

The socio-economic aspects of malnutrition in Sicily

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Summary. - Malnutrition clinical conditions in Sicily, Italy, are examined. Malnutrition today is a result of excess of eating, while immediately after the Second World War, it was a result of deficiency of eating. The main interest in this study is to examine the relationship between social and nutritional conditions in children who are a vulnerable part of the whole population. This is also confirmed by other data reported on this subject, in Sicily.

Key words: malnutrition, dystrophy, overweight, obesity.

Riassunto (*Aspetti socio-economici della malnutrizione in Sicilia*). - Gli autori, dopo una rapida disamina degli studi condotti, concludono come la malnutrizione abbia nel tempo subito un notevole cambiamento nella determinazione dei quadri clinici riscontrati. Infatti la malnutrizione oggi è certamente legata sempre più ad errori alimentari in eccesso, mentre negli anni del periodo della II guerra mondiale la malnutrizione era legata a carenza nella introduzione di nutrienti. L'analisi dei dati riportati consente di affermare l'esistenza di una stretta connessione fra le condizioni sociali, economiche, ambientali, igienico-sanitarie di una popolazione e lo stato nutrizionale medio della stessa; questa relazione è tanto più reale nei soggetti in età evolutiva, nei quali è certamente più facile che possano verificarsi squilibri e carenze più o meno settoriali, più o meno conclamati.

Parole chiave: malnutrizione, distrofia, sovrappeso, obesità.

Introduction

Interest in child nutrition is justified by the necessity of satisfying the nutritional demands of developmental age which differ in relation to the principal life-stages. A supply of food, quantitatively and qualitatively suitable, is indispensable because the maximum growth potential may be reached and it thus avoid negative repercussions which could be due to a nutrition, unbalanced in some way. Every deviation, be it in excess or in defect, from a correct diet leads unavoidably to a state of malnutrition which has negative implications either in the short term (a delay and/or changes in growth, poor physical performance and/or mental changes, etc.) or in the long term (a tendency to metabolic disorders, cardio-vascular diseases, to hypertension in adulthood).

The history of malnutrition in Sicily has undergone a whole series of variations in this century, as in the majority of the industrialized regions, many of which are certainly positive.

