



## Assessment of prevalence of diabetes and hypertension and dental implant failure

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### ABSTRACT:

**Background:** A typical recommendation for replacing missing teeth is dental implants. The present study was conducted to assess dental implant failure in patients in diabetes and hypertension.

**Materials & Methods:** 80 patients who received 125 dental implants of both genders were followed for the period of 10 years. Prevalence of diabetes and hypertension was calculated. The number of implant failure rates was calculated.

**Results:** Out of 80 patients, males were 50 with 75 dental implants and females were 30 with 50 dental implants. Out of 80 patients, 12 were diabetes and 15 were hypertensive. The difference was significant ( $P < 0.05$ ). Among 53 normal healthy subjects, 5 had implant failure. Among 12 diabetics, 2 had implant failure and among 15 hypertensives, 3 had implant failure. The difference was significant ( $P < 0.05$ ).

**Conclusion:** There was high prevalence of dental implant failure in diabetes and hypertensive patients.

**Key words:** dental implants, diabetes, hypertensives

### Introduction

A typical recommendation for replacing missing teeth is dental implants. A 5-year survival rate of 95% has been deemed successful for implant therapy. The patient's factors and dental implant-related factors are just a couple of the variables that affect how well dental implant therapy works. However, a number of etiologies, such as biological, mechanical, or iatrogenic causes, may result in the early or late failure of dental implants.<sup>1</sup>

There are certain contraindications of dental implants. Smoking, diabetes, hypertension, CVDs, etc., are medical conditions which affect dental implant therapy outcome over years.<sup>2</sup> Dental implant-related factors such as design of dental implant, length, width, prosthetic part, etc., determine the success rate of dental implants. Diabetes mellitus is a long-term metabolic condition that causes hyperglycemia, which increases the risk of micro- and

macroangiopathy-related consequences. Patients with diabetes experience more tooth loss and periodontitis, as well as slower wound healing and a compromised immune system.<sup>3</sup> Complications in dental implant insertion are unavoidable. Therefore, a consideration should also be given to complications associated with dental implant surgery.<sup>4</sup> Haemorrhages, implant fracture, loss of bone are certain commonly seen reasons that lead to implant failure. Paraesthesia or anaesthesia are also seen with some cases.<sup>5</sup> Dental implants failure can be early failures, those that occur from weeks to few months after placement caused by factors that interfere with normal healing process or by an altered healing response and late failures, those that arise from pathologic processes that involve a previously osteo integrated implant.<sup>6</sup> The present study was conducted to assess dental implant failure in patients in diabetes and hypertension.

### Materials & Methods

The present study was conducted among 80 patients who received 125 dental implants of both genders. All cases were informed regarding the study and their consent was obtained. Data such as name, age, gender etc. was recorded. All patients were followed for the period of 10 years. Prevalence of diabetes and hypertension was calculated. All patients received dental implant as per standardized technique. All were recalled at regular interval. Clinical and radiological examination was carried out. The number of implant failure rates was calculated. Results thus obtained were analyzed statistically. P value less than 0.05 was considered significant.

### Results

**Table I: Distribution of patients**

Gender	Number	Implant
Male	50	75
Female	30	50

Table I shows that out of 80 patients, males were 50 with 75 dental implants and females were 30 with 50 dental implants.

**Table II: Prevalence of diabetes and hypertension**

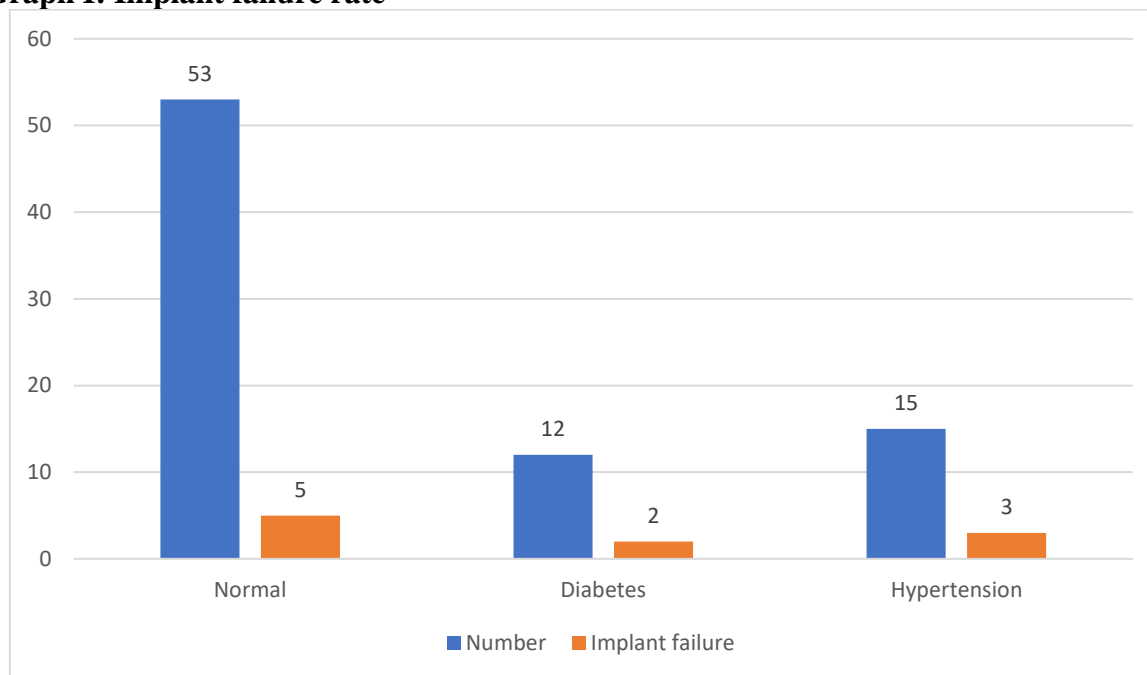
Condition	Number	P value
Diabetes	12	0.87
Hypertension	15	

