Research Article

ASSOCIATION OF ANAEMIA & NUTRITIONAL STATUS WITH DENTAL CARIES AMONG SOCIALLY DEPRIVED STUDENTS OF UDAIPUR CITY

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ABSTRACT

The objectives of the study were to find out the association of Anaemia & Nutritional Status on Dental Caries among socially deprived Students of Udaipur City and to raise awareness among blind students for improving their oral hygiene status & educate them to adopt healthy oral practices. A cross sectional descriptive survey was conducted among the students of Government blind school in Udaipur. A total of 50 students aged 16-25 years were recruited from the school. A total of 50 blind students recruited for study on the basis of inclusion criteria were examined. 72% of study subjects were males and 28% were females of 18-21 & 22-25 years age groups. High prevalence of dental caries among 12-21 years of age group & high prevalence of dental caries among males with high DMFT (4.47) & DMFS (5.30) scores was observed. The research concludes that blind males & females are at similar risk of developing dental caries and developing anaemia. Therefore, further investigation with advanced diagnostic aids is required for future betterment of these population.

INTRODUCTION

Anaemia still remains one of the public health challenges with global impacts (Bhattachherjee.*et al*, 2010) and among the vulnerable groups, such as women and children (Gambling *et al*, 2008) Anaemia is affected by many factors including ethnicity, gender, age, dietary habits, physical and mental health, environment, gynaecological history and genetics (Ugwuja *et al*, 2015)

It was reported in a study that in rural setting, most patients attending out-patient clinics had anaemia (Uria *et al*, 2014). The highest prevalence of anaemia was seen in children <10 years followed by women and older adults.

Oral health has been defined as "The standard of health of the oral and related tissues which enables an individual to eat, speak and socialize without active disease, discomfort and embarrassment and which contributes to general well-being" (Gift and Atchison,1995). Evidence suggests that proper oral health affect self-confidence and socialization (Fiske *et al*, 1998).

Dental caries is a significant public health problem for the society (Rashad, 2009). Without adequate intervention, the process can continue until the tooth is destroyed (Gupta *et al*, 2014).

The World Health Organization (WHO) defined Health as "a state of complete physical, mental, and social well-being, rather than solely the absence of disease" (Peter, 2004). Vision is an important sense for interpreting the world, impaired sight in childhood can have detrimental effects on neurological, cognitive, emotional development (Rashed, 2009). People with visual impairment are at an increased risk of developing oral diseases, because of greater difficulty in attaining good oral hygiene (Titiya *et al*, 2003).

The dental health status of visually impaired individuals tends to be moderate with high prevalence of dental caries because of not getting benefits of treatment needs.

Anthropometry is now a widely accepted, simple field technique for evaluating physical growth and nutritional status of individual and population group. The measurement of attained height and body mass (weight) at specific ages provides useful information which have been incorporated in growth monitoring programmes and cross sectional surveys to express growth experience (Gorstein, 1969).

MATERIAL AND METHODS

A cross sectional descriptive survey was conducted among the students of Government blind school in Udaipur. A total of 50 students aged 16-25 years were recruited during the month of August-September 2015.

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The study protocol was reviewed by the ethical Committee of Pacific Dental College & Hospital & was granted ethical clearance. All the subjects who agreed to participate in the survey were included in the study & were requested to give written informed consent prior to clinical examination. Students who were not willing to participate and with any systemic disease were excluded.

Survey proforma was designed in English consisting of general information regarding demographic data including height and weight for calculating BMI and haemoglobin level for determination of anaemia, DMFT and DMFS index for assessment of dental caries. Before the start of the study, examiner was trained & calibrated in the Department of Public Health Dentistry for 1 week by an expert examiner to minimize the errors & doubts.

Initially, the examiner was standardized & calibrated by practicing the examination on a group of 5 subjects. The intra examiner reliability was assessed using Kappa Statistics, which was 92%, 90% & 89% respectively. A pilot study was done on 10 subjects to know the appropriateness & feasibility of the survey. The examiner visited the school on the predetermined dates according to the schedule.

The statistical software namely SPSS version 17.0 was used for data analysis. Chi square test was used for comparisons. Calculated values of the test criteria were compared with the tabular value at 95% confidence level to ascertain the significance of the test. P value less than 0.05 was considered statistically significant.

Table 1 Distribution of study population according to age and gender

AGE GROUP	GENDER	
	MALE n(%)	FEMALE n(%)
18-21 YEARS	27(54%)	10(20%)
22-25 YEARS	9(18%)	4(8%)
TOTAL	36(72%)	14(28%)

Table 2 showed high prevalence of dental caries among 18-21 years of age group. Majority of study population were under normal range of BMI.

Table 3 reveals high prevalence of dental caries among males with high DMFT (4.47) & DMFS (5.30) scores. 66.6% of males were under normal BMI range & females shows 12.36% haemoglobin levels.

DISCUSSION

An epidemiological survey conducted showed that the study population consisted of 50 blind students, of which 72 % were males and 28 % were female. No significant association was found between mean DMFT and BMI. Our study revealed 50 % females were underweight, while another study showed direct association between obesity and dental caries (Kantovitz *et al*, 2006). According to a study, it was found that overall prevalence of anaemia was 44.62% in males and 66.87% in females (Pal *et al*, 2014) but in our study mean haemoglobin of males (11.76) found was slightly low as compared to females (12.36).

Present study depicts higher percentage of females belonged to underweight group (50%) which can be related to nature of diet and lifestyle of individual. It also reveals that the chances of developing anaemia, however, 66.6% males were under normal BMI range. The haemoglobin level was increased (12.6%) in 22-25 years of age group. According to gender, it was found more in females. The findings were not found similar in other studies.

The prevalence of anaemia significantly increases with decrease of BMI as reported in a research (Gupta *et al*, 2011). A study showed that there was association between the higher prevalence of anaemia and low BMI in the elderly South Indian rural population (Ramachandra *et al*, 2008).

Table 2 Prevalence of dental caries, anaemia and nutritional status among study population according to age

Age group	Dental caries		Nutritional status			Hb %	p value
	DMFT (mean)	DMFS (mean)	Underweight (n)	Normal (n)	Overweight (n)		
18-21 (n=37)	4.27	4.91	16	20	1	11.69	0.005
22-25 (n=13)	4.00	4.92	4	9	0	12.6	

* Indicates statistically significant difference at p 0.05.

Table 3 Prevalence of dental caries, anaemia and nutritional status among study population according to gender

Gender	Dental caries		Nutritional status			Hb%	P value
	DMFT (mean)	DMFS (mean)	Underweight n (%)	Normal n (%)	Overweight n (%)		
Males (n=37)	4.47	5.30	12(33.3%)	24(66.6%)	0(0.00%)	11.76	0.005
Females (n=14)	3.76	3.92	7(50%)	6(42.8%)	1(7.14%)	12.36	

* Indicates statistically significant difference at p 0.05.

RESULTS

A total of 50 blind students recruited for study on the basis of inclusion criteria were examined. Table 1 shows that 72% of the study subjects were males and 28% were females of 18-21 and 22-25 years age groups.

The present study also reveals that the mean DMFT and DMFS index was higher in males (DMFT=4.47 and DMFS=5.30) while the age-wise distribution of dental caries shows high DMFT in the age group of 18-21. Mean DMFT and DMFS were higher in males who have a lower haemoglobin concentration as compared to females.

CONCLUSION

Blind males & females are at similar risk of developing dental caries and anaemia. Therefore, further investigation with advanced diagnostic aids is required for future betterment of the population.

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