

# Nutritional Guidelines for Orthodontic Patients

R Sharma, S Mittal, A Singla, M Viridi

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## Abstract

The orthodontic patients avoid many types of food, particularly fruits, raw vegetables and other hard and tough foods, as they cannot chew these properly, because of pressure sensitivity of the teeth in the initial 3 -5 day period after routine. As a result such individuals consume significantly less proteins and other key nutrients, fiber, calcium, non-haem iron and some vitamins. This paper presents an overview of the relationship between diet and orthodontic treatment. The nutritional guidelines to obtain good oral and general health in orthodontic patients are discussed.

## INTRODUCTION

In recent years people have become more aware and concerned about maintaining good health and having a healthy lifestyle. A good diet plays an important role in maintaining good health. Even the government of different countries have been working to formalize national nutrition monitoring system and there are new labeling laws for foods regarding fat and salt content.<sup>1,2</sup> With so much focus on healthier foods and more nutritional food choices, dietary counseling and nutritional education relevant to oral health have become an important component of dental education. In fact 1987 guidelines for accreditation of dental schools by ADA requires that “the graduate must be competent to provide dietary counseling and nutritional education relevant to oral health.”<sup>3</sup> Study of diet and nutrition is also a mandatory part of curriculum in Indian dental schools.<sup>4</sup>

With nutritional issues in the spot light, it seems a good time to evaluate how orthodontic treatment affects a patient's diet. Orthodontic treatment creates physical, physiologic and emotional stresses that increase the nutrient mobilization and utilization thus raising the nutritional requirements of the person. This along with the fact that the nutritional needs of adolescents (the age of a typical orthodontic patient) is already stressed by growth and development as well as the emotional stress of puberty, maintenance of a well balanced diet is of great importance. Fixed orthodontic treatment (braces in common language) typically lasts for around 1½ to 3 yrs and during this duration certain dietary restrictions and modifications are advised. Typically the orthodontist often advise their patients to eat soft food during treatment to avoid pressure sensitivity but very few give clear cut

instructions or provide diet charts. In absence of these, patients generally switchover to convenient easy to eat food, without any special attention to the nutrient values of the consumed food.

The literature suggest that orthodontic patients nutritional status can affect the reaction of the tissues to orthodontic forces.<sup>5-8</sup> Ascorbic acid deficiency for example is thought to slow down orthodontic tooth movement by decreasing the body's ability to heal.<sup>5,6</sup> Less than adequate levels of ascorbic acid hinder the breakdown and reformation of collagen which is necessary for tooth movement.<sup>9,10</sup> About 17-72% of orthodontic patients have less than optimal levels of ascorbic acid.<sup>9,10</sup> Retention may also be affected by ascorbic acid levels as shown by a study in which guinea pigs with deficiency of ascorbic acid experienced more rapid relapse of malocclusion after treatment than non deficient ones.<sup>7</sup> The involvement of certain nutrients in orthodontics has been looked at in the past, but the diet as a whole has not been evaluated. This paper presents an overview of the relationship between diet and orthodontic treatment and the nutritional strategies which can be employed to obtain good oral and general health in orthodontic patients.

## MATERIAL AND METHOD

The study was conducted on 50 orthodontic patients undergoing fixed orthodontic treatment in the department of orthodontics, PDM dental college, Bahadurgarh. All the patients were between the ages of 12-16 years. The participants were scheduled for treatment that was expected to produce the post appointment pressure sensitivity like bonding an arch, changing an arch wire, activation of loops

or tie backs etc. Appointments were scheduled on Wednesday to control for bias due to diet change on the weekends. A three day diet journal form was given to the patient at the appointment preceding the study appointment. Included with this form was a sample diet recording and an instruction sheet. The patients were reminded on phone a day before the recording was to be made. They were asked to carry the diet journal with them all throughout the day and record in it the food and/or beverages they consumed. For three days before the appointment (Sunday, Monday and Tuesday) the patients used their diet journal form to record the food and the beverages ingested. They returned this form at their study appointments, received treatment and were given a new 3 day diet journal form to record their diet for Thursday, Friday and Saturday. The second form was returned by mail.

## RESULTS

Once the diet journals were completed they were analyzed and observed for the findings. Interestingly few common trends were observed in most of the patients in their after appointment dietary recordings. They were:-

The quantitative intake of food for most of the patient's decreased.

The proportion of fatty and sweet things in the diet increased in all the patients whereas that of carbohydrates decreased.

There was a great decrease in the intake of fruits and vegetables.

Most of patients reported inconvenience or the mental stress during the initial 3-4 days after orthodontic appointment due to changes in their normal dietary schedule.

Lunch was the most affected especially for the school going children.

## DISCUSSION

To maintain a healthy body it is essential to follow a balanced diet. A diet is called balanced when it comprises of all the basic nutrients that the body requires and also meets the calorie requirements of the individual his/her age, sex, activity level etc in mind. A well balanced diet for a typical Indian teenager is given below.

