

# **Sociological and Historical Survey Of Childhood Diseases And Child Mortality In The Greek Lands During The 14<sup>th</sup>-18<sup>th</sup> Centuries**

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## **Abstract**

The aim of the present study is a sociological and historical survey of childhood diseases and child mortality in the Greek lands during the 14<sup>th</sup>-18<sup>th</sup> centuries.

For this purpose Greek and foreign literature, internet sources as well as historical sources were reviewed. Methodologically, this study was based on a review of the relevant literature and on research into historical sources related to childhood diseases and child mortality in the Greek lands during the 14<sup>th</sup>-18<sup>th</sup> centuries. The main conclusions drawn were the following: a) the concept of the term “childhood” has historically varied widely according to both time and place and is defined by the living conditions, social structures and mental perceptions of each society and time period; b) while the factors of ‘time and place’ can aid us in understanding the historicity of childhood diseases and child mortality, the latter study helps us better appreciate specific social structures, attitudes and living conditions; c) with regard to the period in question, by international standards, a high prevalence of epidemic childhood diseases and a high percentage of child mortality is revealed, as a reflection of the general harsh social and financial circumstances of the age; d) it is revealed that child-

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hood diseases in the Greek lands during the 14<sup>th</sup>-18<sup>th</sup> centuries had their sources in previous periods of time, were mostly pestilent and reflected the level of development of medicine and the social conditions of the time, while child mortality is seen to have been a problem with major social and demographic implications.

**Keywords:** Childhood diseases; Child mortality; Historicity of childhood diseases; Social dimension of childhood diseases

## 1. Introduction

In our presentday world, the period of childhood forms the focus of interest of large numbers of scientists mainly belonging to the fields of social and humanitarian sciences, such as anthropologists, sociologists, psychologists, etc. Childhood also constitutes a major demographic issue since it decisively affects each country's both social and economic status. As has been stated:

“The historicity of childhood reveals those human bonds of a given community, which are social, financial and political and which define the individual's status and choices”  
[1].

At the same time, the health and illnesses marking childhood through the course of time are social phenomena as well as purely medical and welfare issues in general, these two factors intimately interacting upon each other and thereby defining and being defined by a particular community's social and historical reality.

It is now almost universally accepted that the maintenance or non of good health affects all aspects of a person's being, including body, mind and spirit, and that, correspondingly, there are psychological, biological and socio-cultural factors which affect health or illness qualitatively and quantitatively. Given this fact, any enquiry undertaken into human health and illness, this also embracing, needless to say, as in our case, the diachronic study of childhood health and illness, should investigate the natural and social environment of the community in question, correlating these with the prevailing living conditions as well as with the philosophy of life existing at the core of every regional cultural system. As it is generally acknowledged today: “*We must*

*see children as an essential part of their social environment, and not as basically separated from the world of adults and society in general”*[2].

Thus, bearing in mind the contemporary broad agreement as to the invaluable contribution of the history of health, illness and medicine to the formation of health policies of modern states, with especial emphasis being placed on nosologic history and its utility in the confrontation of newly appearing diseases [3], we recognized the pressing need to undertake a comprehensive study of the treatment of childhood diseases and child mortality within a historical framework.

Among various medical disciplines a study of childhood diseases and child mortality during the 14<sup>th</sup>-18<sup>th</sup> centuries is of particular importance given the fact that the efforts of scientific research directed to this field are few and partial due to limited sources of information (foreign travelers’ manuscripts, travelers’ notes and diaries, nostra in manuscripts, memos, essays and studies of researchers) [2, 4]. Moreover, during the 400 years of Turkish rule in Greece, i.e. specifically from the 15<sup>th</sup> until the 18<sup>th</sup> centuries, literature was scant concerning demographical issues (numerical and geographical distribution, biological capacity, etc), the available sources are partial and insufficient and often inaccurate and unreliable; some are only partially published and a great many of them are unpublished and dispersed in various files often inaccessible to the researchers. The obvious result is that the study of these historical records has been to date highly deficient, a serious drawback when one takes into account the close correlation between demographic features and phenomena and the social, economic and historical evolution of a people [5].

Taking into consideration all the abovementioned factors, we decided to carry out a socio-historical investigation into childhood diseases and child mortality in the Greek area during the 14<sup>th</sup>-18<sup>th</sup> centuries.

## **2. Material and method of analysis**

The material for this research was both Greek and foreign literature, internet sources as well as historical sources such as manuscripts.

Methodologically, the study was based on a review of relevant literature and on research into historical sources relevant to childhood diseases and child mortality in the Greek lands during the 14<sup>th</sup>-18<sup>th</sup> centuries.

Techniques chosen for gathering data were literature selection, data processing and organization of the subject matter under study, as well as analysis and elaboration of historical sources and manuscripts following the principles of the sociology of health and of history of medicine.

### **3. Childhood, childhood diseases, child mortality: semantic and historical specifications**

Before embarking upon the specificities of the time and area under examination, we deemed it constructive to present a background to the literature covering childhood diseases and child mortality as well as a brief review of the ideas that have been set forth regarding the historicity of childhood through the ages in the Western world.

In classical Athens children were considered weak by nature, i.e. morally and intellectually incompetent, and in general people looked back with little nostalgia on their childhood. Later, with the advent of Christianity we observe that society became more pedagogy-centered since the dominant belief was that all human beings are equal in the eyes of God. However, archives of the period, as set forth in modern literature [6], make it evident that during both epochs childhood was regarded as a separate stage of human existence.

All studies concerning childhood during the Middle Ages cite the views of Aries according to whom the notion of childhood as a separate social group did not exist in medieval society. The place of children was at the lowest level of the social scale and they were therefore looked upon as being unworthy of any special treatment [2, 6]. This view holds, in other words, that the child and childhood were considered of barely any significance at all and, based on the fact that the child of medieval times was hardly mentioned in historical accounts, that children were merely regarded as 'small adults'[7]. Infants would have been considered as 'unformed beings', possessions of their families, while children were very frequently harshly exploited and

generally undervalued [8]. Evidence in fact reveals that in the Byzantine era, political, economic and military conditions created social conceptions and structures which, indeed, determined that a child and its care were to be placed second. If all this is true, then the only positive element that appears to emerge in the above somber image was the merciful attitude of the Christian faith which regarded as a religious and moral duty every support offered to the weak (including children), the humble and the sick [9].

With regard again to the viewpoint expressed by Aries, the importance of the concept of childhood will have been developed gradually due to the revival of interest in education during the Renaissance, accompanied by the evolution of the family, the growth of capitalism, the appearance of an undefined spirit of generosity and the gradual maturation of parental attitudes. At the same time, religious and political reformers introduced the concept of childhood into formal documents during the 16<sup>th</sup> and 17<sup>th</sup> centuries, starting with those pertaining to the better educated social groups [10, 2]. Thus, this is a view that holds that the recognition of childhood as a distinct category of development is relatively recent, arising during the European Renaissance and continuing in the 18<sup>th</sup> century when the distinct rights and needs of children began to be recognized [8].

