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**Campanii sanitare în România
în prima jumătate a secolului XX**

**Health campaigns in Romania
in the first half of the twentieth century**

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Key words: health campaign, epidemy, cholera, malaria, eradication, vaccination outbreak

REZUMAT

Preocupările pentru sănătatea publică au devenit mai intense și primele încercări de a reforma sănătatea publică s-au făcut la începutul secolului XIX. Reformele cuprindeau introducerea vaccinării, construirea de latrine și sisteme de canalizare, colectarea gunoiului.

Teza își propune să prezinte preocupările legate de sănătate de la începutul secolului XX în România, concretizate prin organizarea de campanii sanitare, unele din ele cu rezultate remarcabile, recunoscute și pe plan internațional. Cele 3 campanii sanitare studiate au fost: Campania antiholeră din 1913, Campania sanitară din 1938 și campania antimalarie din 1946-1952.

Obiectivele cercetării sunt: prezentarea evenimentelor socio-politice premergătoare campaniilor sanitare studiate, reconstituirea evenimentelor care au dus la organizarea campaniilor și descoperirea de elemente noi în desfășurarea campaniilor și analizarea rezultatelor obținute.

Analiza campaniilor de sănătate are o importanță deosebită, deoarece *„din studiul, din coordonarea și din interpretarea lor, nu numai că se evidențiază roadele muncii, dar uneori să pot trage concluziuni științifice și mai totdeauna să semnaleză lacunele din organizație și în marginile disponibilităților ne dau posibilitatea să complectăm acele lacune, să armonizăm și să distribuim munca.”* (Bordea, 1924)

De asemenea, ca element inedit trebuie remarcată preocuparea, în cadrul campaniilor, și în special a celei din 1938, de a realiza educarea populației pentru a avea un stil de viață sănătos, pentru a respecta normele igienico-sanitare și a preveni astfel îmbolnăvirile, pentru că, așa cum spunea Constantin Vârnav: *“Fieștecare din doctori- scrie el- ar trebui să facă toate chipurile ce să înzestreze pe popor nu numai cu cărți prin cari să poată învăța cum să-și păstreze sănătatea, odorul cel mai scump pentru omenirea întreagă, dar și cu cărți prin care să poată învăța cum să se vindece de boale epidemicești- și cum să se păzească de ele”*. (Bînzar, 1964)

Studiul s-a bazat pe cercetarea mai multor categorii de surse, cum ar fi legislație, rapoarte, literatură medicală și istorică științifică, presa vremii, imagini inedite și filme documentare. Acestea toate au fost găsite în Arhiva Națională, Biblioteca Națională, Biblioteca

de Istoria Medicinii din cadrul Institutului de Sănătate Publică București, baze de date on-line precum și alte resurse electronice (Institutul Pasteur din Paris).

Documentele au fost analizate și clasificate prin metode iatro-istorice.

BRIEF SUMMARY

Public health concerns became more intense and the first attempts to reform public health were made in the early century. XIX. The reforms included the introduction of vaccination, construction of latrines and sewers, garbage collection.

The thesis aims to present health concerns of the early XXth century in Romania, leading to health campaigns, some of them with remarkable results, internationally recognized.

The research objectives are: to present socio-political events before the studied health campaigns, to reconstruct the events that led to organizing campaigns and to discover new elements in the conduct of campaigns and analyzing results.

Analysis of health campaigns is particularly important because *"from the study, from their coordination and their interpretation, not only highlights the fruits of labor, but sometimes you can draw scientific conclusions and always you indicate gaps in the organization and as we can we complete those gaps, harmonize and distribute the work."* (Bordea, 1924)

Also, as a new element we have to note the concern in campaigns, and especially that of 1938, to carry out public education to have a healthy lifestyle, to comply with sanitary norms and thus prevent illness, to that, as said Constantin Vârnav *"Every doctor- he writes- should do all to equip people not only with books through which you can learn how to maintain health, the most expensive treasure for all humanity but also books that can teach you how to heal infectious diseases- and how to guard against them."* (Bînzar, 1964)

The study was based on researching several categories of sources, such as legislation, reports, historical and scientific medical literature, the press, original pictures and documentaries. They

all were found in the National Archives, the National Library, the Library for History of Medicine from the Institute of Public Health Bucharest, online databases and other electronic resources (Pasteur Institute from Paris).

The documents were analysed and classified using iatro-historical methods.

SUMMARY

INTRODUCTION

The thesis aims to present health concerns of the early XXth century in Romania, leading to health campaigns, some of them with remarkable results, internationally recognized.

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CHAPTER 1 The political, social, economic and health of Romania in the first half of the twentieth century

The evolution of Romania in the first half of the twentieth century is characterized by great achievements due to the Balkan wars, the Great Union accomplishment, illusions related to pre-

war alliances, and major delusions caused by territorial losses due to increased revisionist policy at the end of the period, before the Second World War.

