

## Prevalence of Medical Comorbidities in Dental Patients.

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### ABSTRACT

**Background:** Over the last few decades, oral health care has become a greater priority as people live longer with serious medical conditions and disabilities and the dentist must be aware of them to provide safe and effective oral care. **Objective:** To study the prevalence of medical comorbidities in patients seeking dental treatments. **Design:** A cross-sectional observational study. **Methods:** The study was conducted at the Department of Oral and Maxillofacial Surgery of Dental College and hospital in north India starting from april 2014 to march 2016 for the presence of medically compromised conditions. Demographic data of the patients was also collected to determine the frequency of comorbidities that may affect the dental patients older than 30 years of age. **Results:** A total of 7216 patients visited the oral surgery OPD during the period of april 2014 to march 2016. 5040 patients aged 30 years and above were included in the study. From a total of 5040 patients, 1336 patients (26.5%) were having comorbidities. The age of patients ranged from 30 to 80 years with the mean age  $\pm$  SD of  $45.2 \pm 11.6$  years. The majority of them (54%) were in the 4th to 6th decades of life. There were 694 male patients (51.95%) and 642 female patients (48.05%). In this study, hypertension was the most prevalent comorbidity accounting for 13.8% of total patients followed by diabetes mellitus( 8.29%) and ischaemic heart disease which accounted for 7.28%. Within the strata of medically compromised individuals, prevalence of hypertension was recorded as high as 52.02 %, followed by diabetes mellitus and cardiovascular disease which has prevalence of 31.29% and 24.27% respectively. **Conclusion:** It is very important for the attending clinicians to have an exact knowl-edge of the patient's medical conditions to provide safe and effective dental treatment.

**Keywords:** Dental patients, Hypertension, Medical comorbidities.

### INTRODUCTION

Patients visiting dental outpatient department(OPD) for treatment may present with different comorbidities, which sometimes may be unknown to them, or they may be on a complex range of medications for their medical conditions.<sup>[1]</sup> To provide optimal dental care for this medically compromised population, it is important to obtain a good medical history prior to any dental treatment. Moreover, modifications of dental management due to compromising medical conditions are necessary to provide better and safer oral care for patients.<sup>[2]</sup>

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There is a rapidly-growing elderly population in the world today, which implies a change of scenario in

both oral and general health care contexts. As the 65 and older age group increases in size, their health demands will increase as well. These advances are also reflected in better oral health care in a number of patients since they still retain their natural teeth into the old age.<sup>[3]</sup> The National Centre for Health Statistics reported that 15% of the adult population age 65 and over have chronic medical conditions. The most prevalent reported diseases are cardiovascular ailments, diabetes, hypertension, chronic bronchitis, and arthritis.<sup>[4]</sup>

The aim of providing dental treatment is to provide safe and effective management without causing any medical emergency. Dental treatment may sometimes be modified according to the comorbidity of the patient, and sometimes consultation with the medical consultant may be needed. There is a paucity of data concerning the prevalence of medically compromised conditions in dental patients from India. The aim of this study was to determine the prevalence of medically compromised conditions in dental patients.

## MATERIALS AND METHODS

This study was conducted at the Department of Oral and Maxillofacial Surgery at dental college and hospital in a town in northern India from April 2014 to March 2016.

All patients above the age of 30 years were included in the study. Medical and dental histories were recorded on a predesigned comprehensive history form by the attending doctor for each patient attending the oral and maxillofacial surgery OPD. Informed consent was obtained from all the individual participants included in this study.

The patient's medical and drug history was re-recorded to find out the prevalence of different medical problems including hypertension, diabetes mellitus, liver disorders, anaemia, respiratory disorders, cardiovascular disorders, neurological disorders, renal disorders, musculoskeletal disorders and thyroid disorders. In addition, familial tendency towards medical problems, drug history, and smoking habits of the patients were also recorded.

**Statistical analysis:** Statistical analysis was carried out using SPSS software. Chi square ( $\chi^2$ ) was used to describe male to female ratio. A P value less than 0.05 was considered statistically significant.

A total number of 7216 patients visited the OPD from April 2014 to March 2016 out of which 5040 were aged more than 30 years and were included in study. 1336 patients out of 5040 (26.5%) were afflicted with medical comorbidities.

The age of dental patients who were afflicted with medically compromised conditions ranged from 30 to 80 years with the mean age  $\pm$  SD of  $45.2 \pm 11.6$  years. Majority of patients (54%) were in the 4th to the 6th decades. There were 694 male patients (51.95%) and 642 female patients (48.05%).

