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EVALUATION OF SPIROMETRY ON COMPLETELY EDENTULOUS PATIENTS WITH AND WITHOUT COMPLETE DENTURED: A CLINICAL STUDY

Dental Science

Mohammad Arif Lone* Lecturer Department Of Prosthodontics Govt. Dental College Srinagar *Corresponding Author

Sadat Rashid Khan Registrar Department of E.N.T SKIMS MC/H Bemina Srinagar

ABSTRACT

Teeth loss becomes increasingly common in elderly population and the effective demand for prosthetic care increases, as the patients want to restore the oral health function, esthetics and mastication. Complete denture has a significant role in functioning of respiratory system as per the data. In this study we evaluated the effect of complete denture on the respiratory ability of the patient by calculating the spirometric values.

Materials & Methods: Total of 50 patients were evaluated for the spirometric assessment, patients were not allowed to eat or do any physical activity 2 hours prior to the starting of study. The spirometry test was done in the presence of denture and in the absence of denture. The patients forced vital capacity was measured and was recorded in the excel sheet, after measuring the comparison was done between the values using SPSS software

Results: A total of 50 patients were examined for the study, 27 were male patients and rest were female patients. Significant results were obtained after analyzing the data

Conclusion: wearing of the denture does affect the respiratory function of the patient

KEYWORDS

Spirometry, forced vital capacity, complete edentulous with and without denture

INTRODUCTION:

Oral cavity being home to food debris, microorganisms, plaque and dead epithelial cells may lead to loss of teeth. The onslaught of all the problematic factors lead to the suffering of the dentition. Teeth loss becomes increasingly common in elderly population and the effective demand for the prosthetic care increases, as the patients want to restore the oral health function, esthetics and mastication.[1,2,3]

Complete denture does have a lot of effect on the patients functions and the effect on respiratory function as per the data available, was found significant. Under the light of available date the present clinical study was undertaken to assess the effect of respiratory function on complete edentulous patients with and without complete denture.

MATERIAL & METHODS

Spirometry is a common pulmonary function test, particularly the speed and amount of air inhaled or exhaled in a forceful breathing. Spirometry helps in identifying the underlying diseases of lungs like asthma, pulmonary fibrosis, COPD. [4,56] it measures the flow of air in the lungs using a machine called spirometer. In the present clinical study, physical activity like (smoking, alcohol, too large a meal) was stopped 2 hours prior to the doing of spirometry test.

The patients were informed and explained in detail that different respiratory measurement will be taken in the absence of denture and in the presence of denture. Written consent was obtained from the patients. Healthy patients were selected for the study with no underlying medical or respiratory pathology .A total of 50 complete edentulous patients were selected for the present study. The patients were not allowed to preform any physical activity 2 hours prior to of the study.

The patient was seated in the dental chair comfortably and a clip was placed on the patients nose to keep both nostrils closed, a cup like breathing mask was placed around the mouth, next the edentulous patient is asked to inhale forcefully followed by forceful exhalation in the breathing mask. The test was repeated at least three times to make sure the readings were consistent.[4,7,8]

The study was classified in four groups

1- Edentulous patients in the absence of denture (WOD)
2- Edentulous patients in the presence of denture (WD)
3- Edentulous patients with only upper denture (UD)
4- Edentulous patients with only lower denture (LD)

The following parameters were recorded FVC, PEF, FEV1 AND FEF 25-75 was tabulated in the excel sheet. Comparison of values was done at different stages using SPSS software, Chi SquareTest, Fisher T Test and ANNOVA was done to assess the significance. P value of less than 0.05 was found as significant.

RESULTS:

Total number of patients (table -1) who agreed for the clinical study was 50, out of them 27 were male patients 23 where female patients. The average age group of patients was taken as around 60years old and average weight around 55kg Patients were evaluated for respiratory efficiency with and without complete denture at different stages.

The mean FVC OF WOD ,WD,UD,LD was respectively 3.09,3.01,2.87and 2.89 the mean PEF values of WOD,WD,UD,LD WAS 5.72,5.59,5.39 AND 5.47 respectively 2.37,2.35,2.31and 2.3o were the mean FEV1 values observed in WOD,WD,UD and LD respectively. The FEF 25-75 values foe WOD, WD, UD AND LD group was found to be 2.77, 2.62,2.65 and 2.66 respectively. The data was analyzed and statically significant result were obtained (table-2)

Table 1: Demographic details of the patient

Number of patients	Male	Female	Weight	Age
50	27	23	55	60

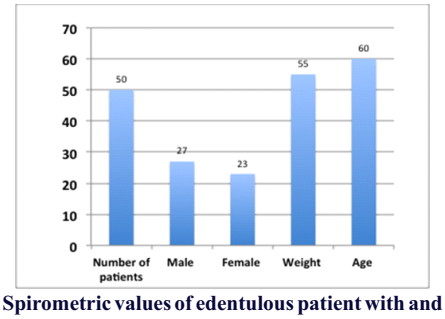

Table 2: Spirometric values of edentulous patient with and without complete denture

Comparative evaluation of spirometric value	P Value
Absence of dentures –FVC & Presence of dentures FVC	0.02*

*Statistically significant

DISCUSSION

In the present clinical study healthy patients were selected, the patients with respiratory problems were not included from the study. The patients that were compared were of same age group and specific race of people were taken into consideration. The total of 50 patients agreed

for the clinical study out of which 27 were male patients and 23 were female patients. The patients were explained all the spirometry procedure and how to do forceful inspiration and expiration before the start of study

Spirometry test was performed in four different oral conditions
1- without denture (WOD)
2- With dentures (WD)
3- Upper denture only
4- Lower denture only

Forced vital capacity, peak expiratory flow, forced expiratory volume and forced expiratory flow was evaluated. The data obtained was analyzed and significant difference was found in patients with and without dentures in all spirometric conditions. The most significant difference was found between WOD, FVC and with lower dentures (FVC) and WOD (forced expiratory volume 1s) and with upper denture (forced expiratory volume in 1 s).[4]It was found complete denture affect the spirometric finding of edentulous patient. [4,7,8,9,10]

Majumdar S et al[11] performed the spirometric analysis of control and patient group for males and females using computerized electronic spirometry. Patients suffering from diabetes, tuberculosis, thyroid vascular showed restricted spirometry values as compared to the control group.

Carossa s et al[12] studied the effect of edentuluism on the spirometric values over a period of time due to decrease in size of oropharyngeal space and reduced musculature tone of oral cavity. It was found that patients without any underlying pathology showed better results. When comparison was done in healthy edentulous patients with and without denture, significant spirometric finding was found in edentulous patients with dentures.

CONCLUSION:

It has been found beyond doubt that forced vital capacity is affected by wearing dentures in edentulous patients, however further research is needed.

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