Nevertheless, according to P. Soutzoglou-Kottaridis (1991) and many others, despite the fact that the above theories have for some time constituted the most prevalent ideas concerning the history of childhood, they are today no longer universally accepted and have been criticized by many authors. In fact, many researchers now support the idea that childhood and puberty were fully recognized in previous ages, even though children may not have been perceived in precisely the same way as today. The theories discussed above frequently arise from the notion that if a society in the past did not entertain the same perception of childhood as we do today, then the society possessed no concept of childhood at all.

Linda Pollock, who challenged Aries' hypotheses by formulating her own propositions based on primary research sources concerning childhood (juveniles' and children's diaries, autobiographies etc), discovered that during the 16<sup>th</sup> century there was

indeed a clear-cut concept of childhood as a separate social group with specific needs, while she also determined that from the 16<sup>th</sup> century until the 19<sup>th</sup> century very few changes came about in the life of children, this quite independently of social and financial changes and of technological innovations. She established that during these epochs, children were widely looked upon as desirable, while considerable interest was manifested as regards children's ablactation and teething as well as concerning the illness and the death of a child [2].

Today the concept of childhood as a distinct category of development is virtually universally accepted and, according to P. Soutzoglou-Kottaridis (1991), this stage of life may be defined as follows:

“Childhood starts from endometrial life and continues until 12-14 years when puberty starts. Its divisions are: endometrial life, infantile life and early childhood (or preschool) life, this categorization being further divided into three substages: the newborn (the first four weeks after birth), the infant (from birth till the end of the first year of life), the pre-schooler (between the first and fifth year of life) and school age (between the fifth and 12<sup>th</sup>-14<sup>th</sup> years)” [2].

Diseases that are characterized by modern medicine as childhood diseases and which correspond to the above stages of the child's development are classified according to the system of the organism which is affected as follows [11]:

A) *Respiratory System* (allergies, allergic rhinitis, tonsillitis, anaphylactic shock, asthma, bronchitis, flu, sinusitis, common cold, adenoids, laryngitis, pneumonia, pharyngitis, etc); B) *Peptic System* (gastroenteritis, gastro-oesophagus regression, diarrhea, constipation, ulcerative colitis, intestinal obstruction, hernia, Crohn's disease, appendicitis, irritable bowel syndrome, etc); C) *Neurological System* (cerebral paralysis, encephalitis, epilepsy, meningitis, headaches, pyrexia spasm, chronic fatigue syndrome); D) *Urinary System* (disorders of the penis and testes, urinary incontinence, urinary tract infections, etc); E) *Circulatory system* (anaemia, leukaemia, cardiological disorders, etc), F) *Congenital disorders* (haemophilia, sickle cell anaemia, thalassaemia, Down syndrome), G) *Skin Disorders* (acne, eczema, exanthema caused by dippers, herpes febrilis, furuncle, furuncle mycosis, pityriasis, insect bites and stings, lice, mange, psoriasis, etc); H) *Ears* (otitis, labyrinthitis, etc); *Eyes* (constriction, ble-

pharitis, refractive errors, eyelid disorders, conjunctivitis, strabismus/squint, etc); *I) Mouth* (dental abscess, mouth ulcers, fungal stomatitis, gingivitis, defective dental interdigitation, eurodontia, etc); *J) Infectious diseases* (chickenpox, malaria, rubella, hepatitis A and B, measles (rubeola), whooping cough (pertussis), infectious mononucleosis, mumps, HIV, scarlatina, tetanus, enteric fever, etc); *K) Bones* (knee disorders, ischium excitation, sarcothlasis and sprain, toe flexion, fractures and dislocations, cramps, bone and joint infections, muscular dystrophy, flatfoot, scoliosis, juvenile chronic arthritis, etc); *L) Hormonal disorders* (insufficient growth hormone, diabetes mellitus, hypothyroidism); *M) Behavior* (anxiety and phobia, faecal incontinence, antisocial behavior, autism, attention deficit disorder, eating disorders, learning disorders, depression, substance abuse, speech disorders, sleep disorders).

Child mortality, similarly to childhood diseases, according to G. Papaevaggelou and K. Tsimpou (1992), is classified according to the childhood stages as mentioned above [12]:

A. Infant mortality<sup>1</sup> which denotes the number of deaths of infants during the first year of life, and

B. Child mortality which denotes the number of deaths of children of the age of 1-14 years old.

With regard to this issue, it is of note that infant mortality in Greece has been studied as a subject of research over the past three or four centuries, although relative to this fairly long period of time, the research data accumulated are very few.

#### **4. The necessity of studying the socio-historical dimension of childhood diseases and child mortality**

The crucial question is: *What precisely is the necessity of exploring the issue of childhood diseases and child mortality socially and historically and, equally importantly, what is the utility of such a study?*

As mentioned above and in many studies, investigation into the evolution and historicity of childhood diseases contributes to the understanding of the social structures and, crucially, of the overall belief system of the members of the particular society.

According to M. Tomara-Sideri (1998), such factors as nosologic incidents decisively affect the development of a population not only demographically but in mentality as well [13]. Fundamental demographic incidents such as births and deaths obviously influence the biological “natural” rejuvenation or, alternatively, decline of a population during its evolutionary course.

At the same time, infant mortality, which relates to the first year of life, presents great interest demographically and biologically as well as socially and economically, since its level is directly correlated with the indicator of health and social and financial wellbeing of a population [12]. It has also been argued that infant mortality precisely mirrors the social evolution and cultural level of a society given the fact that the levels of infant and child mortality of a population depend mainly on such social factors as the standards of social conditions and, more significantly, the quality and availability of education along with financial, environmental, physiological and behavioral factors [14]. As has been observed, the decrease of infant mortality concurs with the elevation of living standards and with the improvement of social factors, with hygiene education and with the scientific improvement of the sanitary system, all of which inevitably conduce to the improvement of the health of a country’s population. For instance, during the 18<sup>th</sup>-19<sup>th</sup> centuries as well as during prior centuries, we observe that infant mortality was particularly prevalent among the poorer social classes, where living and economic conditions were very deficient and social infrastructure virtually non-existent. In particular, the highly insalubrious condition of most habitations, inadequate heating of homes and clothing of children for their protection against the harsh winter weather of northern climes, as well as severe air and water pollution in the societies of the time favored the spread of pestilent diseases and hampered both the mental and bodily health of the inhabitants. As specifically regards children, numerous factors that prevailed in western societies of the 14<sup>th</sup>-18<sup>th</sup> centuries conduced to a high prevalence of childhood diseases and child mortality. The most important of these factors were: insufficient nutrition (that is, inadequate intake of nutrients, or undernourishment, over a long period of time, this leading to the manifestation of specific disorders), malnutrition which causes delays in the



growth and development of infants and children, lack of breastfeeding, the low educational level of much of the population, lack of health and pharmaceutical care and of hospitalization, the population's ignorance concerning basic rules of hygiene, a pregnant woman's often intensive workload and/or work executed outdoors, social diseases such as alcoholism, widespread poverty, and others [15, 16].