In this study, hypertension was the most prevalent comorbidity accounting for 13.8% of total patients followed by diabetes mellitus (8.29%) and cardiovascular disease which accounted for 7.28%. There were many patients who were having more than one comorbidities. Within the strata of medically compromised individuals, prevalence of hypertension was recorded as high as 52.02%, followed by diabetes mellitus and cardiovascular disease which has prevalence of 31.29% and 24.27% respectively.

Among comorbidities hypertension and cardiovascular diseases were found significantly higher in males as compared to females while anaemia, diabetes mellitus, thyroid disorders and musculoskeletal complaints were more in females and the difference is statistically significant ( $P < 0.05$ ). Hypertension was most common in fifth decade onwards, diabetes was most common in fourth and sixth decade. Cardiovascular diseases was highest in elderly population of 60 years and more.

## RESULTS

**Table 1:** Prevalence of various medical comorbidities among dental patients.

Medical Comorbidity	No. Of Patients	Prevalance in %
Hypertension	695	13.8
Diabetes Mellitus	418	8.29
Ischaemic Heart disease	367	7.28
Anaemia	203	4.03
Musculoskeletal Disorders	352	6.98
Respiratory System	227	4.5
Neurological System	226	4.48
Thyroid Disorders	150	2.98
Hepatobiliary System	151	2.99
Renal Disorders	85	1.67

**Table 2:** Comparison of medically compromised conditions between genders

Co morbidity N=1336	Prevalence among Males N (%)	Prevalence among Females N %	P Value	Significance
Hypertension	431 (62.01)	264 (37.99)	0.00	Significant
Diabetes Mellitus	188 (44.98)	230 (55.02)	0.000614	Significant
Ischaemic Heart disease	212 (57.77)	155 (42.23)	0.009	Significant
Anaemia	61 (30.04)	142 (69.9)	0.00	Significant
Significant Musculoskeletal Disorders	137 (38.92)	215 (61.08)	0.00	Significant
Respiratory System	111 (48.89)	116 (51.1)	0.34	Not Significant
Neurological System	127 (56.19)	99 (43.81)	0.165	Not Significant
Thyroid Disorders	62 (41.33)	88 (58.67)	0.007	Significant
Liver Disorders	80 (52.98)	71 (47.02)	0.796	Not Significant
Renal Disorders	50 (58.82)	35 (41.18)	0.217	Not Significant

