

**A CASE-CONTROL STUDY ON THE EFFECT OF ALCOHOLISM ON SALIVA****DEEPTHI.K<sup>1\*</sup> AND DR.K.B. LALIYTHA<sup>2</sup>.**<sup>1</sup>*3<sup>rd</sup> year B.D.S., Saveetha Dental College, Velapanchavadi Tamil Nadu, India.*<sup>2</sup>*Senior Lecturer Department of Oral medicine and Radiology,***ABSTRACT**

Saliva is essential for the maintenance of oral health. Alcohol consumption produces peripheral autonomic neuropathy that causes disordered salivary metabolism and secretion and may even lead to salivary gland enlargement. Histologically, an increased intracytoplasmic zymogen granules is believed to be the etiology. To assess the unstimulated whole saliva in alcoholic patients. The objective of the present study was to evaluate the salivary flow rate in alcoholic and non alcoholic individuals to evaluate the salivary pH in alcoholic and non alcoholic individuals. To compare saliva in alcoholic and non alcoholic individuals. The study was conducted during the period of November 2014 to May 2015. The study comprised of 20 males of age between 30-50 years which included 10 alcoholic and 10 non-alcoholic individuals. The whole saliva flow rate and pH and DMFT index was determined. The mean salivary flow rate in case was 1.620 and in control was 1.700. The mean pH was 5.800 in case and 6.500 in control. Salivary pH was statistically significant between case and control. The mean DMFT score in case was 3.40 in case and 1.70 in control. The Saliva flow rate and DMFT index was not statistically significant between case and control subjects. To conclude alcohol consumption reduced the salivary pH, perhaps will increase DMFT index at a later stage. Future research studies with larger sample size may aid in better understanding of the concept.

**KEYWORDS:** Saliva, Alcoholism, Acetaldehyde**DEEPTHI.K**<sup>3</sup>*rd year B.D.S., Saveetha Dental College, Velapanchavadi Tamil Nadu, India.*

## INTRODUCTION

Saliva plays a vital role in oral homeostasis. The major functions of saliva include lubrication, buffering, protection against bacteria, virus and fungi. Thus qualitative or quantitative changes in salivary secretion can lead to dental caries, oral infections, dysphagia, halitosis etc. Alcohol has been assumed to influence dental caries via the microbial oxidation of ethanol in saliva in alcohol abusers leading to the formation of acetaldehyde and thereby inhibits the cariogenic oral flora. The aim of this study is to evaluate saliva in alcoholic and non alcoholic individuals.

## MATERIALS AND METHODS

The present study was conducted in between November 2014 to May 2015. A total of 20 subjects comprising of 10 alcoholics and 10 non-alcoholics were included in the study. Male patients of age group between 20-40 years were included in the study. Clearance from ethical committee was obtained from the

university. An informed consent was obtained from the subjects. A standard proforma was filled for each subject. Information from the subject was gathered by filling a proforma which included name, age, type of beverage, frequency, salivary flow, pH and DMFT score. Patient was examined for DMFT index using a mouth mirror, probe and an explorer. The results obtained were subjected to statistical analysis.