Obviously the social consequences of infant mortality are very serious, creating problems at all levels of society, such as the squandering of accumulated wealth, the creation of social diseases, the downgrading of social standards as well as such demopathological consequences as early aging of the population and degradation of the race [15].

## **5. Sociological and historical analysis of childhood diseases and child mortality during the 14<sup>th</sup>-18<sup>th</sup> centuries**

### **5.1. Socio-historical features of childhood diseases and child mortality in Europe during the 14<sup>th</sup>-18<sup>th</sup> centuries**

The state of public health in Europe during the period of time under study was at extremely low levels, medical knowledge being still very limited during this age and there thus being little enactment of laws concerning public health and social problems. This naturally led to a low quality of treatment of many contagious diseases, among which childhood diseases [17].

Plagues and epidemics were particularly prevalent in medieval Europe. In 1348 Europe was devastated by the catastrophic Black Death, also called the bubonic plague, pneumonic plague or septicemic plague, which was transmitted by fleas and rats from Asia: it caused the death of one third of the European population, including, of course, many small children [18]. A case in point is that of Germany where thirteen million of the population were lost to various epidemics, most of them to plague [19].

Researches have shown that during 1361, the so-called "childhood plague" produced more victims among children than other population groups, most probably because the adult population had developed immunity through prior exposure to the disease.

Some interesting details emerge from these studies. Firstly, it was found that more boys fell ill than girls, while with regard to age, adolescents appear to have been harder struck than infants and young children. This latter fact could probably be attributed to general social factors as for instance the high level of immigration of families with small children during this period and the high exposure of the age-groups of 5 -7 and 9 -12 to various infections and diseases. It may also be attributable to the fact that children as young as 5, 6 and 7 took charge of often gruelling duties to support the family, this exposing them to harsh conditions and environments, and thus to health risk factors, at an age when their immune system was not yet fully developed [20].

As explained above, outbreaks of the plague were disastrous for Western Europe, though they had different consequences on different occasions, being inevitably more devastating for the poor population of the cities and less grave for the rich urban classes and the rural populations. For example, the particularly ruinous effects of the Black Death epidemic have been attributed to the fact that the population of medieval Western Europe during that age lived in societies that were socially and economically unstable, which further aggravated the crisis situation [21].

In 1492 Europe was again struck by a series of epidemics, of variola (smallpox), tuberculosis, gonorrhoea and even plumbism [22]. As has been noted: “Between the 14<sup>th</sup> and 16<sup>th</sup> centuries Europe was afflicted by around a hundred epidemics and 45 pandemics”[23].

During the Renaissance, the general mortality was high with infant mortality reaching 259% and the average life expectancy being only 30 years. In the cities, systems of sanitation and waste management did not exist, the lack of fresh water struck high and low and public baths were, somewhat ironically, a source of infections and pestilent diseases. Variola often acquired epidemic proportions and malaria was frequently pandemic, both thus causing tremendous distress; cholera was also widespread and frequent in Europe, while influenza<sup>2</sup>, typhus, enteric fever, varicella, scarlatina and diphtheria also claimed many casualties [24, 25].

Touching upon the most important issue of a given population's philosophical attitude to disease, it must be mentioned that European thought was in a state of transition at the time, with traditionalist belief attributing the epidemics to punishment by God for human sins and more modern thinkers ascribing them to a number of factors, including the rise of the capitalist system as well as the as yet meagre capabilities of the then medical profession system and public health system [26]. As mentioned above, the majority of the victims belonged to the poorer classes of the city who were constantly undernourished and lived in miserable and insalubrious conditions [27].

Nevertheless, progress was being made and exceptions did exist. For example, in 17<sup>th</sup> century Germany child mortality declined considerably with the increasing custom of breastfeeding, this underlining the fact that a given society's culture, traditions and practices exert a very perceptible influence on child mortality, either increasing or decreasing its percentage [28].

In England [29, 30] during the 16<sup>th</sup> and 17<sup>th</sup> centuries we observe high percentages of morbidity and mortality—especially prevalent among two-year old children—due to various epidemics (e.g. pest, plague, English sweat (sweating sickness), syphilis). Current historical demography has estimated these figures to have pertained mainly to the cities and less to villages and rural areas. There was additionally a difference of child mortality among the various professions with, for instance, a particularly high rate among weavers and a much lower one among merchants [31].

In the following centuries the increase of urbanization and in particular the growth of industry—this notably in the 17<sup>th</sup>-18<sup>th</sup> centuries—in urban areas brought about a considerable upsurge in environmental pollution and, as a result, an increase in metabolic diseases among all age groups, including many children, as well as of mortality due to both acute and chronic diseases. This was in contrast to rural environments where clean air and easy access to fresh food favored children's wellbeing and survival [32]. Besides the epidemic diseases mentioned above, a review of the literature discloses reports about other childhood diseases in England and in Europe, from the 15<sup>th</sup>-18<sup>th</sup> centuries, such as hidrosis, viral encephalitis, melitococcosis, diseases of the thymus gland, diseases of the pituitary gland which lead to obesity and to sex development

disorders, and infectious erythema [33, 34]. The main childhood ailments to be noted during the 15<sup>th</sup> century were infectious and contagious diseases caused by malnutrition. In addition, newborns and infants up the age of one year were particularly vulnerable to any disease causing diarrhea since this could quickly and easily result in the small child's death [35]. Generally speaking, a child's risk of dying during the first four years of life was great, and most particularly during its first year because of its exposure to contagious or parasitological diseases.

The social dimension of child mortality will now be evident to the reader, taking into consideration the fact that the abovementioned diseases were the result of serious deficiencies in child care, this being especially grave among the socially and economically disadvantaged classes of the population. These diseases were also due to the absence of the scientific understanding of correct child nutrition, a discipline which was not possible until the advent of laboratory medicine and bio-medicine [35].

Other diseases that affected populations in England and Europe during the period of time under review were poliomyelitis and periodontal diseases. This last was a major problem in England where ever more people over the age of sixty suffered from this ailment which often led to total tooth loss [36, 37].

Again with reference to a people's philosophical attitudes to health and sickness, it is interesting to note that British society of the age considered illness not to be an accidental event caused exclusively by outer factors but the outward manifestation of deeply internal complexities originating in the entire intellectual, moral and physical makeup of the human being. In other words, it was considered to be internally instigated from mainly moral causes rather than merely externally caused from e.g. a virus attack. Thus, the answer to the question "Why has this illness overcome me?" would be found in certain moral theories (illness as a punishment) [38]. In addition to this view there was the belief that illness might be the result of sorcery, demonic forces or evil. With regard to contagious diseases there was also the fancy that they were due to mental disorders and that they could thus be prevented or cured by the power of the will [39].

