

Hypertension and Complete Denture Therapy - A Retrospective Study

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Abstract

A completely edentulous state is when the patient is in a state of complete tooth loss. In the current world, an increasing demand for complete denture prosthesis is also seen. The lifestyle, food habits etc are thought to be major factors that are influencing the oral health of the current generation. Marked evidence has been cited between the relationship of various systemic diseases like diabetes and completely edentulous state. Hypertension is the state of elevated blood pressure. An evident association between hypertension and oral diseases has been established previously. The aim of our study was to find the association between hypertension and a completely edentulous state. The study was performed in a university setting, it reviewed patient records and analysed the data of 86000 patients between June 2019 and March 2020. A total of about 450 entries were selected. Of this after removing multiple entries a total of 372 patients data were obtained. The collected data were compiled and tabulated using Microsoft Excel, then reviewed and exported to SPSS for performing statistical analysis. In the study a total of 5 parameters were considered, but only for one parameter a statistically significant data was found, and this was the demographic profile of the completely edentulous patients, p value was found to be 0.0052 (p =0.005) hence proving the data to be significant. For the rest of the parameters the study considered, a statistically significant data was not obtained, but the data has remarkable clinical significance. In the study, completely edentulous male population were, 56%, the female population represented 43%. 27% of the completely edentulous patients in the study were hypertensive and that is not a negligible count. Within the limitations of the study, it can be stated that there is a relation between hypertension and a completely edentulous state.

Keywords: Hypertension; systemic conditions; tooth loss; complete edentulous state.

Introduction

The size of the geriatric segment of the population is expanding in the emerging nations as the latter undergo a demographic transition, with a collateral increase in

life expectancy. As a matter of fact, it is approximated that by the year 2025 the majority of the elderly people worldwide will be residing in developing countries^{1,2}. Developing countries are thus likely to face an enormous burden of chronic non-communicable diseases in the near future. Of these diseases, hypertension is one of the most important treatable causes of mortality and morbidity in the elderly population³, and accounts for a large proportion of cardiovascular diseases in the old aged population⁴⁻⁶. There are findings that provide direct evidence of an increasing burden of hypertension among the elderly population in the Indian subcontinent. A significant relationship has been obtained in regards to Hypertension, BMI, diabetes mellitus, and physical activities on a lot of studies⁷⁻¹¹.

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Hypertension is the synonym for high blood pressure. The normal blood pressure is below 120/80 mm Hg and above 90/60 mm Hg in an adult. When the systolic pressure is greater than 120 and the diastolic pressure is less than 80 mm Hg it is considered as the high blood pressure state. On a long run hypertension will lead to very severe health complications also it will increase the risk of heart diseases, stroke and sometimes can even lead to death of the patient. Since hypertension is considered as a lifestyle disorder, the initial line of treatment is always lifestyle modification, like regular exercise, following a proper diet stress reduction etc.

Complete edentulism can be considered as an ultimate result of various physiologic and pathologic processes that involve systemic conditions, nutritional factors and other patient-related factors. An early tooth loss can be indicative of various oral diseases or poor oral hygiene. It is proved that in 70% of the cases the early tooth loss is due to various periodontal diseases. The other reasons can be cavities or dental caries, high sucrose rich sugar intake, other systemic diseases, and personnel habits.

A marked relationship between these periodontal diseases and systemic complications has been cited. Edentulism is an enervating and irreversible condition and it has been described as the final marker of the disease burden of oral health¹². This often affects the patient's approach to a pleasant life since it has an impact on the morale of the patient. The prevalence of tooth loss completely reduced over the last decade, but still persisting as a major disease around the globe particularly in older individuals¹³⁻¹⁷. The nutritional factors of edentulism are complex due to the wide range of factors that influence food initiative, nutritional status, acute and chronic disease, and financial limitations¹⁸⁻²⁴.

