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Editorial

Preventive nutrition: consideration of cost-benefit and cost-effective ratios

> The superior physician helps before the early budding of the disease. The inferior physician begins to help when the disease has already developed; he helps when destruction has already set in.
>
> Huang Ti Nei Ching Su Wen (2697-2597)

> Since, both in importance and in time, health precedes disease, so we ought to consider first how health may be preserved, and then how one may best cure disease.
>
> Galen (130-200)

Over two-thirds of disease is man-made and therefore should theoretically be man-preventable.

Prevention has opened up exciting new avenues for improving health and extending life. And nutrition is at the centre of this recent surge of interest in prevention.

The usefulness of prevention should be considered in all its dimensions, including health benefits, health risks, and resource costs. In times of limited resources, it is essential to choose those preventive programs that are the most effective and carry the least risks. In short, when is the health gain achieved worth the cost? Attempts to answer this question must take into account balanced and comprehensive evaluations encompassing the total social and health scenarios and not be limited to one specific disease or only medical care costs. Cynics have said of physical exercise that whereas there is no doubt it extends life, the increase in life-span is no more than the time spent in exercising! The point must be made that exercise may not only extend life but more importantly it improves health.

The unique feature of preventive measures that work through life style, such as nutrition, is that they can be recommended to large populations and involve everyday habits. However, there is no evidence that such changes in dietary intake proposed for everyone will in fact benefit everyone. This is because everyone is not at equal risk of disease. It is sometimes possible to identify groups, small or large, that are at high risk for a particular disease and would therefore benefit from specific guidelines. Thus, different groups probably need different dietary guidelines to be most effective. If we extend this to individuals, then the plot thickens even further. Surprisingly, some persons may prefer the pleasures of less healthy lifestyles.

It is known that not all preventive efforts are without some risk. For example, exercise is associated with the risk of injury. Does that apply to diet? This question is pertinent but it

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is compounded by the fact that most studies and publications have looked at the relationship between one lifestyle factor and one disease but this approach may overlook the overall effect of the preventive measure. For example, serum cholesterol levels lowered by drugs are associated with low death rates from coronary heart disease but they are also associated with a somewhat greater risk of cancer, stroke and even suicide. Similarly, those who recommend low-fat milk for young children ignore the role of dietary fat in the normal optimal development of the nervous and visual systems. Often the side-effects and risks of a preventive measure may not be apparent until it has been applied to a large population group for an extended period of time.

There is a need for caution before recommendations emanating from a single study can be given carte blanch for the entire population. Publications resulting from several analyses derived from the same study subjects have concluded that benefits can be attributed to a single nutrient; however, each publication emphasizes the importance and preventive role of one, often different, nutrient. No attempt has been made to rank order the effectiveness of each of these nutrients leaving the reader confused and leading to commercial interests cashing in on isolated observations.

It is essential to look at the costs of both prevention and of health benefit. Savings in one sector of the economy, such as medical care, may be offset by costs outside that sector. Moreover, the choice of investment in health must consider that sometimes prevention buys more health for the money whereas sometimes cure does. It has been estimated that the cost per year of life saved was somewhat less for the intensive care for myocardial infarction when it did occur compared with a change in diet and its monitoring for 10-year old boys whose cholesterol levels were high [1]. But then many would choose a healthier angina-free life even though this option is more costly.

Cost-effectiveness analysis is designed to answer the fundamental question - is the gain in health a reasonable return for the risks and costs? Unlike *cost-benefit* analysis, cost-effectiveness calculations do not put a monetary value on gains in health. Instead, it looks at years of healthy life, lives saved, diseases prevented, and other less tangible benefits. Its central purpose is to compare alternatives. If the ultimate goal is better health, then cost-effectiveness must take into account an evaluation of the measure being tested as a method to improve health as also the evaluation of the probability of that measure being adopted by the population. Cost-effectiveness can also help with decisions across a variety of choices - between different kinds of prevention, between different kinds of therapy, between prevention and therapy, and between action and no action.

Russell [2] has suggested standardization of several aspects before a comparative evaluation of cost-benefit and/or cost-effectiveness can be carried out. These include the perspective of the study, the social perspective being the dominant touchstone; the discount rate, 5 percent being an acceptable number; medical costs in the years of life added by the preventive measure; the measures of health effects that allow for changes in the quantity and the quality of life or better still, quality-adjusted life-year; future earnings as well as time spent in productive and pleasant activities; an estimate of the cost of the individual's use of time; compliance; degree of imprecision of the estimates in all of the above.

This number of *Nutrition Research* presents some original studies and many review articles that touch upon a limited number of health issues and of preventive strategies.

Clearly, this is only a drop in the ocean. Other aspects of preventive nutrition are also important and it is our hope that a future issue of the Journal will address those topics.

A fundamental objective of preventive nutrition is to help people die young late in life; we must attempt to reduce suffering and illness, not just to extend life-span.

Ranjit Kumar Chandra*, OC, MD, FRCPC
Memorial University of Newfoundland,
Janeway Child Health Centre,
St. John's, Newfoundland, Canada
* Corresponding author: Dr. R.K. Chandra, Janeway Child Health Centre, Room 2J740, St. John's, NF A1B 3V6, Canada. Fax: -1-709-777-6400, email: rchandra@mun.ca

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