

PREVENTION OF ENDEMIC GOITER AND THE TEN-YEAR HEALTH PLAN FOR THE AMERICAS¹

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Goiter, a disease present before the Spanish Conquest, persists as a serious health problem in many parts of the Americas today. This article discusses a growing awareness of the goiter problem in this Hemisphere, preventive measures recommended by the Ministers of Health of the Americas, and steps needed to make sure these preventive measures achieve the desired effect.

Introduction

The history of endemic goiter can be traced back to several centuries before Christ, when Chinese, Hindu, and Egyptian medical literature made occasional reference to the disease. Later, in the first centuries of the Christian era, during the Middle Ages, and during the Renaissance, a number of writers and scientists displayed interest in the problem (1). Its occurrence was generally attributed to the quality of the waters or living conditions in the mountains, and the cures recommended included seaweed and marine sponges and animal thyroid preparations. Interesting observations were made in these periods about goitrous areas in both the Old and the New World and about the occurrence of cretinism in populations with a high prevalence of endemic goiter. Early in the last century iodine was used for the first time to treat goiter, and later iodized salt and iodides were used to prevent the disease (2).

The tremendous advances of modern medicine have brought about a correspondingly vast increase in our knowledge of the etiology, pathogenesis, and epidemiology of endemic goiter, its clinical and pathologic pictures, and

new methods of treatment and prevention. Nevertheless, despite our increased knowledge, particularly our awareness that the basic etiologic factor is an easily remedied deficiency of dietary iodine, endemic goiter still exists in practically every country in the world, and only a very few countries have succeeded in reducing its prevalence to a level where it is not a public health problem. Also, we must note that in some isolated localities where goiter is very severe the prevalence of endemic cretinism may be as high as 10 per cent (3), and that two quite distinct syndromes of cretinism have been observed (4).

Goiter in the Americas

Sculptures of human figures with goiter found in the Andean region are evidence that this disease has been present in the Americas since pre-Colombian times, although nothing definite is known regarding its prevalence (5). However, the chroniclers of the Spanish Conquest mentioned that large numbers of persons were suffering from goiter and deaf-mutism in certain parts of the Andes.

The Pan American Health Organization recently updated the available information on the current status of endemic goiter in Latin American nations. The study showed that only two countries had succeeded in reducing the national prevalence of goiter to a level below 10 per cent, at which point it no longer constitutes a serious health problem (6-8). The other countries with a high prevalence of goiter have approved special legislation and are implement-

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ing salt iodization programs, but since these programs do not include all the salt consumed by the population effective coverage at the national level has not been achieved and the problem persists. Moreover, proper systems have not been established to ensure periodic monitoring and control of the iodization process or to assess the impact of the programs. Areas of severe endemic goiter still exist in the mountainous regions of the Continent, where there is also a high prevalence of cretinism. This latter is unquestionably the most serious consequence of endemic goiter, since it involves gross mental deficiency and irreversible damage to the central nervous system (9).

Although the available data are neither completely accurate nor fully up to date, they make it clear that endemic goiter and cretinism pose serious public health problems for Latin America. The presence of the disease in certain areas shows that there is a population at risk whenever unfavorable ecological conditions appear.

We could summarize the present status of endemic goiter in the Americas by saying that "considering the large number of individuals afflicted with goiter and imbecility whom one sees throughout the Andes Cordillera, it is surprising that the Governments have not turned their attention to this matter, which is one of extreme political importance, since goiter not only disfigures people but has even more severe effects on their faculties." I say this in the seventh decade of the twentieth century, literally repeating the words written early in the nineteenth century by the eminent French scholar J. Boussingault in his "Memorial on the Iodiferous Salt Springs of the Andes and the Causes of Goiter in the Cordilleras of Nueva Granada" (10). It was this same scientist who, with a vision of preventive medicine far in advance of his time, stated that "goiter would disappear within Nueva Granada [now Colombia] if the authorities were to take steps to establish, in the principal city of each canton where goiter is endemic, stocks of iodiferous salts from which the inhabitants could supply themselves with the salt needed for their personal consumption."