First Balkan War

During the First Balkan War, Romania remained neutral, although there have been proposals for alliances from a group (Ottoman Empire) and the other (Bulgaria), but has followed with interest the conflict that could change the status quo that Romanian politicians defended it fiercely.

Second Balkan War

The Second Balkan War broke out on June 30, 1913, when Bulgaria, without declaration of war, attacked their former allies (Serbia and Greece). In agreement with France and Russia, the Romanian government ordered army mobilization on the 3rd of July and gives notice of entry on the territory of Bulgaria on July 10, fact which was a public rejection of the alliance with the Dual Monarchy. This action was regarded with hostility in Viennese political circles, but in order not to lose Romania, they will accept some territorial changes in favour of Romania, and on the other hand they wanted to stop the Balkan conflict to avoid its spread, so that Romania becomes the determining factor in convincing Warring States to cease hostilities. On July 22, Romania accepted a truce, because the Romanian politicians believed that the war was to maintain the balance of power in the Balkans, and not to destroy Bulgaria. Following the peace treaty that was signed in Bucharest, Romania received Cadrilater.

World War I

In just one year, in 1914, World War I breaks out. Romania entered the war two years later, in 1916, by the Entente, in a bad moment in military terms, when the military balance was not in favour of the Entente, when the forces of the Central Powers, not being heavily engaged, had freedom to act and the possibility to achieve overwhelming superiority on the Romanian front. From the Western Front five infantry divisions and one cavalry were transferred. Over 30

divisions of the Central Powers were used on the Romanian front. Romanian victories in the summer of 1917 saved the Eastern Front and allowed uninterrupted transport of US troops, which decided the victory on the Western Front. "We, the Prime Minister appreciated, referring to Romania's participation at the war, didn't enter as solicitants and uninvited [...] we entered as allies, wanted and asked for, when the French Ambassador in Petersburg said: if Romania does not enter the war the Western Front can be compromise. We entered the war when the Russians were saying: now or never" (Constantinescu, Daicoviciu și Pascu 1970).

While participating in an imperialist war which concerned economic and political world redistribution, Romania waged a just war of national liberation.

The Great Union

Achieving Greater Romania by the unification of Basarabia, Bucovina and Transilvania to the Old Kingdom was the result of the favourable conditions created by the Romanians in the end of the First World War, when the Tsarist Empire and the Austro-Hungarian Empire disappeared from the map of Europe.

First Romanian province that united with the motherland was **Basarabia**. In 1917 the Moldavian National Party was formed, and it which will coordinate the movement of liberation of Basarabia. Facing the threats of Russia and Ukraine, Basarabia proclaimed its independence (February 4, 1918) and on March 27, 1918, the Council of State, which included representatives of all nationalities, adopted by majority the decision of Basarabia to unite with Romania.

On November 28, 1918 **Bucovina** followed, when the General Congress of Bukovina, composed of representatives of the Romanians, Poles, Germans and Ruthenians, voted for the union with the Kingdom of Romania. Austria recognized the union of Romania with Bukovina by the Treaty of Saint-Germain.

Regarding **Transilvania**, since the beginning of World War I the means of struggle of the Romanians for uniting the country diversified, activity coordinated by the Romanian National Party (PNR). In autumn 1918, when the Central Powers were defeated and Austro-Hungarian Empire has collapsed, the national movement of the Romanians in Transilvania has grown. The

Grand National Assembly from December 1, 1918 in Alba Iulia was started by President Gheorghe Pop de Băsești in the presence of 1,228 delegates, the Orthodox Bishop Miron Cristea, Greek Catholic Bishop Iuliu Hossu and more than 100,000 people. Vasile Goldis read the Union's Resolution with Romania (it promoted democratic principles, equality of minorities with the Romanian nation, universal suffrage, freedoms). Next day provisional organs of state power and the Great National Ruling Council, headed by Iuliu Maniu were chosen. The union was welcomed and recognized by all nationalities in Transylvania. Hungary recognizes the union in the Treaty of Trianon (1920).

The Great Union of 1918 crown aspirations of centuries of Romanians live in one state, the fruit of the struggle of all internal forces and social groups. Thus, the perfect establishment of Greater Romania. The new Romanian state, with an area of 295,049 km² and a population of 18 million inhabitants, is internationally recognized by the Paris peace treaties in 1919-1920.

The period between the wars

Romania was a medium developed country between the wars, a country in which the main branch was agriculture and industry was on the rise. Romanian society was a society of contrasts, there was a big difference between urban dwellings with about 18% of the total population and rural. The changes, momentum, progress of Romania during the interwar period were due to the completion of the national state Romania Mare (Scurtu, 2010), which increased human and material potential of the country. The great union from December 1, 1918 has made Romania one of the biggest countries of Europe. Its surface has increased from 137,000 km² to 295,049 km², being the ninth country in Europe as surface. The country's population reached about 18 mil. inhabitants, of which about 72% were Romanian, and 28% minorities: Hungarian, German, Hebrew, Ukrainians, Serbs, Croats, Gypsies, etc.

