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# Starvation as Cause of Death in the Croatian Quarnero and Hinterland between 1816 and 1825

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## ABSTRACT

*Our aim is to investigate starvation as cause of death and social and demographic consequences in the Croatian Quarnero and its hinterland between 1816 and 1825, paying particular attention to the infamous »year of famine« 1817. Our sources were: registers of births, marriages, and deaths from 21 parishes kept at the Croatian State Archives in Rijeka and Zagreb. We collected and processed data for statistical analysis according to the date of baptism (birth), marriage, and death, and according to sex and age. Our focus was on recorded causes of death. Between 1816 and 1825, 15,701 children were baptised (born), and 11,021 people died. Starvation was recorded as cause of death in 255 cases, of which 198 were recorded in the infamous 1817. It was the only year with negative growth in virtually all parishes, with the birth-to-death ratio of 1,147:1,545. In 1817, the proportion of death by starvation to the total death rate was 12.8% for the entire area, with the highest share recorded in Veprinac (33.3%), Crikvenica (23.3%), and Kastav (15.8%). Death by starvation was more common in men than in women (56.7% vs. 43.3%, respectively). Age distribution was as follows; in the population below 20 years of age the death rate was 42 (16.5% of total deaths), but the most affected age group were infants and children aged 1–4 years (69.0%) whereas in adult population the death rate was 213 (83.5% of total deaths) and the most affected group were the elderly between 60 and 69 years (26.3%). Analysis shows lower birth and marriage rates between 1816 and 1818, followed by a steep rise and a plateau with minimal variation. This study shows that the Croatian Quarnero and its hinterland suffered a great famine in the early 19<sup>th</sup> century and 1817 in particular, which had left a deep mark on local demography, just like in the neighbouring parts of Croatia and Europe.*

**Key words:** starvation, death rate, 19<sup>th</sup> century, Quarnero and hinterland, Croatia

## Introduction

An old Latin invocation »A peste, bello et fame libera nos Domine!« (From war, famine, and pestilence, deliver us, O, Lord!), which is still common among the people, even against minor hurdles and adversities, is a vivid illustration of famine as one of the most abominable phenomena in human history, along with pestilence, as a metaphor of all epidemic diseases, and the horrors of war. Mass starvation was not associated with wars and epidemics alone, but also with changes in climate such as cold weather spells, droughts, and floods, as well as poverty and widespread chronic diseases. From antiquity to modern times, many a starvation epidemic hit European countries bringing devastation to the society, its economy and demography.

One of more recent famine outbreaks hit Europe just after the Napoleonic Wars in 1815 and 1816, reaching its peak in 1817, which has later become known as the »year of famine«. In addition, the second decade of the 19<sup>th</sup> century has been remembered in Europe as a small-scale ice age with harsh winter destroying summer crops.

Folk lore and scarce documents suggest that Croatia was not spared the famine. Unfortunately, official records with precise figures are rare, because authorities did not consider famine a transient phenomenon which did not deserve particular attention in terms of record keeping<sup>1</sup>. However, the remaining documents may provide relatively reliable figures about famine and poverty victims. These include registers of baptism (birth), mar-

riage, and death kept by parish priests all over today's Croatia since the 1545–63 Council of Trent. It is worth the mention that since 1815 new registries had been in use with forms requiring precise and concrete information. For a medical historian, the most interesting section would be *Causa mortis* (cause of death); it provided filling instructions and a set of descriptive terms (symptoms), but the description often depended on subjective interpretation of the parish priest. As starvation was not included in the recommended set of descriptive terms for the cause of death, other terms were used instead such as *fames* (famine, hunger), *inedia* (fasting), *inopia* (scarcity, poverty), and *miseria* (misery, calamity), all of which suggest starvation to death. In addition, starvation indirectly contributed to a higher rate of deaths of chronic and exhausting diseases such as pulmonary tuberculosis.

