

Causes of Child Death in the Registers of Deaths. Catholic Parishes in Southern Baranja in the 18th Century

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1. Registers of deaths in southern Baranja in the 18th century – sources and methodology

The aim of this paper is to analyse child mortality and the causes of infant and child deaths based on data contained in a database created from the records of death registers for the population in the Catholic parishes of southern Baranja in the 18th century. The approach to data analysis is primarily descriptive, with basic descriptive statistics applied to determine trends in the number of deceased children by decade, the proportion of deceased children in the total population, and the age and gender structure of child mortality. These serve as a historical-demographic basis for analysing causes of death according to frequency, age groups, gender, and seasonal occurrence. The obtained results are compared with research findings from other areas in Croatia during the 18th century, as well as the 19th century, given the relatively limited number of studies on child mortality and, in particular, causes of child death in Croatia in general, especially for the period before the 19th century.

The analysis covers the registers of deaths of eight southern Baranja parishes: Batina, Branjin Vrh, Čeminac, Darda, Draž, Luč, Popovac and

Zmajevac in the 18th century,¹ that is from 1717, the year of the oldest entry into the register of deaths of the parish of Darda. Entries in the analysed registers of deaths are made in the Latin language, in italic humanist script, which is generally typical of the 18th century and the area covered by the analysis. Although the handwriting changes as priests making entries into the registers change, it is mostly legible and neat, with only few occasions where text cannot be read, mostly on account of minor damages (ink spillage or fading, ink bleeding through to the other side of the page, paper damage, etc.). Entries in the registers of southern Baranja in the 18th century are generally, and thus also in the registers of deaths, for the most part made in the narrative form, and only from the eighties onwards in the tabular form by certain parish priests. Entries in all registers flow continuously, in chronological order, and only rarely and exceptionally the chronological order is interrupted by an occasional subsequent entry. In general, from the thirties, and in particular in the second half of the 18th century, the data can be considered more reliable because from that point onwards the registers were for the most part orderly maintained. However, there are several longer breaks in the keeping of the registers of deaths that need to be taken into consideration in the data analysis and interpretation. Namely, in the period between 1764 and 1776 the registers of the parish of Darda contain only several entries, most probably entered subsequently and only until 1767, there are no records of deaths in the period from 1768 to 1774 for the parish of Luč, and the greatest lack of data concerns the inhabitants of Topolje, where only the register of baptism remained (1784-1828).²

¹ Državni arhiv u Osijeku (DAOs), Zbirka matičnih knjiga (HR-DAOS-500): Batina: RVM 1780 – 1815 29, Branjin Vrh: R 1773 – 1832 154, VM 1773 – 1832 157, Čeminac: R 1789 – 1813 193, V 1789 – 1832 199, M 1789 – 1832 203, Darda: RVM 1715 – 1764 293, RV 1776 – 1832 294, R 1789 – 1821 366, V 1789 – 1840 372, M 1789 – 1834 373, Luč: R 1722 – 1769 620, R 1769 – 1799 621, R 1800 – 1832 622, VM 1723 – 1766 626, V 1773 – 1832 627, M 1773 – 1832 629, Petlovac: R 1756 – 1859 946, Popovac: R 1789 – 1831 992, V 1789 – 1840 999, M 1789 – 1836 1000, Topolje: R 1784 – 1828 1219; Zmajevac: ŽU-RVM 1755 – 1832.

² For more details see: DUBRAVKA BOŽIĆ BOGOVIĆ, *Rođenje, brak i smrt – Stanovništvo južne Baranje u 18. stoljeću*, Beli Manastir, Ogranak Matice hrvatske u Belom Manastiru, 2013, pp. 21-25.

Regardless of whether the data are recorded in the narrative or tabular form, their content is as a rule standardised, with only minor variations. The entries in the registers of deaths regularly included the name of the priest attending the funeral, the date of death, the name and surname of the deceased, the place of origin of the deceased, the age of the deceased and the information on whether the deceased received the required sacraments. These data in the registers of the Catholic parishes of southern Baranja in the 18th century were for the most part recorded meticulously, so that very few entries lack some of the aforementioned data. In relation to the main elements of entries into the registers of deaths, there is no difference in the content of entries of adults and children. However, the differences are observable in the recording frequency of the name of the deceased's father, which was mostly recorded only in the case of infant and child deaths or deaths of unmarried girls, and very rarely was also the name of the dead child's mother recorded. As to children, it was recorded, albeit very rarely, whether the father and mother were alive at the moment of the child's death. In addition to the aforementioned, the data that were in general irregularly or rarely recorded were the data on the cause of death, the occupation of the deceased, social and marital status, the name of the spouse, the place and date of the burial.