World War II

The worsening of the international situation in the second half of 1939 has seriously affected our country. Molotov-Ribbentrop Pact was received with great uneasiness in Bucharest and on September 1, 1939, when war broke out, Romania declared neutrality. In the spring of 1941 Romania has refused to participate in the Nazi aggression against Yugoslavia and Greece. At the

end of 1941 and early next year the state of war intervened with Great Britain, the United States and their allies, due to intense participation of our country in the Eastern war. Romania took part in the war to obtain the release of Romanian territories occupied in 1940 by the Soviets. On June 12, 1941 General Ion Antonescu was invited by Hitler to Munich, where he was presented Barbarossa military operations plan, which was intended to destroy the Soviet Union. On June 22, 1941 Romania took part, along with Germany and its allies, the attack against the Soviet Union. At the call of the general: "I order you: cross the Prut!" Romanian army entered the war to restore the country's body with provinces torn by Soviet in the tragic summer of 1940 - Basarabia, Northern Bucovina and the Herta region (Manea & Teodorescu, 1996). On the southern front acted 3rd Romanian Army (General Petre Dumitrescu) and 4th Romanian Army (General Nicolae fungus) beside 11th German Army, commanded by General Eugen von Schobert. Aeronautics and Navy also participated with 672 planes and 39 warships.

The economic situation

From the economic perspective, early twentieth century found Romania in the process of development. A significant increase of industry, emphasizing the development of agriculture, the development of transport, expanding internal and external trade, and as a corollary thereof, creation and development of new institutions attested the building of Romanian modern state.

The transformations of the Romanian economy in the late nineteenth century and early twentieth century put their mark on the development of agriculture (Constantinescu, Daicoviciu & Pascu, 1970). Unlike the industrial sector, where, despite the difficulties, the process of capitalist development was more pronounced, agricultural development knew a slower pace and take place while maintaining some important feudal vestiges. The coexistence of the two aspects of agricultural development was the exploitation of the peasantry to widen, despite some measures on peasant ownership or regulating labour relations.

The development of capitalist industry, internal market and external trade has created the need to extend and intensify transportation. This problem primarily interested bourgeoisie as it was a condition of economic development. The advent of railways in Europe, meaning safe, fast and cheaper transportation has produced a radical change in the transport system.

The sanitary situation

According to reports made by doctors as I. Felix or N. Maldarescu, law enforcement and health regulations leave much to be desired in Romania end of XIX century and beginning of the twentieth century. Although the image a reader can form in completing these notations is frightening, their main purpose is to highlight the negative situations so that the Ministry of Interior to take measures to combat and "righting".

Health legislation in force after mid nineteenth century regulated sanitary service organization, the profession of physician, establishment and operation of pharmacies, public hygiene, epidemic control and even "the statute of the general management of the health service staff " (in red. Ceausescu, 1984, 1988).

At that time there were many cases of illnesses and epidemics that haunted all the inhabitants of the country whose hygiene habits were poor or non-existent. Some of the diseases that wreak havoc were: typhus, cholera, dysentery, malaria, pulmonary phthisis, contagious eruptive fevers, diphtheric angina.

CHAPTER 2 The Health Campaign from 1913

Second Balkan War

Romania's participation in the Second Balkan War of 1913, and the appeared difficulties were analyzed in a series of papers, memoranda or articles, unflattering, about subsistence, quartermaster and health services in that campaign. After 35 years from the Independence, the Romanian arm had to have the necessary logistics to fight a war. However, it turned out that the desire to develop the military body in peacetime was much smaller, and they did not take into account the priorities. The campaign was short, and even if the soldiers did not fight, the Romanian army lost over a thousand soldiers because of a cholera epidemic that has revealed all

the flaws of military and sanitary organization, flaws which will be seen, unfortunately, in 1916, when Romania enters World War I.

The famous historian and doctor Constantin Kirişescu remarked, referring to the Romanian army's participation in the Second Balkan War: "*Neither ago we could not keep the Army ready for war at any time. Political considerations - our relationship with the powers of the Triple Alliance - made her seem unnecessary; financial considerations makes it seem impossible. As a new and poor country, hampered by periodic crises, had many things to organize that we thought that it would have been wiser to keep the money for other needs, which seemed more urgent. Therefore, the Balkan war and our intervention in and Bulgaria surprised us with an army where there is a lot of gaps*" (Kirişescu, 1989).

The campaign in Bulgaria is not an evidence of great bravery for Romanian soldiers as Romanian army did not encounter significant resistance from the Bulgarian troops, which were concentrated against Greece and Serbia.

