APPLICATION OF ICD-10 ON THE CAUSES OF DEATH FROM THE REFORMED-CALVINIST BURIAL PARISH REGISTERS IN THE MUREȘ VALLEY, TRANSYLVANIA

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Abstract The aim of this paper is to show that the International Statistical Classification of Diseases and Health Related Problems, 10th revision (ICD-10) can be applied on causes of death from the parish registers from Transylvania. The sources consist of burial parish registers for the Reformed-Calvinist parishes in three villages overlapping for the period 1859-1930. All the causes of death could be coded and classified according to ICD-10. Furthermore, the analysis will be in regard to gender and age of the deceased and the seasonality of the main causes of death. In addition, some aspects of the epidemiological transition will be observed.
Keywords ICD-10, cause of death, mortality, historical demography

In the 19th century, the European continent was confronted with frequent epidemics of infectious diseases. The most common causes of death were tuberculosis, smallpox (especially where the vaccination was not conducted on a large scale), measles, scarlet fever, whooping cough etc. Also, the respiratory diseases such as influenza and pneumonia were frequent, and diseases of the digestive system were recorded especially in the summer. Even though the parish registers recorded many diseases as causes of death, there still are some gaps. Occasionally, only symptoms are recorded as a cause of death or a vague terminology was used under which other diseases were hidden. Towards the end of the century, the parish registers started to record non-infectious diseases such as cardio-vascular and respiratory diseases which is a sign of a better understanding of the diseases, their terminology became more known, and the improvement of the sanitary system.

Starting with the second half of the 19th century, in many countries from the western part of the continent, a decline in the impact of infectious diseases and an increase in the impact of degenerative and man-made diseases are noticed. This is the main aspect of the epidemiologic transition theorized by Abdel Omran[1]. The classical model for the epidemiologic transition is based on England where this change in diseases which led to death is more visible. Also Thomas McKeown, in his studies regarding England and Wales, shows how, between 1851 and 1900, the numbers of deaths related to infectious diseases, especially tuberculosis, declined and diseases of the digestive, nervous and circulatory systems became more frequently causes of death[2]. In the centre and eastern part of continent the time frame for the characteristics of the transition shifts towards the end of the century and the beginning of the 20th century, because they are susceptible to socio-economic conditions. In Prussia, Germany and the Austrian-Hungarian Empire, the infectious disease remained the primary causes of death until the beginning of the 20th century[3]. Tuberculosis had the highest impact in these territories, followed by diphtheria, cholera, scarlet fever, and influenza[4]. In the Poznań province (Poland), scarlet fever and smallpox were responsible for almost 40% of the number of deaths until 1870. After this period, there is a decline in the impact of infectious diseases and an increase in the number of degenerative diseases, especially heart attack, stroke and paralysis[5].

In the 20th century, up until 1930 at least, the impact of infectious diseases declined even more, including tuberculosis and pox epidemics, the year 1918 is the last moment when an epidemic, the Spanish Flu, caused the deaths of millions of people. Degenerative diseases, especially the cardio-vascular ones, increased in intensity. Also in this period vague causes of death such as "old age" became less frequent and different illnesses for people older than 60 were recorded. This was another reason the number of deaths due to degenerative diseases increased.

For the second half of the 19th century in Transylvania, the primary sources for researching different epidemic diseases are the parish registers and the press (newspapers).Various studies on the burial parish registers revealed that the main causes of

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[1] Abdel R. Omran, "The epidemiological transition: A theory of the Epidemiology of Population Change", *The Milkbank Memorial Found Quarterly*, 49, no. 4, part 1 (1971), 509-538, Accessed October 2017, http://www.jstor.org/stable/3349375.

[2] Thomas McKeown, R.G. Record, "Reasons for the decline of mortality in England and Wales during the nineteenth century," in *Population Studies*, 16, no. 2 (1962): 102, accesed October 2017, http://www.jstor.org/stable/2173119.

[3] Andrew Davidson, *Geographical Pathology: an inquiry into the geographical distribution of infective and climatic diseases* (Edinburgh & London: Young J. Pentland, 1892), 67-100.

[4] Ibid., 74-100.

[5] Grażyna Liczbińska, *Lutherans in the Poznań province. Biological dynamics of the Lutheran population in the 19th and early 20th centuries* (Hamburg: Verlag Dr. Kovač, 2015), 76-88.

death were tuberculosis, typhus, pox and diphtheria[6], but also respiratory diseases such as pneumonia and influenza[7].

The press of the time also noted the existence and spreading of epidemic diseases such as a diphtheria epidemic in 1871[8], pox epidemic in 1880, small pox epidemic in 1881[9] and influenza epidemics between 1889-1890 and 1899-1900[10].