Registers are a first-class source for researching the population history in the so called pre-statistical period, i.e. the period preceding contemporary statistical censuses.³ However, the use of registers to establish demographic facts in the past has certain methodological limitations arising mostly from the way in which registers were kept and related types of data that can be found in such registers, as well as their reliability. In addition to the already mentioned interruptions in the continuity of register keeping (be it irregular or unordered register keeping by the parish priest, illegible records or damaged or lost registers), errors are possible, as well as recording of inaccurate data, in particular when data are recorded subsequently and with a considerable time delay from the death of the person to whom the data pertain. A particular challenge,

³ The first modern censuses in the Croatian countries started by the middle of the 19th century.

primarily in the application of the genealogical method, concerns obstacles to accurately identifying individuals in the circumstances of prominent name and surname entropy, orthographic inconsistency and still unstable name formula, which is typical of the observed time and space. Furthermore, in the analysis and interpretation of the data sourced from the registers of deaths certain limitations arise also from the way in which the age of the deceased was recorded. Although southern Baranja parish priests for the most part recorded the age of the deceased on regular basis, the issue of rounding the number of years of the deceased to the nearest ten and, less frequently, five still has to be taken into account as a methodological limitation in the age structure analysis that partially distorts the results. The rounding is observable also in the case of dead infants because the age at death was frequently determined in weeks instead of in days, which disproportionately increases the number of infants who at the time of death were seven, fourteen, twenty-one and twenty-eight days old. Sometime parish priests added *cca* in front of the number indicating the age of the deceased, which clearly shows that the recorded age of the deceased was not precisely established.

The issue of mortality of unbaptised newborns represents a special methodological limitation in the research of child mortality. A relatively high mortality of children at birth and immediately after birth in traditional societies, including southern Baranja of the 18th century, when related to the Catholic Church's teaching and practice with regard to the death of unbaptised children, can also affect the way in which the data are recorded in the registers of deaths (and baptism). Namely, the Catholic Church's practice of not entering unbaptised dead children in the registers of baptism and registers of deaths can distort the data on the number of born and dead children and affect the results of the statistical analysis of natural development.⁴ Although it is generally considered that

⁴ For more details about the mortality of unbaptised newborns in southern Croatia in the 18th century see: ROBERT SKENDEROVIĆ, *Smrtnost nekrštene novorođenčadi kao problem u istraživanju nataliteta i mortaliteta katoličkih zajednica u Slavoniji, Srijemu i Baranji tijekom 18. stoljeća*, *Scrinia Slavonica : Godišnjak Podružnice za povijest Slavonije, Srijema i Baranje Hrvatskog instituta za povijest*, Vol. 16 No. 1, Slavonski Brod, 2016, pp. 147-164.

the number of the baptised in the registers more or less corresponds to the number of newborns, as in the Catholic community baptism was performed immediately upon birth or soon after, the raised issue cannot be disregarded when analysing child mortality.

A particular methodological challenge in this study is the analysis of causes of death based on data from death registers, as the information recorded on causes of death is often highly imprecise and of questionable accuracy. The primary reason for this is that the records were entered by priests who lacked medical education, and the level of diagnostic and medical knowledge at the time was vastly different from that of modern medicine. Additionally, during the period and in the area covered by this study, there was no requirement for a doctor to confirm causes of death. In the rural area of southern Baranja in the 18th century, healthcare organization was extremely weak, if not non-existent. County centres where physicians resided were distant, connected by poor roads, and difficult to access. Death registers generally recorded symptoms or conditions as observed by the priest or described to him by others (e.g., cough, fever, swelling), or locations of pain (e.g., chest pain). However, some specific diseases were recorded, usually common or easily recognizable ones, such as childhood infectious diseases like smallpox and measles. Even in these cases, however, it is uncertain whether the priest made an accurate “diagnosis.” In cases of violent or accidental death, circumstances were sometimes described. In essence, the recording of child deaths did not differ from that of the general population, although infant deaths were usually attributed to less specific causes, making an already narrow range of vaguely defined causes of death even more pronounced.

2. Child mortality in southern Baranja in the 18th century

Child mortality is a topic of interest to historians studying population history and historical-demographic phenomena, especially since the establishment of the demographic transition theory, which examines changes in birth and death rates as consequences of economic, social, and cultural development. Numerous studies have shown that in the so-called pre-transition period (which, for most Croatian regions, was before the 1880s),

high child mortality was one of the main obstacles to population growth. Infant and child mortality are therefore considered key factors in understanding the demographic history of a population. Additionally, the study of child mortality is particularly useful for the so-called pre-statistical period (before the mid-19th century, and in many cases before the 20th century), which is characterized by a lack of systematic historical records kept by institutions of organized medical care, hospital systems, etc. Data on child mortality can indirectly reveal various biological, environmental, socio-economic, and cultural factors affecting not only child health but also maternal health, and thus children's chances of survival. Mortality is affected by various biological, medical, social and economic factors (population age structure, individual's health, hygiene conditions, healthcare and medical science development, standard of living, education, quality and accessibility of health services, efficiency of preventive health protection measures), where the infant mortality itself can be a good indicator of the existing standards of living and hygiene, in the same way the mortality in general can indicate the health status of certain age groups.⁵

Research on living standards and living conditions in southern Baranja in the 18th century is primarily based on data from contemporary censuses and descriptions of the Belje and Darda estates, which included all the settlements analyzed in this study. The Catholic population had different legal statuses in terms of serfdom: Croatian inhabitants of late-feudal Baranja estates generally had hereditary serf status and were not allowed free migration, whereas the German population had the right to move freely. However, there were no significant socio-economic differences between individual settlements; in almost all cases, arable land was classified in the second category, while meadows and pastures were in the third. Some notable differences existed in housing conditions, as Croatian households typically housed multiple families (three or more) under one roof, whereas German households usually consisted of a single family. Houses were mostly built from rammed earth and wood. In settlements along the Danube, Drava, or Karašica rivers, frequent floods worsened