This study continues a line of similar investigations of natality, mortality, and lethality in western Croatia<sup>2–6</sup>, focusing this time on starvation as cause of death and on socio-demographic consequences in Quarnero and its hinterland from 1816 to 1825. Particular attention has been paid to the most critical year of 1817. The results have been compared with earlier findings for other Croatian and neighbouring areas<sup>7</sup>, Istria<sup>8</sup> and Dalmatia<sup>9–11</sup>, in particular.

## Sources and Research Methods

We used registries of baptism, marriage, and death of 21 parishes, now kept at the Croatian State Archives in Rijeka and Zagreb. We collected and processed data for statistical analysis according to the date of baptism (birth), marriage, and death, and according to sex and age. Our focus was on recorded causes of death.

The original registries included the following parishes: Bakar<sup>12–14</sup>, Brseč<sup>15–17</sup>, Cernik<sup>18–20</sup>, Grobnik<sup>21–23</sup>, Hreljin<sup>24–26</sup>, Kastav<sup>27–31</sup>, Kostrena – Sveta Barbara<sup>32–34</sup>, Kostrena – Sveta Lucija<sup>35–37</sup>, Kraljevica<sup>38–40</sup>, Kukuljanovo<sup>41–43</sup>, Lovran<sup>44–47</sup>, Mune<sup>48–50</sup>, Praputnjak<sup>51–53</sup>, Rijeka<sup>54–56</sup>, Trsat<sup>57–60</sup>, Veprinac<sup>61–64</sup> and Volosko<sup>65–67</sup>. For four other parishes we relied on registries saved on microfilms that are kept at the Croatian State Archives in Zagreb, as follows: Crikvenica<sup>68–70</sup>, Fužine<sup>71–73</sup>, Lič<sup>74–76</sup> and Novi Vinodolski<sup>77–79</sup>.

As a uniform system of registry keeping had been introduced in these parishes only since 1815, we limited our research to the period between 1816 and 1825.

We also intended to include parish chronicles, hoping to come across records about famine, but most of the documents covering this period were allegedly lost or not available for use.

**TABLE 1**  
NUMBER OF THE BAPTISED IN SELECTED PARISHES IN QUARNERO AND HINTERLAND BETWEEN 1816 AND 1825

Parish	Year										Total
	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	
Bakar	82	86	81	110	124	130	103	117	119	109	1061
Brseč	21	14*	27	34	35	28	34	14	41	26	274
Cernik	22	14	11	23	28	20	25	21	28	33	225
Crikvenica	18	19*	20	63	48	48	48	42	48	52	406
Fužine	44	45	44	63	62	58	45	60	70	59	550
Grad Grobnik	64	52	55	80	66	73	60	77	82	89	698
Hreljin	60	53	50	87	78	87	71	65	96	73	720
Kastav	203	154*	193	321	315	312	319	333	348	360	2858
Kostrena – Sv. Barbara	9	25	20	16	33	25	30	16	18	25	217
Kostrena – Sv. Lucija	35	31	37	60	54	49	68	39	66	47	486
Kraljevica	42	38	59	57	59	69	40	59	64	51	538
Kukuljanovo	33	32	38	45	51	51	38	50	48	50	436
Lič	33	28	17	37	40	42	29	37	42	36	341
Lovran	52	39*	56	95	95	76	102	94	82	93	784
Mune	22	13	16	23	32	18	20	19	26	19	208
Novi Vinodolski	41	54	54	93	60	81	73	64	65	78	663
Praputnjak	23	30	19	29	23	25	33	30	30	35	277
Rijeka	348	324	341	369	376	383	380	372	357	385	3635
Trsat	47	48	58	63	53	62	66	55	68	51	571
Veprinac	19	17*	31	57	65	40	43	56	57	58	443
Volosko	36	31	22	40	41	32	37	14	35	22	310
Total	1254	1147	1249	1765	1738	1709	1664	1634	1790	1751	15701

\* p<0.05

All registries were kept in Latin or Italian. For this study, we limited the data we collected from the registries of baptism to sex and date of baptism (birth). From the registries of marriage, we recorded the number of married couples by month for the entire study period. From the death registry we recorded the sex, age, time, and cause of death, paying particular attention to express references to starvation. These data were recorded for each month.

