were contacted through zoom meetings and the purpose of this study was explained to them long with seeking permission to willingly participate in this current study.

2.3 Variables and their characteristics

Socio-demographic, academic and work-related variables were collected from the first part of the questionnaire, the demographic variables that were considered in this study were age, gender, number of family members, marital status, monthly income and smoking habit**.** Academic variables like institute of completing their bachelors of dental surgery (public/private), enrollment in clinical programs (PGT, FCPS, DDS, MS, internship) and currently studying for Bangladesh Civil Service (BCS) exam were included. Work-related variables taken into account were the number of working hours in a day, presence of supportive and helpful colleagues and fear of doing a dental mishap during treating a patient. Dentist –patient interaction was generated from the

question about whether the respondent had encountered any form of verbal and physical abuse or mistreatment from the patient. Burnout was measured using the Burnout Measuring tool, BMS and the responses were categorized into two category depending on the score. A score below or equal to 3.4 was recorded as 'Burnout absent' and a score above 3.4 was recorded as 'Burnout present'.

2.4 Data management and analysis

After completion of data collection, the data analysis was performed using R software. Descriptive statistics was used to characterize the responses from the questionnaire. For categorical variables, frequencies (numbers and percentage) and for continuous variables mean and standard deviation was recorded. Multivariate regression analysis was then performed to estimate the odds ratio (OR) between the determinants and development of burnout. The statistical significance was defined as $p < 0.05$. and the confidence interval was 95%.To ensure and maintain the quality of data collection, the data collected was checked, rechecked to avoid any errors or missing information and monitored on a regular basis.

2.5 Ethical Consideration

All participants received oral information about the purpose of the study. Informed written consent was obtained prior to data collection and study participants were informed that their participation was voluntary and they could withdraw at any time. The data were handled confidentially and no personal identifiers we collected of the respondents.