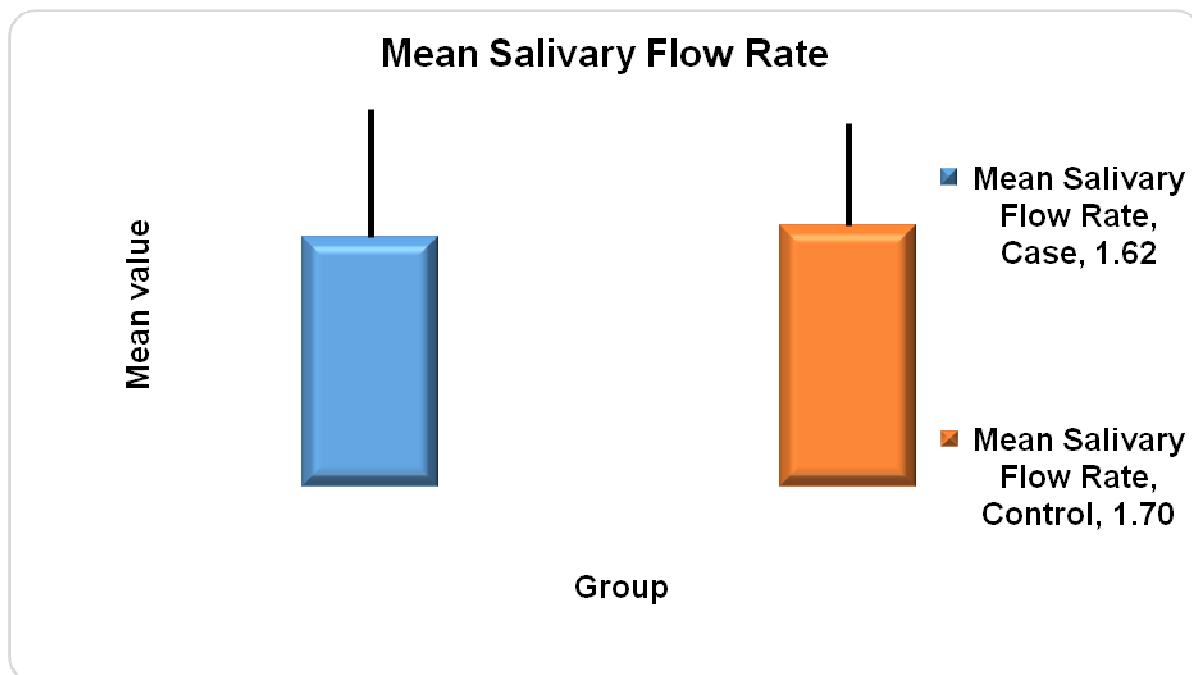
## RESULTS

The mean salivary flow rate in case was 1.620 and in control was 1.700. The mean pH was 5.800 in case and 6.500 in control. Salivary pH was statistically significant between case and control. The mean DMFT score in case was 3.40 in case and 1.70 in control. The Saliva flow rate and DMFT index was not statistically significant between case and control subjects. (If P-Value < 0.05 then Statistically Significant)

**Table 1**  
***Independent samples T-Test to compare the mean values between groups***

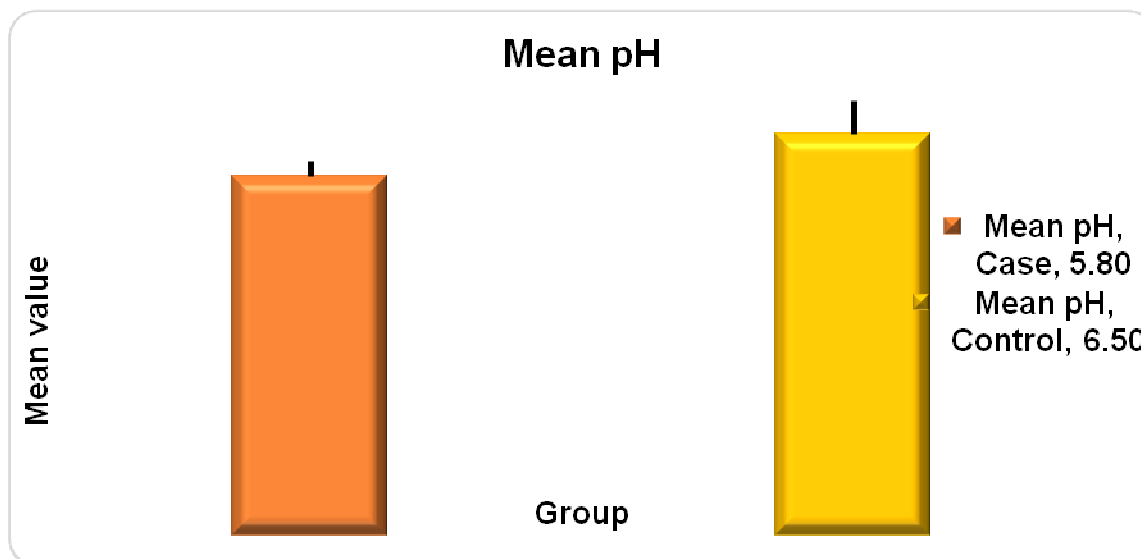
<b>Variables</b>	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Std. Dev</b>	<b>t-Value</b>	<b>P-Value</b>
Salivary Flow rate	Case	10	1.620	0.8364	0.237	0.816
	Control	10	1.700	0.6650		
pH	Case	10	5.800	0.2582	3.3772	0.002
	Control	10	6.500	0.5270		
DMFT Score	Case	10	3.40	2.675	1.714	0.104
	Control	10	1.70	1.636		

