

**ORAL HEALTH STATUS
OF IRAQI DIABETIC PATIENTS
SALIVARY & MICROBIAL ANALYSES**

A THESIS

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Abstract

Background: Diabetes mellitus is a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both. The effects of diabetes mellitus include long-term damage, dysfunction and failure of various organs; it may present with characteristic symptoms such as thirst, polyuria, and weight loss. The oral complications associated with diabetes mellitus may include increased incidence of gingivitis, periodontal pockets and abscesses, cheilosis, high dental caries and heavy deposits, dryness and cracking of the lips, dryness and burning sensation of the tongue, dry mouth due to decrease in salivary flow, non-inflammatory non-neoplastic enlargement of the salivary glands, lowered tissue resistance and delayed wound healing.

Aim: The present study is conducted to estimate dental findings (Decayed, Missed, and Filled Teeth index; Plaque and Gingival Indices), physical and biochemical analyses of salivary characteristics (saliva pH, salivary flow rates, salivary glucose level and salivary alpha amylase activity) and microbiological assay of inter-proximal space in 340 subjects (240 diabetic patients of both types 1 & 2 as experimental group, and 100 non-diabetic subjects as control group).

Subjects and methods: The subjects were divided into three main groups: One control group and two diabetic groups according to the type of diabetes mellitus 1 & 2. Each group also subdivided into two subgroups according to the metabolic glycaemic control (good or poorly) for diabetic patients and oral hygiene care (good or bad) for non-diabetic subjects. The oral, dental and salivary clinical parameters were correlated with age, gender, smoking, dry mouth, wearing prosthetic appliances and metabolic glycaemic control.

Salivary samples were collected by spitting method. Saliva pH was measured immediately by digital pH meter; salivary flow rate was measured by collection of saliva through 5 minutes. The time required for collecting such volume is recorded in order to give the salivary flow rate in ml/min; salivary glucose level was determined by enzymatic method; salivary alpha-amylase activity was evaluated by amyloclastic method; plaque, dental caries experience and gingival indices were estimated.

Results & Discussion: Poorly controlled diabetic patients had more acidic saliva pH, diminished salivary flow rate, higher glucose and α -amylase levels in saliva, abundant accumulation of soft deposits, moderate inflammation of gingiva, elevated number of decayed, missed and filled teeth, increased number of isolated pathogenic microorganisms, when compared with good controlled diabetic and non-diabetic subjects.

Diabetic patients older than 45 years old, females, smokers, feeling dry mouth, and wearers of prosthetic appliances revealed acidic saliva pH, lowered salivary flow rate, increased glucose and α -amylase concentrations in saliva, moderate accumulation of microbial plaque, moderate gingivitis, high prevalence of dental caries and its complications, and elevated number of isolated microorganisms in the inter-proximal spaces, when compared with diabetic patients younger than 45 years old, males, non-smokers, do not feeling dry mouth and non-wearers prosthetic appliances.

Diabetes has been the one most frequently blamed as a risk agent for dental, gingival inflammation and salivary alterations. Several factors, besides diabetes mellitus; contribute to the increased incidence of oral, dental and salivary changes such as: 1. Dry mouth which is more common complaint among diabetic dental patients and leads to impaire lubricant and moist functions of saliva. 2. Smoking plays an etiologic factor of high prevalence of gingivitis, heavy plaque deposits, dental caries and 3. diminished saliva flow rate and increase glucose level create an attractive medium for microbial growth and adhesion to the tooth surfaces and formation of lactic acid which lead to damage tooth layers.