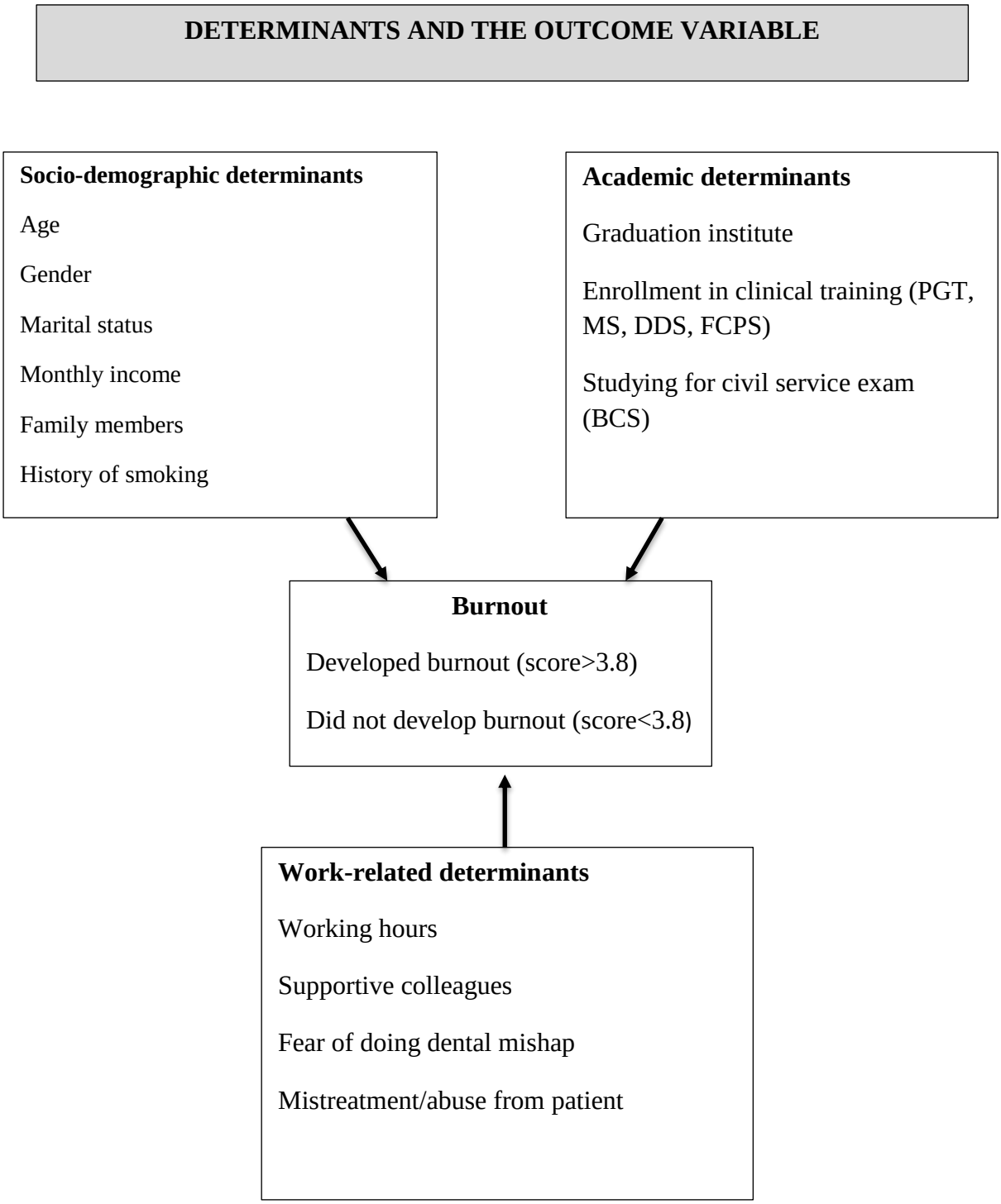

Figure-1 Conceptual Framework of Predictors and outcome variables

CHAPTER IV

RESULTS

4.1 Characteristics of the determinants

Among the 300 dental practitioners reached out, 210 (70%) participants consented and completely filled out the questionnaire. Descriptive statistics were used to characterize the survey responses, for continuous variables, means and standard deviation were reported and for categorical variables, frequencies and percentages.

Table-1 shows the socio-demographic characteristics of the dental practitioners who participated in the current study. Among the participants, 132 (63%) were male and 78 (37%) were female. The overall mean age of the participants were 32 years. The majority of the participants were married (56.2%) and most of the participants had an average of four members in their family during the study. Furthermore, it was seen that a large portion of the respondents had an average monthly income of less than 50 thousand (62%) as opposed to monthly income of more than 50 thousand (37%). Among the respondents, 64% of them were non-smokers and 36% were smokers.

Table-2, outlines the academic and work-related factors of the participants in this study. It is seen that 59% of the respondents completed their undergraduate degree from private dental schools and remaining were from public dental schools. Most of the participants were already enrolled in clinical training programs (60%) as opposed to studying for the civil service exam and 67% of the participants were neither involved in training nor studying for the civil service exam. About 64% of the respondents reported they had supportive and co-operative colleagues in their work place. Majority of the participants had an average working hours of 9.4 hours and 52% of them had fear

of performing dental mishaps or accidents while treating their patients. Respectively, 40% and 46% of the dental practitioners had encountered at least once or more than once mistreatment and abuse of some kind by the patient, whereas 14% never had such experience.

Table-1: Socio-demographic characteristics of the respondents (n=210)

Variables	Frequency (%)	Mean ± SD
Gender		
Male	132(63)	
Female	78(37)	
Age/years		32 ± 4.17
Marital status		
Married	118(56.2)	
Unmarried	92(43.8)	
Members in a family		4 ±1.29
Monthly income(taka)		
Less than 30,000	64(30.5)	
Between 30,000-50,000	67(32)	
More than 50,000	79(37.6)	
History of smoking		
Never	135(64.3)	
Ever	75(35.7)	

Table-2 Academic and work-related characteristics among participants (n=210)

Variables	Frequency (%)	Mean ±SD
Graduation institute		
Public	86(41)	
Private	124(59)	
Clinical trainee		
Yes	126(60)	
No	84(40)	
Student status		
Yes	69(33)	
No	141(67)	
Working hours		9.4 ± 2.3
Fear of doing a mishap		
Sometimes	109(52)	
Rarely	101(48)	
Mistreatment from patient		
Never	29(14)	
At least once	84(40)	
More than once	97(46)	
Supportive colleagues		
Yes	135(64.3)	
No	75(35.71)	

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Among the 210 participants, 133 (63%) participants have developed burnout and 77 (37%) of them did not develop burnout.

