OPINION ***OPINIE***

Is Sugar Good for You?

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This is the title of an article in the December 1977 issue of *Reader's Digest* by Jane Brodie, who concluded that there is little to say in favour of sugar, and a strong case against it. In a short article is was obviously impossible to do justice to a controversial subject. Yet the article, like so many similar ones in the medical, scientific and lay press, lacks balance.

At present there is enormous discussion and argument over our precise needs of several nutrients and foodstuffs, and of their roles in the causation or promotion of diseases. The issue of whether sugar intake is beneficial or promotes such conditions as caries, obesity or diabetes, is part of a far wider field of robust inquiry and re-examination.

The value of sugar, its culpability or its aggravational character in disease processes are certainly not simple yes and no issues. Unfortunately, much of the evidence cited, especially that in detriment, is very selective. This may be illustrated:

1. Criticism against sugar because it supplies only 'empty calories' is very plausible. But if the criticism is meaningful in everyday nutrition, then high compared with low consumers should exhibit more nutritional deficiency stigmata. In actual practice this is not true, at least, in Western populations, a fact admitted by Yudkin, one of the chief protagonists of sugar restriction.

2. With regard to dental caries, were sugar the primary causative factor, then major differences would be expected in caries scores between high and low consumers of sugar, between pupils at schools with and without tuckshops, and between persons accustomed to frequent compared with less frequent between-meal snacks. It is unfortunately seldom mentioned that in all such comparisons in given communities, differences in caries scores are disappointingly small. Most reviewers also omit to mention that as late as 1940, school pupils' teeth in the Island of Lewis, Scotland, were excellent, despite a relatively high sugar intake, a situation which correspondingly prevails among urban Black high-school pupils. Also unmentioned is the fact that in the Second World War, caries scores fell in Berlin, although sugar intake rose.

3. The view that excessive energy is taken in unwittingly from consumption of sweetened beverages or foodstuffs is also entirely plausible, and is one of those beliefs which ought to be absolutely true. Yet its validity is put out of court by the fact that in the numerous studies that have been made, high compared with low consumers of sugar, on average, do not weigh more.

4. The fact that many workers, among them Cleave and Cohen, are totally certain that sugar promotes diabetes, is well publicized. What is not publicized is that many extremely able investigators, such as Medalie in Jerusalem, Keen in London, and West in Oklahoma, are wholly unconvinced that sugar is a serious aetiological factor.

As regards the nature of benefits likely to result from sugar restriction, much is implied, but minimal evidence is given. It is illuminating that Cleave, in his book *The Saccharine Disease,* does not cite a single quotable study describing people who, having voluntarily reduced their intake, obtained particular unequivocal clinical or other benefits.

It must be recognized that both in Western and in developing populations sugar is now an integral part of the daily diet, and emphatically is here to stay. It is simply naive to say that sugar is unnecessary, and hence can be done without. That is how Marie Antoinette would have reasoned. Sugar is still a relatively cheap source of energy; it is palatable and certainly adds to the pleasure of eating. Are the arguments against its use or for its restricted use, really telling? They would have to be in order to engender change. Middle-class adults, whether in South Africa, the UK or the USA, as reflected by dietary surveys, consume about 70 - 100 g total sugar per day. This supplies about 15% of the diet's energy value, the actual proportion regarded as reasonable in Senator McGovern's *Nutritional Goals for the USA.* If consumers of this amount were persuaded to reduce their intake by as much as a half, could it be said with certainty that by that change alone, clinically detectable benefits would follow? This is doubted. If sugar intake is reduced, then part of the decrease in energy value will be made up by increased consumption of other foodstuffs. If this entailed greater intake of fat and protein foods, would such changes be nutritionally advantageous? Not in Western populations. This is really the crux of the issue.

We believe that significant improvements in health and disease patterns would follow only were reduction in sugar intake associated with reduction in fat intake, especially animal fat, and in protein intake, especially animal protein; and were there associated increases in the intake of fibre-containing foods such as cereals, legumes, vegetables and fruit. All these changes are urged in *Nutritional Goals for the USA* and, when taken together, they represent a measure of reversion to the diet of our ancestors, whose

morbidity and mortality from degenerative diseases were far less of a public health problem than they are today.