Most important enemy of the Romanians was not the Bulgarian army, but the outbreak of cholera among the Romanian army. The disease appeared not only in Romanian soldiers, but also to locals and Turkish prisoners. The reasons of occurrence of cholera are multiple. Among them, an important reason is the poor organization and equipping of military service, which led to deficiencies in terms of food and sanitary condition of the Romanian troops.

From the notes of Professor Ion Cantacuzino, who was sent to Bulgaria as a Army hygienist and Military Health Service chief consultant to try to control the cholera epidemic, we learn that: "*In January 1913, 40 cases of cholera broke out in a group of 800 Turkish prisoners came from Turkey and held in Vratsa. Climax - 16 fatalities. On 15 June, three cases of disease flare among some Bulgarians living in the city, came from Thrace. Very soon, in the same house, two women (mother and daughter) get sick; daughter died in about three days (July 1), the mother is in agony; she is isolated at home*" (Cantacuzino, 1965). These notes, resulting from a rapid epidemiological survey carried out immediately after arrival at Vratsa by Professor Cantacuzino, and the fact that the Romanian army was free from cholera when crossing the Danube, demolish the Bulgarian side allegations and demonstrate that cholera was not brought in Bulgaria by the Romanians.

Contamination causes are multiple, of which we mention a few: the existence of cholera outbreaks in Bulgarian civilian population, contact with the sick people in hospitals because of

weapons search, unexamined water consumption (rudimentary wells, wells in which the Bulgarians threw animal carcasses, water from rivers, water from ponds and puddles), bathing in infected rivers or together with Turkish prisoners, lack of hygiene in the camp (lack of latrines, lack of disinfectants for latrines, etc.), general lack of hygiene and prophylaxis notions, the insufficient medical personnel and lack of epidemiological training.

Historical aspects of the emergence of cholera cases in 1913, during the Balkan War

The first case of cholera in the Romanian soldiers appeared on the July 13, five days after the first army corps crossed the town of Vratsa, Bulgaria. It would have gone unnoticed unless news about the cholera came from all troops stationed around Orhanian.

Then the epidemic expanded rapidly due to fatigue accumulated by soldiers during the forced march.

On July 20 there were already 2,000 cases, and the disease was spreading rapidly. "They asked for doctors everywhere, but doctors were helpless. They could have done more, by preventive and hygienic measures, but they were not listening "(Argetoianu, 1991).

The decision of vaccination was taken immediately, but only on July 22 it could have been started. Besides the soldiers who retreated back across the Danube, the civilians in the towns through which they passed soldiers were vaccinated. Because of the rapidity of intervention and the systematic way of acting, last case of cholera was reported in November.

A new method of combating cholera in 1913, during the Balkan War

Great Romanian experience, as will be known the cholera vaccination in outbreak, was possible because in 1912, Professor Ion Cantacuzino sent a team of doctors headed by C. Ionescu-Mihăiești to study epidemic in Bulgaria during the first Balkan War. The consequences of these safeguards have resulted in a collection of important epidemiologically and microbiologically data.

Cholera strains were brought and they made preparative for the production of large amounts of cholera vaccine, by developing of methods for the mass culture in large flasks. The vaccine

resulted was a polyvalent vaccine, composed of 25 races of which 15 brought from Bulgaria. Vibrio emulsion was heated for one hour and a half at a temperature of 55-56°C. Vaccine concentration was between half a billion and one billion microbes per cm³ (Cantacuzino, 1920).

The makeshift hospital at Orhanian, where 50,000 Romanian soldiers were camped, Ion Cantacuzino began vaccination. The first inoculation was made on July 21, 1913 with a dose of 1cm³ to all soldiers without exception. A second inoculation with a dose of 2 cm³ was made on July 27, and the third inoculation with a dose of 3 cm³ was made on August 2. Between the first and third inoculation was further observed daily instances of 100-200 daily. But immediately after the third inoculation, the epidemic suddenly stopped, yet the next day, and there were recorded only two new cases of the disease.

Due to the preventive measures taken in a relatively short time, but mostly because of the Professor Ion Cantacuzino's vaccine, the cholera epidemic was stopped before the returning of troops in Romania.

The health campaign of 1913 is overwhelming marked by the figure of Professor Ion Cantacuzino. His professional acumen, coupled with mass audacity to apply freshly prepared vaccine, limited the number of victims of cholera. The fruitful activity of research, education and practical application of creative and organizing these activities for the benefit of public health care in our country, he was rightly considered among the creators of the Romanian scientific medicine, founder of the Romanian school of experimental medicine and microbiology.

Ion Cantacuzino - leading figure of the Romanian medicine, a central figure of the campaign of 1913

Professor Ion Cantacuzino (1863 - 1934), one of the most important scientific figures of Romania, is among the creators of Romanian experimental medicine, founder of the Romanian school of microbiology. His findings have particular importance in the treatment of cholera, epidemic typhus, tuberculosis and scarlet fever (Iorga, 1936).