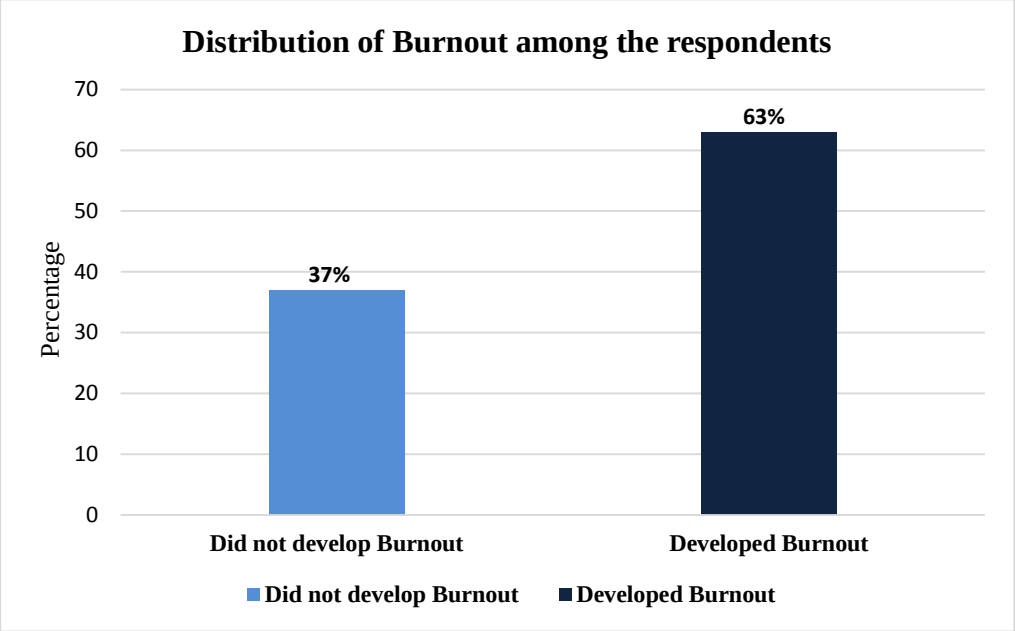

Figure 2: Percentage distribution of burnout among the dental practitioners of Bangladesh.

4.2 Logistic regression model

A multivariable logistic regression model was used to estimate the odds of having burnout among the respondents. For the regression analysis burnout was defined as a categorical variable in which, a score above 3.8 was considered as 'burnout present' and a score below and equal to 3.8 as 'burnout absent'. Table-3 and Table-4 show the results obtained by multivariate logistic regression analysis. The parameter estimates of the regression model were interpreted as odds ratios at 95% CIs.

From the adjusted values of odds ratios presented, it can be seen that gender of the respondents was significantly associated with the development of burnout, as male dental practitioners are 78% less likely to develop burnout than females (OR=0.22, 95% CI: 0.06-0.59, $p<0.05$).

The effect of age on burnout is found to be significant at 10% level of significance (p = .086), more specifically for 1-year increase of age the odds of developing burnout decreases by 0.15 point. Marital status and number of family members was found to be insignificant. Furthermore it was seen that as the average monthly income of the respondents increases the likelihood of developing burnout also increases, respondents having an monthly income of more than 50 thousand are 1.6 times more susceptible to develop burnout than the ones who has a monthly income of less than 50 thousand (OR=1.6, 95%CI: 0.48-5.98).

The factors related to the academic, behavior and work of the dental practitioners such as institute of undergraduate degree, current student status, history of smoking, and most importantly mistreatment or abuse of some kind by patient were found to be significantly associated with the development of burnout in the current study. Respondents who have history of smoking cigarettes were 3 times more prone to develop burnout than respondents who never smoked cigarettes in their lifetime (OR=3.2, 95% CI: 1.20-8.93, $p<0.05$) (Table-3). Participants who were currently studying for the civil service exams were thrice as likely to develop burnout (OR=3.5, 95%CI: 1.39-11.8, $p<0.05$). The participants who had experienced frequent mistreatment or abuse by patient are 3.5 times more likely to suffer from burnout as opposed to the ones who did not go through such experiences(OR=3.63, 95% CI:1.41-9.9.74,$p<0.05$). Interestingly, working hours, enrollment in clinical training programs and having supportive colleagues did not have significant impact on the development of burnout among the respondents ($p>0.05$) (Table 4).

Table 3: Multivariate logistic regression analysis of socio-demographic variables and development of Burnout (n=210).

Determinants	**Estimate**	**OR**	**p-value**	**95% CI of OR**	
				Lower	***Upper***
Gender					
Male	-1.520	0.218	<0.05	0.066	0.589
Female		1.00			
Age(in years)	-0.151	0.860	0.087	0.719	1.018
Marital status					
Married		1.00			
Unmarried	-0.210	0.811	0.670	0.303	2.104
Number of family members	0.185	1.20	0.262	0.873	1.675
History of smoking					
Never		1.00			
Ever	1.170	3.22	<0.05	1.202	8.927
Monthly Income					
Less than 30,000	-0.672	0.511	0.298	0.139	1.789
Between 30,000-50,000		1.00			
More than 50,000	0.494	1.640	0.441	0.476	5.980

Table 4: Multivariate analysis of academic and work-related factors and development of Burnout (n=210).