Nevertheless, this great fermentation of ideas, new and old, during the late Middle Ages was beneficial in that it led to ever deeper analysis of the physical causes of epidemics. For example, the 16<sup>th</sup> century syphilis epidemic instigated numerous studies and research into this disease. Jacques de Bethencourt is famed for his investigation into syphilis, which for long had no commonly accepted name, each nation calling it after the name of the country or the nationality from which it appeared to have originated, for instance “male di Francia (morbus gallicus, French disease)”, “Spanish disease“, “Turkish disease”, “Portuguese disease” [2, 40, 41].

During the 17<sup>th</sup> century, Europe was struck by a series of appalling epidemics, even worse than those of the Middle Ages. These included other outbreaks of the deadly bubonic plague as well as occurrences of variola, malaria, diphtheria, typhus and scurvy. Sources record that during the 18<sup>th</sup> century, a variola epidemic affected 53% of the population of the European continent, resulting in a 17% mortality rate [42]. Many of these calamities brought about deep changes in both social organization and worldview. Some examples are the creation of new social structures because of the collapse of seigniorial system due to many deaths, the contestation of family bonds because the threat of death resulted in the abandonment of close relatives, and, most importantly because most fundamentally, the changeover from the ancient concept that there were “fair and unfair” diseases with all disease and consequent death originating from God to the understanding of the physical origins of disease and death [43].

During the 17<sup>th</sup> and 18<sup>th</sup> centuries, Europe also experienced a number of epidemics of rubeola and malaria (these particularly in the rural areas) and of typhus and tuberculosis<sup>3</sup> [44] (these in poor neighborhoods of the cities). However, at the beginning of the 18<sup>th</sup> century, the transition from a primarily agrarian to a more and more urban and industrial society in the West inevitably brought about changes in the nosologic model for the reason that the type and prevalence of disease underwent progressive change. That is to say, there was a gradual evolution of incidence from primarily pestilent diseases to chiefly non-contagious diseases, degenerative diseases (e.g. cardiovascular diseases, cancer, diabetes), accidents and mental disorders. This is a trend

which continues, in fact, right up to the present day, the last mentioned factors being the main causes of death in our contemporary world [45].

## **5.2. Childhood disease in the Greek society of the 14<sup>th</sup>-18<sup>th</sup> centuries**

Despite the limited sources of information on the subject under study as concerns Greek society during the 14<sup>th</sup>-18<sup>th</sup> centuries, this stemming from the harsh social and economic situation of the time, as mentioned in the introduction, we have deemed it important to review childhood diseases in societies preceding the one in question. This is due to the fact that during the Hellenistic and Roman eras, no changes are observed to have taken place in the nosologic model, while pestilent diseases such as Hansen's disease were still the main cause of mortality, presenting only a fluctuation in the frequency of their appearance [45]. As has been said: "Through the entire cultural history of the Greek lands in medieval times, there is no clear separative line nor any sudden transition from one type of medical culture to another"[2].

Moreover, the Hippocratic Book "Regimen in Acute Diseases" includes rules of treatment specifically for children while a chapter of the book "Sacred Disease" is devoted to epilepsy<sup>4</sup> during childhood. According to Hippocrates, this latter medical condition mainly afflicts individuals of "a phlegmatic temperament" and not those of "a choleric temperament" and arises when the person is still a foetus in his mother's uterus; this is said to be because "the brain, as well as the other organs, is at its most critical stage before an individual is born, when he is also purified".<sup>5</sup> In his book "Epidemics", infantile spasms are also reported during an epidemic of marsh fever [46]. Approximately two hundred passages concerning health and illness in children may be found throughout the entire Hippocratic Collection. Meanwhile, information concerning childhood diseases and their treatment may also be found in the medical texts of the Romans. Much of this knowledge appears to have been based on the fact that the ancient Greek and Roman as well as Byzantine doctors were expected to provide the overall prognosis of an infant's health on the first day it was born. Subsequently, they diagnosed any infantile diseases the child may manifest and determined

if they were congenital or acquired diseases while also suggesting modes of treatment, by surgery or conservative treatment [47, 48].

Soranos, for instance, reports in his texts a list of childhood ailments such as teething problems [49] along with appropriate means of treatment, as well as rashes, diarrheic diseases and febrile conditions all of which he describes in detail. According to Aristotle, boys were likely to be handicapped more often than girls, they are more fragile and they are prone to higher mortality. After Soranos, medical literature developed little as regards pediatrics and Galen also had little to say about this issue [47, 48].

During the Byzantine era, we find a considerable amount of information concerning childhood diseases in the works of great Byzantine doctors/writers much of which was derived from the works of Hippocrates and the other important doctors of the classical period; they additionally incorporated the achievements of medical science of their own epoch, although pediatrics as a medical specialty was not far developed during that time [9].

More specifically, the greatest of the medical problems that afflicted children during the Byzantine age were the following: rashes,<sup>6</sup> parotitis, acute otitis, acute antiaditis, acute bronchitis-cunanche-coryza, bronchial asthma in children, diabetes,<sup>7</sup> conjunctivitis and other eye disorders, tuberculous adenitis, hydrocephaly, epilepsy, spastic conditions, mental retardation, anaemia and parasitic infections. Moreover, as regards the incidence of epidemics during this era, serious outbreaks of variola, plague, rubeola, diphtheria, malaria, tuberculosis, gastrointestinal diseases, dystrophy and avitaminosis have been recorded [50, 51].

Childhood diseases that prevailed during the period of time under review were dermatitis, gastrointestinal disorders, cardiac disorders, infantile spasms, childhood epilepsy, hydrocephaly, childhood asthma, icterus neonatorum, rubella, rubeola, scarlatina, diphtheria, encephalitis and congenital aphonia [52].

As mentioned above with regard to European philosophic notions of the period, it must be noted that in Greece too of this age the same 'holistic' and religious understanding of the origin of disease was entertained. Thus, during the post-Byzantine period and for many years afterwards, that is, those centuries encompassing the pe-

riod of time under study in the Greek lands, health was generally considered as a sign of harmony in a person's relationships that would beneficially affect the society the person lived in and that also reflected the harmony and power of the universe, while illness was believed to be a point of interruption in the interaction between all these powers. It was believed that illness was sent by God, the Creator of everything, the giver of good but also the punisher of evil—'evil' being understood to be neglect of one's duties to undertake prayers and acts of purification, the which negligence merited chastisement—or that it was sent by evil powers.

In other words, the onset of illness was placed within the realm of moral and religious reality, since the epoch was an intensely religious one and every act of the people of the time was determined by deep religious beliefs and convictions. Meanwhile, diseases were treated in accordance with popular medicine<sup>8</sup> which was itself frequently composed from age-old religious beliefs and customs. Thus, with regard to childhood nurture, there were popular practices and superstitions pertaining to pregnancy, labor and the neonatal period and, in general, relating to children's health and care [2].

