OBESITY IN BYZANTINE AND IN MODERN ERA FROM A PUBLIC HEALTH PERSPECTIVE

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SUMMARY

Obesity is one of today's most serious and amplified public health problems. Surprisingly, obesity constituted a health problem through the Byzantine Empire (3rd to 15th century AD) as well; the extent of the problem was then very much alike to that one seen in modern industrialized and developing countries of today. In this report we perform an historical throwback in Byzantine years in order to explore the link regarding the aspects of obesity in these years and in modern era.

Key words: obesity, Byzantine, medicine

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INTRODUCTION

Obesity is one of todays most serious and amplified public health problems. The International Obesity Task Force (IOTF) (1), using World Health Organization (WHO) definitions, estimates that more than 700 million people are overweight (i.e. have body mass index between 25 to 30 kg/m^2), while more than 300 million individuals are classified as obese (body mass index >30 kg/m^2). Moreover, the estimated annual deaths attributable to obesity in the USA are over 300,000 (2), while the number of overweight children has doubled in the past twenty years (3). This trend raises concerns of an even greater preponderance of adult obesity in the future.

Although these data are derived mostly from American surveys, there is strong evidence that obesity is increasing globally. Recent surveys in Europe and the Far East show that over the last years, rates of overweight and obesity have increased by 50% to 100% (4).

In addition, WHO reports that "obesity and overweight pose a major risk for chronic diseases, including type-II diabetes, cardiovascular disease, hypertension, stroke and certain forms of cancer". Surprisingly, obesity constituted a health problem, instead of a marker of well-being, through the Byzantine Empire years (i.e. from the 2nd to 15th century AD) as well, to a similar extent that it is regarded in modern industrialized and developing countries (5).

Although food was an important sign of wealth in those years, obesity was a sin both to be abstained from and almost irresistible to most of the citizens. Additionally, obesity was related to an increased risk of death, as well as to several adverse health conditions (5).

In this report we perform an historical throwback in Byzantine years (200 AD to 1500 AD) in order to explore the link regarding the aspects of obesity in these years and in modern era.

THE BYZANTINE PERIOD AND THE MEDICAL SCIENCE

The period of Byzantine acme is characterized by the development of medical science to a remarkable extent. Many written documents have been found, revealing not only the progress, but the Byzantine vanguard as well, in means of medical discoveries and applications (5). However, scholars, during the years 1000 to 1800, have belittled Byzantine medicine for its perceived static and derivative nature (6). In particular, applied to the medicine of the centuries immediately before and after the 10th century, these criticisms, though apparently sustainable, fail to recognize its underlying vigour. It has been suggested that several of the current chronic diseases are well known from the years of Byzantium (5). Although the works handed down to us are almost all compilations, they frequently contain excerpts from lost works and are of some historical value.

The notable writers of this period are: Oreibasios (325–403 AD), physician in ordinary to Julian the Apostat, and Aetius of Amida, a physician under Justinian (527–565 AD). A little more originality than these men exhibited was shown by Alexander of Tralles (525–605 AD), and Paulus Aegineta of the first half of the 7th century, of whose seven books, the sixth, dealing with surgery, was greatly valued in Arabian medicine. Paulus Aegineta lived at Alexandria, and was one of the last to come from its once famous school, which became extinct after the capture of the city by Omar in 640 AD. At the end of the 13th century Myrepsus, living at the court in Nicaea, made a collection of prescriptions which was extensively used. In the time of Emperor Andronicus III (1328 – 1342 AD) lived a highly gifted physician, Actuarius, and the mention of his writings closes the account of this period. Many of the aforementioned physicians and scientists have already recognized the importance of increased body weight and fat in human health and wellbeing.

Furthermore, it is noteworthy to mention that several investi-

gators believe that in Byzantium first hospitals for the public were established. In particular it is believed that the origin of the hospital as an independent institution for care and treatment of sick people dates back to the 3rd quarter of the fourth century (7).

DEFINITION OF OBESITY IN THE BYZANTINE YEARS AND THE CURRENT ERA

There are several historical manuscripts from the Byzantine years, which report that terms like *"plentitude of flesh"* or *"fatness"*, were used to describe what we now call obesity. Moreover, the obese people were called *"fat fleshed"*, *"obese limbed"*, *"abundant of flesh"* and *"oversized"*, in Byzantine years (8). The WHO defines obesity as an excess of body weight in relation to height. In particular, a body mass index (an anthropometric index) higher than the value of 29.9 kg/m^2 defines a man or a woman as obese (4). As we can see obesity was considered to be an aberration from the normal values, in Byzantine years, too.

Aetius (or Aetii Amindei) ascribed obesity to *"the crasis (i.e. blending inheritance) of the body"*, in other words he adopted the Galenic idea of the *"temperament"* of the body (9, 10). Despite the familial predisposition which was a key element for obesity, he also blamed *"the harmful thick juiced food"*, *"the fatty-juicy and the multi-nourishing food items"* for the development of obesity (10). Moreover, Aetius also recognized that the lack of exercise was a fundamental parameter, *"as raw juices concentrate in the body"*. Aetius also described the *"obese limbed, because of lifestyle"* and the *"gynoecia-type obese individuals"*, due to pathological hormonal factors (10). Nowadays, WHO attributes obesity to the increasing consumption of energy-dense, nutrient-poor foods and to the reduced physical activity (4). Moreover, genetic factors have been associated with the increased prevalence of obesity (4). The role of the human genome which was decribed in Byzantine manuscripts as "crasis", is well known for thousands of years and so is the role of the energy balance (high food intake – low physical activity), as Aetius advised people to *"keep the food input and output balance"* (10). A link between the past and the present as regards the definition and the etiology of obesity seems to exist.