Many clinicians have reported that superintending hypertensive patients can be troublesome when it comes to the oral complications, dental therapy and emergency care. It has been reported that one third of clinical hypertension is not diagnosed. Some reports even suggest that though more than 70% of the patients are aware of their hypertensive state, only thirty to fifty percent among them seek medical care, and out of this less than twenty percent of the patients gain control over the hypertensive state²⁵. The common drugs prescribed

for hypertensive patients are thiazide diuretics, loop diuretics, angiotensin converting enzyme inhibitors. These medications are well known for their side effect, xerostomia (dry mouth) which is due to hyposalivation. A reduction in saliva secretion will result in incidence of caries, candidiasis, oral burning syndrome etc²⁶. The xerostomia will in turn result in hindering the retention and stability of complete denture. So it is important to note that, for hypertensive patients who are undergoing complete denture therapy, for providing a successful treatment, artificial salivary lubricants or denture adhesives must be advised^{27,28}. There are studies which have cited a higher survival rate of implant supported complete dentures in hypertensive patients who were undergoing antihypertensive therapy. The reason for this was found to be the favourable effect of the anti hypertensives in bone remodeling and as well as the lower risk of bone fracture that these medications impart²⁹. The aim of this study was to determine and assess the association between hypertension and the completely edentulous state.

Materials and Methods

The study was conducted in a university setting. Being done with the entries of one university the pros regarding the study were that the data were already available and the data belonged to individuals with similar ethnicity. The cons of the study were geographic limitations, locations, and also the trends of other locations were not assessed.

The study is a retrospective cross-sectional study and the data were collected within a time period of June 2019 to March 2020. There were two reviewers for the study. Ethical approval was provided by the University ethical committee. A total of four fifty entries were assessed and after deleting multiple entries there were a total of three seventy-two entries. To ensure the validity of the data the patients were contacted through telephone. The data was tabulated by using Microsoft Excel software. It was then exported to SPSS for statistical analysis. The analysis was conducted by the Chi-square test. In the study, the independent variables were:- the ethnicity, age, gender, and the dependent variables were hypertensive, and complete denture, reason for a complete denture.

Result and Discussion

The way of living or behavioral components critically is believed to determine the level of blood pressure in individuals and the prevalence of hypertension in the population.

56% of the total study population were males and 43.01% of the respondents were found to be females. The youngest complete denture patient reported to the institution was in the age range of 31 to 40, hence we included the age range as 31 to 40, 41 to 50, 51 to 60, 61 to 70 and beyond 70. In this we found the highest number of patients in the age range of 61 to 70, and this was 37.63%. It was followed by the individuals in an age range of 51 to 60 years, and this represented 31.18%. This was followed by the individuals belonging to 41 to 50 years. (Figure 1)

In our total population as the figure 2 depicts, 72.045 of the total respondents were devoid of hypertension, and 27.96% were found to be hypertensive patients .(Figure 2)

In this female completely edentulous patients tend to show a slight predominance in having hypertension, that is 74% of the total female completely edentulous patients were reported to have hypertension and 25% of the female did not have hypertension. 70% of the male patients were reported to have hypertension and 29% of the patients did not have hypertension.(Figure 3)

Here we can observe that the patients in the age group of 31 to 40 were having the highest percent of hypertensive patients, with 91.67%. the lowest percent of completely edentulous hypertensive patients were found to be in the age group of 61 to 70.(Figure 4)

Hence in our study, we found that within the completely edentulous patients females had

predominance. But in the general population hypertension has shown a male predominance.