What deserves to be highlighted in relation to how Professor Cantacuzino conducted vaccination campaigns in 1913 and 1916 is that they were designed according to the criteria of the most demanding scientific experiment with a perfect record of epidemiological and laboratory data so that the results could enter in the annals of epidemiology.

Ion Cantacuzino remains a role model for current generations of physicians, regardless where they learn or what country they profess.

CHAPTER 3 The Health Campaign from 1938

Conducting health campaign in Romania

The health campaign from 1938 was inspired by the concern of King Carol II of Romania, who realized that health is an important asset of the population and should be preserved and enhanced. The attention that King Charles II granted to population's health emerges from his speech in 1937 in which this problem is situated immediately after national defence: "*After the primacy of national defence, must follow the primacy of public health*". The campaign lasted two months, from early August to late September, was organized and conducted by the Ministry of Health and Social Works, entitled "Sanitary offensive" and benefiting from the help of local authorities.

The campaign had six objectives, namely (Panaitescu, in red. 1938):

- execute health records,
- full implementation of collective hygiene measures,
- implementation of measures for individual hygiene,
- controlling swimming pools and school premises,
- measures for control of medical and social diseases,
- propaganda measures.

The campaign was conducted in both urban and rural.

To organize this action, the authorities have used, in addition to medical personnel engaged in health services and trainees, residents and interns in hospitals. Some of them were hired temporarily, only for those activities. They used also nurses, midwives and so-called health agents. Each team consisted of two people. Doctors were forced to lecture at the end of the day, about public health issues. There were, thus, more than 9,100 conferences on sanitation, hygiene and other public health problems. The medical staff was organized in 429 teams. In addition to

the medical staff they used a number of 144,706 other people (priests, teachers, police officers, administrative staff, etc.). In total, 152,497 people have contributed to this campaign throughout Romania.

The campaign was taken not only at the individual level, but were considered also households, wells, latrines, stables etc. At that time there were over 4.2 million households across the country, of which more than 85% were in rural areas. Almost 74% of all households were visited during the two months of the campaign, half of which have been cleaned and 6% disinfected.

The most important part of this campaign was the examination of persons and the discovery and treatment of their diseases. About 7.77 million individuals were examined, over 42 thousand X-rays have been carried out, over 77 thousands samples of blood were analyzed and there have been more than 360 thousands of injection. An important result of this campaign was the preparation of sanitary monographs of localities. These monographs had a standard format, comprised five chapters and an appendix providing data on geography, topography, vegetation, climate, demography, household hygienic-sanitary status, organization and sanitary infrastructure and many other elements that define the location.

Campaign of 1938 in Brasov - case study

Implementation of the programme and the campaign logistics were decided at the meeting of all county head physicians held at Sibiu Health Inspectorate. The Braşov County head physician collaborated with the County Prefect's Office to establish the human and material resources needed to run the campaign, in addition to those provided by the Ministry of Health. There were family cards for social surveys printed after the model established in Sibiu. The 29 villages selected for the study were the least developed ones as to both economy and culture and included Tohanul Vechi, Tohanul Nou, Zărneşti, Poiana Mărului, Holbav, Râşnov, Bran, Sohodol, Simon, Moieciu de Jos, Moieciu de Sus, Holbav, Crizbav, Fundata, Peştera, Şirnea, Măgura, Prejmer, Budila, Dobârlău, Mărcuş, Întorsura Buzăului, Vama Buzăului, Barcani, Sita Buzăului, Târlungeni, Satulung, Cernatu. In other villages the study was conducted with the support and guidance of local physicians. The involvement and support of the municipalities materialised in supplying, in total or in part, the team members' meals, and in making available the dispensaries

by sharing drugs from their reserves and providing the needed tools. The bath-train and mobile radiological investigation unit operated by a schedule such as to reach all municipalities in the county.

Seven physicians sent out by the ministry participated in the study conducted on the 29 villages, as well as the county's head physician, 15 physicians from districts in the county, nine nurses, 56 municipal midwives, two health workers and 8 specialist physicians. Daily, physicians had to fill in the patients' files, whose first page was subsequently transcribed by municipalities in order to have a clear record of the population, and a protocol. At the end of the campaign they were used for devising the final report, which included photographs taken during the campaign - the bath-train (Fig.2), radiological examinations in the field, etc. Expenses totalled 53,000 lei, of which 10,000 were for ambulance transport, 10,000 lei for prints, cards and dissemination, 26,000 lei for daily allowances and 7,000 lei for miscellaneous.