⁵ ALICA WERTHEIMER-BALETIĆ, *Stanovništvo i razvoj*, Zagreb, MATE, 1999, p. 239.; NIKOLA ANUŠIĆ, 'Rajna smrt' - prilog istraživanju smrtnosti djece u Makarskoj 19. stoljeća, *Radovi Zavoda za hrvatsku povijest*, 38, Zagreb, Filozofski fakultet, 2006, p. 161.

hygiene conditions and reduced agricultural yields. These relatively poor housing and hygiene conditions, combined with a low standard of living and poor nutrition, had a significant impact on child mortality, particularly infant mortality.⁶

The preserved registers of deaths of the southern Baranja parishes in the 18th century record a total of 16 211 deaths. Among deaths, children (persons in the pre-fertile age contingent covering the population under 15 years of age) accounted for 10 132 (62.50% of all deaths).

decade ⁷	number of deaths		share (%) of death children in the whole population
	whole population	children	
1721-1730	240	117	48.75
1731-1740	357	199	55.74
1741-1750	470	283	60.21
1751-1760	1087	530	48.76
1761-1770	1092	609	55.77
1771-1780	2532	1689	66.71
1781-1790	5206	3261	62.64
1791-1800	5209	3439	66.02
TOTAL	16193	10127	62.54

Table 1

The number and share of dead children per decades on the basis of the data from the registers of the Catholic parishes in southern Baranja in the 18th century (1721-1800)

⁶ IGOR KARAMAN, *Ekonomsko-socijalni sastav seljaštva i seoskih naselja na kasnofeudalnim vlastelinstvima baranjskog trokuta*, izbornik radova *Tri stoljeća „Belja“*, (ed. DUŠAN ČALIĆ), Zagreb, Osijek, JAZU, Zavod za znanstveni rad Osijek, 1986), pp. 184-188.; MAGDOLNA KISS, *Život kmetova na veleposjedima u Baranji između Dunava i Drave od 1700. do 1848. godine*, Zbornik radova *Tri stoljeća „Belja“*, (ed. DUŠAN ČALIĆ), Zagreb, Osijek, JAZU, Zavod za znanstveni rad Osijek, 1986, pp. 39-48, 51-70, 129-137, 142-164.

⁷ As the earliest records in the registers of deaths stem from 1717, the analysis per decades does not include data prior to 1721 due to incompleteness.

The share of children in the total number of deaths during the whole observed period is high, and certain differences observed in individual decades cannot be explained on the basis of the data from the registers of deaths but rather require additional researches and the inclusion of other types of historical sources. However, certain assumptions can be made as to the reasons for the variations in the share of children in the total number of deaths, one of them potentially being the very quality of the historical source (that is the earlier mentioned quality of register data). Also, it can be assumed that in the decades with a lower share of children in the total number of deaths the matter at issue was not a decrease in child mortality but an increase in the mortality of other age groups, either due to changes in the age structure of the population or for other reasons (e.g. diseases affecting other age groups more than children). In any case, the share of children in the total number of deaths of less than 50% was recorded only in two decades, which indicates the pronounced dynamics of child deaths throughout the whole observed period.

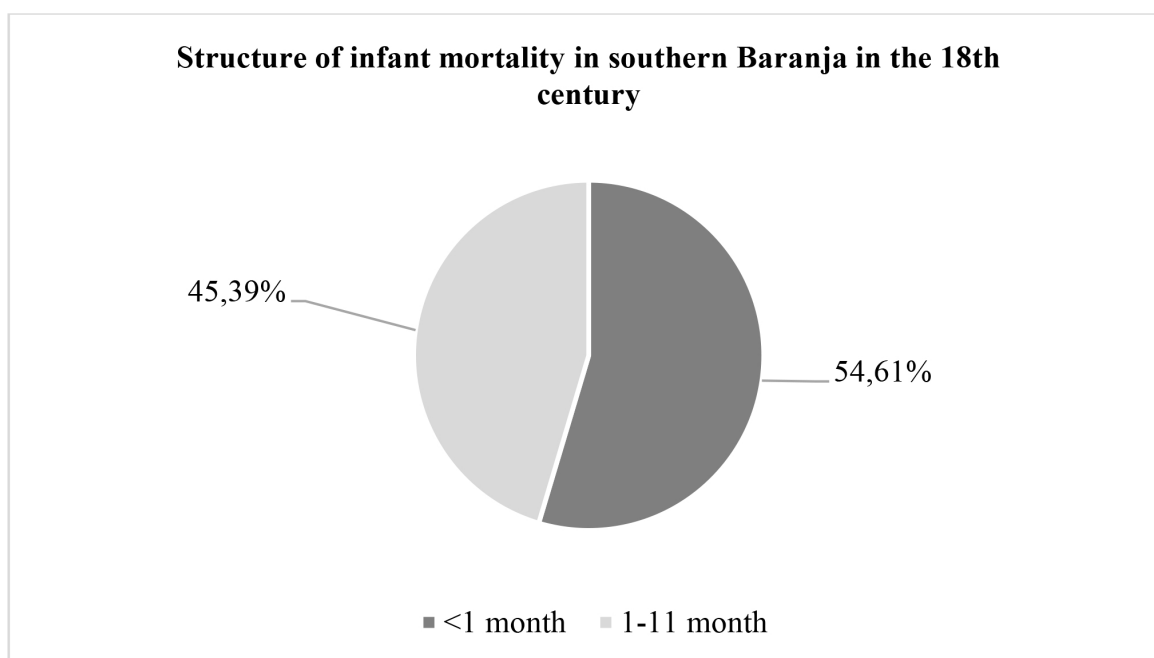
age	male	female	unknown ⁸	total
0-23 hours	151	92	0	243
1-6 days	442	329	0	771
7-29 days	827	591	1	1419
0-29 days	1420	1012	1	2433
1-11 months	1040	978	4	2022
< 1 year	2460	1990	5	4455
1-4 years	2069	2113	6	4188
5-9 years	615	540	0	1155
10-14 years	182	152	0	334
TOTAL	5326	4795	11	10132