Official statistics for Transylvania regarding causes of death are available only from 1901 to 1910, but the information is offered for every county and every village. Out of the infectious diseases, tuberculosis had the highest impact, 177.996 deaths were recorded in Transylvania because of this illness. The second infectious disease with a high impact was scarlet fever causing 31.680 deaths and the third was diphtheria. Over 17% of the total number of deaths in this period is attributed to congenital weakness and over 14% to weakness from old age. The number of deaths caused by pneumonia is also high, representing 11% from the total number of deaths in Transylvania[11].

All these types of sources reveal that in Transylvania, epidemic diseases were the main causes of death, followed by diseases of the respiratory system. Congenital debility was the main cause of death for children under the age of 1, just as senility and old age were the main causes of death for older people.

Historical demography is a recent field of study in Romania, only in the last 20 years students and researchers from Babeș-Bolyai University started to study different aspects of historical demography using the only sources available which offer information at a micro level, the parish registers. This sources offer information about the baptisms, marriages and deaths in a parish at an individual level. As a result, these are the primary sources used in studies about certain demographic events, correlate of course with other types of sources which offer more general information. Other sources available are the Hungarian Statistics of different aspects of life, but the information refer mostly of Transylvania, and only some are available on a county level. There are many research papers which observed a demographic phenomenon in a parish or a village level in Transylvania.

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[6] Ioan Bolovan, *Transilvania între Revoluția de la 1848 și unirea din 1918. Contribuții demografice* (Cluj-Napoca: Centrul de Studii Transilvane, 2000), 157; Alina Ioana Șuta, "Aspecte privind evoluția demografică a orașului Câmpia Turzii (jud. Cluj) între anii 1855-1900", in *Transilvania în secolele XIX-XX. Studii de demografie istorică,* ed. Sorina Paula Bolovan, Ioan Bolovan, Corneliu Pădurean (Cluj-Napoca: Presa Universitară Clujeană, 2005), 190.

[7] Alina Ioana Șuta, "Aspecte privind evoluția demografică a orașului Câmpia Turzii (jud. Cluj) între anii 1855-1900", in *Transilvania în secolele XIX-XX. Studii de demografie istorică,* ed. Sorina Paula Bolovan, Ioan Bolovan, Corneliu Pădurean (Cluj-Napoca: Presa Universitară Clujeană, 2005): 189.

[8] Oana Habor, *Incursiuni pe tărâmul medical transilvănean (1876-1914). La răscrucea dintre sensibilitatea tradițională și provocările modernizării* (Cluj-Napoca: Mega, 2015): 96-97.

[9] Ibid., 86-89.

[10] Ibid., 97-98.

[11] Traian Rotariu, *Mișcarea naturală a populației între 1901-1910 Transilvania. Vol II. Cauze de deces* (Cluj-Napoca: Presa Universitară Clujeană, 2005), 8-11.

Since Mureș Valley is located geographically at the border of the Cluj County and the Alba County, some studies on parishes near the three settlements analysed in this paper may offer some insights on different aspects of mortality in this area. Daniela Deteșan in her study on the Cluj County observed that between 1900 and 1910 the infectious diseases with the highest impact were measles, scarlet fever, diphtheria and tuberculosis[12]. Ciprian Rigman in his work regarding different aspects of life among Orthodox parishes in Turda and in the neighbouring villages, observed the same pattern of a high impact of infectious diseases, especially tuberculosis, pneumonia, scarlet fever, diphtheria and typhus[13]. Crinela Holom studied the demographic aspect in the Alba County in the second half of the 19th century and the beginning of the 20th century in 7 parishes. With regards to mortality, she observed the fluctuation of the number of deaths and different diseases, also offering different explanations. The most predominant causes of death were the epidemic diseases, such as cholera in 1873, but also diphtheria, measles, and pox epidemics[14].

The present study focuses on the applicability of the *International Statistical Classification of Diseases and Health Related Problems,* 10th revision on causes of death recorded in the burial parish records of three communities from Transylvania. These communities are Războieni-Cetate, Noșlac and Mirăslău with complete parish records overlapping for the period 1859-1930. The analysis focuses on the causes of death recorded in the parish register and how they are coded using ICD-10, and the evolution of mortality correlated with the economic, social and cultural events is only slightly covered. In addition, the present article includes a series of analyses of the epidemic diseases present, the most predominant diseases are correlated with gender, age and the seasonal movement of mortality. Some aspects of the epidemiologic transition will be observed in these parishes, mainly the reducing of the impact of infectious diseases.