In the health campaign from 1938 there were notable results. Almost a quarter of the total population was examined; laboratory investigations were carried out; some patients were examined radiological. Doctors have prescribed recipes and distributed free medicines for many patients, untreated wounds were dressed, and they have given injections suitable for infectious diseases or syphilis. The teams have ordered and performed disinfection of houses with contagious patients, have dewormed and have expanded of personal hygiene upon the uncontaminated inhabitants (bath-trains).

CHAPTER 4 Antimalarial campaign of 1946 - 1952

Malaria - epidemiology

Malaria is a disease of infectious nature that characterizes the tropics (or predominantly tropical - mostly in Africa, South East Asia, Central America and South America) and can endanger the patients' lives. Infection is part of parasitizes class, diseases caused by parasitic, protozoa. Malaria is caused by protozoan Plasmodium, transmitted by an insect vector, namely the female anopheles mosquito.

Studied over the centuries, malaria is even nowadays a challenge to medicine. Malaria is an ancient disease, references to what was certainly malaria occurred in a Chinese document from about 2700 BC, clay tablets from Mesopotamia from 2000 BC, Egyptian papyrus from 1570 BC and Hindu texts from the sixth century BC. Such historical records should be viewed with caution, but advancing towards more recent times we started to walk on firmer ground. Early Greeks, including Homer, in about 850 BC, Empedocles of Agrigentum in 550 BC and Hippocrates in about 400 BC knew well the poor health, malaria fever and enlarged spleen observed in people living in marshy places.

Malaria in Romania

Malaria was common in Romania until successful campaigns of the 20th century. Researchers Ion Cantacuzino, George Zotta, and Mihai Ciucă made important early contributions to the understanding of epidemic-endemic situation of malaria in Romania. Malaria epidemic recorded a peak in 1942, with an incidence of 1218 cases per 100,000 inhabitants, following the disastrous effects of the Second World War. In coming years, the incidence increased from 421.5 cases per 100,000 inhabitants in 1944 to 7351 cases per 100,000 inhabitants in 1946. A committee was formed for Malaria in February 1947 with the mission to reorganize the fight against malaria in Romania based on international guidelines. Following the adoption of appropriate methods to eradicate malaria, like spraying endemic areas with residual insecticides associated with chemotherapy and chemoprophylaxis with synthetic products, the indigenous cases disappeared rapidly, recurrent cases were greatly reduced, and the number of imported and induced cases remained constant or even increased slightly, probably due to increased traffic and use of blood transfusions. No indigenous case has been registered in Romania in 1962. In 1963 the Romanian authorities declared to the World Health Organization eradication of malaria in the region.

Confidence in eradicating malaria between the two World Wars was replaced by a determined effort to control it. By 1940 a new drug, chloroquine, and an effective insecticide, dichlorodiphenyl trichloroethane (DDT), have renewed the last initiative (Ciucă et al., 1951). In 1955, the World Health Organization (WHO) launched a global campaign to eradicate malaria.

Malaria control organization (1923-1946)

As will be shown below, antimalarial campaign in Romania was initiated in 1923, but official eradication campaign began later in 1947. Malaria was common in Romania before the largely successful campaigns of the twentieth century. The disease was gradually brought under control by a combination of strategies for vector control and chemotherapy, and nowadays in Romania are reported only sporadic cases of import.

From the epidemiological point of view, campaigns against malaria highlight how malaria was acquired and identify effective strategies developed to combat the disease. Following the campaign between 1923 and 1926, an amount of data has been gathered on Anopheles mosquito habitat in relation to human settlements and the necessary strategies that could be applied to attack modes of reproduction. Data was also processed on the use and distribution of the most effective drugs that could be provided to people affected by this disease. From the point of view of historical geography, about 30% of the Romanian territory at that time presented favourable conditions for malaria endemic (Ciucă et al., 1957).

Malaria campaigns were led by some key personalities. Professor Ion Cantacuzino (1863-1934) was a distinguished member of the Romanian Academy and member of the Hygiene Committee of League of Nations. In 1901 he founded the first laboratory of bacteriology in Romania, which was the basis of Dr. Ion Cantacuzino Institute founded in 1921 in Bucharest. His disciples, Professor Mihai Ciucă (1883-1969) and Professor George Zotta (1886-1942), were both members of the Romanian Academy and dedicated to their activities in the campaign against malaria. Professor Mihai Ciucă was secretary of the League of Nations Malaria Commission (1928-1938), and Deputy Director of Dr. Ion Cantacuzino Institute (1934-1962). He was awarded the Darling Foundation Award in 1966, for international missions successfully completed, on behalf of the League of Nations and WHO.

During the first two years (1923-1924), many unknown outbreaks of malaria have been discovered, mainly due to documentation and statistical collaboration. In 1924, the Malaria Commission appointed by the Health Committee of the League of Nations (including country expert, Mihai Ciucă) has completed the first round of investigations in malaria in countries of South-East and Eastern Europe - Yugoslavia, Greece, Bulgaria, Poland, Romania, Soviet Union, and Italy - to study antimalarial methods used in these countries and to make recommendations for the organization of the fight against malaria. The results of these studies have formed the

subject of two reports of endemic malaria in Romania, presented at the League of Nations by Ciucă and Swellengrebel (1925).