Table 2

Age structure of dead children on the basis of the data from the registers of the Catholic parishes in southern Baranja in the 18th century

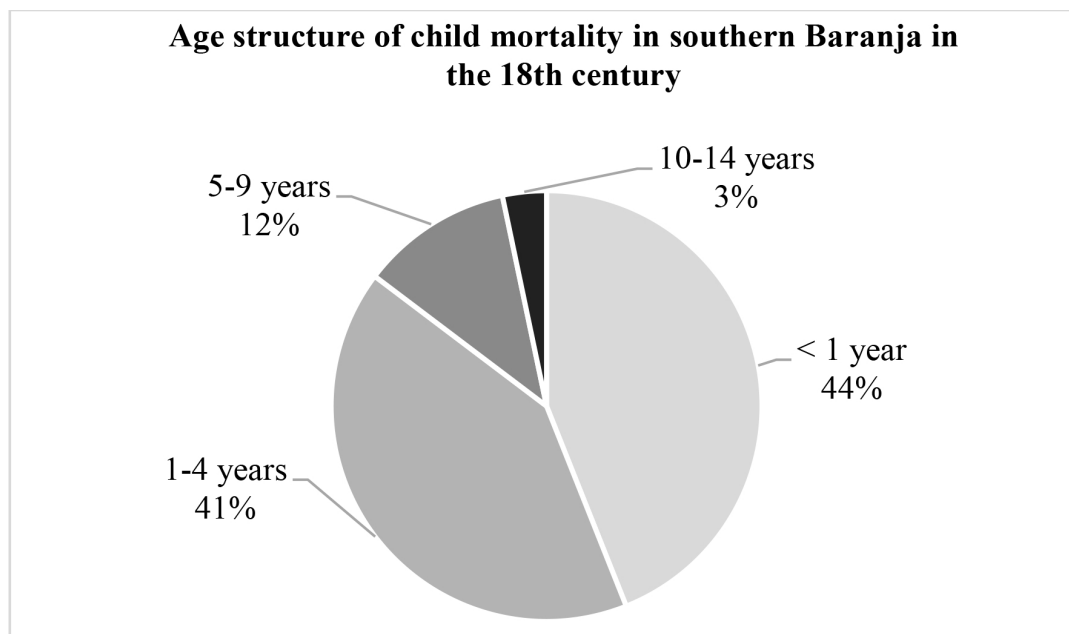
⁸ The gender of the child is unknown where the name of the child is not recorded, nor does the record of death contain the term *filius* or *filia* next to the names of the father and mother.

Most dead children were infants, that is children up to one year of age (43.97% of all child deaths). Of the total number of infant deaths, the neonatal group (children who died during the first month of life) accounted for 54.51%, while the post-neonatal group (children who died between the first month and the first year of life) accounted for 45.39%. As to dead children belonging to the neonatal group, in most cases they died after reaching seven days of age (58.34% of the total number of child deaths in the neonatal group), with the lowest number of deaths during the first day following the birth (9.99% of the total number of child deaths in the neonatal group), and 31.69% dying from the first to the sixth day of life.



Graph 1

The group of children who at the time of death were from one to four years old is the next largest group among child deaths (41.33% of all child deaths), meaning that out of all child deaths, as many as 85.30% died before they reached their fifth birthday. Children who died at the age from five to nine years account for 11.40% of the total number of child deaths, and the smallest share of 3% in the total number of child deaths are children who died at the age from ten to fourteen years.



Graph 2

Regarding child mortality, the population of southern Baranja in the 18th century aligns with broader demographic trends. Research findings from neighbouring areas indicate significant similarities. In southern Baranja, in the second half of the 18th and the first half of the 19th century, children under 15 years of age accounted for 49.63% of all deaths, with infants making up 22.90% of all deceased individuals, while children older than one year accounted for 26.73% of all deaths in the Reformed Hungarian population.⁹ In the Reformed population of nearby Slavonia in the same period, children under 15 comprised 54.92% of total deaths, infant mortality accounted for 26.47%, and children older than one year made up 28.45% of the deceased.¹⁰ In Požega, in some years, infants constituted more than 40% of all deaths.¹¹ In Brod, at the end of the 18th and the first half of the 19th century, children accounted for 49.5% of deaths, while in

⁹ DUBRAVKA BOŽIĆ BOGOVIĆ, ELDINA LOVAŠ, *Stanovništvo reformirane vjeroispovijesti u južnoj Baranji 1750. – 1850.*, Slavonski Brod, Hrvatski institut za povijest – Podružnica za povijest Slavonije, Srijema i Baranje, 2019, p. 86.