Concerning childhood ailments, certain pestilent childhood diseases were often mentioned in the relevant literature under different names given to them by the popular medicine of the time. Some of these—here additionally rendered in the English vernacular version of the scientific names—are scarlet fever (scarlatina), measles (rubeola), German measles (rubella), mumps (parotitis), consumption (phthisis), shake (malaria), snuffles (rhinitis), sore throat (tonsillitis), bad stomach (indigestion), 'banana' denoting a person with jaundice (icterus), worms (intestinal parasites), to get stunted (atrophy), lunacy (epilepsy), dizziness (vertigo), chilblains (perniosis), chafing (skin irritation), and so on.

Turning to childhood diseases recorded in various regions of the Greek lands during the period of time under study, it is to be noted that, for example, in the region of the Eptanissa during the second half of the 16<sup>th</sup> century, besides epidemics of variola and plague,<sup>9</sup> a number of childhood diseases are mentioned which, however, did not develop into widespread epidemics, such as rubeola, scarlatina, whooping cough,



varicella, intestinal infections, typhus, all of which, nevertheless, contributed to an increase in child mortality [53].

Pestilent diseases such as plague, variola and cholera are recorded to have broken out during the 17<sup>th</sup> century on the island of Hydra with adverse consequences among the population, notably because of the inadequacy of their social protection system. There are also reports of such diseases such as “impetigo,”<sup>10</sup> “helminths”, and “tape-worm” at this period [54].

An epidemic of variola broke out on the island of Naxos towards the end of the 17<sup>th</sup> century, causing widespread devastation, especially among the children since it resulted in the death of a great many children in numerous parts of the island. Another contagious disease that struck this same island was scarlatina: note is made of the appalling rashes caused to the body and face of the children. The following is a characteristic statement: “*The disease was so contagious that the closing of schools was ordered immediately*”. Other ordinary diseases of the time were typhus “abdominal or cerebral” which derived from the general lack of hygiene and mostly from infected well water. In addition, another pestilent skin disease, unknown and unrecorded in the medical Literature, which was called “the Jewish disease”, afflicted the people of this island during the same period, small children included [55].

By contrast to most travelers’ negative reports as to Greek children’s health during the period of time under examination, a French priest named Francois Richard visiting the island of Santorini in 1650 reports on the everyday life of the inhabitants of Santorini making particular reference to the good health of the island’s children, this despite the evidently low standard of nutrition available to them [53].

From the mid-17<sup>th</sup> century till the mid-18<sup>th</sup> century, the population of the island of Chios was also periodically struck by epidemics of plague, variola and Hansen’s disease with disastrous effects for the island’s economy because, among other adverse consequences, these epidemics impeded the exportation of merchandise, mostly of textile and silk [56].

Likewise, the island of Crete was hit during the 17<sup>th</sup> century by several epidemics “of the worst kind”, such as cholera and plague, during which thousands of the population fell sick and died [57].

During the same period of time, the city of Thessalonica and inland Macedonia were afflicted by outbreaks of malaria, syphilis and Hansen’s disease, while a century later the Peloponnesus suffered a number of epidemics of malaria, cholera and plague [58].

In the area of Epirus, the most frequent diseases reported were colds, coughs, throat-ache, flu, dizziness, nausea, childhood diseases (jaundice and fevers), as well as various injuries, bone fractures and strains along with scorpion and snake bites [59].

Later, during the 18<sup>th</sup> century, a period when traveling was becoming more and more common, a rich source of material was provided by travelers writing journals and other chronicles that detailed the health and care of children as they encountered these in various lands. These included mention of childhood diseases, superstitions concerning diseases, the famous infant asylum of Chios, children’s vaccination against variola, medication and epidemics. Among the various childhood diseases that captured the travelers’ interest was in particular variola, or smallpox. This acute infectious virus disease had caused ravages as an epidemic in previous centuries. However, from the 17<sup>th</sup> century it became a simple childhood disease appearing periodically every 3 or 5 years and was a common illness in some countries, as, for instance, certain Balkan lands. During the same century, plague was the main problem, depopulating mostly the big cities; however, unfortunately, information provided by travelers concerning plague does not refer to children in particular but to the population in general [59].

Besides pestilent diseases, travelers of the 18<sup>th</sup> century mention other diseases as well, such as scoliosis, dislocations and infant skin diseases. According to a Dutch traveler by the name of Egmont who wrote during his journey to the Ottoman East, “at Smyrna, childhood cases of scoliosis are very rare because women do not overdress their offspring but dress them in light clothing, letting their body grow”. The same traveler also refers to diseases originating from the “evil eye”, that is deriving

from 'evil actions which bring about divine punishment', which, according to the superstitions of the time in Athens and in the East, could affect children as well as adults [59].

Reviewing some published manuscripts and historical sources that date to the period of time under study, we find reports concerning childhood diseases of the particular age about which the relevant therapeutic means are proposed.<sup>11</sup> Among these documents, an outstanding source of information has survived in the form of Manuscript number 218 of the Iviron Monastery of Mount Athos dating from the 16<sup>th</sup>-17<sup>th</sup> century. This interesting manuscript contains reports of the following childhood ailments and diseases: "infantile teething", "mouth ulcers", "diurnal fever", "enuresis", "lichens", "ileus", "bladder stones" [60].

Likewise, in Manuscript number 181 of the Iviron Monastery of Mount Athos dating from the 16<sup>th</sup> century, the childhood diseases mentioned are: "icterus", "mumps", "rashes"[61].

Moreover, in a nostrum codex dating from the 15<sup>th</sup>-16<sup>th</sup> century, a great number of childhood disorders and diseases are recorded, among which are the following: "infants with abdomen disorders", "dysentery", "oxyuris equi", "distress suffered, e.g. crying, by children who are teething", "children who cannot urinate", "spasm of a small child", coughing of a child who lactates", "a child who cries all night and is afraid", "a child who cries" [62].

The medical text of Nikolaos Ieropaidos titled "Some instructions for neophyte doctors" (in particular the first chapter) dated to the 16<sup>th</sup>-17<sup>th</sup> century also refers, inter alia, to children's "morbus" such as "the abscesses on the head of small children", coughing, "children's cuts"[63].

Around the same time, a text written during the 18<sup>th</sup> century by Rigas Velestinlis and titled "Physics variorum" includes several maladies that develop among newborns such as icterus, inflammation, mastitis and "tapeworm" [64].

In another two nostra manuscripts (from Epirus) dating from the 18<sup>th</sup> century, we find reports of childhood problems and ailments as, for example, following: "the child

who does not sleep calmly”, “the child who has helminths”, “the child who does not sleep at night” [65].

### **5.3. Child mortality in the Greek lands in the 14<sup>th</sup>-18<sup>th</sup> centuries: socio-historical features**

With regard to child mortality in the Greek lands during the period of time under study, we observe its direct correlation with the specific structure of Greek society of this period, this being principally agrarian and notably indigent. The numerous foreign incursions and occupations of this era (e.g. Ottoman invasion and rule, Serbian invasions), the outbreak of several civil wars and the eruptions of various epidemics, in particular plague, resulted in widespread depopulation, drastically reduced economic circumstances and, inevitably, very low-grade standards of health and welfare [21].

