# Pulpal Changes of Permanent Teeth in Diabetic Patients

A Thesis Submitted to the Faculty of Oral and Dental Medicine, Cairo University, in Partial Fulfillment of the Requirements for the Master Degree in Endodontics

**By**

**Noha Alsayed Mohammed Abd-Elmaboud**

B.D.S (2004), Cairo University

Department of Endodontics

Faculty of Oral and Dental Medicine

Cairo University

2014

# Supervisors

**Prof. Dr. Hebatallah Mohamed Maged ElFar**
Professor of Endodontics
Faculty of Oral and Dental Medicine
Cairo University

**Prof. Dr. Heba Ahmed Farag**
Professor of Oral Pathology
Vice dean for student affairs
Faculty of Oral and Dental Medicine
Cairo University

**Prof. Ass. Dr. Geraldine Mohammed Ahmed**
Associate Professor of Endodontics
Faculty of Oral and Dental Medicine
Cairo University

# Acknowledgment

I would love sincerely to send my honorable thanks to **Prof. Dr. Hebatallah Mohamed Maged ElFar,** Professor of Endodontics, Faculty of Oral and Dental Medicine, Cairo University, for her helpful suggestions, counseling, encouraging and valuable scientific supervision.

I send my great thanks to **Prof. Dr. Heba Ahmed Farag,** Professor of Oral Pathology, Vice dean for student affairs, Faculty of Oral and Dental Medicine, Cairo University, for her effort and time spent during this work, for her continuous support and encouragement in every step of the work, and for her precious scientific supervision.

I take the opportunity to send my honest thanks to **Dr. Geraldine Mohammed Ahmed,** Assistant Professor of Endodontics, Faculty of Oral and Dental Medicine, Cairo University, for her kind supervision, guidance, corporation and her great participation in fulfilling this work.

I would like to thank all staff members of the departments of Endodontics and Oral Pathology who helped in making this work possible.

Finally, I would like to express my deep gratitude to my beloved **husband** for his encouragement, patience and support.

## Dedication to

Souls of my dearest Mother and Father

My beloved Husband

My dear Sisters

# Pulpal changes of permanent teeth in diabetic patients

Noha AL Mohammed, Heba A Farag, Hebatallah M Elfar and Geraldine M Ahmed

**Abstract**

**PURPOSE:** To evaluate the effect of diabetes mellitus on dental pulp of permanent teeth, by recording the histopathological changes occurred in these teeth.

**MATERIALS AND METHODS:** Sixty five recently extracted teeth, Forty five teeth extracted from patients having diabetes for at least (8-10) years (group A). Control group has 20 teeth extracted from healthy patients (group B). No gender, occupational, social or residential predilection. All patients signed a consent sheet. Patients selected were of age ranging between (20-40) years old (mean age 30 years). Decalcification of extracted teeth was done and stained using a Hematoxylin and Eosin stain. A blood samples were taken from patients to be tested for Glycated hemoglobin HbA1c, Ionized Calcium level, Serum alkaline phosphatase ALP, Fasting blood sugar and complete blood picture. Histopathological examination of pulp chamber and root canals was done by light microscope to determine pulpal changes. Statistical analysis of numerical data was done.

**RESULTS:** All specimens of control group are showing normal pulp. Group A has inflammation, fibrosis, calcification and stones, partial necrosis and angiopathy. Group A showed statistically significant higher mean fasting blood glucose, HbA1c and WBC than group B. There was no statistically significant correlation between stone areas and age or diabetes duration. Females showed statistically significantly higher mean stone areas than males $P \leq 0.05$. There was a statistically significant positive (direct) correlation between stone areas and HbA1c. There was a statistically significant negative (inverse) correlation between stone areas and HGB. There was no statistically significant correlation between stone areas and other laboratory investigations.

**CONCLUSION:** Diabetes mellitus seems to be a causative factor of many histopathological pulpal changes that increase liability and need of teeth for endodontic treatment as well as increase the difficulties faced by the endodontist during the procedures of the treatment.

**KEYWARDS:** Diabetes mellitus, histopathological changes, pulp stones, calcification, HbA1c.

# *List of contents*



`

# *List of figures*



`

`

# *List of tables*



`

# *List of graphs*



`

`