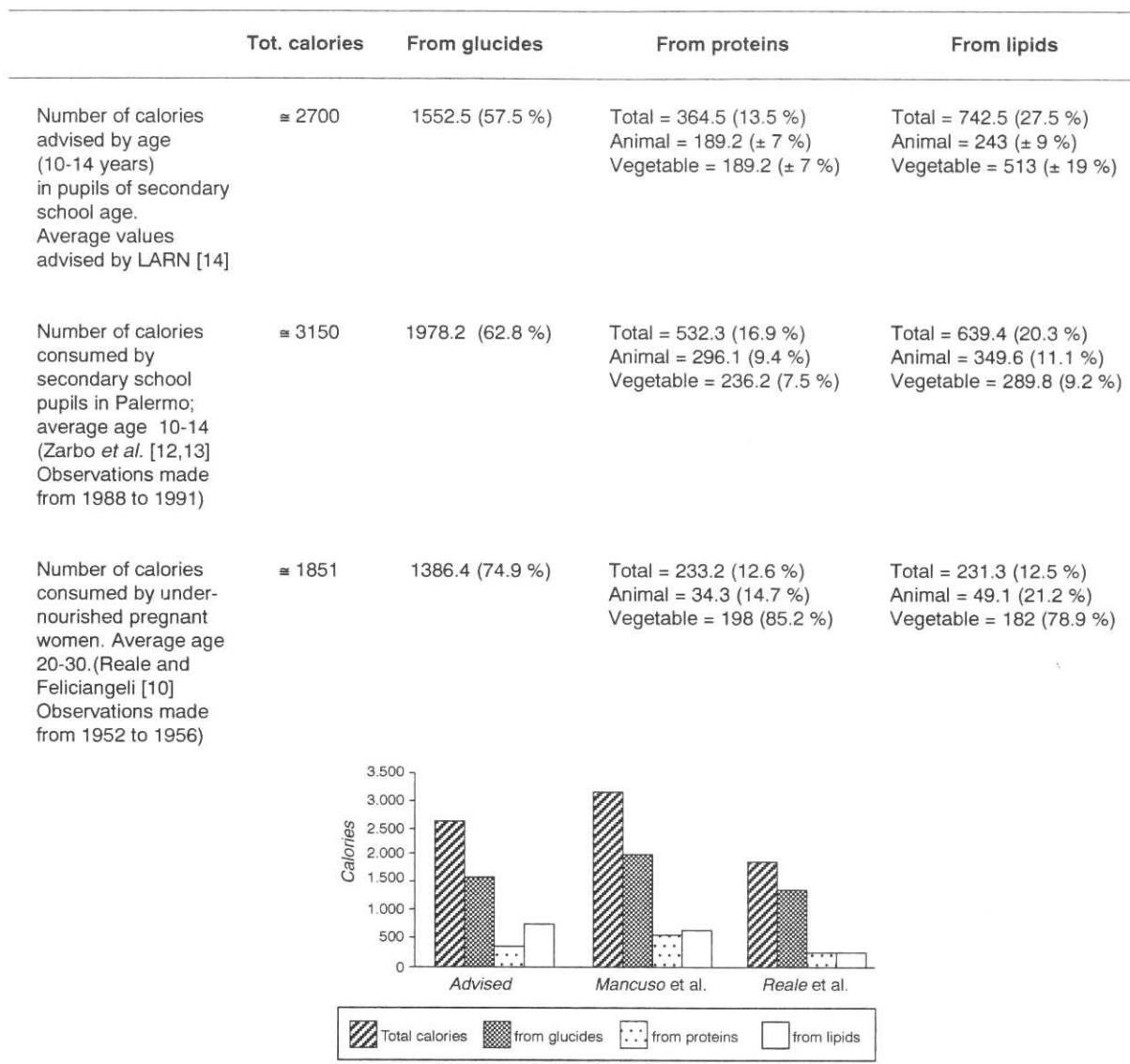
With regard to this, the Palermitan School (Gerbasì, Burgio, Russo, La Grutta, Reale and many others) focussed the most important aspects of clinical research on malnutrition, a fact which contributed significantly to the elevated infant mortality rate in those periods (greater than 10%) (Fig. 1).

It was at the beginning of the 1930s that M. Gerbasì [1] apprehended instinctively the possibility of various forms of deficient anaemia, as opposed to the iron-deficiency type. The author put the basis of the definitive

description of new nosographical symptoms, like those of perniciosiform anaemia in breast-fed, clearly different from Biermer type. These were described some years later (1940) and were known (as confirmed by Italian and international studies), in the Haematological Paediatric Treatise with the title: "Gerbasì's anaemia".

Then there came the years of recession, the tragedy of the Second World War whose terrible consequences were readily evidenced by a very high death-rate both for new-borns and infants. Infectious diseases decimated the weaker groups in the population through the effects of epidemics and the School concentrated its efforts to the study of correlative malnourished phenomena. The study made it possible to put together the symptoms of deficiency pathology and malnutrition dystrophy for example: riboflavin deficiency and local Kwashiorkor (or multi-deficiency oedematous dystrophy) [2, 3], alimentary hypochromic anaemia, the distinct deficiency being the nodular purpura of the breast-fed, i.e. vitamin K deficiency [4, 5].

In the period 1940 to 1960 food tests were conducted on the mothers of breast-feds with perniciosiform anaemia and Kwashiorkor, investigations which demonstrated that in the majority of cases the deficiencies depended on an animal-protein of food of about 5-6 g/day [1, 2, 6-10]. Protein-energy malnutrition already pre-existent during pregnancy and at birth, connected to the aforementioned poor food supply, was further worsened by the rapid succession of numerous pregnancies with births being insufficiently spaced-out. This was in addition to the

Fig. 1. - Nutritional consumption. A comparison between some data from 1950s and 1990

extremely poor environmental conditions with respect to both hygiene (and therefore recurring infections) and the economic aspects of extreme poverty.