The demographics of the Greek lands as concerns population ages after the year 1300 suggests either low rates of population increase or stagnancy of population growth. There is also a significant change in the demographic composition of the population regarding ages with an increase in the percentage of aged and middle-aged people and a decrease in the percentage of younger people. With respect to sex distribution, and especially amongst the younger generation, one also notes a higher percentage of men than women as well as a large number of women marrying earlier than men. Numerous explanations have been offered to elucidate this phenomenon, such as, for instance, increased female mortality or female infanticide.

Our study of the stabilized birthrate, which means the number of children born and surviving childhood, during this given period of time resulted in the number of 22 every 1000 stabilized births per year. This result denotes that the crude stabilized birthrate was 44 every 1000 births, a percentage quite normal for a population of the pre-industrial era. In general, the upheavals of the first decade of the 14<sup>th</sup> century and, in particular, of the first civil war (1321-1328) inflicted much turmoil upon the agrarian population and produced a decrease in the birthrate (the number of live births per 1000 individuals per year). It should however be pointed out that the abovementioned

birthrate can be calculated only for the time period from 1317-1321. Nevertheless, the crude birthrate, meaning the number of births per 1000 persons per year, was much higher than the stabilized birthrate because of the high rate of infantile mortality in the populations of the pre-industrial era. More specifically, 49% of children (boys and girls) died before they turned five so that the crude birthrate was approximately 44% per year. In addition, more girls than boys died, possibly because adults paid less attention to them.

With respect to the number of children per couple, a number which represents the reproduction rate of the population, the younger generations had 2.15 children per couple during their fertile years [21].<sup>12</sup>

During the 14<sup>th</sup> century, the average life expectancy was 25 years. The birth percentage was 44% per year and the percentage of children who survived until the age of 5 years was 50%. Interestingly, a woman would need to give birth to six daughters if she wanted to see one of them reach the age of 30 years old [66].

The fact that child and infantile mortality was a problem generating direct demographic and social consequences in the Greek society of the period of time under review is also verified by documentary evidence that has been uncovered concerning child mortality in Crete under Venetian rule and in other Greek regions under Latin rule. A typical example of such testimony is the following:

“In their wills, parents, and especially women who redacted wills usually during the days before labor, made sure to declare to whom their property should be given if their children died young “ [7].

## **6. Discussion**

Based on the above review conducted for the present study, we can conclude the following: Childhood diseases and child mortality are revealed to precisely correlate with each human society, its situation in time and the specific mentality or worldview that its people possessed, each of these factors mutually interacting with one another. It is thus highly illuminating to study all of these dynamics in order to acquire an

overall understanding of the history both of medicine and of social developments down through the ages.

For example, the pervasiveness of pestilent and contagious diseases among European populations, the prevalence of grave and/or life-threatening childhood diseases (which concerned mainly epidemic and/or pestilent diseases but also included other ailments) and the generally high percentages of child mortality in European countries and the Greek lands during the 14<sup>th</sup>-18<sup>th</sup> centuries all reflect the low levels of social, political, financial and cultural development at that time.

The causes of childhood diseases and child mortality may be summarized as follows:

a) social factors such as a high level immigration of populations including children, b) environmental factors (urbanization, industrialization, environmental changes), c) factors related to the socioeconomic structure of the society of the time (socially and financially unstable societies in crisis), d) sociopolitical factors (health and social protection system), e) cultural factors (culture, manners and customs), f) frequently inadequate therapeutic measures due to the perception of the time pertaining to disease as a result of supernatural and religious cause (disease as punishment). Other causes of childhood diseases and child mortality in the Greek lands of the time were an underdeveloped social protection and healthcare system and the lack of sanitary and hygiene systems.

The prevalence of childhood diseases, these mainly of an epidemic nature, as well as of a high rate of child mortality in the examined societies had an unavoidable impact on the structure and composition of these societies as well as on the evolution of mentalities and beliefs.

In the Greek lands during the period of time under examination, it is of considerable interest to note a continuance in the prevalence of the same childhood diseases that were carried over from previous periods of time, and specifically from the ancient Greek and Roman eras as well as from the Byzantine age: this is attributable to the fact that no profound changes took place over these centuries as regards the social formation of Greek society. During these eras, very little also changed in the outlook and beliefs of the people of the Greek lands so that the causes of the manifestation of

diseases in Greek society continued during these times to be considered to be moral and religious, while all diseases were treated via the practices of popular medicine.

As mentioned above, the relative commonness of childhood diseases and the high rate of child mortality in Greek society during the period of time under study had a profound and distressing impact on the social and financial structure of the Greek lands, including, in particular, serious demographic consequences (aging of the population), this once again demonstrating the fact that childhood diseases and child mortality correlate closely with the social and financial status and structure of a society, in this case Greek society of the 14<sup>th</sup>-18<sup>th</sup> centuries.

## **7. Conclusion**

The study of childhood diseases and child mortality in our country, though historically an unexplored field of research is an extremely valuable one, enriching as it does the country's historical archives.

As has been discussed, the comprehension of and resultant attitudes towards the concept of childhood as this prevailed in Europe during the period under review were the basic factors that determined the place of the child in the framework of the family, the society and the state. In addition, the value systems that existed in these societies and that established people's expectations of the child's social, moral and physical functions and roles also shaped, for better or for worse, the preponderance of health and of illness among children.

Taking an even broader view, it is obvious that a diachronic/historical study of the health and care of the child at different times and in different places of our continent and our planet, including evidence and statistics of child mortality throughout history, is capable of providing vital guidelines for the future, since it is said that the past is the surest guide for the present and the future.

### **Notes:**

<sup>1</sup> According to G. Papaevagellou, K. Tsimpos, 1992, as before, pp. 19-20, the infantile mortality rate (IMR) expresses the number of infantile deaths observed in a year

(newborns who died before they completed one year of life) *per 1000 live births during the same year*. In addition, given that infantile mortality is affected by genetic and environmental factors, there is a distinction between a) “innate” mortality which includes infantile deaths caused by agents difficult to predict or treat (e.g., congenital disorders, injury during labor), and b) “external” infantile mortality which includes mostly infantile deaths due to infections and accidents after labor, as well as a distinction of infantile mortality according to the age of the infant

<sup>2</sup> In 1538 10% of the population of England died due to an “unknown disease”, most probably influenza. For more quantitative details regarding the consequences of the epidemics, see: K. Gaganakis, *“Social and Financial History of Europe”*, Patras: Greek Open University, 1999, p. 97

<sup>3</sup> During these two centuries, tuberculosis swept across Europe like an epidemic ‘storm’, beginning, it is estimated, in the 17<sup>th</sup> century, and continuing and expanding right up until the 19<sup>th</sup> century 20% of the deaths due to this epidemic occurred in the year 1655 alone in the city of London