Table II shows that out of 80 patients, 12 were diabetes and 15 were hypertensive. The difference was significant ( $P < 0.05$ ).

**Table III: Implant failure rate**

Condition	Number	Implant failure	P value
Normal	53	5	0.01
Diabetes	12	2	
Hypertension	15	3	

Table III, graph I shows that among 53 normal healthy subjects, 5 had implant failure. Among 12 diabetics, 2 had implant failure and among 15 hypertensives, 3 had implant failure. The difference was significant ( $P < 0.05$ ).

**Graph I: Implant failure rate**

## Discussion

Dental implants are one of the most successful treatment choices for edentulous areas. The surgical and rehabilitation phases of dental implant surgery are greatly affected by the history and clinical examination of the patient.<sup>7</sup> Surgical procedure for dental implant requires minimal trauma and circumvent excessive bleeding and stress.<sup>8</sup> Moreover, a patient requiring dental implant has a number of fears such as fear of pain during the procedure. For the reduction of pain to minimally possible, it is required to properly manage the anxiousness of the patient regarding minimal to moderate stress.<sup>9</sup> From the follow up studies conducted over 10 years, it has been reported that in healthy patients the success rate of dental implants is 90 to 95%.<sup>10</sup> The present study was conducted to assess dental implant failure in patients in diabetes and hypertension.

We found that out of 80 patients, males were 50 with 75 dental implants and females were 30 with 50 dental implants. Singh et al<sup>11</sup> involved 826 individuals, of both sexes, who had undergone 1420 dental implants. The implant's length, diameter, placement, and bone quality were all noted. Risk factors including smoking habit, diabetes history, hypertension, etc., were noted. 588 dental implants were put in 310 women and 832 dental implants in 516 men. Maximum dental implant failure was observed with lengths under 10 mm (16%), diameters under 3.75 mm (20.6%), and type IV bone. A significant difference was discovered (P 0.05). Smoking was the main cause of dental implant failure (37%) and was followed by high blood pressure, diabetes, and cardiovascular disease (18.7%). The failure rate was lowest (4.37%) in healthy patients.

We observed that out of 80 patients, 12 were diabetes and 15 were hypertensive. In the study by Bhagat et al<sup>12</sup>, there were a total of 40 participants. The institute's records were used to get the data. To reduce the surgeon's impact on the rate of complications, only one skilled surgeon put the dental implants. The study's average participant's age was 28.34+/- 4.33 years. 13 females and 27 males participated in the study. In 32.5% (n=13) of the patients, 4 implants were inserted. Five implants were inserted in 20% of the individuals. 20% of the participants (n=12) had mucositis. There was peri implantitis in 22.5% (n=9) of the

individuals. 20% of the individuals had bad oral hygiene. 20% of the individuals (n=8) had crown fractures.

We found that among 53 normal healthy subjects, 5 had implant failure. Among 12 diabetics, 2 had implant failure and among 15 hypertensives, 3 had implant failure. Singh et al<sup>13</sup> included a total of 100 patients. 50 patients belonged to the study group, while the remaining 50 belonged to the control group. In the control group, dental implant failure occurred in a single patient while in the study group, dental implant failure occurred in 3 patients. Removal of dental implants occurred in 10 patients of control group; while it was done in 9 patients of the study group.

The limitation the study is small sample size.

### Conclusion

Authors found that there was high prevalence of dental implant failure in diabetes and hypertensive patients.

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