The collected data were processed using descriptive statistics and modified standard demographic methods. We used the  $\chi^2$ -test wherever possible, and the p-value was set at  $<0.05$ .

In our methods we relied on literature describing methodological approach to registries<sup>80–82</sup> and on research covering periods<sup>2–7</sup> or issues<sup>8–11</sup> corresponding to our own.

## Results

Table 1 shows the trend of baptisms, which largely corresponds to the number of live births in the studied parishes of Quarnero and its hinterland between 1816 and 1825. As the preceding years had not been recorded

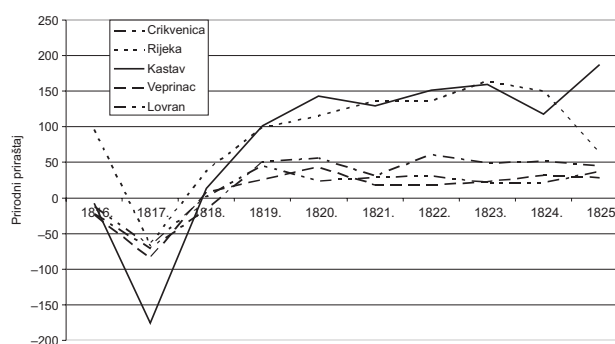


Fig. 1. Population growth in some parishes in Quarnero and hinterland hit by starvation between 1816 and 1825.

consistently and uniformly, we decided to compare the data from the »years of famine« with the seven years that followed (1819–1825?). The years of famine saw a lower rate of baptisms in most of the parishes than the years that followed, but the difference was statistically significant ( $p < 0.05$ ) only for 1817 in the parishes of Crikvenica, Kastav, Veprinac, Lovran, and Brseć (Table 1).

Death rate was similar to the baptism/birth rate. Higher rates were recorded in the years of famine than in

TABLE 2  
NUMBER OF THE DECEASED IN SELECTED PARISHES IN QUARNERO AND HINTERLAND BETWEEN 1816 AND 1825

Parish	Year										Total
	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	
Bakar	108	222*	113	160	111	118	115	114	105	123	1289
Brseć	15	35	31	18	12	18	19	19	15	16	198
Cernik	13	22	9	11	9	19	6	7	4	9	109
Crikvenica	30	87*	22	17	24	18	17	20	26	14	275
Fužine	36	33	24	34	32	12	21	13	44	52	301
Grad Grobnik	43	72*	22	32	31	40	23	24	28	27	342
Hreljin	38	60	69	41	49	58	29	30	62	48	484
Kastav	210	330*	180	220	172	183	168	174	230	173	2040
Kostrena – Sv. Barbara	?	?	1	1	1	16	13	7	20	11	70
Kostrena – Sv. Lucija	34	73	37	49	28	33	26	42	31	30	383
Kraljevica	27	38	73	57	42	48	26	22	37	27	397
Kukuljanovo	?	?	17	36	24	24	18	28	6	11	164
Lič	33	27	9	30	22	12	13	10	29	33	218
Lovran	74	110*	73	44	39	45	41	45	30	47	548
Mune	15	22	8	20	21	21	14	13	8	15	157
Novi Vinodolski	51	53	37	49	63	33	38	18	33	43	418
Praputnjak	11	17	10	19	19	15	17	16	15	19	158
Rijeka	252	390*	303	270	216	247	244	208	207	322	2659
Trsat	28	54	40	41	32	24	23	35	25	35	337
Veprinac	43	102*	23	31	21	22	25	33	25	30	355
Volosko	8	20	15	18	6	11	16	8	7	12	121
Total	1060	1545	1116	1198	904	1017	912	886	897	1097	11021

\*  $p < 0.05$

? no data available

the years that followed. The most prominent was 1817, when the death rate in Bakar, Crikvenica, Rijeka, Grob-nik, Kastav, Veprinac, and Lovran was significantly higher than in other years ( $p<0.05$ ) (Table 2). 1817 also stands out with the difference between the birth rate and the death rate; it saw a distinct negative population growth in parishes such as Crikvenica, Rijeka, Kastav,