Determinants	Estimate	OR	p-value	95% CI of OR	
				Lower	*Upper*
Graduation Institute					
Public		1.00			
Private	-0.819	0.441	<0.05	0.185	1.021
Clinical Trainee					
Yes		1.00			
No	-0.233	0.793	0.623	0.317	2.052
Current student status					
Studying	1.26	3.51	<0.05	1.39	11.80
Not studying		1.00			
Working hours	-0.044	0.957	0.701	0.760	1.194
Fear of doing a mishap					
Sometimes		1.00			
Rarely	-0.874	0.417	0.087	0.150	1.131
Mistreatment/abuse from patient					
Never	-1.72	0.180	0.51	0.039	6.869
At least once		1.00			
More than once	1.29	3.63	<0.05	1.413	9.739
Supportive colleagues					
Yes		1.00			
No	-0.366	0.694	0.418	0.281	1.671

CHAPTER V

DISCUSSION

The current study was conducted in order to identify the determinants of burnout among the dental practitioners of Bangladesh. The instruments used and the methodology applied were relevant to achieve the aim of the study. The self-structured questionnaire proved as a reliable instrument in collecting the relevant socio-demographic characteristics, academic and work-related variables data which were proposed to be closely related to the development of burnout.

More than half of the study population developed burnout in the present study (63%) compared to reports in USA (38%) and Spain (20%) were the development of burnout was lower among dentists compared to our study (Deeb et al., 2018). The plausible reason behind such high levels of burnout in Bangladeshi dentist could be because of intense patient workload with limited number of dentists, not getting paid well and poor dentist-patient relationships (Modi et al., 2016). Using logistic regression, it was found that gender, age, history of smoking, graduation institute, studying for civil services exam (BCS) along with clinical practice and mistreatment/abuse by patient were strongly associated with development of burnout.

Gender and age played an influential role in developing burnout among dentists in Bangladesh. Females exhibited higher level of burnout than male which was similar to the finding in India but was in contrast with the findings in Denmark (Modi et al., 2016). Burnout is seen more commonly in females in Bangladesh, possibly because of higher expectations in domestic settings and conjugal life, causing a discrepancy in their work-life balance. Conversely, the present study found that as the age of the respondents increases the chances of developing burnout decreases. This can be attributed to the

concept that personal accomplishment and years of successful practice increases with increase in age which results on having a healthy mental state.

The institute from which the dentists completed their bachelors in dental surgery plays a pivot role in developing burnout as it is in student-life that the dentists encounter initial contact with patients, experience a time of transition, uncertainty and lack of confidence in their skills which results in them feeling intense exhaustion, anxiety and early onset of burnout which later on influences their professional life. the development of burnout in more in dentists graduating from public school as they tend to treat increasing number of patients with lack of resources and equipment from their student life.

Moreover, dentist who are studying for civil service(BCS) exams along with clinical practice were more prone to develop burnout which is quite a common scenario as they are constantly juggling between studying and working resulting on them being more exhausted and tired compared to dentist who are just clinically practicing (Al-Rawi et al., 2021) . The current study finding along with study in India reported that any kind of verbal, and physical abuse or mistreatment strongly influenced the development of burnout among the dentists(Reddy et al., 2014), since dental practitioners face and handle a wide variety of people during their work, it is evident that they will go through some kind abuse or mistreatment from patients during treating them, which may impact their professional and personal life negatively.

Interestingly, working hours was not strongly associated with development of burnout as oppose to finding in Lithuania and Spain were long working hours led to increased risk of burnout, anxiety and loneliness (Jugale et al., 2016). In the present study, monthly income, members in a family, enrollment in clinical training program, supportive and helpful colleagues did not show a strong association with the development of burnout in dental practitioners.

It was accepted that the present study had limitations since data were collected during the Covid-19 pandemic, which may have given distorted results compared to normal situations. The relatively small number of participants, may also have adversely impacted the outcomes and confounders were not considered only the unadjusted odds ratio were reported. Data for the study was obtained from an online questionnaire so it was difficult to ascertain that all the participants were well versed in understanding the questionnaire so there remains a degree of uncertainty in the accuracy of the data obtained.