But what of less privileged populations, say, the urban Black population, whose diet contains less than 15% energy value from sugar? Certainly the hostel dweller's diet leaves very much to be desired. What of the diet of the average household? Orthodoxly, reduced consumption of refined carbohydrate foods should be urged, with increased consumption of more nourishing foods. But today more than ever it is essential to be able to prove to Blacks the value of making such changes. This is difficult. In Western populations, it is easy to instance the diets of Seventh Day Adventists and Mormons, and to point to their lower proneness to several important diseases. But with Blacks the task is less straightforward, partly because so much remains to be learnt of assessments of nutritional and health status. At a school in Komatipoort, one of us (A.R.P.W.), with considerable care, selected 15 pupils out of a class of 45 as being superior in appearance, learning and alertness at play. But on going into their dietary histories, it was found, unexpectedly, that there were scarcely any differences between the diets of the good and less good groups; moreover, it transpired that 12 of the 15 had schistosomiasis. The late Dr Bernard Squires reported having had similar experiences in judging children at Kanye, Botswana. Many other examples of this paradoxical phenomenon have been described in the literature. Nevertheless, there is no doubt that within limits the recommendations in the *Nutritional Goals for the USA* apply generally to large moieties of urban developing populations.

Briefly then, if we wish to be taken seriously in lauding the benefits of reduced sugar intake, or in extolling the value of increased consumption of fibre-containing foods, or of ingesting megadoses of vitamin C, then, for a given community, we must be able to produce adequate evidence of two types: (*i*) demonstration of unequivocal clinical and other advantages as evoked by controlled trials; and (*ii*) identification by epidemiological studies of particular subgroups, who eat as prescribed or as recommended, and who themselves exemplify the benefits claimed.

Sucrositis

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'The good doctor prevents and the bad doctor treats' — Confucius

That pathological conditions result from the ingestion of certain chemicals is a biological axiom. Excessive consumption of food is known to be deleterious, and many pathological sequelae have been linked to incorrect food intake. Knowledge of such disorders grows daily, but the glib use of the word 'food' may cause us to overlook the possible harmful effects of other commonly eaten substances such as $C_{12}H_{22}O_{11}$, or sugar, an unnecessary chemical substance which, like the chemical ethyl alcohol, also contributes kilojoules when ingested. The body metabolizes alcohol, and in the process gains energy, but this energy is usually in excess of the necessary amount already derived from true food. Alcohol is in fact a drug, with energy production as one of its side-effects; it is consumed not for its energy-producing effects, but for its psychophysical properties.

Sucrose, like alcohol, is also an energy-producing drug and also devoid of the other prerequisites for classification as a food. As sugar, it is ingested by virtually the entire human population, not for energy production but for its physical taste and inbred psychological effects. Classification of sucrose as a food is, however, not merely a semantic error but a biological catastrophe.

It is a naturally occurring chemical, and in this form it is an important source of energy in intermediate metabolism. The Western diet, however, involves the abuse of sucrose as a drug. Man is a rational animal and therefore the folly of drug abuse is understood and discouraged, but disguising sucrose as a food has effectively prevented awareness of its harmful potential.

The pleasant character of sucrose has resulted in the production of a great variety of sweets, chocolates and other combinations — all mere taste stimulants. It is included in practically every food as a taste supplement. As an additive it permeates meats, fruits and drinks. By making unpalatable food tasty, it is the saviour of the food industry.

The properties of sucrose make it an excellent drug. It is comparatively cheap, satisfying, physically stable and easily dispensed. Absorption via the oral route is rapid, and large amounts can be taken comfortably. No acute physical effects result to warn the mind of excess consumption unless this is grossly excessive.

Unlike alcoholism, the process of addiction to sugar starts early; the crying newborn baby is soothed with sucrose. The child is rewarded with a sweet and all the emotions of joy and happiness become associated with sucrose. It is easily and legally purchased; the pattern is rapidly set and the sucrositic patient is created.

Sucrositis is more difficult to define than alcoholism because of its insidious onset and chronic course. Furthermore, variance in the expression of the conditions associated with this disorder may be dose-related and/or due to genetic susceptibility.

It would appear that sucrose acts directly on practically