Almost all the children suffering from serious deficiency pathology (such as perniciosiform anaemia of breast-fed, local Kwashiorkor, serious dystrophies of protein-energy malnutrition) belonged to farm labouring families, mainly in the interior of Sicily. In the coastal area, the animal-protein alimentary supply was, at least in part, compensated for by a relatively higher consumption of fish (particularly, the blue fish of the Mediterranean which was found at modest prices).

These then are the aspects of deficiency in malnutrition which have been precisely defined, clarified by the etiopathogenic point of view, set against a nosographic

background. And it is obvious that the increase in knowledge and the improving of socio-economic conditions may have had, as the first result, a gradual but progressive reduction in the death-rate and rate of morbidity.

Today, all the basic conditions have changed; the sanitary conditions of towns have improved to European standards and the economic conditions have permitted to surpass a life of poverty.

All this, however, if it has resolved in a way the problem of serious under-nourishment of our country, has brought up again the problem of malnutrition by simple shifting the boundaries of fundamental question. From a period of malnutrition "by defect" we have passed to a period (if we want, also worrisome) of malnutrition "by excess".

The improving of socio-economic conditions and the greater availability of foodstuffs (nowadays it is possible to obtain many food items throughout the year, putting aside local production cycles) has been, and still is viewed as a phenomenon as "social conquest". All this has led to a consumption of a greater quantity of foodstuffs, in addition to eating patterns not always suitable and very often unbalanced.

Increasingly, therefore, we can now speak of malnutrition pathology owing to an excessive consumption of protein, animal fats, sugars and, consequently, an excessive intake of calories. If we add to this the idea of the heritage of "food education", very often entrusted to the mass-media, we can easily understand how the confusion that follows leads whole nuclear families to false conclusions.

The mistakes made in this field can be due to ignorance, religious reasons, to bias and bad faith and psycho-social causes.

However, the mistakes more frequently detectable in the analysis of data collected regarding food education in the context of homogeneous population (for example, a scholastic one) are represented by and large by the consequent distortions in the incomplete informative messages transmitted in the publicizing of food products.

An interesting example of the existing relationship between socio-economic and cultural aspects of a well-defined population and malnutrition can be seen (according to the author) by the observations of numerous clinical cases acclaimed as infant scurvy or Barlow's disease. These were observed and studied in our clinic during the 1970s and 1980s.

The first case of this deficiency disease, observed by us at the end of the 1960s, regarded a child approximately 3 years old, son of a Sicilian emigrant living in England. The child, who also was fed on tinned food without any or little fresh food, began to develop the classic deficiency symptoms with pains in his bones, a slight fever and anaemia. This was not correctly diagnosed and, after a period of time, the parents decided to return to their country of origin. Here clinical diagnosis was accurate: scurvy, with clinical tests also revealing evidence of marked vitamin C deficiency. The radiological skeletal lesions confirmed this.

We were not accustomed to seeing children suffering from scurvy, even if example of a deficiency pathology of malnutrition were certainly not rare. The cases of scurvy observed in our clinic, and that we still observe (very sporadically by now), proved correct at the time when food technology, distribution and the commercialisation of products according to industrial standards, common enough nowadays, were still not widespread in our region.

We can assert that, until fresh cow's milk was used as food for breast-feds, more or less altered at home by, for example, boiling or the addition of water, we did not see

cases of scurvy. The modification took place naturally when, in the absence of mother's milk and because of economic necessity in the family, it was difficult to buy artificial milk that had been, and still is, enriched in vitamins. We must remember that deficiency diseases struck the economically weaker members of population. Scurvy cases were more frequently observed when the use of long-life cow's milk, heat-sterilized and industrially prepared was widespread; it no longer contained ascorbic acid because it had been rendered inactive.

One could raise objections that this vitamin is found principally in fresh fruit and vegetables, if eaten raw. But also here, technological progress has made its contribution in that, for some fruits which are consumed in great quantities by children (for example, pears, apples and bananas), the amount of vitamin C is negligible as a consequence of the possibility of being preserved. Moreover, because of the prejudices and ignorance of economically-disadvantaged people, the habit of not giving citrus fruits (rich in vitamin C, as well as fruit preserved for a certain length of time) to young children was quite widespread for fear that their acidity could interfere with the digestion of milk.