¹⁰ DENIS NJARI, *Stanovništvo, Hrastina, Laslova, Koroda i Retfale u 18. stoljeću i prvoj trećini 19. stoljeća* (PhD Thesis), Zagreb, Hrvatski studiji, 2016, p. 206.

¹¹ ROBERT SKENDEROVIĆ, *Stanovništvo Požege 1699. – 1781. prema matičnim knjigama* (M.Sc Thesis), Zagreb, Filozofski fakultet, 2005, p. 107.

surrounding villages, the percentage was 55.9%.¹² Similar results were obtained in other Croatian regions. In Varaždin, in the last third of the 18th and the first half of the 19th century, individuals under 19 years of age accounted for 50.6% of deaths, and infants made up 23.1% of all deaths where age was recorded.¹³ In northwestern Croatian parishes in the late 18th and early 19th century, infants and children aged one to four years comprised about 45% of all deaths,¹⁴ while in the Croatian Littoral in the 19th century, children and adolescents under 19 years made up 53.7% of all deceased individuals.¹⁵ In Makarska in the 19th century, child mortality accounted for 45.17% of total deaths, with infant deaths comprising 34.5% of all child deaths.¹⁶ In Kotor in the 18th century, children constituted 36.46% of total deaths, with infants making up 40.57% of all deceased children (infant deaths accounted for 14.79% of total deaths).¹⁷

The gender structure of dead children shows that somewhat fewer girls than boys died in south Baranja in the 18th century, i.e. girls accounted for 47.33% of all child deaths. The number of dead boys in relation to girls is higher across all age groups, except in the one comprising children from the first to the fifth year of life, where the share of girls in the total number of child deaths is 50.45%.

¹² DAVORIN HRKAČ, *Brod u demografskim izvorima od 1780. do 1850. godine* (PhD Thesis), Zagreb, Filozofski fakultet, 2012, p. 112.

¹³ ANTE GABRIČEVIĆ, *Stanovništvo Varaždina tijekom minulih stoljeća*, Zagreb, HAZU - Zavod za znanstveni rad Varaždin, 2002, p. 207.

¹⁴ STJEPAN KRIVOŠIĆ, *Stanovništvo i demografske prilike u sjeverozapadnoj Hrvatskoj u XVIII. i prvoj polovini XIX. stoljeća*, Varaždin, HAZU - Zavod za znanstveni rad Varaždin, 1991, p. 70.

¹⁵ ČULINA, TATJANA; JOVANOVIĆ, VIŠNJA, *Uzroci smrti djece u Hrvatskom primorju u XIX. stoljeću*, Medicina Fluminensis : Medicina Fluminensis, 2015, 51, p. 278..

¹⁶ NIKOLA ANUŠIĆ, *'Rajna smrt' - prilog istraživanju smrtnosti djece u Makarskoj 19. stoljeća*, *Radovi Zavoda za hrvatsku povijest*, 38, Zagreb, Filozofski fakultet, 2006, p. 163.

¹⁷ MAJA KATUŠIĆ, *Društvena i demografska struktura Kotora u 18. stoljeću* (PhD thesis), Zagreb, Hrvatski studiji, 2013, p. 141.

3. Causes of child death in southern Baranja in the 18th century

Research on causes of death in historical societies, particularly in the study of child mortality based on individual-level cause-of-death data, despite the previously mentioned methodological limitations, can contribute to understanding various factors influencing mortality. Changes in the frequency of specific causes of death within certain groups may indicate shifts in living standards, hygiene conditions, medical advancements, and similar factors. They can also help better understand the decline in mortality, including infant and child mortality, during the first demographic transition, as well as health and epidemiological transitions.

The registers of deaths of the Catholic parishes in southern Baranja in the 18th century rarely contain records on the causes of death, i.e., they are contained in only 589 entries (3.63% of all recorded deaths). The causes of death were recorded even more rarely when it comes to children so there are only 228 cases of child death where the cause was recorded (accounting for 2.25% of all recorded child deaths). Of all cases in which the cause of death was recorded, 54.39% relate to boys. At first glance, this could be linked to the greater importance traditionally assigned to the birth—and consequently the death—of boys in a patriarchal society. However, when compared to the gender structure of deceased children, it becomes evident that this percentage aligns with the overall proportion of boys among deceased children and based on the analysis of only the parish registers, it cannot be concluded that they are the result of cultural patterns of behavior. The rare recording of the cause of death in itself constrains the possibility of a systematic and high-quality analysis of the causes of death, to which the quality of the data recorded in the registers of deaths needs to be added as the data on the causes of death are exceptionally imprecise and of questionable accuracy.

Taking into account the aforementioned limitations of the registers of deaths as a source for determining the causes of death, the causes of child

death can be divided into the following groups: disease, death at birth, premature birth, accident, sudden death¹⁸ (of undetermined cause).