In the general population, some studies have depicted that women have been found to be hypertensive when compared to men³⁰⁻³⁶. While at the same time there are other studies that have shown that women have better or equal hypertension control than men^{37,38}. Another fact found in the study was the prevalence of hypertension based on the age groups, is that the maximum number of hypertensive patients were reported to be belonging to an age group of 61 to 70 in our study (Figure 4). 32% of the total population within an age range of 61 to 70 is having hypertension, and another study has stated 46% of individuals above 65 years of age being hypertensive in the general population justifying our findings³⁹. Various studies have proved a remarkable relation between oral health and its possible effects on systemic health⁴⁰. It has been found that even after being diagnosed with hypertension, if the patients oral health is not maintained properly it might lead to the deterioration in the effectiveness of the medication that the patient is undergoing in regards with hypertension, also it will increase the risk of complications which is associated with hypertension. Some findings even disclosed the fact that the individuals with healthier gums have lower blood pressure and they responded better to blood pressure lowering medications, in contrast with the individuals who have periodontal diseases. Precisely, the patients with periodontal disease were 20 percent improbable to reach healthy blood pressure ranges when compared to patients with good oral health⁴¹. Hence, this relationship of periodontal disease and the dietary habits to hypertension, is paving a path for us to correlate it with the increased chances of tooth loss in patients with hypertension.