The above has been demonstrated by the authors of this paper and their research which is in agreement with the observation of the first case of scurvy in English children. Moreover, it has been demonstrated (as is true for other countries) that food which is distributed to patients in hospitals was lacking in vitamin C in that it had been inactivated by the necessity of the food being permanently hot [11].

Then, little by little, in equal step with improvement of socio-economic-cultural conditions, eating habits changed. The aforementioned conditions favoured the diminution of the cases of multi-deficiency pathology, of which the most prominent has been local Kwashiorkor, and the cases of scurvy.

Today, the deficiency condition which is more widespread (in Italy as well as throughout the world), is the iron-deficiency which goes beyond the subject of this brief paper.

It is certain, that the cases which we now examine present a pathology which we cannot easily put together and understand. Nowadays, we are increasingly concerned with overweight, obesity and a pathology correlated to a state of excessive nutrition.

In the last few years at the Institute of Pediatrics [12, 13] we tried to highlight the relationship between the socio-economic conditions, alimentary disinformation, malnutrition and their consequences in pupils of primary and secondary schools.

A cohort of 800 pupils of secondary school (10 years old), was followed with this aim for four years; the pupils received alimentary information, habit correction (families and teachers were also involved in the programme), and dietetic advice. This produced extremely interesting results.

The pupils' diet before our educational intervention clearly did not conform to the eating recommendations for their age. More specifically:

- the glucide supply was greater than the amount recommended in 60.1% of cases, the normal range being 11.7%, under the prescribed limits of 28.2%;
- the protein supply was generally acceptable in the total quantity, and it was evident that the use of animal protein (with respect to that of vegetable) predominated;
- the supply of fats emphasized again a greater dyscrasia. Indeed, compared to the 19% advised level of vegetable fats, the real intake did not exceed 9.3%, with an increased consumption of animal fats (11.2% as opposed to the 9% advised) which were much more harmful;
- the general caloric supply was higher than that recommended by age.

All this, in comparison with a parallel investigation which took into consideration anthropometrical parameters showed that the "overweight" subjects were 32% and the "obese" 13.3% in the age-group under consideration.

From our analysis the following data emerged: teenagers coming from medium-to-high social classes were the subjects at greater risk of malnutrition. The availability of foodstuffs tied to favourable economic, social and cultural conditions influenced their eating behaviour, thereby determining a greater intake of calories, a higher probability of being overweight and obese, more frequently than in other over-eating groups. Living conditions had a naturally important role which was ever inclined to reduction in muscular activity; efficient central heating and air-conditioning also contributed to diminishing the burning of calories.

This again confirmed that the average availability of foodstuffs did not correspond to a correct distribution and that consumption was not always correlated to needs.

Hypernutrition can favour the expression of genetic conditions (or those prematurely acquired) which lead to a dysmetabolic pathology.

In conclusion, and given what until now has been briefly described, we believe there exists a strict connection between the social, economic, environmental and sanitary conditions of a population and their average nutritional state. This relationship is even more important for the members of a population at developmental age. For such people it is certainly easier to verify the more or less sectional and acclaimed imbalances or deficiencies than in other groups. Certainly we cannot save other individuals in the population and, in particular, as became apparent from the quoted research of our school, young pregnant women, considered to be on a par with children, are subjects at greater risk. Other important factors in the origins of the phenomena of malnutrition must be researched and identified in the cultural heritage of the population group under consideration and in its socio-economic-environmental conditions.

We are convinced that, whilst the resolving of socio-economic problems (where necessary and possible, through the correct use of resources) is the duty of those who are responsible in the public domain, the presence and greater responsibility of local pediatrics only informed on nutritional problems can contribute much, through an extensive and effective information campaign and health checks, to rectify errors, bias, and dietetic-nutritional imbalances, which are still relatively frequent and are the real causes of malnutrition today.

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