In addition to categorizing causes of death, the analysis focuses on different age groups of children, each characterized by distinct health and survival risks. Thus, structuring the analysis according to these groups provides a useful methodological framework that indirectly points to certain circumstances and characteristics not recorded in historical sources from the analysed period. Age-group analysis is particularly useful for studying neonatal mortality (death of children up to one month of age) and postneonatal mortality (death of children between one month and one year of age), as neonatal mortality is largely considered a consequence of the mother's and child's health status and childbirth conditions, though it can have other causes as well. Although the analysed death registers do not contain data that would allow for identifying endogenous causes of death specific to neonatal mortality, analysing available data may provide indirect indications. On the other hand, postneonatal mortality is more strongly influenced by exogenous factors (environmental, socioeconomic, and cultural). By analysing causes of death according to age groups, it is possible to indirectly highlight living standards, which have a strong impact on the mother's health status and, consequently, the child's health during pregnancy and after birth. External factors (hygiene, housing density, nutrition quality, breastfeeding practices, etc.) also significantly influence child mortality, especially among infants and children aged one to four years.

cause of death category	No	%
Illness	99	43.42
death at birth	66	28.95
Accident	28	12.28
sudden death	22	9.65
premature birth	13	5.70

Table 3

Causes of child deaths on the basis of the data from the registers of the Catholic parishes in southern Baranja in the 18th century

¹⁸ Referred to as *repentina morte* in the registers of deaths.

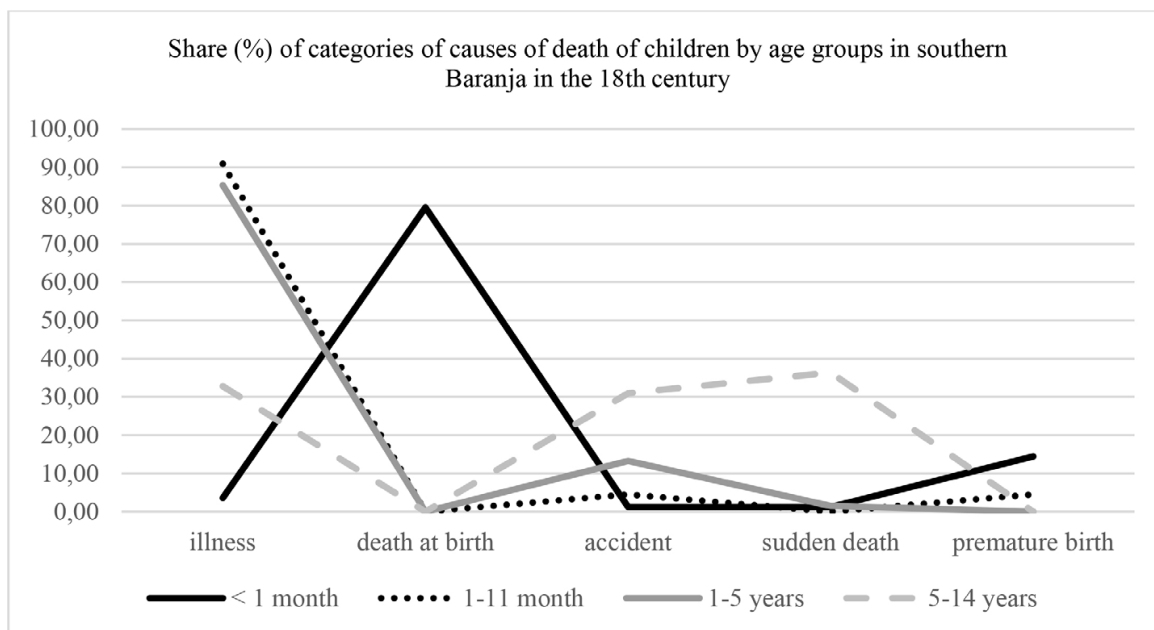
The data displayed in the table above show that death at birth accounted for almost one third of all child deaths for which the cause of death is indicated, where this cause of death can be assumed to be related with different complications at (unprofessional) birth. For the majority of child deaths for which the cause of death is indicated, which is over 40%, some kind of disease is listed as the cause of death. Diseases that affected children the most were measles (57.58% of all diseases) and dysentery (14.14% of all diseases), while other diseases that caused child deaths include: encephalitis, gangrene, sepsis, tumour, dropsy, fever, sore throat, cough, swelling, puncture. The shortcomings of registers as a source for determining the causes of death is perhaps the most obvious in the case of measles, which were recorded as the cause of death only over the course of three years (of which mostly during 1785). Namely, the registers of the reformed population in southern Baranja from the first half of the 18th century to the first half of the 19th century recorded the causes of death more frequently, and it is clear that measles were one of the more frequent causes of child death and their occurrence was not limited to only several years in the observed period, where the largest number of the sick was in the period from December to February, although measles were present throughout the year.¹⁹ In general, when it comes to illness and death at birth as one of the most common causes of child deaths, southern Baranja in the 18th century shows significant similarities with the population of other parts of Croatia and beyond can be expected also with regard to the causes of child death.²⁰

Among accidents as the cause of death, the most frequent is drowning (28.14% of all accidents), which likely can be linked with the natural, hydrological features of southern Baranja as a territory rich in various water courses and bodies (large lowland rivers

¹⁹ DUBRAVKA BOŽIĆ BOGOVIĆ, ELDINA LOVAŠ, *Stanovništvo reformirane vjeroispovijesti u južnoj Baranji 1750. – 1850.*, Slavonski Brod, Hrvatski institut za povijest – Podružnica za povijest Slavonije, Srijema i Baranje, 2019, p. 61, 65.