The international classification of cause of death (ICD-10)

In the 19th century, the idea of a classification of the causes of death used on a larger scale which simplified the works in the field of medical statistics emerged. As a result, different classifications of diseases were published in the second half of the 19th century in England. During the international conferences in the field of statistics (first one in 1853 in Buxelles) the

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[12] Daniela Deteșan, "Mișcarea naturală a populației comitatului Cluj între 1870 și 1910", in *Om și societate. Studii de istoria și populației României (sec. XVII-XXI),* ed. Sorina Paula Bolova, Ioan Bolovan, Corneliu Pădurean (Cluj-Napoca: Presa Universitară Clujeană, 2007), 339-353.

[13] Ciprian Rigman, *Biserică, școală, populație în Protopopiatul Ortodox al Turzii la sfârșitul secolului al XIX-lea (1880-1900)* (Cluj-Napoca: Argonaut, 2015), 182-205.

[14] Elena Crinela Holom, *Individ, familie, comunitate. Comportament demografic, relații de familie interetnice și interconfesionale în satele din trecutul Albei (1850-1910)* (Cluj-Napoca: Mega, 2009), 49-58.

first international classification of causes of death was developed[15]. Since then it was revised multiple times. The current edition was released under the World Health Organization (WHO) in 1992 and applied starting with 1993 under the name *International Statistical Classification of Diseases and Health Related Problems*, 10th revision (ICD-10).

This international classification consists of a list of all the diseases discovered until 1992 and categorizes them to the smallest of details. The purpose of ICD-10 is to classify the causes of death and to be applied in the medical system, but also in the areas where causes of death are studied. This classification attributes numeric codes to diseases which allow for a better statistics analysis and also allows for comparisons to be made between regions or even countries. Although it may seem more appropriate for contemporary studies of mortality, the classification includes numeric codes for diseases without any specifications. As a result it can be used to classify the causes of death in past populations[16].

Currently ICD-10 is used on a national scale in Germany, Russia, Sweden, United Kingdom, United States of America, Czech Republic, France and other countries and was translated into the Romanian as well. Mostly it is used in classifying recorded causes of death in death certificates nowadays and in studies concerning the actual situation.

Some researchers started applying the previous version, ICD-9 to causes of death in historical populations, mostly starting with the second half on the 19th century. Concerning this edition (the 9th revision) there were numerous assessments that cannot be applied on causes of death for the populations in the past. Many causes of death recorded in historical populations were just symptoms which today are not considered to lead directly to death and can be attributed to many diseases[17]. Fortunately, ICD-10 has a whole chapter dedicated to classifying symptoms. This makes it possible to classify every cause of death recorded in the parish register including "ordinary death" (R99) or "long disease" (R69). Every disease in ICD-10 has different codes for the localisation of the ailment, the method of investigation or the manifestation of the disease. However, every disease has one code for strictly the name of the disease without any specification: tuberculosis – A16.9, gastritis – K29.7 and a code for ill-defined diseases of a certain organ, for example kidney problems – N28.9. As a result, it can be used for the diseases recorded as cause of death in the parish registers. The previous version,

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ICD-9, was largely used until the current version was implemented successfully, therefore only recently researches started using this ICD-10 in the field of historical demography[18].

As it was mentioned before, the main purpose of this study is to observe if ICD-10 can be applied to diseases recorded in the parish registers in the second half of the 19th century and the beginning of the 20th century. Thus, this article is also an attempt to include the study of mortality and causes of death in historical demography in Transylvania in the international research by using a modern technique presently used.

Methodology and sources

Three communities from the Mureș Valley were selected for observing and analysing the main causes of death: Războieni-Cetate, Noșlac și Mirăslău. The sources consist of burial parish registers for the Reformed-Calvinist parishes in these villages. These are the only sources available which contain information at an individual level such as the date of death, gender and age, in some cases the socials status, and the cause of death. The parish registers were held by the priests, and, consequently, the information they recorded based on what people declared has certain gaps. For example, in many cases of people who died over 65 years of age the cause of death was registered as weakness from old age or simply weakness. Although these villages have mixed populations, Romanians and Hungarians, the analysis was conducted only on the burial parish records belonging to the Reformed-Calvinist denomination because the diseases which lead to death are clearly recorded. In the parish registers belonging to the Orthodox and Greek-Catholic denominations the predominant cause of death recorded was "ordinary death" with no indication of the diseases which led to death. "Natural" or "ordinary" deaths can also be found in the Reformed-Calvinist parish registers but in a smaller number. The time period of the observation is 1859-1930. The total number of demographic events under observation is 1837.