**Figure 1**

Table 1: Indian Diet Chart

Food Group	Quantity	Sources
Cereals	300 g	Wheat, Rice, Millets
Pulses	60g (Veg), 30g(Non-Veg)	Sprouts/ Fermented
Meat	30 g	Egg / Chicken / Fish
Vegetables	300 g (minimum)	Peas, Carrot, Pumpkin, Beans, Green Leaf Vegetables etc.
Fruits	100 g (minimum)	Orange, Apple, Papaya, Guava, Mango etc
Milk & Milk products	300 g	Cheese, Curd etc
Sugar	20 g	Confectionary
Fats	20 g	Oil/ Butter/ Ghee

Orthodontists often advise their patients to eat soft foods during treatment to accommodate pressure sensitivity experienced with tooth movement however there is little literature on how orthodontic treatment affects a patient's diet and even little reports on clear cut diet guidelines for orthodontic patients. In this study we found that in the absence of proper nutritional guidelines and clear cut instructions, a nutritious balanced diet is the last thing on the patients mind in the initial 3-4 days of orthodontic adjustments especially when they think that with the braces they have very limited food choices.

Most of them are not aware that it is possible to eat more healthily with braces because; now one has to watch what he/she is eating. So once the treatment is finished and you thank your orthodontist for your transformed smile consider whether you should also thank those braces for a lighter and healthier you!

## A BRACES FRIENDLY BALANCED DIET

**Cereals (Carbohydrates):** - This group should provide  $\frac{1}{4}$ <sup>th</sup> of our total energy requirements. The forms in which cereals are generally consumed in a typical Indian diet consist of chapattis, rice and bread. They are generally an easy food groups for braces wearers because most grain products are very soft and easily chewed. In cases of discomfort dunking/mashing chapattis in curries and dals ensure that you don't miss out on two most vital components of a balanced diet – carbohydrates and proteins.

**Milk and milk products:** - Dairy products should comprise about  $\frac{1}{4}$ <sup>th</sup> of the total dietary requirements. Strong bones and teeth rely on a diet that is rich in calcium. Dairy products provide us with calcium, vitamin D, potassium and even protein. Dairy products are an excellent choice for braces wearers because most dairy products are soft and require very little chewing. Milk, milk shakes, yogurt (curd) and cottage cheese are commonly used milk products in Indian diets and its consumption by patients should be encouraged.

**Vegetables:** - Vegetables again comprise about  $\frac{1}{4}^{\text{th}}$  of the total dietary requirements. Vegetables provide us with vitamins and minerals that are essential for growing bodies. Most Indian diets consume vegetables in the cooked form, so they don't provide much of the problem for braces wearers. They can be meshed up further for increased comfort. Raw vegetables or salads can be grated or cut into bite sized pieces.

**Fruits:** - Fruit is an essential part of a healthy diet but eating it with braces can be quite challenging. Hard fruits like apple, unripe pears and peaches can be very difficult to bite into because of the brackets that are on the teeth. After a wire change even the softest food can be a nightmare. For 3-4 days after an orthodontic appointment, choose citrus juicy fruits such as oranges and berries. Hard fruits can be cut bite sized pieces so they can be chewed with the back teeth. If nothing else works fruit juice is always a healthy easy option.

Frequently it is uncomfortable to bite or chew something very cold with all that metal around the teeth. Having eatables at room temperature helps.

**Nuts and Seeds:** - Carefully selecting the choices from this vegetarian group will help keep the braces secure. Nuts and seeds are very hard and they are very small - two challenging aspects for braces wearers. During the duration of active orthodontic treatment select nut spreads or coarsely grind your favorite nuts and seed.

**Meat:** - Meat poses a problem for braces wearers because it is fibrous, making it hard to chew. Avoid eating meat right from the bone. Tofu or cottage cheese provides a safe alternative to meat as a source of protein. Select, lean, tender cuts of meat and cut them into bite size pieces before you eat it.

### “ABSOLUTELY NO” FOOD GROUP

- Gum – sugarless or otherwise
- Sticky foods – toffees, candies etc
- Hard food – nuts (unless grinded), popcorn, corn on the cob, pizza crusts, ice, cookies

## CONCLUSIONS

To optimize patient's physiologic response to orthodontic treatment, it may be beneficial to provide dietary guidance to orthodontic patients in choosing soft food diets. This includes obtaining nutrition history, evaluating the diet, educating the patient about diet components important for oral health, motivating the patient to improve diet and follow up to support patient's effort to change food behaviors.

Patient with braces who prefer or switch over to convenience foods such as cakes, pastries, ice creams and cookies which are high in simple sugars and fats should be advised regarding the value of fruits, vegetables, grains and cereals in their regular diet. Nutrition goals for the orthodontic patient should be to eat a variety of foods including protein sources, dairy food, fruits, vegetables and cereals and to limit salt, fat and sugar intake.

Compliance with dietary advice is more likely if follow-up is provided. Dietary progress should be discussed at further appointments. Nutrition care should be an integral part of orthodontic care.

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**Author Information**

**Rekha Sharma, MDS**

Professor, Department of Orthodontics, PDM Dental College & Research Institute

**Sushil Kumar Mittal, MDS, MOrth RCSEd, PGDHA**

Reader, Department of Orthodontics, PDM Dental College & Research Institute

**Anu Singla, MDS**

Sr. Lecturer, Department of Orthodontics, PDM Dental College & Research Institute PDM Dental College & Research Institute

**Mandeep Singh Virdi, MDS**

Professor, Department of Pedodontics, PDM Dental College & Research Institute