²⁰ For example, measles was almost an unavoidable childhood disease and one of the most frequent causes of child death: STANFORD T. SHULMAN, *The History of Pediatric Infectious Diseases, Pediatric Research*, Vol. 55, No. 1, USA, 2004, 165., <https://ourworldindata.org/child-mortality-in-the-past> (accessed on 5. 8. 2021)

Drava and Danube, Karašica creek, Kopački rit floodplains, marshes, ponds...). A special case of drowning can be cited as an unfortunate incident when a nine-year-old boy drowned in a wine barrel.²¹



Graph 3

When causes of death are analysed by age groups, the most common cause of death in neonatal age is recorded as death at birth (79.52%), followed by premature birth (14.58%), while other causes appear in only a few cases. The analysis of postneonatal causes of death confirmed established trends, with disease being the most common cause of death in this age group (90.91%), mainly measles and dysentery, while other causes of death were noted in only two cases (complications from premature birth in a child who had just turned one month old and one accident).

Similar results were found for children in early childhood (ages one to four), where disease—again mainly measles and dysentery—was the most common cause of death (85.29%), followed by accidents (13.24%) and only one case of sudden death. Among children aged five to fourteen, causes of death were more evenly distributed, with sudden death (36.36%), illness (32.73%), and accidents (30.91%) being recorded in roughly equal

²¹ HR-DAOS-500: Batina: RVM 1780 – 1815 29.

proportions. These findings highlight the significant impact of maternal and neonatal health status on neonatal mortality, the increasing influence of environmental factors on postneonatal mortality, and the notable rise in accidental deaths in early childhood, particularly in later childhood and early adolescence.

As for measles, which is the most common cause of death among diseases, they were recorded more frequently among boys than girls (boys accounted for 57.89% of all deaths caused by measles). Mostly children under three years died of measles, that is 67% of all children who died of measles belonged to this age group, where the oldest child for whom measles were indicated as the cause of death was seven years old. As to the seasonal distribution of child deaths caused by measles, although they were recorded in all months, almost 90% of cases of death by measles were recorded in the second half of the year, particularly in November (21.05% of all child deaths caused by measles). Unfortunately, the majority of recorded cases of child deaths by measles refers to 1785 (only several cases were from 1786 and one from 1740, which calls for caution in interpretation).

Due to the small number of cases, it is not possible to track seasonal patterns for other diseases. Regarding accidents, 75% occurred during the warmer months (May to September), which corresponds to children spending more time outdoors and facing increased risk of accidents. The distribution of death at birth and premature birth by month only partially overlaps with birth peaks recorded for the Southern Baranja Catholic population in the 18th century,²² likely due to the relatively small sample of neonatal deaths for which a cause of death was recorded.

4. Conclusion

The registers of deaths are a very valuable, and in some cases, especially in the so-called pre-statistical period, the only historical source for researching the population history, including mortality in general

²² DUBRAVKA BOŽIĆ BOGOVIĆ, *Rođenje, brak i smrt – Stanovništvo južne Baranje u 18. stoljeću*, Beli Manastir, Ogranak Matice hrvatske u Belom Manastiru, 2013, pp. 51-52.

and specifically child mortality of a certain population. Although the shortcomings of the registers of deaths as a historical source call for caution when analysing and interpreting the data sourced from them and indicate a need for supplementing them with other types of sources whenever possible, the registers of the Catholic parishes in southern Baranja from the 18th century can still be determined as a reliable source for establishing the features of child mortality. These results, particularly regarding infant mortality, confirm the expected high rates of infant deaths, which align with findings from other comparable studies. Additionally, as the studied population was Catholic, religious practices placed significant emphasis on emergency baptism, and all parishes had individuals trained to perform baptisms, usually midwives. It is therefore reasonable to assume that almost all new-borns, including those who died shortly after birth, were baptized. Considering that priests in southern Baranja typically recorded children's ages with relative accuracy, and that age rounding occurred mainly for infants younger than a month (due to age being recorded in weeks), it can be concluded that the analysed death registers are not only valuable but also relatively reliable sources for studying child mortality. While caution is necessary in interpreting results, these records can indicate certain demographic trends.

High children and infant mortality in the Early Modern Age in Europe in general, and thus in the territory of nowadays Croatia, had its main causes in unprofessional births, generally unhygienic conditions and child malnutrition. Infectious disease outbreaks, various infections and poisonings due to poor hygienic conditions and other diseases that in most cases were not precisely defined in the historical sources on account of the low level of development of medicine science at the time, are generally considered the main causes of high mortality, which was also affected by various other factors, including hunger, war conflicts and their wider ramifications, natural disasters, etc.

Demographic trends in infant and child mortality suggest that the Catholic population of southern Baranja fits within prevailing historical patterns, characterized by high child mortality rates and a significant proportion of infant deaths among child mortality figures—features

typical of premodern societies. Although differences in sources and methodologies (especially in age structure) limit direct comparisons, data indicate that in both the 18th and 19th centuries, child deaths accounted for approximately half of all deaths in different European historical societies. Among the Catholic population of southern Baranja, this percentage was even higher (62.54% of all deceased individuals were in pre-fertile age). To determine whether this was due to differences in source records (death registers) or other factors (environmental, social, cultural, economic, etc.), extensive systematic comparative historical and historical-demographic research would be needed.