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[18]Judith H. Wolleswinkel-van den Bosch *et al.*, "Mortality decline in the Netherlands in the period 1850-1992: a turning point analysis" *Social Science and Medicine*, 47, no. 4 (1998): 429-443; Inna Danilova *et al.* "Identifying potential differences in cause-of-death coding practices across Russian regions" *Population Health Metrics*, 14, no.8 (2016), 1-20, accessed October 2017, DOI 10.1186/s12963-016-0078-0; Alice Reid *et al.* "‹A confession of ignorance›: deaths from old age and deciphering cause-of-death statistics in Scotland, 1855-1949" *The History of the Family*, 20, no. 3(2015): 320-344, accessed October 2017, DOI: 10.1080/1081602X.2014.1001768.

Table. 1 The communities under observation

| Community	Number of events
Războieni-Cetate	331
Noșlac	730
Mirăslău	776
Total	**1837**

The methodology consists in exploiting the parish registers which offer information at an individual level in order to observe certain demographic patterns. The parish registers used for this paper offer information about the annual number of deaths in a parish, the gender, age and date of death for each individual. By analysing this information, certain aspects at the community level can be seen, such as the years with a high and low mortality level, which age group was most affected and the season with a highest mortality toll. The data was subjected to a cleaning and standardizing process, because more than one term could be found for the same disease and there were cases in which a term considered to be just a symptom today was used for a certain disease in the 19th century. After these processes, the causes of death were coded using the *International Statistical Classification of Diseases and Related Health Problems, the 10th revision (ICD-10)*. For conducting the analysis the programs Excel, Word and SPSS were used.

In these three communities, 117 distinctive causes of death were identified and coded according to ICD-10. *Appendix 1* illustrates the coding attribution of the disease categorised according to the structure of the main categories found in ICD-10.

The main causes of death and their predominance

First of all, we classified the causes of death recorded in the parish registers in three major categories: clearly defined diseases, symptoms, and external causes of death. As it can be seen from the graphic below, the largest category is of the clearly defined diseases, but also for a large proportion of deaths only symptoms were recorded.

Graphic 1. The categories of causes of death recorded in the parish registers.
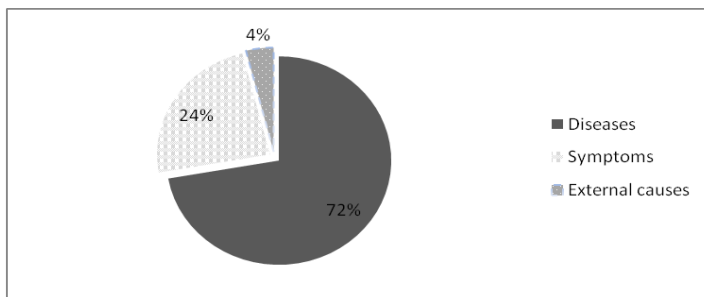
In the category of symptoms, debility (weakness) from old age is the symptom with the uppermost proportions, 38,44% from this category. Oedema is the second cause of death with the highest frequency, 15,56%, while 11,89% represent the cause "ordinary death". The external causes of death include accidents, suicide, murder, and also 12 cases of men who died on the front in the First World War or as prisoners.

The analyses focus on the predominant diseases which led to death organized by the system they belong too, accordingly to ICD-10, which is also the structure of volume 1.

Graphic 2. Classifications of the diseases form the sample according to the categories in ICD-10
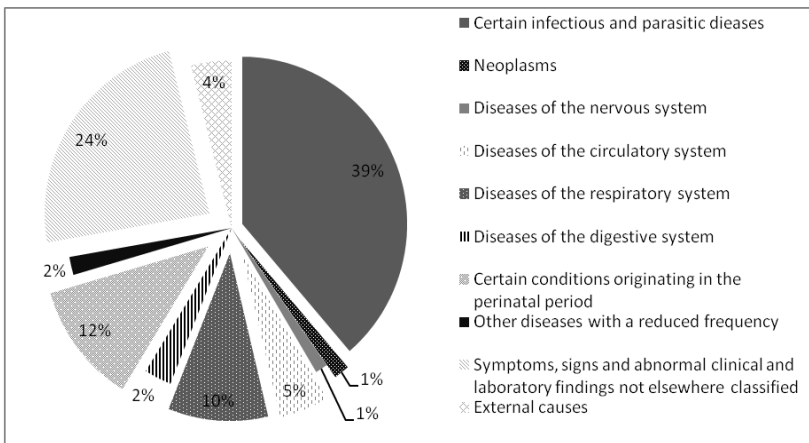
As it can be seen for *Graphic 2.*, in the three communities from the Mureș Valley the main causes of death were the infectious diseases, which represent 39% of the total causes of death. From this category, tuberculosis had the highest impact, almost 40% of the total number of deaths from infectious diseases, and was present almost every year. The highest number of deaths due to tuberculosis was recorded in 1871, more precisely 14 deaths in one year. A descending trend can be observed towards the end of the observation period. If until 1900 there were 5 deaths due to tuberculosis on an annual average, after 1900 the average declined to 3 deaths per year.