Graphs

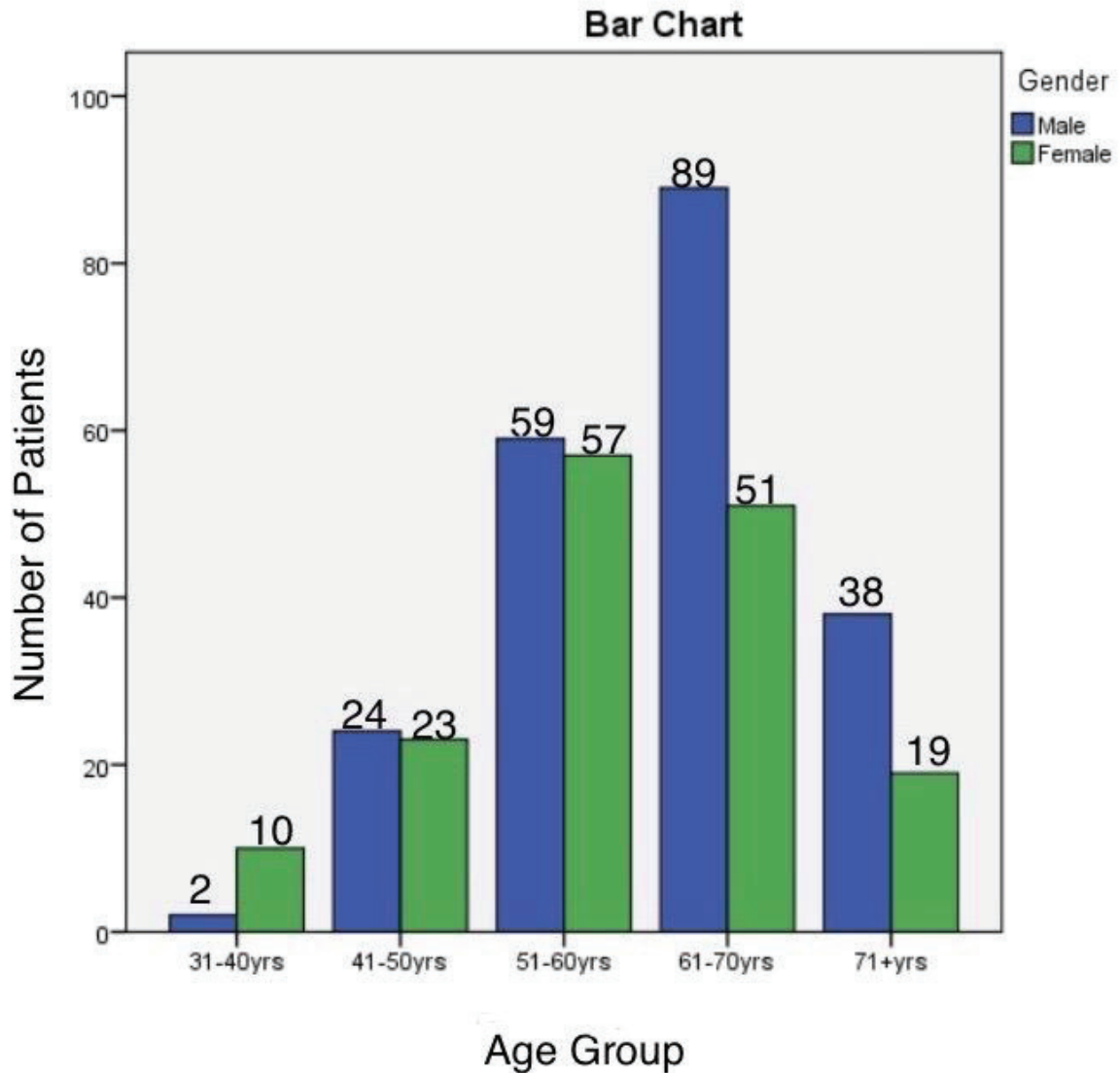


Figure 1 this is a bar chart showing the association between gender and age group of completely edentulous patients; where X axis shows the age groups which are 31 to 40, 41 to 50, 51 to 60, 61 to 70, 71+, Y axis shows the frequency of edentulousness, blue colour represents male, green represents females. A male predominance was seen when compared to the female population in having a completely edentulous state, and the maximum number of patients were seen in the age group of 61 to 70 years. Chi square test was done, Pearson Chi square value: 15.062, DF: 4, p value = 0.005, p=0.005 found to be statistically significant .

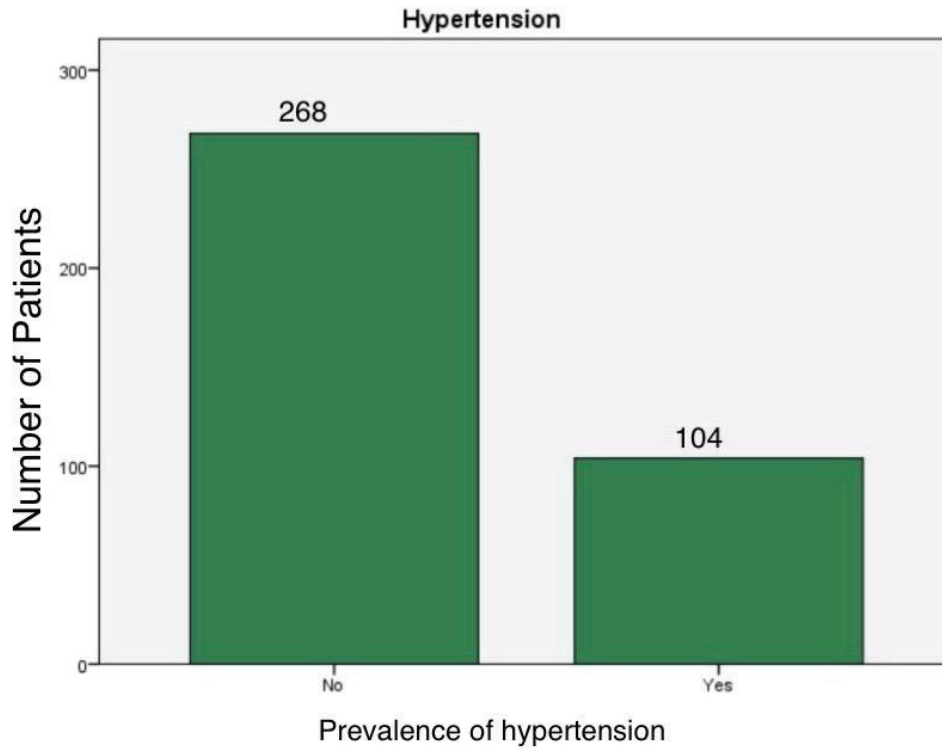


Figure 2 The graph shows the prevalence of hypertension among completely edentulous patients.

104 patients (28%) of the total population were found to have hypertension and 268 patients (72%) were devoid of hypertension.

