

Oral and Dental Hygiene

A Lecture to the College of Nursing Students, New Delhi

By

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The subject of Oral Hygiene is of increasing importance as we adopt the so-called civilized methods of living. The role of dental hygiene has become such an essential part in the profession of dentistry that it has instituted the coining of a new term such as 'Dental Hygienist'. Even the Government of India has recognized this profession and under the Dentists Act, 1948, a Dental Hygienist means "a person not being a dentist or a medical practitioner, who scales, cleans or polishes teeth, or gives instructions, in dental hygiene." Dental Hygienists in various parts of the world have even a more important role than this, especially in New Zealand, where owing to a shortage of dentists over the last three decades, the Government have instituted a condensed course for dental hygienists, who look after all the dental work of the children in the State, which includes fillings, extractions and orthodontic work and it has been found to be very successful. Indeed, there has been much controversy about the dental hygienists in New Zealand and since last year the WHO, the American Dental Association and Government of the United Kingdom have appointed special committees to examine and report on their work. The British Committee has reported favourably and have recommended to the Government of U.K. that such a course for dental hygienists should be introduced in England. These Hygienists would take care of all dental work for children and adolescents up to the age of 15. The American Committee has reported against it as they are afraid of a dilution of the profession. In the State of Massachusetts, U.S.A., last year, a law enabling dental hygienists to perform all dental work on children

was passed, but there was such an uproar from the American Dental Association that it has been rescinded. Why I am telling you all this is because with your training of four years, I am certain, a course of one year would be sufficient to enable you to play the important role of dental hygienists in this country and act as Dental Nurses to Dental Surgeons as in other countries; and if the government so decides at a later date, to entrust all the work of the school children in your hands. However, I shall not go more into this question as it is still in the embryonic stage with the Dental Council and the Government of India, but you would certainly be the most suitable persons to take it up with some training.

Dental disease is the most prevalent of diseases of practically all civilized races. As long as man lived simply and spent his time hunting, fishing and attending his small crop of cereals as they do here in rural areas, he was caries free. With the development, which led to the greater organization of society with consequent easier habits of living in leisure, luxury and sensuous foods, caries made its appearance in the first instance as a disease of the nobility and of the rich. As the centuries rolled by, domestic civilization spread and was embraced by more and more people as the most desirable way of life. In the wake of this progress came caries, and today we find it existing across the subcontinent and now recognized as one of the commonest of human diseases. It is frequently asked, What is the civilization factor?—it is the diet which is responsible.

Oral Hygiene is the science of oral health and is intended to preserve the

oral cavity and its contents in a healthy condition in normal equilibrium. This may consist of all remedies for the maintenance of the teeth and the soft structures of the mouth in a healthy condition and hygienic measures for daily use. In the mouths of the civilized races, the mucous membrane because of the present methods of preparing and selecting food-stuffs, and other intrinsic causes, is found more or less in a state of mild chronic inflammation, while the teeth are subjected to a process of molecular destruction, known as "dental caries." While certain preliminary intrinsic causes such as anomalies of position and structure may profoundly alter the predisposition of the teeth to various destruction as a whole or in part, dental caries will always occur if a tooth is subjected to the influences of a suitable environment.

Dental caries is not a disease in the strict biological sense; it is a process distinctly allied, both in its chemical and bacteriological aspects, to the general phenomenon of putrefaction. But we have found that caries is a nutritional as well as a bacterial disease. We recognize that the destruction of the enamel or the dentine can only be brought about by physical or chemical means. Bacteria *per se* cannot destroy teeth. Bacteria are, however, capable of producing by their metabolism, substances which can dissolve the inorganic and organic parts of the tooth. When a coarse diet was the staple food, it scraped the teeth and cleaned them. These natural foods did not tend to lie in the crevices, for the jaws of primitive people were very well formed and the teeth were regularly placed. If any digestion took place it was around the teeth and was very slow. The modern soft refined foods all digest easily and rapidly. The foods are squeezed rather than chewed because they are soft and not coarse and fibrous. The highly refined carbohydrates, such as our bread and cakes, produce acid on digestion and

this can dissolve the calcium salts in the enamel.

