

RESEARCH LETTER

Association of imbalanced diet with dental caries: A case-control study

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Dental caries is one of the most prevalent but preventable dental public health problems. Early prevention and dietary intervention can prevent tooth loss.¹ Most of the published articles so far reported regarding the effect of refined carbohydrate on dental caries.² This study aimed to determine whether there is an association of balanced diet in prevention of dental caries.

A case-control study was conducted from June, 2020 to May, 2021 at the Department of Conservative Dentistry and Endodontics of Bangabandhu Sheikh Mujib Medical University. A total of 50 adults with dental caries were considered as cases and 50 adults without dental caries were considered as controls. Both groups comprised good or fair oral hygiene status and belonged to 20-50 years of age. Edentulous or partially dentulous subject, subject with systemic diseases such as diabetes

HIGHLIGHTS

1. Imbalanced diet is a risk factor for dental caries.
2. Non-dietary habits such as hand washing and adequate sleeping can prevent dental caries.

mellitus, respiratory disease, Sjogren's syndrome and sickle cell anaemia, were excluded.

Clinical examination was done for oral hygiene status and presence of dental caries. Interviews were done to collect the data with the help of a questionnaire and check list which included caries index, oral hygiene index and diet score (balanced or imbalanced category) of the respondents. ICDAS (International Caries Detection & Assessment System) Score³ was used to define caries. Any score other than 0 was considered as having caries in ICDAS scores.

TABLE I Diet and other habitual activities in a day between 50 cases and 50 controls

Diet and other habits	Cases n (%)	Controls	P
Cereals or cereals products	50 (100)	50 (100)	-
Vegetables oil	50 (100)	50 (100)	-
Fish/ meat/ poultry/ egg/ legumes	39 (78)	49 (98)	0.002
Pulses	8 (16)	23 (46)	0.001
Leafy and or non-leafy vegetables	28 (56)	48 (96)	0.001
Fruits	4 (8)	32 (64)	0.001
Milk or milk products	3 (6)	16 (32)	0.001
Avoidance of sugar or sweetened food	7 (14)	26 (52)	0.001
Water more than 6 glasses per day	26 (52)	48 (96)	0.001
Avoid of taking extra salt in daily meal	26 (52)	46 (92)	0.001
Homemade food taking	39 (78)	48 (96)	0.007
Avoid of over eating	35 (70)	47 (94)	0.002
Eating of food with chewing	22 (44)	46 (92)	0.001
Always washing of hands before meal	17 (34)	41 (82)	0.001
Enough sleeping, more than 6 hrs	27 (54)	44 (88)	0.001
Exercise or doing work by own self	45 (90)	50 (100)	0.02
Proportion of imbalanced diet	41 (82)	4 (8)	<0.001

Chi square t test as obtained by SPSS

The 17 scores of the balanced and imbalanced diet evaluation score based on Desirable Dietary Pattern for Bangladesh, 2013⁴ was categorized into good (15-17), moderate (11-14) and poor (≤ 10). Poor category was considered as imbalanced diet, while good and moderate category was considered as balanced diet.

Results are presented as number (%). Between group comparison were done using the data Chi-square test. *P* value less than 0.05 was considered as statistically significant.

All study subjects of both groups were habituated to take cereals and cereals products, and vegetable oil (TABLE 1). There were statistically significant differences in 14 diet indicators between the two groups. Eating habits of fruits, eating of food with chewing and drinking water >6 glasses daily belonged more to control group compared to cases. Out of total study population, 45% were habituated with poor category of diet or imbalanced diet. About 82% of cases were habituated to take imbalanced diet, while only 8% of control were habituated to take imbalanced diet.

Compromised dietary elements and related factors play a significant role for caries development. In a comprehensive meta-analysis of 16 studies, the effect of daily intake of fruit or vegetables was assessed for the relative risk of dental caries and the combined computed adjusted odds ratio suggested that each portion of fruit consumed in a day significantly reduced the risk of dental caries by 49%. Furthermore, chewing of food or mastication act as mechanical stimuli on the salivary flow rate and pH.⁵ In addition, taking of frequent water throughout the day can significantly prevent dry mouth condition is one of the risk factors for caries development.⁶

Although patients with periodontitis could not be involved, this case-control study indicates that an imbalanced diet is as a risk factor for dental caries in this sample of people from Bangladesh.

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Author Contributions

Conception and design: AAM, RA. Acquisition, analysis, and interpretation of data: RA. Manuscript drafting and revising it critically: AAM, RA. Approval of the final version of the manuscript: AAM, RA. Guarantor accuracy and integrity of the work: RA, AAM.

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Conflict of Interest

There is no conflict of interest to declare by the authors.

Ethical Approval

Ethical approval was taken from the Institutional Review Board of BSMMU (memo number: BSMMU/2020/24444; date: 22/02/2020).

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