Studies were conducted on the ecological peculiarities of *Anopheles maculipennis* group to identify continuous transmission factors and define specific characteristics of malaria endemicity areas of Romania (Martini & Zotta, 1934). Epidemiological investigations conducted by George Zotta and co-workers in 1938 established three major regions of malaria in Romania, as follows (Zotta & al., 1939):

1. Large areas of flooding and water stagnation. These included the Danube and its main affluents (Prut, Siret, Arges, Olt). This region was characterized by the movement of the species *An. maculipennis messeae* and the gap between the increased number of mosquitoes and relatively low frequency and mild clinical progression of the disease.
2. The inland regions represented by the Romanian Plain characterized by the presence of the species *An. maculipennis maculipennis*, *An. atroparvus maculipennis* and *An. maculipennis messeae* and high endemicity, severe course of the disease with splenomegaly sea.
3. Black Sea species characterized by the presence of *An. Sacharov (ellutus)* and *An. maculipennis atroparvus* and high endemicity with a very severe course of the disease, numerous complications and significant mortality rate.

Some field laboratories for malaria, created in 1931, worked only six months a year (May-October), but since 1937, have worked throughout the year.

Centres for malaria treatment were created in 1927 at Socola Hospital in Iasi, and in 1935, at the Central Hospital in Bucharest. These centres offered the same time the opportunity to study natural infection and the basis for experimental research related to biological strains of local parasites; chemotherapeutic value of various synthetic drugs; pathophysiology and immunity to malaria (Ciucă & al., 1934), together with local species of malaria parasites susceptibility and parasitic selective spectrum of each substance (Cantacuzino & Lupasco, 1944; Ciucă & al., 1948).

Malaria Eradication in Romania (1947-1963)

In 1949, the Ministry of Health has created a vast specialized network of institutions against

malaria formed in the early years of a number of 28 antimalarial stations, 36 sub-stations, appendices, and an independently basic centre, distributed in 12 regions with endemic intense or moderate malaria. These sections, equipped with a staff of 800 highly trained specialists, malariologists, entomologists, microbiologists, hygienists, lab technicians etc., were equipped with blood and entomological laboratories and equipment, materials and equipment necessary for application of the anti-anopheles methods (Ciucă & al., 1957).

Special units and those belonging to major health organizations - regional dispensaries, hospitals - were provided by the Ministry of Health with sufficient quantities of anti-malarial drugs that were to be distributed free to population. The success of rapid distribution of drugs in large numbers of sick people was also provided through the voluntary cooperation of people in areas with malaria and grouped in health organizations.

The fight against vector was known as dezanofelizare. The three main species of Anopheles identified were *An. maculipennis typicus*, *An. messeae maculipennis* and *An. maculipennis atroparvus*. Specialists in those days thought that a minimum density of about 20 Anopheles per household makes possible the transmission of disease.

Spraying campaign began annually in May and held to July. The main insecticides used in this process were DDT and HCH (lindane). From the chemical point of view, DDT differed from other insecticide, both by high insect toxicity and by a single action. DDT was a residual powder, that means that effective action continues long after spraying. The houses were sprayed with a 5% solution of DDT dissolved in kerosene (40 ml/m²) leaving a deposit of about 2g/m² on the walls. A solution of 6.25% HCH dissolved in kerosene was sprayed on the walls (40ml/m²), resulting in a final volume of 1g HCH /m² after evaporation of the kerosene. The surface was impermeable, the residual effects lasted longer, even up to 1 year (Ciucă & al., 1951). The best yield was obtained from spraying houses with DDT every 6 months and HCH every 3 months (Ciucă & al., 1957).

National campaign to fight malaria comprised four phases distributed as follows (Ciucă & al., 1957):

1. The first stage (1949-1950) had the following objectives: to fight against vector anopheles, to reduce outbreaks and to implement chemical prophylaxis for exposed population. The results were immediate and extraordinary, reducing morbidity by 30% in late 1949 (1,462 cases per 100,000 population) compared to 1948 (2,131 cases per

100,000 inhabitants). In 1950, morbidity decreased to 585.3 cases per 100,000 inhabitants.

2. The second stage (1951-1952) continued spraying of insecticides began in the first stage and the consolidated results previously obtained. Total number of places de-anophelized increased from 701 in 1949 to 984 in 1951. However, total eradication of the vector was impossible (Ciucă & al., 1951). Inactivation of human tank included early and accurate diagnosis of new cases of malaria and chemoprophylaxis therapy application throughout the malaria season (April to October). Therefore, morbidity experienced a major new decline, reaching 63 cases per 100,000 inhabitants in 1952.