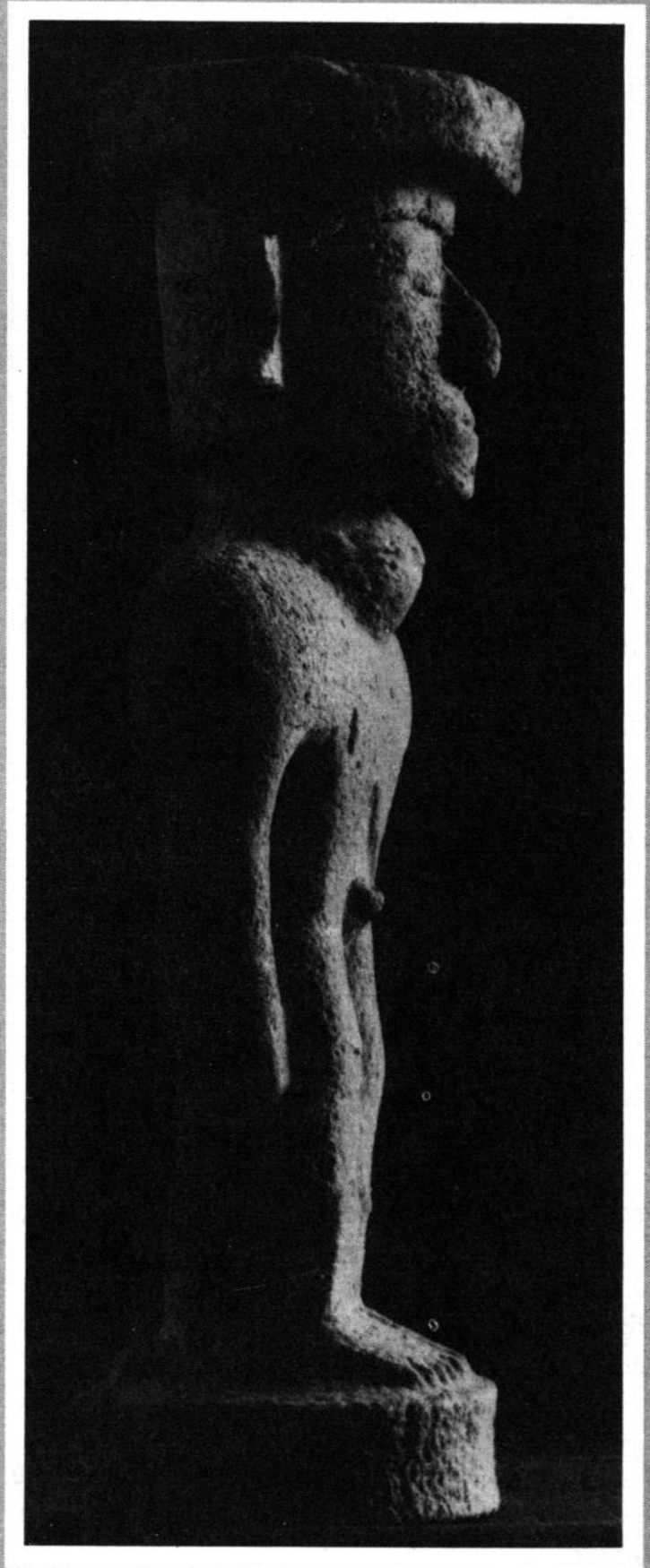
The wise comments and recommendations made by Boussingault early in the last century are still pertinent; and, incidentally, they show how slow and protracted is the practical application of scientific advances. Following that first recommendation on the use of iodized salt for prevention of goiter, almost a century passed before Marine and Kimball conducted their famous study in Ohio and established, on a firm scientific basis, that iodized salt was the preferred prophylaxis for the disease (11). Today, fifty years later, endemic goiter is still widely prevalent in most of the countries in the Americas.