Although the analysis based on individual-level cause-of-death data is largely descriptive, it still holds great research potential, which can be further enhanced through systematic comparative analysis. However, for this to be achieved, historical-demographic research based on individual-level cause-of-death data must be conducted systematically, using standardized cause-of-death coding (ICD-10). Cause-of-death coding has its limitations, particularly for periods before the mid or late 19th century, when cause-of-death records were inconsistent and not based on medical expertise, increasing the likelihood of masking individual causes. Nevertheless, the advantage of standardized coding lies in enabling the comparison of long-run historical causes of death, thereby opening new possibilities for historical-demographic research on populations in different regions of Croatia and allowing for more systematic comparisons with research findings on other European historical societies.

Bibliography

- NIKOLA ANUŠIĆ, *'Rajna smrt' - prilog istraživanju smrtnosti djece u Makarskoj 19. stoljeća*, *Radovi Zavoda za hrvatsku povijest*, 38, Zagreb, Filozofski fakultet, 2006.
- DUBRAVKA BOŽIĆ BOGOVIĆ, *Rođenje, brak i smrt – Stanovništvo južne Baranje u 18. stoljeću*, Beli Manastir, Ogranak Matice hrvatske u Belom Manastiru, 2013, pp. 21-25.
- DUBRAVKA BOŽIĆ BOGOVIĆ, ELDINA LOVAŠ, *Stanovništvo reformirane vjeroispovijesti u južnoj Baranji 1750. – 1850.*, Slavonski Brod, Hrvatski

- institut za povijest – Podružnica za povijest Slavonije, Srijema i Baranje, 2019.
- TATJANA ČULINA, VIŠNJA JOVANOVIĆ, *Uzroci smrti djece u Hrvatskom primorju u XIX. stoljeću*, *Medicina Fluminensis : Medicina Fluminensis*, 2015, 51, 278.
- ANTE GABRIČEVIĆ, *Stanovništvo Varaždina tijekom minulih stoljeća*, Zagreb, HAZU - Zavod za znanstveni rad Varaždin, 2002.
- DAVORIN HRKAĆ, *Brod u demografskim izvorima od 1780. do 1850. godine* (PhD Thesis), Zagreb, Filozofski fakultet, 2012.
- IGOR KARAMAN, *Ekonomsko-socijalni sastav seljaštva i seoskih naselja na kasnofeudalnim vlastelinstvima baranjskog trokuta*, *iZbornik radova Tri stoljeća „Belja“*, (ed. DUŠAN ČALIĆ), Zagreb, Osijek, JAZU, Zavod za znanstveni rad Osijek, 1986), pp. 184-188.
- MAJA KATUŠIĆ, *Društvena i demografska struktura Kotora u 18. stoljeću* (PhD Thesis), Zagreb, Hrvatski studiji, 2013.
- MAGDOLNA KISS, *Život kmetova na veleposjedima u Baranji između Dunava i Drave od 1700. do 1848. godine*, *Zbornik radova Tri stoljeća „Belja“*, (ed. DUŠAN ČALIĆ), Zagreb, Osijek, JAZU, Zavod za znanstveni rad Osijek, 1986, pp. 39-48, 51-70, 129-137, 142-164.
- STJEPAN KRIVOŠIĆ, *Stanovništvo i demografske prilike u sjeverozapadnoj Hrvatskoj u XVIII. i prvoj polovini XIX. stoljeća*, Varaždin, HAZU - Zavod za znanstveni rad Varaždin, 1991.
- DENIS NJARI, *Stanovništvo, Hrastina, Laslova, Korođa i Retfale u 18. stoljeću i prvoj trećini 19. stoljeća* (PhD Thesis), Zagreb, Hrvatski studiji, 2016.
- ROBERT SKENDEROVIĆ, *Stanovništvo Požege 1699. – 1781. prema matičnim knjigama* (M.Sc Thesis), Zagreb, Filozofski fakultet, 2005.
- ROBERT SKENDEROVIĆ, *Smrtnost nekrštene novorođenčadi kao problem u istraživanju nataliteta i mortaliteta katoličkih zajednica u Slavoniji, Srijemu i Baranji tijekom 18. stoljeća*, *Scrinia Slavonica : Godišnjak Podružnice za povijest Slavonije, Srijema i Baranje Hrvatskog instituta za povijest*, Vol. 16 No. 1, Slavonski Brod, 2016.
- ALICA WERTHEIMER-BALETIĆ, *Stanovništvo i razvoj*, Zagreb, MATE, 1999, p. 239.

Državni arhiv u Osijeku (DAOs), Zbirka matičnih knjiga (HR-DAOS-500):
Batina: RVM 1780 – 1815 29, Branjin Vrh: R 1773 – 1832 154, VM 1773
– 1832 157, Čeminac: R 1789 – 1813 193, V 1789 – 1832 199, M 1789
– 1832 203, Darda: RVM 1715 – 1764 293, RV 1776 – 1832 294, R 1789
– 1821 366, V 1789 – 1840 372, M 1789 – 1834 373, Luč: R 1722 – 1769
620, R 1769 – 1799 621, R 1800 – 1832 622, VM 1723 – 1766 626, V
1773 – 1832 627, M 1773 – 1832 629, Petlovac: R 1756 – 1859 946,
Popovac: R 1789 – 1831 992, V 1789 – 1840 999, M 1789 – 1836 1000,
Topolje: R 1784 – 1828 1219; Zmajevac: ŽU-RVM 1755 – 1832.