**Graph 1**  
**Mean salivary flow rate**



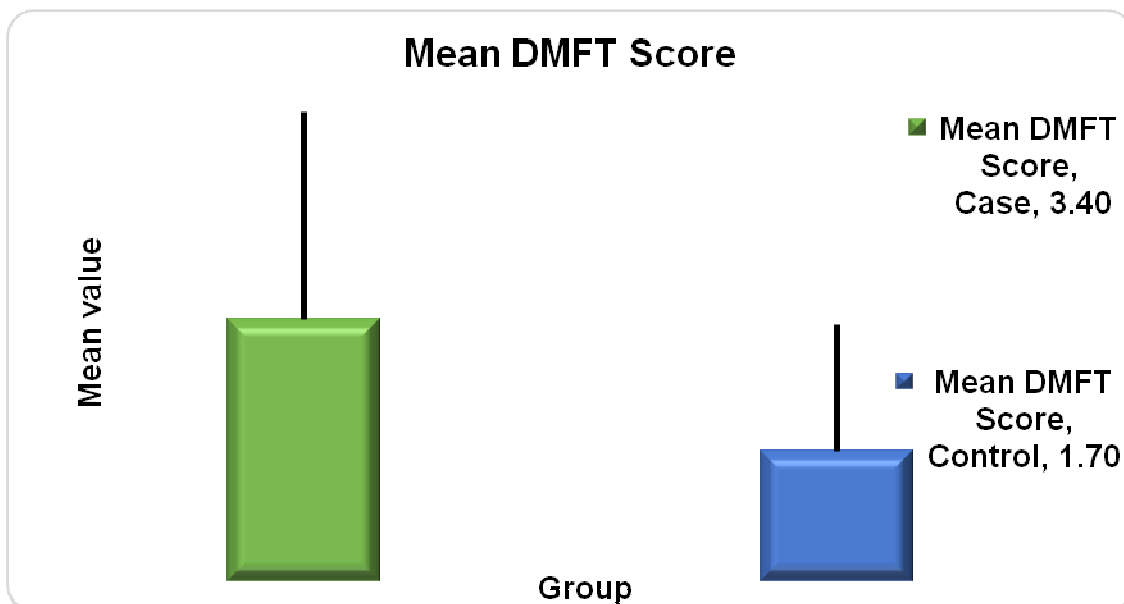
*Inference: P Value for salivary flow rate is 0.816. So it is not statistically significant.*

**Graph 2**  
**Mean pH**



*Inference: P Value for pH is 0.002. Hence, it is Statistically Significant.*

**Graph 3**  
**DMFT index**



*Inference: P Value for DMFT Score is 0.104. It is Statistically insignificant.*

**Table 2**  
**Pearson Correlations between DMFT score and Salivary flow rate & pH in case and control groups separately**

Group		DMFT Score	
Case	Salivary Flow rate	Correlation	-0.108
		P-Value	0.766
		N	10
	pH	Correlation	-0.273
		P-Value	0.445
		N	10
Control	Salivary Flow rate	Correlation	0.296
		P-Value	0.406
		N	10
	pH	Correlation	-0.064
		P-Value	0.860
		N	10

## DISCUSSION

Alcohol is a psychoactive substance. Drinking alcohol causes health problems like alcohol dependence, cirrhosis and cancer.<sup>1</sup> Harmful use of alcohol is responsible for 5.9% of all death. Alcohol drinking was considered as occasional and communal with particular festivals.<sup>2,3</sup> For most disease and injuries caused by alcohol, the dose plays a major role. The cause for impaired health at young age is due to early initiation of alcohol use with alcohol dependence and abuse at later age.<sup>4,5</sup> Alcohol use is the common factor for death in males aged 15-59 years. Saliva is a aqueous fluid containing organic and inorganic products

secreted by salivary gland.<sup>6,7</sup> Saliva is helpful in mastication, speech, deglutition, lubrication and mucosal protection.<sup>8,9,10</sup> Decreased salivary flow rate may lead to dental caries, oral pain and fungal infection.<sup>11</sup> Alcohol diffuses rapidly into saliva during the drinking. Then salivary concentration becomes temporarily higher than in plasma. Within half an hour, salivary alcohol concentration equilibrates with the alcohol level in plasma. This suggests that alcohol can easily penetrate the whole body, including salivary glands. The alcohol metabolizes to aldehyde. After alcohol intake, acetaldehyde level in saliva exceeds the level in blood. Damage to the oral tissues is possibly due to the action of acetaldehyde, although some damage

depends on a direct action of alcohol and formation of reactive oxygen species and fatty acid ethyl esters (FAEEs).<sup>12</sup>Alcohol contain high amount of sugar leading to demineralization thus increases tooth decay. For binge drinkers, tooth damage occurs more, because this type of drinking is often combined with vomiting which cause increase in acid build up in the mouth. According to a previous study by Walter Dukić et al revealed no major differences with respect to overall DMFT in alcoholics compared to the control group. No correlation between alcoholism and

stimulated salivary flow rate. Unstimulated salivary flow rate and the pH values of both unstimulated and stimulated saliva, were lower in the alcoholic group.<sup>13</sup>In our present study, there is a statistically significant correlation between alcohol consumption and pH, but no relationship between alcohol consumption and salivary flow rate and DMFT. To conclude, alcoholism is found to cause alteration in oral environment. Further studies with larger sample size can help in understanding of the concept behind the same.

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