Preventive Programs

So far we have concentrated mainly on the epidemiology and pathophysiology of goiter and on the metabolism of iodine, paying comparatively little attention to the practical application of that scientific progress, that is, to the implementation of preventive programs of the type which have proved successful in several countries. While we recognize the importance of the studies that have been carried out on varied aspects of the problem of iodine deficiency and its consequences, the time has come, it would seem, to make a deliberate and sustained effort to identify the factors that currently stand in the way of implementation of effective salt iodization programs, so as to provide the Governments with specific guidelines and support for their programs for the eradication of endemic goiter and cretinism. Obviously, as long as the disease exists, we should study the individuals and population groups affected; nevertheless, our basic objective should be to eliminate the disease entirely and, in so doing, our subjects of study.

In the past the problem of endemic goiter has been ranked low among public health priorities. As it is not a reportable disease and rarely causes death, it does not appear in the morbidity and mortality statistics used by health planners for establishing priorities and allocating resources. Since infectious diseases do appear in health records and do create a great demand for medical care at high cost, preventive programs in that field are easily

PLATE 1—A pre-Columbian figure with an enlarged thyroid, the classic symptom of goiter. The figure was sculpted by Ecuador's "Colorado" people, who inhabited part of the Andes (the Guailabamba River basin) before eventually migrating to the Pacific coast. This sculpture, now at the Anthropological Museum in Quito, is believed to be about 800 years old. (Photograph courtesy of Drs. Rodrigo Fierro-Benítez, Ignacio Ramírez, Eduardo Estrella, *et al.*, authors of "Iodized Oil in the Prevention of Endemic Goiter and Associated Defects in the Andean Region of Ecuador."³)



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justified; this is not the case with endemic goiter and cretinism, which give rise to relatively little demand for medical care. Nevertheless, their cost can be very high when assessed in terms of medical services and loss of working time (12).

There is little pressure from public opinion regarding endemic goiter because its most severe expression is usually limited to marginal populations living in isolated rural areas. If to this we add the fact that policy-making groups still know little about the relationship between the high incidence of goiter and the various forms of endemic cretinism, it becomes easier to explain why these diseases do not arouse greater concern.

The Ten-Year Health Plan for The Americas

There can be no doubt that the first prerequisite for ensuring the success of a program is its acceptance and approval at the decision-making level by national authorities. Fortunately, at the present time the situation is highly favorable. The III Special Meeting of Ministers of Health of the Americas was held in October 1972 in Santiago, Chile. That meeting, after reviewing the current status of the health problems affecting the Hemisphere, established goals and strategies for action during the present decade. These were set forth in the Ten-Year Health Plan for the Americas, which was discussed at length by the various national delegations and was finally approved by all the ministers of health of the Region (13). The document is one of considerable historic importance, for it not only established the current status of health problems in the Americas and formulated goals and strategies for the future, but also presented a clear-cut expression of intent by the health authorities and a commitment on the part of their Governments to implement a definite plan and to achieve specific goals for health during the decade ahead.

Problems of nutrition received special attention at the Santiago meeting. The health ministers recognized that "an adequate nutritional

status and the satisfaction of demand for food are an inalienable right of people, and accordingly this right is established as an objective *per se*, independent of any purely economic consideration regarding a country's socioeconomic development.

The priority they assigned to the problem of endemic goiter and cretinism is apparent from the goal approved for the decade: "To reduce the prevalence of endemic goiter to below 10 per cent, and to eliminate endemic cretinism." In order to achieve this goal, the following recommendation was approved: "To establish effective programs for salt iodization and the use of iodized oil in all the countries of the Region where goiter presents a public health problem." This decision represents a mandate for the Pan American Health Organization, which is prepared to intensify its actions for assistance and support to Member Governments to enable them to achieve the proposed goals on schedule.

Progress to Date

Another favorable aspect of efforts to combat endemic goiter is the legislation on salt iodization that has been approved in almost all the countries of the Region. Nevertheless, the necessary machinery has not yet been set up everywhere to compel salt producers in either the government or the private sector to observe the law on salt iodization; nor have surveillance systems been created to monitor the iodine levels in salt and to assess the results of the program. Furthermore, vested interests in the private sector are frequently opposed to salt iodization, and this sector has not been sufficiently motivated or informed regarding the benefits for the population. To ensure the success of a program of this nature, close coordination must be established with private industry at the planning and implementation stages.