Pox epidemics had the most spectacular decline as a cause of death. Before the turn of the century an average of 3 children died because of pox every year. Afterwards the average dropped to one death annually. Diphtheria, a disease which also had a high impact in Transylvania according to official statistics form 1901-1910, was responsible for 12.09% of all the deaths due to infectious diseases. However, it completely disappeared from these parish registers after 1921. Typhus had a similar course, disappearing after 1924 from the parish registers as a cause of death.

The second category with the highest frequency is that of diseases originating in the perinatal period, 12%. For this category the term form the ICD-10 was kept. Although only two

diseases from this category were recorded in the parish registers. More precisely, 192 children died because of congenital weakness and 24 premature deaths were recorded.

Disease of the respiratory system, especially pneumonia and influenza, were also present in these communities. For the total number of deaths due to respiratory diseases, 63% were caused by pneumonia and 30% by influenza. In addition, a few cases of deaths due to bronchitis and pulmonary emphysema were also recorded.

In the category of the diseases form circulatory system, stroke as cause of death had the highest frequency, 53,93%, and deaths due to heart attack had the second highest percentage, 32,58%. In the category of disease of the digestive system, gastroenteritis was the disease with the highest frequency, 24,48%. Cases of deaths due to gastritis, gastric ulcer and abdominal hernia were recorded but in very small numbers.

During the First World War, the number of deaths increased in 1915 and 1918 in all the communities even though this territory was no affected directly by the war. In 1918 tuberculosis and influenza were the primarily reason for the increase in the number of deaths. Spanish Flu was recorded starting with October and even in the following year some cases of death due to influenza were recorded in Războieni-Cetate and Noşlac. In Mirăslău there was an increase in the number of deaths due to tuberculosis in this period, probably the cases of death due to respiratory diseases were related with the Spanish Flu or a consequence of it[19].

In observing the characteristics of the epidemiologic transition, the decline of the impact of infectious disease can be noted, as evidenced by *Graphic 3*.

Graphic 3. Five-year average of the most important infectious diseases in these communities.


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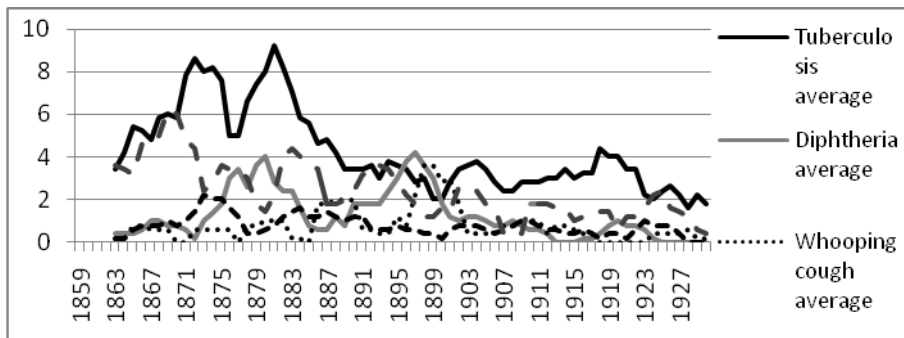
[19] Antonella Pinnelli, Paola Mancini, "Mortality Peaks in Italy in the Late 19th and Early 20th centuries: Trends by Age and Sex", *European Journal of Population*, 14, no. 4, (1998/1999): 347, accessed October, 2017, http://www.jstor.org/stable/20164043.

The most visible decline is in tuberculosis and pox, because the two also had a high impact, but one must take under consideration that typhus and diphtheria disappeared from the parish registers after the 1920's. Nevertheless, an increase in the number of deaths due to degenerative diseases was not visible yet. Throughout the period under scrutiny, only one death on average was recorded due to degenerative diseases.

Gender distribution of mortality

The next part of the analysis focuses on gender differences in causes of death. In all these communities a slight higher number of male deaths were recorded. From the total number of death events registered between 1859 and 1930, 52, 74% were men and 47,25% were women. As a result, the percentage of male mortality is also higher in case of some diseases. *Graphic 4* shows the male and female proportions in different categories of diseases, but in detail we will observe the diseases where the gender differences are higher.