3. The third stage (1953-1954). Spraying insecticides was discontinued in regions with no new cases of malaria or only sporadic cases. In 1954, morbidity decreased to 5.3 cases per 100,000 inhabitants (Ciucă, 1966).

4. The fourth phase (1955-1963). Expert Committee on Malaria has prepared a guide to the technical and administrative principles involved in achieving eradication of malaria. The above program was strictly applied in Romania since 1955, when there was a morbidity of 2.2 cases per 100,000 population (308 new cases and 75 relapses) (Ciucă, 1966).

Campaigns against malaria have shown that human actions can overcome and defeat the disease that once devastated entire families. Since then, there have been no domestic documented cases; only an average of about 20 imported cases per year were reported (WHO Regional Office for Europe, 2009).

Mihai Ciucă - Cantacuzino's successor

Personalities of Romanian medical life that influenced the first half of the twentieth century, Mihai Ciucă was a Romanian scientist, researcher and teacher in the field of bacteriology, infectious diseases and vaccines, member of the Romanian Academy (Iftimovici, 1975).

He did specialization in the field of bacteriology, hygiene and infectious diseases at the institutes run by Victor Babes and Ion Cantacuzino in Bucharest.

He taught at prestigious institutions such as the Institute of Hygiene in Paris, Marchiafava Institute from Rome, Institute of Tropical Diseases in Hamburg; he also taught at Philadelphia, Singapore, Bucharest and Iasi.

Professor Mihai Ciucă's name is related to: first immunization with cholera vaccine, treatment of nervous syphilis and organizing the first centre for therapy of malaria, research on the biology of bacteriophages which led to the discovery in 1920 with Jules Bordet of the phenomenon of lysogenie, organization of National Reference Centre for bacteriophages in Bucharest, malaria eradication in Romania and use of this experience for international missions carried out for the League of Nations and, after World War II, World Health Organization. For all these achievements he was awarded the Darling Foundation Award at the festive meeting of the 19th WHO World Assembly on 12 May 1966 in Geneva.

Particular character, rigorous scholar, appreciated and respected doctor, Mihai Ciucă has devoted his entire life to study, improvement, being a model and a reference name in the history of medicine.

CHAPTER 5 Conclusions

The first part of the twentieth century witnessed a dramatic fight against infectious diseases and public health system organization. In this context the present study aims to analyze three health campaigns, which were chosen because of the large number of people who benefited from them, medical personnel involved and novelty in preventing certain diseases.

The first campaign studied was the one during the Second Balkan War in 1913 to combat the cholera epidemic among Romanian army.

Quarantine measures, but mostly Professor Ion Cantacuzino's intervention, who vaccinated all Romanian troops stationed in Bulgaria with a vaccine produced by himself. This action carried out in 1913 in the Second Balkan War, was named the "Great Romanian experience", its effectiveness being recognized among scientists of the time.

A second major campaign was that of 1938 performed by the Ministry of Health and Social Works with the help of local authorities and entitled "Sanitary offensive".

The objectives of the campaign were: health records execution, full implementation of collective hygiene measures, implementation of measures for hygiene individual school premises beaches and control measures for disease control medical and social measures propaganda. The campaign took place both in urban and in rural areas.

Following these campaigns a national report was prepared with all the health problems of the population and measures have been taken to improve personal and collective hygiene, combating social and infectious diseases and promote better health.

The last of the campaign was the one to eradicate malaria and it was conducted between the years 1946-1952. While the campaign started much earlier, in 1923, it failed to lead to the eradication of malaria but the control of this infectious disease. Although the initiative belonged to the League of Nations, the Health Committee whose member was Mihai Ciucă, Romanian health authorities continued investigations and research to discover principles and methods in the fight against malaria. Following measures, malaria was declared eradicated in 1963.

The model of combining vision and courage to use a new method, novel and even revolutionary (outbreak vaccination), or a thorough organization of a campaign across the country, which charted the investigated areas in sanitary terms and combined detection with prevention (1938 campaign), or if it's a campaign that succeeded ultimately to lead to the eradication of a disease that seemed impossible to remove because of weather conditions and the large number of vectors or carriers that were a constant source, however is certainly an example that can and should be followed by all those working in public health.

Conducted with the contribution of outstanding personalities of Romanian medical life, whose competence has been recognized beyond the borders, as Ion Cantacuzino or Mihai Ciucă their work is based on a medical system whose organization, at least in the health campaigns, especially in the military medicine has the spotlight on Dr. Carol Davila.

The analyzed campaigns prove again the veracity of academician Șt.M.Milcu's words: "In few professions the responsibility is so overwhelming that in medicine. Acting on man, the doctor gives the word, attitudes and judgments an activity which results in a high risk. His scientific formation and his social ability invest him with the trust of those who appeal to his power and allow him to take sovereign decisions, often at the turn of life and death."

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