

# Evaluation of the Relationship between the Prevalence of Dental Caries and Age Factor in Dental Patients

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## ABSTRACT

**Aim:** To evaluate and assess the relationship between the prevalence of caries and age of the patients.

**Methods:** This descriptive study was carried out at Nishtar Institute of Dentistry Multan from 1<sup>st</sup> January 2016 to 31<sup>st</sup> March, 2016. A total number of 265 patients were examined randomly having the selection criteria. Patients were divided in three age groups. Group I with 16-30 years, Group II with 31-45 years and Group III with 46-60 years of age. Black's classification of caries was followed. Only class I, II and class III carious lesions were selected to add in the history record. So these types were recorded in patient's history Performa.

**Results:** The results rejected the null hypothesis that the age and carious lesions are independent. At degree of freedom 4, the chi square value is 86.4965. The p-value is <0.00001 which is highly significant.

**Conclusion:** The prevalence of caries is much common in younger and that the prevalence of caries and age are related.

**Keywords:** Caries, Symptoms, Cavity, Prevalence, Abscess

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## INTRODUCTION

Caries is a chronic bacterial disease that leads to the disintegration and demineralization of teeth. The word Caries is Latin for "rotteness"<sup>1</sup>. This breakdown of the tooth surface if not treated, progresses and celerity of decay causes breakdown of the tooth structure. It is responsible for the many tooth complications and pathologies. So it is always advisable by the oral health professionals that every sort of oral disease whether it is caries or other should be treated at earliest. When this awareness of treatment at earlier stage of diseases is created in the community, definitely it will help a lot combating the major oral health diseases. The tooth decay that leads to cavities is a breakdown of tooth structure due to biological activities of microorganisms<sup>2</sup>. The cavities might be of a number of different colors from yellow to black<sup>3</sup>. The symptoms may be pain and difficulty with eating<sup>3,4</sup>.

Complications may include inflammation of pulp, loss of teeth and complicated infections<sup>3</sup>. The carious defect occurs due to the production of acid by micro organisms. Carbohydrates in food are the primary energy source for the bacteria. If degradation of tooth is greater than remineralization and cavitation results. Risk factors include conditions that result in less saliva such as diabetes mellitus, Sjogren's syndrome and some drugs.<sup>6</sup> Caries is also associated with poor

socioeconomics and lack of cleansing the teeth<sup>2,7</sup>. We all know that diseases of teeth are present in almost every community with different prevalence rates. Due to this, it is very important to have a check on the current prevalence of the disease in the specific community. Nishtar Institute of Dentistry, a tertiary care teaching hospital in Multan, has been known for its high standards of provision of dental treatments among the patients in the southern Punjab. It has a large population sector that is drained here for the dental treatment.

Arrangements regarding the treatment of dental diseases have been made in the hospital to facilitate and give the best ever possible. The holy prophet

(ﷺ) said, "خير الناس من ينفع الناس" (The best among you is the one who benefits people)<sup>5</sup>. By keeping in

mind these golden words of our holy prophet (ﷺ), it should be our aim to help and serve those who deserve. Thus the goal was to provide the maximum treatment facilities available for the betterment of the patients. It has been observed that there is a wide range of differentiation found about the prevalence of caries in different patients having different ages. Usually the children with mixed dentition have high caries rate due to the consumption of sweets and junk foods. In the same way the adults also present different scenario about the caries and the nature of tooth decay. It all depends upon multiple factors including the socioeconomic status, education, knowledge, immunity and behavior. According to

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National Institute of Dental and Craniofacial Research, 93% of elders with age of 65 and above have caries in their permanent teeth. This is based on those elders who have teeth.

**PATIENTS AND METHODS**

This descriptive study was carried out at Nishtar Institute of Dentistry Multan from 1<sup>st</sup> January 2016 to 31<sup>st</sup> March, 2016. It is basically an attempt to address the issue of prevalence of caries regarding the age of patients. A total number of 265 patients were observed and clinically examined. The patients were categorized in three age groups. Group I from 16 to 30 years, Group II from 31 to 45 years and Group III from 46 to 60 years of age. The finding of caries was Class I, Class II and Class III cavities. All the patients selected were having permanent teeth without any missing teeth. The elderly patients of age Group III were also selected according to this criterion. The examination instruments were included the dental

mirror, dental probe and the cotton pliers. Sterile cotton was available to scrub and clean the hard and soft tissue surface. All the surfaces of permanent teeth were examined in order to find out the caries classification according to our selection mode. Radiographic help was taken in case of any ambiguity about caries presence. Black's classification of cavities was observed. Chi square test was used to determine the relationship.

**RESULTS**

According to Chi square table value of  $\alpha$  with degree of freedom 4 is 9.488 while our statistics show it to be 86.4965. So we can reject the null hypothesis because 86.4965 is greater than 9.488. The data suggest that there is a relationship between the two variables i.e., age group and the caries as classified (Tables 1-2).