Graphic 4. Gender distribution in categories of diseases
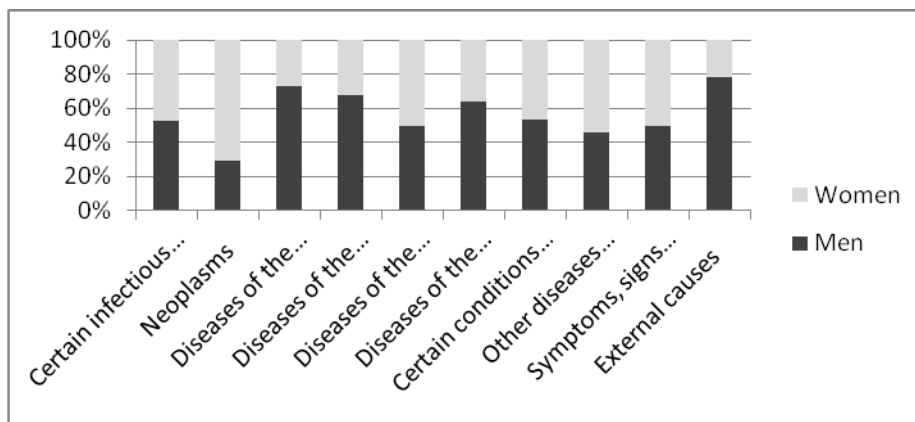
Individually on infectious diseases, typhus had a higher predominance among men. From the total number of people who died because of typhus, 64,15% were men and 35,84% were women. From the total number of deaths due to pox 53,84% were men and 46,15% were women. Also in the case of diphtheria and whooping cough, the number of men who died was higher but the differences are very small. Regarding tuberculosis, the situation is reversed – form the total number of deaths due to tuberculosis, 50,53% were women and 49,46% were men.

The graphic above shows that in the category of neoplasms the number of women who died due to cancer was higher. In the parish registers 21 deaths were due to a form of cancer or another. The predominant disease was "stomach cancer" and was the cause of death

for 8 women and 2 men. This difference in male and female proportions is the main reason why the gender difference was higher in this category.

Disease of the circulatory system is another category where the gender differences are high. Form the total number of deaths due to heart attack, 62,06% were men and 37,93% were women. In the case of deaths due to stroke, 68,75% represents the number of men from the total number of deaths due to this disease and 31,25% the number of women.

Concerning the diseases of the respiratory system, the situation seems to be balanced at a first glance, but specifically influenza had a higher impact on women. Form the total number of deaths due to influenza 58,49% represent the number of women and 41,5% the number of men. Regarding the deaths due to pneumonia almost 51% were men and 49% were women.

Age group distribution of mortality

The analysis of age-group distribution of the diseases is another aspect taken under consideration. From the total number of 1837 deaths, most of them occurred among children, out of which 24% before reaching one year and 16% between 1 and 4 years of age.

Graphic 5. Age-group distribution of causes of death
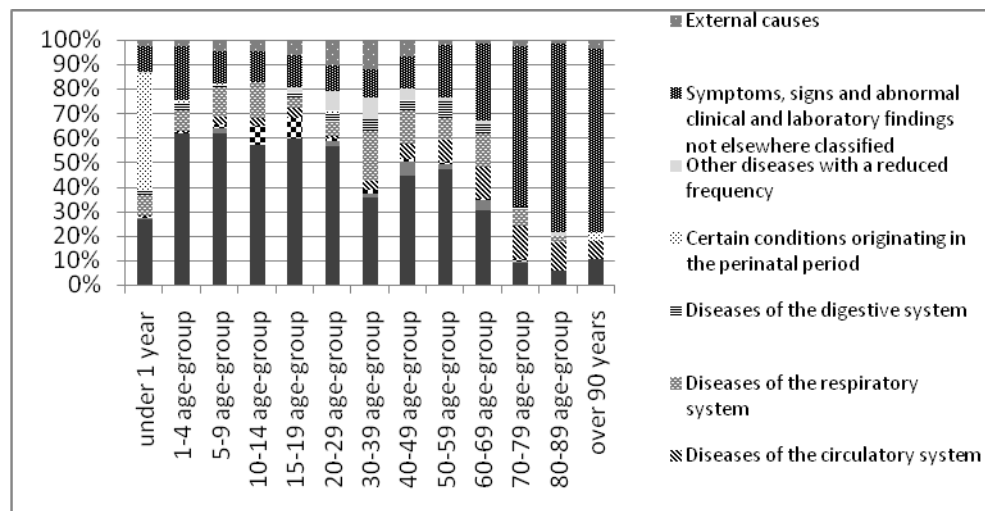
As it was expected, at all age-groups the infectious diseases had a high impact. Children between 1 and 4 years old were mostly affected by these diseases. For children who died under one year of age the most common causes of death were the diseases originating in the

perinatal period, especially congenital weakness, which represents 42,43% of the total number of death under one year.