Interest in salt iodization programs on the part of the national or provincial authorities has also varied, and on occasion a program that had developed properly for a time was dropped



PLATE 2—A small sculpture from Quito, Ecuador, made in the late eighteenth century. Now at the convent “El Carmen Alto” in Quito. (Photograph courtesy of Drs. Rodrigo Fierro-Benítez, Ignacio Ramírez, Eduardo Estrella, *et al.*, authors of “Iodized Oil in the Prevention of Endemic Goiter and Associated Defects in the Andean Region of Ecuador.”⁴)

⁴*Ibid.*

when interest flagged. It is also evident that a decision on the part of the ministry of health is not enough. Support from other ministries (finance, industry, natural resources) or from other government agencies is necessary to cover the costs of iodide or iodate, iodization machinery, and proper packaging of salt, since lack of funding has held back the implementation of some programs. There have also been some technical problems in connection with the iodization procedure itself, and these problems have occasionally led to failure. However, the objections to iodized salt that were raised a few years ago by part of the medical profession have fortunately been overcome by the establishment of proper and safe levels of iodization.

Furthermore, the success some countries have had in carrying out effective nationwide goiter prevention programs should encourage us to intensify our efforts to implement programs of this type in the other countries of the Hemisphere. Clearly, the keys to success in such preventive programs are determination on the part of the Governments, assignment of high priority to the program, coordination between the national authorities and salt producers at all stages, and, finally, proper periodic surveillance and control of salt iodization. Because every political, administrative, economic, and technical problem may appear in a different guise from country to country, all the problems must

be examined carefully and individually if realistic and practical solutions are to be achieved.

In 1963, 1965, and 1968, the Pan American Health Organization convened meetings of Scientific Groups on Research in Endemic Goiter in Caracas, Cuernavaca, and Puebla, respectively (14, 15, 16). During those meetings, distinguished scientists from Latin America, the United States, and Europe discussed various aspects of the problem and offered valuable guidelines for further research and for applied programs to solve the problems involved.

More recently PAHO, the Brazilian State of São Paulo, and the University of Sao Paulo jointly sponsored a conference to review current scientific knowledge of endemic goiter and cretinism and to discuss actual programs for eradication of the disease. This meeting was held in the City of São Paulo in October 1973.

The Pan American Health Organization is confident that it reflects the wishes of all the Governments of the Hemisphere, as expressed in the *Ten-Year Health Plan for the Americas*, by reemphasizing the importance of examining, as a matter of high priority and in a constructive spirit, the current status of preventive programs, the obstacles they have encountered, and, in particular, the strategy that should be recommended for successfully overcoming such obstacles in the decade ahead.

SUMMARY

Endemic goiter has afflicted much of Latin America from pre-Colombian times to the present day, despite the nineteenth-century discovery that lack of dietary iodine was the basic cause of the disease. In theory this discovery should have made both endemic goiter and endemic cretinism easy to prevent. But in practice technical and administrative difficulties in many countries have stood in the way of this goal. As a result, in 1972 nearly all the countries of Latin America had a nationwide incidence of goiter exceeding 10 per cent.

Having only recently become fully aware of the health problems created by this situation,

the Governments of the Americas are stepping up their preventive efforts. In October 1972 the Ministers of Health of the Americas approved a Ten-Year Health Plan for the Region. This plan recommended establishment of "effective programs for salt iodization and the use of iodized oil in all the countries of the Region where goiter presents a public health problem," in order "to reduce the prevalence of endemic goiter to below 10 per cent, and to eliminate endemic cretinism." These provisions are indicative of the strong interest the affected countries now have in setting up anti-goiter programs and ensuring that on-going programs

function well. They also constitute a mandate for the Pan American Health Organization, which is prepared to intensify its actions for

assistance and support to the Member Governments in order to help assure timely achievement of the proposed goals.

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