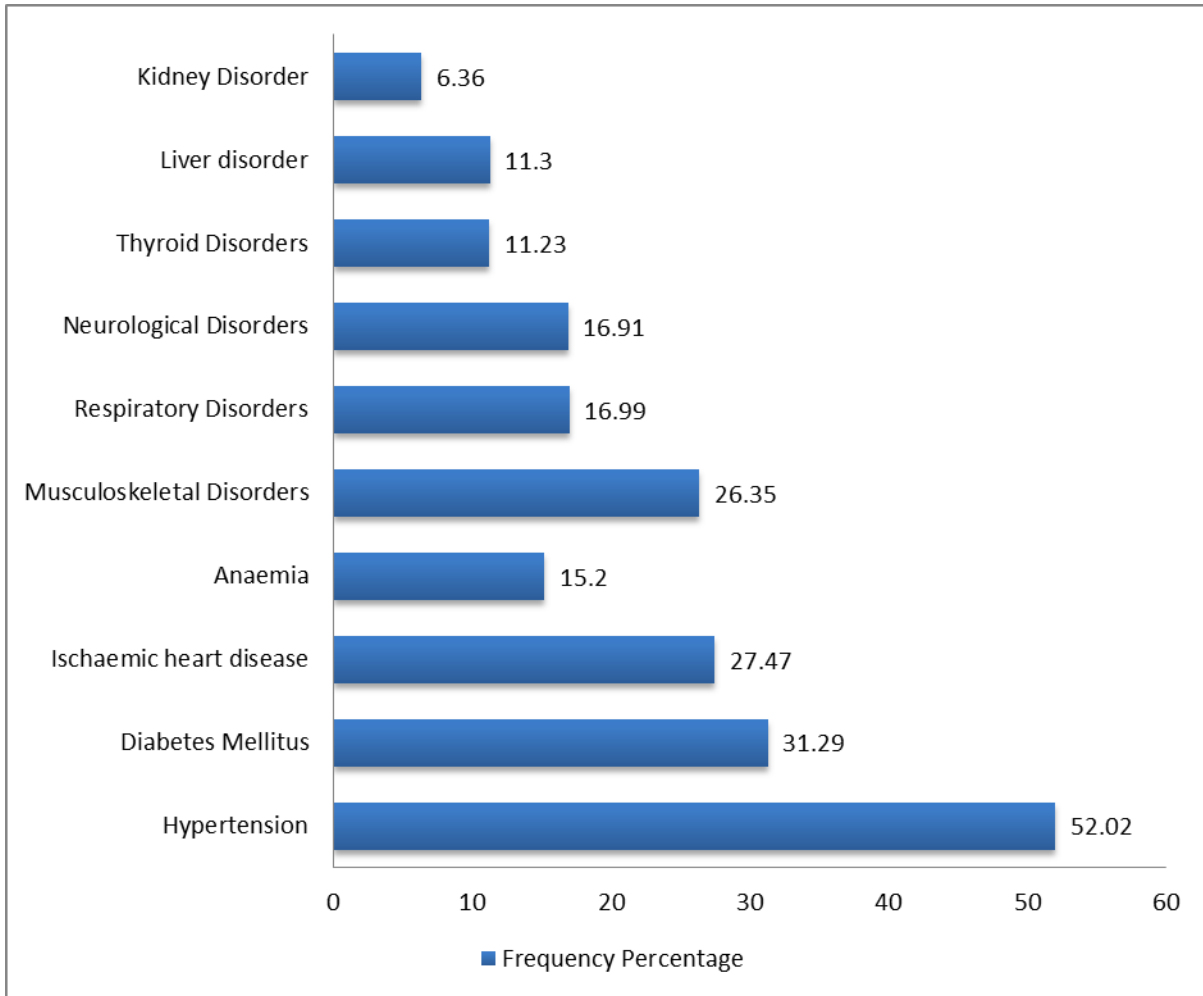


Figure 1: Frequency distribution of co-morbidities.

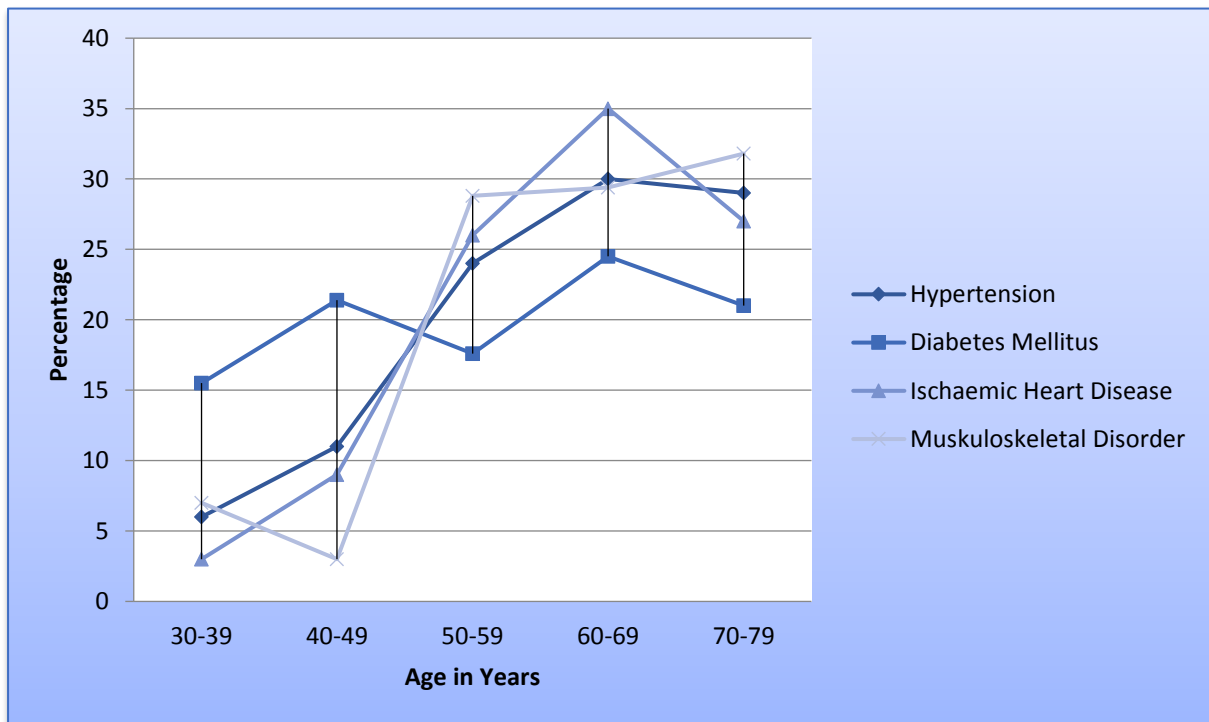


Figure 2: Age-wise distribution of major comorbidities.