From the category of infectious diseases, tuberculosis was present in all age groups, although it had a higher impact among people over 20 years, 73,30% of those who died from this disease being between 20 and 69 years old. Typhus was also present in all age groups, but was the most predominant in the 20-29 age–group. Diphtheria affected children in particular; 80,23% of the total cases of deaths due to diphtheria occurred in the 1-9 age-group. 55 cases of death due to whooping cough were recorded of which 53 were children between 1 and 4 years of age. It is obvious that the pox epidemics affected children especially. From the total number of deaths caused by this disease, almost 50% of them occurred among children under one year and over 33% were children with ages varying between 1 and 4 years old.

The two most predominant diseases form the circulatory system, heart attack and stroke, affected especially people between 50 and 79 years. From the category of diseases of the respiratory system, 54,34% of the deaths due to influenza occurred among children under 1 year of age. The highest percentage of deaths due to pneumonia occurred in the 40-59 age-group, 26,32%, and 22,80% were children under 4 years old.

**Seasonal movement of mortality and causes of death**

Analysing the seasonal movement of mortality in these communities it was revealed that most of the deaths occurred during spring and winter months. As can be seen from *Graphic 6.,* in these seasons the diseases of the respiratory system had a higher predominance, followed by the infectious diseases.

Graphic 6. Seasonality of causes of death
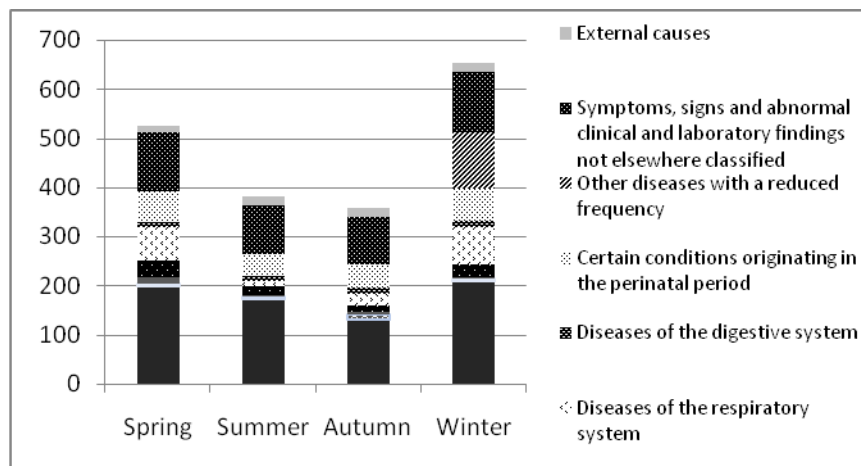
Specifically on the predominant diseases more susceptible to seasonal changes, tuberculosis was present every month of the year, with predilection in the first five months of the year and in December. The same was the case for diphtheria, which had a higher predominance in November and February. Eruptive diseases were also present every month of the year, but had a higher impact in the spring months, with the peak being recorded in March when were recorded 15% of the total deaths due to pox.

Graphic 8. Monthly differences of the main infectious diseases.
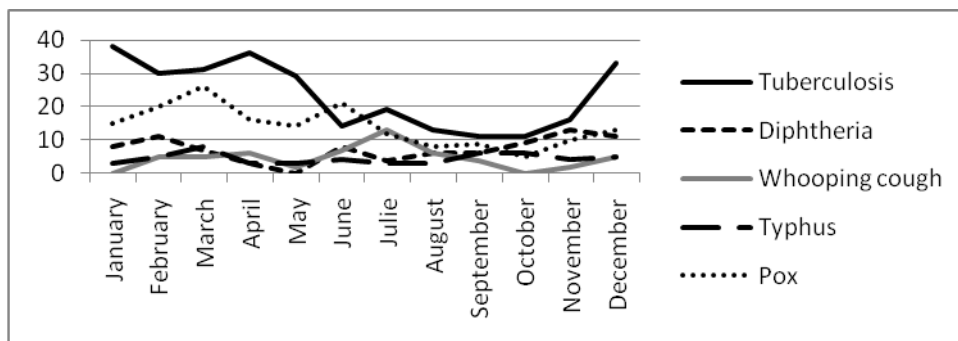
Other diseases present in these communities had a less visible monthly evolution, with the exception of the respiratory diseases. In this category, the two diseases with a high impact, pneumonia and influenza, were present mostly during spring and winter. In the case of deaths due to influenza the highest values were recorded in February and March, 50% of all deaths due to influenza took place in these months and the highest number of deaths due to pneumonia was recorded in March, 25,43%. In regard with the diseases of the circulatory system, deaths due to heart attack and stroke occurred almost every month with the same frequency.