HEALTH IMPLICATIONS AND TREATMENT OF OBESITY IN THE BYZANTINE YEARS AND NOW

Byzantine scientists had succeeded to treat obesity by dietary measures, inducing exercise and the use of drugs. Aetius (9) paid special attention to proper diet, suggesting *"less fattening food"*. Among the recommended foods he included fish, poultry, lean boneless meat, fruits (especially apples), rice, and vegetables (especially pumpkins). Furthermore, Aetius opposed to eat red meat (i.e. hare) and entrails, as they were *"thick juiced and multi-nourishing"*. Orivase (12) suggested a diet that included *"whatever among foods is inducing slimness, like garlic, onions, peas, lentils, fish, poultry, whey and honey"*. Moreover, he gave preference to the whey, over the rest diary products and could be considered as the "for father" of the guideline for less fat milk consumption, while Aetius (10) prohibited "all kinds of cheese and fried eggs".

Additionally, Sethi (13) supported the consumption of *"peas with broad beans"*, as they induce *"leanness"*. Actuarius (5) demonstrated the association between obesity and lifestyle, as he reported that someone manages strain situations by following light food regime. On the contrary, he reported that those who do drill need *"multi-nourishing foods"*. Tralliani (14), one of the most famous Byzantine physicians, prescribed foods like fish and tripe soup, so as to diminish appetite. Furthermore, it is noteworthy to mention that Tralliani also reported: *"someone with fatness and plenty of blood is imperative to follow a slimming diet and to refrain from salt and fat intake for several days"*. This is the first manuscript to correlate obesity and hypertension with salty and fatty foods. At this point it should be mentioned that physicians in Byzantium instituted the use of drugs (purgatives and emetics) in order to diminish obesity. Physicians in nowadays have not adopted these recommendations.

Furthermore, several Byzantine physicians advised those who were obese, to do regular exercise and physiotherapy (5). In particular, thermal baths were also recommended as a slimming measure, by Myrepsus (5), "because of the high temperature and the excess sweating".

It is of interest that observations of those ages lead scientists to the correlation of obesity and malnutrition with certain diseases, like cardiovascular diseases and cancer (5), which are not different from the current knowledge. We know that the current essence of measures against obesity and cardiovascular diseases is based on a proper healthy diet and on an intense physical activity (15 – 18). Moreover, recently, the "European Prospective Investigation into Cancer and Nutrition (EPIC)" (19) suggests avoidance of obesity and reducing fatty foods consumption.

The roots of these guidelines are to be found also, in the Byzantine Dietetics, and particularly the one related to the diet against heart disease and malignancy (5). For example, Neophytos (20) proposed the consumption of ptisanae (i.e. tea) broth, whey, vegetables (like strawberries, pumpkins), rock fish, and poultry, while he excluded red meat, in order to avoid heart disease. Several up to date studies enhance these data (21 – 22), and have emerged the positive relation between animal fat and hormonally related, large bowel cancers, and gallbladder disease, as well.

In addition, there is now sufficient scientific evidence to establish the inverse relation of obesity to the life expectancy (23 – 25). For example, recent data suggest that a 40-year old non-smoker male and female obese lose 3.1 and 3.3 years of life expectancy, respectively, due to overweight. Interestingly, the association between obesity and life expectancy, as well as the emerging of therapeutic interventions, has already been reported from the years of Paulus Aegineta in the 15th century (26, 27).

It is of interest that the recommendations in Byzantine years do not differ from the current guidelines. The IOTF (1) and WHO (4) suggest to exercise at least three times per week and for at least 30 minutes per time, and to eat a variety of fruits and vegetables, grain products, fat-free and low-fat milk products, fish and legumes. Moreover, they suggest choosing fats and oils with 2 grams or less saturated fat per tablespoon, and to limit foods high in saturated fat, trans fat and/or cholesterol. Also, they suggest to moderate alcoholic beverages consumption. In general, physicians and health science specialists of the Byzantine years and current era suggest people to balance the number of calories they eat with the number they use each day.

Finally, in order to achieve the threefold notion of wellbeing (i.e. psycho, social and body) in a mean‘s and result‘s combination for the treatment of obesity, the Byzantines put particularly emphasis on a mental health factor “taking care of the soul, results in achieving slimness”, to physical activity, such as swimming (5), and to the proper climate, as “the north cold winds are the healthiest for the obese” (10), while Aetius suggested “heliotherapy-sunbathing” (9).

CONCLUSION

Acknowledgement of obesity as a serious health problem, with social, psychological and health dimensions, seems to start from the Byzantine years. The present historical report confirms the successful presence of the Byzantine medical diagnostic art and treatment and it could be said that contemporary views on obesity constitute its continuity. It also appears that modern nutrition is bound to refer to the Byzantine dietetics as a pattern.

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