<sup>4</sup> Other ancient authors who were engaged in the study of epilepsy were Herodotus of Halicarnas, Aristotle, Erasistratos of Kea, Aretaios of Cappadocia, Soranos of Ephesus, Galen, and many Byzantine doctors, all of whom maintained that, although epilepsy strikes all age groups, we find an especially high prevalence in children. See: A. Stiga, N. Andreou, S. Loukopoulou, K. Maniati, V. Gallaki, “Epilepsy in children during antiquity”, *“About the nature of the child”, the history of paediatrics from antiquity until today*, Thessalonica: Medical Publications Siokis, 2004, pp. 27-33

<sup>5</sup> According to sociological studies as well as to writings of the time, the attention paid by ancient and Byzantine doctors to pediatrics was based on the belief that the salvation of the “Polis” (city) could be achieved not by ill men but by men who were healthy both physically and mentally, that is, men whose physical status was due not only to natural good health and strength but also to serious and intense follow-up during their mother’s pregnancy, the neonatal age, the infantile age, childhood and puberty, See: I. Tsoukalas, G. Tsoukalas, N. Andreou, X. Veliotis, V. Galiaki, 2006, *as above*, p. 59



<sup>6</sup> The most eruptive problems of childhood which are reported during the Byzantine age are psoriasis, rashes in various body parts, ulcerous rashes, blisters, corrosive ulcers or ulcers full of pus, herpes, hemorrhagic or rheumatic ulcers, See: I. Ramoutsaki, H. Dimitriou, M. Kalmanti, “Management of childhood diseases in the Byzantine period: II-Exanthematic diseases”, *Pediatrics International*, vol. 44, 2002, pp. 338-340

<sup>7</sup> Diabetes mellitus was considered by many Byzantine doctors (Orivassios, Pilos of Aegina, Alexandros the Tralleianos, Theophilos) as a serious disease during the Byzantine age. See: I. Ramoutsaki, H. Dimitriou, E. Markaki, M. Kalmanti, “Management of childhood diseases during the Byzantine period: IV-Juvenile diabetes mellitus”, *Pediatrics International*, vol. 44, 2002, pp. 463-464

<sup>8</sup> Popular medicine is defined as the following: a mixture of practical medical knowledge and magical concepts and actions (superstitions) which were transmitted orally and were written as *nostra*, see: P. Soutzoglou-Kottaridi, 1991, p. 144

<sup>9</sup> During the 16<sup>th</sup> century, besides the Eptanissa the plague also hit other Greek regions such as Epirus, Corfu, Zante, the Peloponnesus, Crete and Athens. During the 17<sup>th</sup> century the plague caused the death of a large part of Greek population in regions such as Constantinople, Crete, Zante, the Eptanissa, the Aegean islands, the Peloponnesus, Athens, Thebes, Lamia and Euboia. With the same intensity, the plague continued depopulating the Greek lands during the 18<sup>th</sup> century striking not only the abovementioned but other locations as well. See: I. Vitsos, “*Medicine in the Eptanissa and the contribution of the doctors of the Eptanissa to the cultural and social development of Greece*”, PhD, Athens, 1979, pp. 30-31

<sup>10</sup> Impetigo= pyogenic dermatitis of the scalp in children

<sup>11</sup> At this point we should note the fact that many of the typically adult diseases described in relevant manuscripts could also afflict children; however, in the present study we mention only those diseases that the authors consider as childhood diseases

<sup>12</sup> As indicated by the author, A. Laiou-Thomadaki, 1987, although the data recording is incomplete this did not happen systematically

## References:

- [1] Jose Gentil Da Silva, “Historicity of childhood and youth”, Athens: General Secretariat of Youth, 1986
- [2] P. Soutzoglou-Kottaridi, “Child and health during the first years of the independence of Greece 1830-1862”, Athens: Dodoni, 1991
- [3] L. Sapounaki-Drakaki, “Financial growth and social protection-the birth of health services in Piraeus and the Tzanio Hospital”, Athens: Dionikos, 2005
- [4] M. Mandila-Koussouni, A. Koussouni, A. Koussounis, “The child’s care and attention in the Greek population under Ottoman and Venetian rule according to travelers, about the nature of the child, the history of paediatrics from antiquity until today”, Thessalonica: Medical Publications Siokis, 2004
- [5] X. Patrinelis, “Distribution of Greek populations according to gender and age (end of 16<sup>th</sup> century– beginning of 19<sup>th</sup> century)”, *Hellenica*, vol.34, 1982-3, pp. 369-370
- [6] H. Gunningham, “Children and Childhood in Western Society since 1500”, London and New York: Longman, 1995
- [7] X. Maltezou, “The child in the society of Crete under Venetian Rule”, *Chronicles of Crete*, vol. 27, 1987, p. 215
- [8] D. Gelfand, “Blackwell handbook of infant development”, Blackwell publishing, 2004
- [9] N. Matsaniotis, “Pediatrics in the Byzantine years”, *Proceedings of the 4<sup>th</sup> Panhellenic Congress of History of Medicine*, 1986. p. 16
- [10] P. Aries, “Centuries of Childhood (G. Anastasopoulou, trans)”. Athens: Glaros, 1990
- [11] “Childhood diseases”, <http://www.altasoft.gr/software/kids.HTML>
- [12] G. Papaevagellou, K. Tsimpos, “Medical demography and family planning”, Athens: Beta, 1992
- [13] M. Tomara-Sideri, “Historical Demography”, Athens: Papazisi, 1998

- [14] J. Scott S, “Dungan Interacting effects of nutrition and social class differentials on fertility and infant mortality in a pre-industrial population”, *Population studies*, vol. 54, 2000, pp. 71-87
- [15] T. Zavitsanos, “Infantile Mortality in Greece (1938-1960), its social importance – consequences on public health and ways of dealing with it”, Reprint of the proceedings of the medico surgical company of Athens, Athens, 1962, p. 5-6
- [16] Z. Patrona, “Preschool children’s health issues in two areas of Greece having extreme rates of mortality”, Athens: PhD thesis, 1984
- [17] D. Musto, “A historical perspective, Psychiatric ethics”, Oxford: University Press, 1999
- [18] “European History/The Crises of the Middle Ages”, <http://E:\European> History - The Crisis of Middle Ages-Wikibooks, collection of open-content textbooks”
- [19] S. Geroulanos, “Military Medicine during the 19<sup>th</sup> century”, Proceedings of Meeting, Athens: Office of studies of Greek Naval Medicine’s History, 2004, pp. 85-86
- [20] J. Margerison, C. Knusel, “Paleodemographic Comparison of a Catastrophic and an Attritional Assemblage”, *American Journal of Physician Anthropology*, vol. 119, 2002, pp. 134-143
- [21] A. Laiou-Thomadaki, “Agricultural society in the post-Byzantine years”, Athens: MIET, 1987
- [22] S. Hernberg, “Lead poisoning in a Historical Perspective”, *American Journal of Industrial Medicine*, vol. 38, 2000, pp. 244-254
- [23] I. Kaliviotis, “Historical progression of childhood infections, About the nature of the child, the history of paediatrics from antiquity until today”, Thessalonica: Medical Publications Siokis, 2004
- [24] N. Pappa, “The history of public health”, National and Kapodistrian University of Athens, 1998
- [25] M. Pelling, M. Harrison, “Caring for health: history and diversity”, Open University Press, 1993