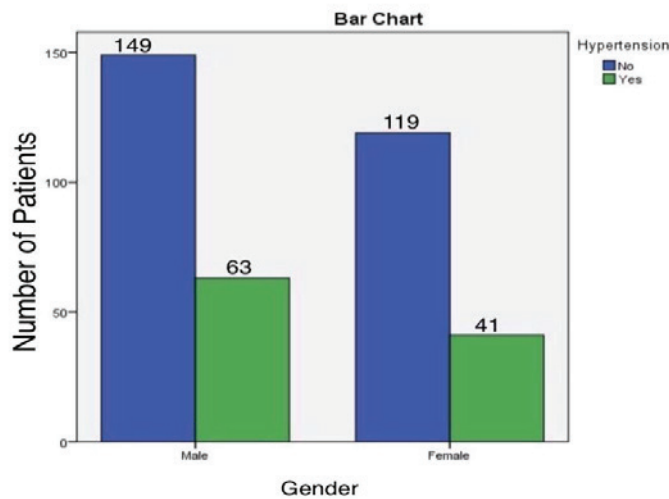


Figure 3 Bar graph shows the association between of male and female completely edentulous patients with prevalence of hypertension. X axis shows the gender distribution, Y axis shows number of completely edentulous patients with or without hypertension. Highest prevalence of hypertension was seen in males compared to females. Chi square test was done, Pearson Chi square value: 0.758, DF: 1, p value = 0.3842, $p > 0.05$ hence and the association between gender and prevalence of hypertension was found to be statistically not significant.

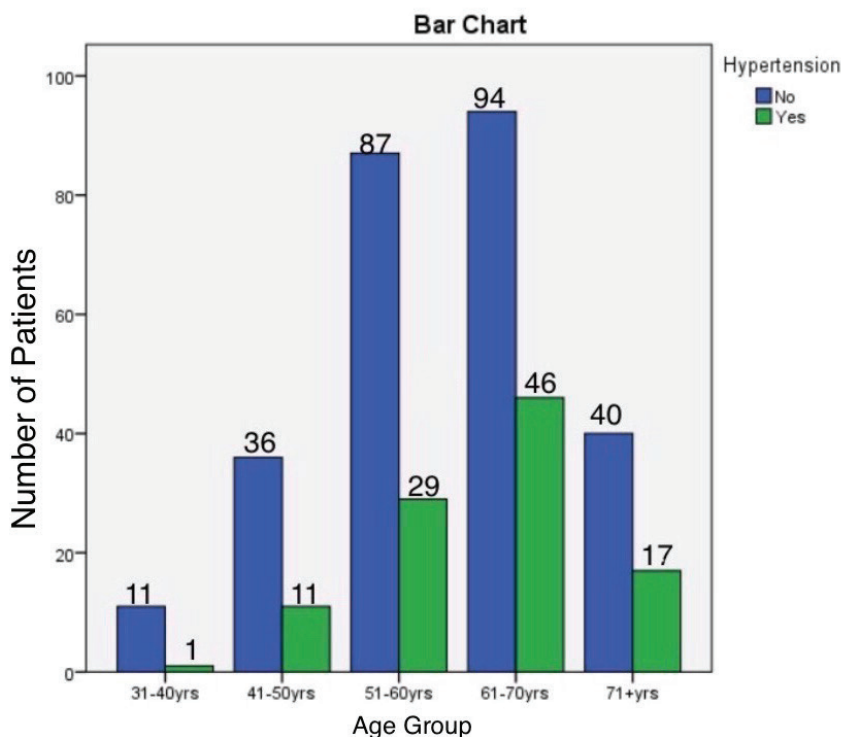


Figure 4 shows the association of age groups of completely edentulous patients with prevalence of hypertension. X axis shows the age distribution, Y axis shows the number of patients with or without hypertension. Maximum number of hypertensive patients were found to be within an age group of 61 to 70 years and the least number of hypertensive patients were found to be in an age group of 31 to 40. Chi square test was done, Pearson Chi square value: 5.049, DF: 4, p value = 0.2825, p>0.05 and hence the association was found to be statistically not significant.

Conclusion

Within the limitations of the study it can be concluded that there is a definitely possible interrelationship of hypertension and a completely edentulous state. However, the limited time period, and smaller sample size are one of the major limitations that we faced in the study.

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