The current study found that socio-demographic factors like gender, age, history smoking and academic and work-related factors like graduation institute, studying for civil service exam, mistreatment/abuse by patient to be strongly associated with development of burnout among dental practitioners. These finding emphasis that dental practitioners, in general, may be at particularly high risk of burnout not only because of the mental stresses of the profession, but also due to the work environment ,physical stresses on their bodies due to their working posture and detail-oriented diagnosis and treatment on patient. All of these issues can lead to consequences alcohol and substance abuse, isolation from family, friends and colleagues, anger and abusive behavior with family and friends, irresponsibity with finances, job dissatisfaction, suicidal ideation and even sudden deaths. Ultimately, if dental practitioners are chronically stressed and exhausted, it may negatively impact the care they provide to their patients and lead to patient dissatisfaction, malpractice and loss of patient lives which will eventually lead to loss of manpower in a population and lead to economic downfall of a country.

Recommendation

Since high percentage of burnout was determined in the current sample of dental practitioners, there is a need to target preventive interventions for dental students during their training so that they don't suffer from burnout in their professional life. Systematically teaching skills in stress management, self-care and psychological well-being maybe helpful in coping with burnout. Based on our findings, future research should be done in larger sample size to get a better understanding and impacts of burnout in dentists and healthcare professionals. Future research should also investigate the effects of provider stress and burnout on dental patient treatment outcomes, as the literature from the medical and nursing professions suggests that burnout may have a negative effect on patient care and healthcare professional's performance.

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APPENDICES

APPENDIX-A

QUESTIONNAIRE

SECTION-1

1. Please state your age:

2. Gender: □ Male

□ Female

3. Marital status: □ Unmarried

□ Married

4. How many members are there in your family:

5. Where did you complete your BDS degree from: □ Public institute/dental school

□ Private institute/dental school

6. Are you currently studying for civil service exam: □ Yes

□ No

7. Are you currently involved in any of the following training programs?

□ Intership

□ PGT (post-graduate training)

□ DDS (diploma in dental surgery)

□ MS degree (masters of science in dentistry)

□ FCPS-1/FCPS-2

8. What is your average monthly income?

□ <30,000tk

□ Between 30,000-50,000tk

□ >50,000tk

9. How many hours do you work in a day:

10. Do you have the habit of smoking: □ Yes

□ No

11. Do you have helpful/supportive colleagues: □ Yes

□ No

12. Do you have the fear of mistreating a patient or doing dental mistakes/mishaps during providing the treatment: □ Yes, always

□ Sometimes

□ Rarely

13. Have you been harassed/mistreated by the patient or the patient's family/acquaintances: □ No, never

□ At least once

□ More than once

SECTION-2

MEASUREMENT OF BURNOUT

To determine your burnout level the MALACH-PINES BURNOUT MEASURE will be used.

Instructions:

For each item, please circle/ tick the number to indicate the degree to which you feel the statement is characteristic or true for you.

When you think about your work overall how often do you feel the following?

Characteristics	**1-** Never	**2-** Almost never	**3-** Rarely	**4-** Sometimes	**5-** Often	**6-** Very often	**7-** Always
Tired							
Disappointed in people							
Hopeless							
Trapped							
Helpless							
Depressed							
Physically weak/sickly							
Worthless/like a failure							
Difficulty sleeping							
"I've had it!" or "I want to quit!' attitude							

APPENDIX-B

ABBREVIATIONS

BMDC – Bangladesh medical and dental council

BM – burnout measure

BMS- short version of burnout measure scale

R - Statistical Data Analysis Software

BMDC – Bangladesh medical and dental council

DSM - Diagnostic and statistical manual for mental disorders

ERC – Ethical Review Committee

GBD - Global Burden of Disease

WHO - World Health Organization

APPENDIX-C

INFORMED DECISION-MAKING CONSENT FORM

INDEPENDENT UNIVERSITY BANGLADESH

Code: **Date:**

Name of the respondent:

I am Salwa Islam, Student of MPH Program, Independent University of Bangladesh As a course requirement I am doing a research on "**Identifying the determinants of burnout among the dental practitioners of Bangladesh"**.

I am inviting you to participate in this research study. I need some valuable information from you as a part of my academic purpose. Your co-operation will be highly appreciated. You can refuse to answer any questions or leave anytime you feel like. If you refuse to leave you will face no problems. All the information provided by you will be kept confidential. Your identity will not be disclosed. Only study-related personnel will be allowed to see the information.

I will highly appreciate your cooperation and be grateful enough if you could provide all the information as accurately as possible. If you agree to participate in the study please sign at the space indicated below.

Investigators Signature & Date **Volunteers signature & date**