- [26] S. Watts, "A social history of Western Europe 1450-1720", Hutchinson University Library, 1984
- [27] K. Gaganakis, "Social and Financial History of Europe", Patras: Greek Open University, 1999
- [28] D. McLaren, "Fertility infant mortality and breast feeding in the seventeenth century", *Medical History*, vol. 22, 1978, pp. 376-396
- [29] R. Porter, "Disease, medicine and society", Cambridge: University Press, 1987
- [30] R. Woods, "On the Historical Relationship Between Infant and Adult Mortality", *Popular Studies*, vol. 47, 1993, pp. 195-219
- [31] S. King, "Dying with Style: Infant Death and its Context in a Rural Industrial Township 1650-1830", *The society for the History of Medicine*, 1997
- [32] M. Lewis, "Impact of Industrialization: Comparative Study of Child Health in Four Sites from Medieval and Postmedieval England (A.D. 850-1859)", *American Journal of Physical Anthropology*, vol. 119, 2002, pp. 211-223
- [33] P. Beeson, "Some diseases that have disappeared, *Medicine, Science and Society*", *The American Journal of Medicine*, vol. 68, 1980, pp. 806-811
- [34] T. Chorba, J. Anderson, "Erythema Infectiosum (fifth disease)", *Clinics in Dermatology*, vol. 7, no. 1, 1989, pp. 65-74
- [35] R. Ballester, "Child mortality: social and medical responses", *The Lancet*, vol. 354, 1999, p. 27
- [36] E. Millar, "Poliomyelitis Epidemiology and Control", *Public Health*, vol. 85, no. 3, 1971, pp. 103-106
- [37] N. Kerr, "Prevalence and natural history of periodontal disease in a London Spitalfields population (1645-1852)", *Archs and Biol*, vol. 7, 1994, pp. 581-588
- [38] R. Porter, "Medicine in Society", Cambridge University Press, 1992
- [39] S. Sontak, "The diseases as a metaphor and HIV and its transporters", Athens: Ipsilon, 1993
- [40] A. Diamanopoulos, M. Marcelos, "Old drug vessels", Medical Company of Athens, 1993

- [41] D. Karamperopoulos, Ioannis Nikolaidis and Anton Stoerck, Identification of the text of the book “Interpretation of how morbus gallicus, that is male di Francia, should be treated”, Vienna 1794, 1999
- [42] V. Karakatsanis, “Social Medicine”, Medical Newspaper, 2005
- [43] P. Maniatis, “History of medicine from prehistoric times until today”, Athens, Entos, 2002
- [44] I. Lempeisis, “The history of tuberculosis”, PhD, Pneumatologic-Tubercular Clinic of University of Athens, 1983
- [45] Y. Tountas, “Society and Health”, Odysseus, Athens, 2000
- [46] G. Papavasileiou, “Childhood diseases from antiquity until now, Paraskeva Leonis”, Press in Athens, 1900
- [47] K. Pollak, “Medicine in antiquity” (D. Maroudis, trans), Athens: Papadima, 2005
- [48] I. Tsoukalas, G. Tsoukalas, N. Andreou, X. Veliotis, V. Galliaki, “The first 24 hours of the newborn according to ancient Greek and Byzantine authors”, Newsletter of the 1<sup>st</sup> Dept Pediatric Clinic of University of Athens, vol. 53, 2006, p. 66
- [49] I. Katsou, G. Alevetsovitis, M. Myronidou-Tzouveleki, “About the nature of the child, the history of paediatrics from antiquity until today”, Thessalonica Medical Publications: Siokis, 2004
- [50] A. Eftihiadis, “Introduction to Byzantine therapeutics”, Athens, 1983
- [51] I. Ramoutzaki, H. Dimitriou, A. Markaki, M. Kalmanti, “Management of childhood diseases during the Byzantine period: II-Respiratory diseases of childhood”, Pediatrics International, vol. 44, 2002, pp. 460-462
- [52] A. Eftihiadis, “Introduction to Greek therapeutics from 1453 until the middle of the 19<sup>th</sup> century”, Athens, 1985
- [53] N. Mandila-Kousouni, “The practice of medicine in the Eptanissa under Venetian rule Medical Chronicles of Northwestern Greece: 1”, Medicosurgical Company of Corfu, <http://www.ixek.gr/magazine /issues3 /index.htm>
- [54] G. Sahinis, “The health of the inhabitants of the island of Hydra through the centuries”, Piraeus, 1986

- [55] N. Kefalliniadis, “Pestilnt diseases on the island of Naxos in past years”, Reprint from newspaper: the Future of Naxos, vol. 484, 1978, pp. 486-487
- [56] M. Paidousis, “Medicine on the island of Chios, supplement and corrections”, Chios: Zissimos, Bulletin of the Argenti Union in Chios, vol. 6, 1964, pp. 15-21
- [57] G. Gryntakis, “Cholera of 1646 in Western Crete”, Proceedings of International Scientific Congress of Popular Medicine, Rethimno: Historical – Folkloric Company of Rethimno, 2003, p. 135
- [58] M. Lykissas, “Doctors-philosophers of Corfu and doctors in politics”, Athens, 1989
- [59] A. Mpimpi-Papsyropoulou, “Byzantine medicine and post-Byzantine nostra codices. The contribution of the Byzantine Empire to the occupied nation”, Greek medical tradition: Athens, 1989
- [60] A. Kadda, “Social – historical approach to health – illness and medicine in Greek area during the 16<sup>th</sup>-17<sup>th</sup> century: the case of manuscript number 218 of the Monastery of Iviron of Mount Athos” (PhD thesis), Athens: Panteion University of Athens, 2007
- [61] L. Manou, “Nostra of the 16<sup>th</sup> century”, Athens: Publishing House of Kiriakidis Bros, 2008
- [62] K. Amantos, “Nostrum Codex”, Athens: Estia press, Reprint from Volume 43 of “Athens”, 1931, pp. 154,156,159, 160, 161, 163, 166, 167
- [63] A. Tselikas, G. Ilioudis, “Some instructions for neophyte doctors, of Nikolaos Ieropaidos of Agrafa”, Larissa: Medical Department of the University of Thessaly, 1996
- [64] D. Karamperopoulos, “Medical knowledge of Rigas Velestinlis in his work *Physics variorum*”, Athens: reprint from Ypereia Bulletin, 1990, pp. 467-468, 474
- [65] K. Oikonomou, “Two nostra from Epirus Dodoni”, Ioannina: Scientific Yearbook of the Department of Philosophy of the University of Ioannina, vol. 7, 1978, pp. 241, 267, 269, 286
- [66] X. Meletiadis, “Renaissance trends in modern Greek intelligentsia Nikolaos Sophianos”, Thessalonica: Vanias, 2005