## DISCUSSION

A thorough knowledge and understanding of a patient's medical problems is of paramount importance for providing effective and safe dental treatment. As more and more patients with medically compromised conditions are seeking dental treatment, dentists should be prepared to handle such patients. A thorough history taking and physical examination in every patient is important to identify patients with medically compromised conditions, but unaware of them. Patients having systemic diseases and taking complex medications may force modification of the dental management protocols especially if surgical treatment is indicated.<sup>[5,6]</sup> For example, in the first six months after acute myocardial infarction, dental treatment should be reserved for emergency situation only, stopping anti-platelet therapy before surgical interventions, providing infective endocarditis prophylaxis in patients with valvular heart disease or the avoidance of bruising maneuvers during dental treatment in patients with coagulation factor deficiency.<sup>[7]</sup> Dental setting is regarded as a stressful environment for certain individuals. It would be beneficial to reduce stress in the dental setting when treating this type of patient, especially in hypertensive patients.<sup>[5]</sup>

To elicit the patient's medical history there are two different methods traditionally used in dental practice one is to take interviews and the other is patient self-reporting.<sup>[8,9]</sup> Standard protocol of taking medical history was used. The collected information of medical status of the patient was based on the patient's general physician's advice to them and medication prescribed. The information collected through history was correlated with the signs and symptoms of the patient to reach an accurate diagnosis.

The prevalence of medically compromised conditions in dental patients in the present study was 26.5% which is similar to various other studies. Dhanuthai K et al., reported prevalence of 12.2%.<sup>[3]</sup> Smeets et al., revealed the prevalence of medically compromised patients from the survey of 29,424 dental patients from the Netherlands to be 28.2%.<sup>[10]</sup> Umino et al., reported that one or more medically compromised conditions were encountered in 64.2% of elderly Japanese dental patients.<sup>[11]</sup> Rhodus et al., reported that the prevalence of medical conditions in dental patients increased from 7.3% in 1976 to 24.6% in 1986.<sup>[12]</sup> Saengsinavin et al., disclosed the prevalence of medical conditions in Thai dental patients to be 55.45%.<sup>[13]</sup> Bhateja S reported prevalence of medical conditions in dental patients as low as 1.02%.<sup>[14]</sup> Our data signifies that a significant portion, about 1/4th of patients attending dental OPD has medical comorbidities, so the dentist

should be thoroughly aware of patients medical condition before proceeding for dental treatment.

In the present study, Hypertension was the most prevalent comorbidity accounting for 13.8% of all dental patients closely followed by diabetes mellitus and cardiovascular diseases which are 8.29% and 7.28% respectively. Among comorbidities hypertension accounts for 52.02% followed by diabetes mellitus (31.29%) and cardiovascular diseases (27.47%). Lakhani et al.<sup>[15]</sup> reported hypertension (50%) as most prevalent medical condition in patients requiring extraction. A number of previous studies like Smeets et al.,<sup>[10]</sup> Persson et al.,<sup>[16]</sup> and Jankittivong et al., (33.7%)<sup>[17]</sup> reported that Cardiovascular diseases were the most prevalent medically compromised conditions in dental patients. Our study found a high prevalence of cardiovascular diseases to the tune of 27.47%. The most frequent and serious emergencies that can manifest during dental treatment are chest pain, accelerated hypertension and acute lung edema. Due to the high prevalence and seriousness of these problems, the dental surgeon must be aware of them and should be able to act quickly and effectively in the case of such an event. In patients with a history of cardiovascular disease, attention must be focussed on the control of pain, the reduction of stress and the use or avoidance of vasoconstrictors in dental anaesthesia. In turn, caution is required in relation to the antiplatelet, anticoagulant and antihypertensive medication typically used by such patients. Endocrine disorders, the majority of which were diabetes mellitus, came second in the present study (31.29%). The dentist should also be aware of glycemic status in diabetic patient which is a major determinant in wound healing.

The practicing dentist should be able to modify the treatment plan to cater special management requirements of the patient's medical condition. In a patient who has had myocardial infarction, all routine dental treatment should be avoided for initial six months.<sup>[18]</sup> Similarly medicine should be prescribed with caution to the patients having hepatic or renal disorders.<sup>[19]</sup> Prescribing medication in patients who are on multiple medications can be a challenge due to drug interaction.

## CONCLUSION

In this study the medical status of the patients who come to the oral and maxillofacial surgery department was categorized according to their medical condition to highlight the role of proper history taking and recognition of comorbidities. Some of these patients may have contraindications to certain surgical procedures and others may require modifications in standard treatment

protocols to provide safe and effective dental treatment in these patients.

Medically compromised patients need more in-depth evaluation, which indeed requires more knowledge of medicine. Patients' medical conditions demand a more detailed assessment and modification of dental management. This is an important issue that leads to reassessing whether medicine should be taught more in-depth in dental schools. Dental schools may have to expand subjects such as management of the medically compromised patients, pharmacology, and medical emergencies.

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