The Bacillus Acidophilus, which is known to cause dental decay, increases considerably on such diet. We, however, do know that no specific organism has been found to be entirely responsible for caries. The nature of the caries process, which is generally accepted today, is the chemico-parasitic process consisting of two definite states—the decalcification of the tissues and the dissolution of the remaining organic matrix. We as yet do not know the actual cause of dental caries. There are many theories but we do know of a certain number of favourable conditions, which help in the growth and advancement of caries in the teeth. Much research has yet to be done and the person, who can discover either the specific cause or the cure would become famous and rich. We do know that the accumulation of carbohydrate food debris on and about the teeth is considered the incipient factor in the production of the decalcifying agents,—the direct factor of splitting all these carbohydrates by bacteria into acids, principally, lactic acid.

The normal mouth is fairly well protected against the continuous onslaughts of bacteria through an unusually rich blood supply, a high resistance of the epithelial lining and a free flow of saliva. The vigorous use of the organs of mastication during the chewing of properly selected foods will bring about an active circulation and stimulation of the parts involved.

Human saliva is secreted through three pairs of salivary glands and the minute mucous glands distributed over the oral cavity. Saliva is a weak solution of alkalies and it contains organic substances among which are mucin and other ferments, which convert the starches into maltose. Saliva is a glandulous secretion capable of adaptation. The biologic laws governing the secretion of saliva are directly responsible for its composition, its quantity and its influence on the

digestion and, incidentally, on dental caries. The quantity of saliva secreted, *i.e.*, the rapidity of its flow depends upon the physical nature of the stimulant, *i.e.*, food-stuffs. The fundamental basis of the secretion of saliva, however, rests with the process of mastication. The much-discussed bactericidal action of the saliva is still unsolved. In the normal mouth, pathological micro-organisms are usually less virulent, and they are less in number than saprophytic types. It appears that the saliva of man and some animals exercises an inhibitory function on certain micro-organisms, such as, staphylococci and streptococci. Teeth, which are imperfectly calcified, have a lower resistance and will sooner or later decay. If, however, the flow of saliva is impaired or completely checked all teeth will be destroyed by caries unless some other means for removal of food debris is established.

Vigorous mastication of correctly selected foodstuffs forms the basis for the natural prevention of dental decay. Subjecting wild tribes of the human race to the influences of civilized diets, will always be followed by a marked increase in dental caries. The mastication of soft refined white bread and the abundance of sweets is the cause of rampant decay, which is frequently manifest in the mouths of civilized races.

In the U. S. A., 98 per cent and in Europe 85 per cent of the population suffer from tooth decay. They eat so many candies and sweetmeats, they chew so much sugary chewing gum and they drink too many carbonated soft drinks. Coca-Cola and sweet aerated waters, the common orangeade and lemonade are the worst enemies of good and healthy teeth.

"Our mechanical age, our progress, our rapid pace of life, our perpetual nervous tensions, our congested living and working quarters, our all too few opportunities of being out in the open air, our irrational nutrition—these are the causes of dental decay," declared

Prof. Kantarowitz of the University of Bonn at the recent Conference of Dentists at San Remo in November. Dental caries is rarely observed in the Eskimos, whose diet consists of raw meat of seals, walrus and fish. It is the mechanical cleansing action which keeps the surfaces of the teeth clean besides the nutritional value of the food-stuffs, but the moment the Western traders introduced tinned and canned food, the Eskimos immediately got dental caries. Similarly with the Samoans and the inhabitants of the Congo. Mothers do not suckle their babies long enough, as a result, many babies develop rickets and get bad teeth later on.

It has been proved, the Eskimos and primitive races suckle their children to an advanced age. An explorer once saw a 14-year old Eskimo boy feed at his mother's breast and the Eskimos have beautiful healthy teeth. Convincing evidence has been also given by the Michigan group and others that the amount of sugar and fermentable carbohydrates of the diet directly affects the activities of dental caries. During both World Wars, it has been definitely shown by undeniable statistics that caries decreased considerably in all children of school age not only in the U.K., but in the Scandinavian countries, Denmark and Finland. Therefore, it is recognized that dental diseases are influenced not only by the local law and environmental conditions, but also by nutritional factors.

Statistical investigations by Toverod in Norway on examining nine thousand children over a period of eight years 1940-48 show the reduction in the caries incidents in these children from 50 to 75 per cent; and the only relevant change in the food during these years was due to decrease or lower consumption of refined carbohydrates, sweets, and the increase in the consumption of more natural foods due to production difficulties, which resulted in the increased resistance of the teeth.

(To be continued)