Table 1: Prevalence of cavities types and age of patients

Class	Age group I	Age group II	Age group III	Total
I Cavity	52	41	15	108
II Cavity	30	19	10	59
III Cavity	18	10	70	98
Total	100	70	95	265

Table 2: Expected frequency and Chi square statistic for each cell

Class	Age group I	Age group II	Age group III
I Cavity	40.75 [3.10]	28.53 [5.45]	38.72 [14.53]
II Cavity	22.26 [2.69]	15.58 [0.75]	21.15 [5.88]
III Cavity	36.98 [9.74]	25.89 [9.75]	35.13 [34.61]

$\chi^2 = 86.496$ ,  $df = 4$ ,  $P = <0.00001$

**DISCUSSION**

The current age is an age of science, technology and developments. Despite the major advancements in the field of science, medicines and technology, oral diseases still remain a major challenge especially in the developing countries. The foregoing discussion implies different grounds of current literature. Due to high prevalence of oral diseases, the dental caries and periodontal health are considered as global oral health burdens.<sup>9</sup> There is rapidly growing literature available and different studies have been performed in different age groups regarding the prevalence of caries. The data yielded in our study, the age group I showed a high percentage of caries (37.73%) The age group II has the least prevalence among the other categories (26.41%) while the age group III has the higher prevalence than the age group II (35.84%) The result of study done by Muntaha et al<sup>11</sup>, showed that class I lesion was very high.<sup>10</sup> This is in accordance to our study with class I prevalence rate

of 40.75%. The same results have also been supported by the other researchers showing the high prevalence of class I carious lesions. Another study showed the overall high prevalence of caries as 72.80%.<sup>12</sup> The class I cavity is the most frequently present cavity in all the age groups. According to a study 90% of the carious lesions are occurred in the pits and fissures of the posterior permanent teeth and the molars having the high prevalence rate.<sup>13</sup> The prevalence of class III carious lesion is also low as compared to class I. Class III cavity has the 36.98% of prevalence in our study. Class II is less prevailed as compare to class I and class III. All the above data suggest the different reasons for the prevalence of caries. As we know that tooth brushing play a vital role in the maintenance of oral hygiene and thus prevention from the caries. A good knowledge of tooth brushing techniques pays a lot for the oral hygiene and thus oral health. According to a study brushing duration and the quality of the dentifrice

have a significant role in the caries prevention of fluoride dentifrices<sup>14</sup>.

A lot of techniques have been developed to clean the teeth, so it is extremely important to educate the patients and the community to utilize what is necessary and what is not. We can say that proper guidelines regarding the correct and effective brushing would be a key factor in minimizing the caries and oral diseases<sup>15</sup>. The low prevalence of caries in age group II might suggest a good following of the oral hygiene instructions and awareness about the dental diseases. The pits and fissures are the retentive areas for the food debris, thus these areas are more vulnerable to caries as compared to the smooth surface areas of teeth. Different factors are involved in the occurrence of caries including the environment, micro organisms and the host factors in the older and younger factors. It has been observed that there is high prevalence of caries in the developing countries as compared to the other developed countries. This difference is presumably due to the healthy lifestyle and the provision of preventive measures and the basic awareness.<sup>16</sup> People with different age groups present different prevalence of caries. Older patients present different prevalence of caries as compared to the younger ones. The basic premise is because the older patients have to face different problems that occur in the later phase of life. Our study also agrees with the high carious rate in younger patients exactly in accordance to some other researchers that highlighting the carious lesions being more in younger patients as compared to the elderly pts<sup>13</sup>.

A study in Malawi presented one in five (21 %) adolescents aged 12-15 years and half (49%) of adults aged 35 years or more had dental caries, half (48%) and 80% of the population aged 35-44, 65-74 years had missing teeth respectively. Toothache, dental caries and missing teeth were more common in females than males and prevalence in urban was as high as in rural areas. Oral hygiene was poor with less than 40% of the population brush their teeth twice a day and tobacco smoking was high, particularly in men where prevalence was 23%<sup>17</sup>. There is approximately 2.43 billion people (36% of the population) have dental caries in their permanent teeth. The World Health Organization estimates that nearly all adults have dental caries at some point in time<sup>8</sup>. In deciduous teeth it affects about 620 million people or 9% of the population. They have become more common in children & adults in recent years<sup>18</sup>.

## CONCLUSION

There is overwhelming evidence concluding that age and the distribution of caries are not independent.

Our study validates this significant finding. There is substantial prevalence of caries in the younger group of patients (37.73%) while class I type of caries is most common finding (40.75%) in the overall sample of patients. There is, therefore a definite need for creating a burnished awareness about the dental diseases.

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