Conclusions – the applicability of ICD-10

There are some aspects to be taken under consideration regarding the applicability of ICD-10 on causes of death from burial parish registers in Transylvania in the second half of the 19th century and at the beginning of the 20th century. Firstly, the causes of death need to go under a process of standardization. There were many terms for just one disease and also there were cases in which the cause of death was a name that represents a symptom now days but actually meant a certain disease in that time. For example "fej fájás" which means head ache normally could be classified as a symptom, but in that period it was actually the term for rabies[20]. Some names are still very vague, such as „brain problems", but for all the terms in the

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[20] Cosmin Căprioară, *Limbajul medical popular românesc* (Cluj-Napoca: Mega, 2014), 107.

parish registers, after standardization, codes were attributed. Even if just symptoms were recorded as causes of death, a code could be attributed. A whole chapter is dedicated to coding symptoms in case the disease is not clearly specified, as a result codes from this chapter could be used. The main reason why ICD-10 could be applied to causes of death recorded in parish registers is because every disease has a code for the simple recording of the term, without any further details. Of course, there were cases in which the diseases were a little more specified, like pulmonary tuberculosis and intestinal tuberculosis and they were coded as such, but in most of the cases the term was simply "tuberculosis". Also the terms "ordinary death", "unknown disease" and "poverty" had their own set of codes.

Of course many decisions must be taken regarding the symptoms, for example, the term "weakness". If it was given as a cause of death for a new born it was obvious congenital weakness and was coded as such. The same in the case if the person who died of weakness was older than 70, the code given was for weakness of old age. There were also cases in which the person who died due to weakness was not in these age-groups and the code for simply weakness was given. As can be seen, the age of death had to be correlated with the cause of death in order to code properly. After all these processes of standardization and correlation every cause of death was coded. As a result, we consider that ICD-10 can be applied to causes of death from parish records. This study is not exhaustive. There are still many issues to be discussed, but the main purpose was to try and demonstrate that this classification can be used on these type of sources, the only available sources so far that contains the causes of death in depth and at a individual level. We hope this study will represent a starting point for other researches who want to use instruments which now are advancing in the international level.

The burial parish registers in these three communities Războieni-Cetate, Noşlac and Mirăslău reveal information about the predominant diseases the people of these communities confronted. Most of the deaths occurred as a result of infectious diseases from which tuberculosis had the highest percentage, 40%, followed by pox. Also diseases such as whooping cough, typhus and diphtheria were present. The second category of diseases with highest impact was that of respiratory diseases, especially pneumonia and influenza.

Regarding the gender distribution of mortality, a slightly higher number can be observed in men. The differences were more visible in the case of typhus and diphtheria, but in the case of tuberculosis the number of deaths was higher among women. The same case can be observed for deaths due to influenza. Concerning the number of deaths due to heart attack and stroke, the number was higher in men.

In these communities the infant mortality and that of children between 1 and 4 years are very high. The most predominant causes of death were the infectious diseases. Tuberculosis and typhus affected mostly people over 20 years of age, and diphtheria and whooping cough were more frequent amongst children between 1 and 10 years of age. For the majority of infants the predominant cause of death recorded was „congenital weakness", and the second disease was pox which affected children from several months old to 4 years of age. In the case of respiratory diseases, over 50% of death due to influenza occurred in children

under one year of age and pneumonia affected mostly people between 40 and 59 years, but also children with ages varying from 1 to 4 years.

In regards to the seasonal movement higher levels of mortality were recorded in the spring and winter months. In these seasons not only the number of deaths due to influenza and pneumonia were high but also death due to tuberculosis and pox.

Towards the end of the 19th century mortality slowly declines in these communities following the European pattern. At the beginning of the next century the infectious epidemic diseases continue to be the main causes of death, but after the First World War their predominance started to decline. Although tuberculosis remains predominant, the eruptive diseases, typhus and diphtheria almost disappear from the burial parish registers. Using the IDC-10 classification makes possible to enrol the studies of mortality in Transylvania in the European patterns by making it easier to compare them to other European patterns.