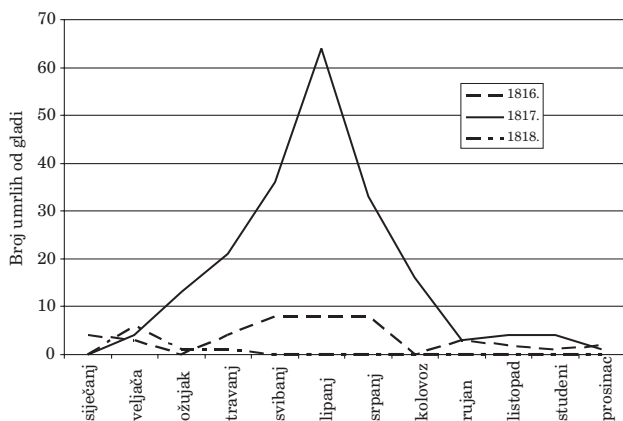


Fig. 2. The number of the dead by months between 1816 and 1818 (the cause of death being explicitly stated as starvation).

and Veprinac, which changed to positive from 1818 on (Figure 1). The growth was also negative in other parishes not included in Figure 1, but not as distinctly.

When it comes to the death rate where starvation (*fames*, *inedia*, *inopia*, or *miseria*) was recorded as cause, 1817 again stands out significantly ( $p<0.001$ ) in respect to the other years (Table 3).

Of 255 people who died of starvation in all parishes and years together, 142 were men, and 113 women. Most (83.5%) were older than 20 years and belonged to the age group between 60 and 69 years. Of 42 children who died of starvation, 29 were between 1 and 4 years of age.

In 1817, death rates peaked in the spring and summer, June in particular. A year before and a year later, seasonal variations were significantly lower (Figure 2).

Marriage rates did not change significantly over the years of famine, but from 1818 on they soared constantly with minimum variation.

## Discussion

Before we discuss our findings about starvation epidemic in Quarnero and its hinterland in western Croatia in the early 19<sup>th</sup> century, we would like to describe the circumstances which led to it. Between 1815 and 1819,

TABLE 3  
STARVATION RECORDED AS THE CAUSE OF DEATH IN THE REGISTERS OF DEATHS IN SELECTED PARISHES IN QUARNERO AND HINTERLAND BETWEEN 1816 AND 1825

Parish	Year										
	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	Total
Bakar		1									1
Brseč		2									2
Cernik											
Crikvenica	3	44									47
Fužine		3									3
Grad Grobnik											
Hreljin	4	6									10
Kastav	2	52									54
Kostrena – Sv. Barbara											
Kostrena – Sv. Lucija	2	9	2	2							15
Kraljevica		6									6
Kukuljanovo			1			1	1				3
Lič		6									6
Lovran	20	14	2								36
Mune		3				1					4
Novi Vinodolski	3	17	2								22
Praputnjak											
Rijeka											
Trsat			1								1
Veprinac	9	34					1				44
Volosko		1									1
Total	43	198*	8	2		2	2				255

$p<0.001$

**TABLE 4**  
THE NUMBER OF MARRIED COUPLES IN SOME PARISHES OF QUARNERO AND HINTERLAND (THOSE WHERE THE REGISTERS OF MARRIAGES HAVE BEEN PRESERVED FOR THE PERIOD 1816–1825)

Parish	Year										Total
	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	
Bakar	21	29	23	40	38	36	14	21	26	31	279
Brseč	7	3	9	5	6	6	5	3	7	7	58
Crikvenica	4	9	5	15	9	10	4	6	6	20	88
Fužine	8	6	11	14	6	7	5	22	11	11	101
Hreljin	13	12	15	13	8	9	19	20	20	12	141
Kastav	27	50	38	72	77	55	55	73	52	46	545
Kraljevica	?	?	3	17	14	9	14	16	12	6	91
Kukuljanovo	10	14	4	10	13	6	5	22	9	10	103
Mune	2	0	0	1	7	4	7	0	4	0	25
Novi Vinodolski	2	11	9	0	13	24	6	9	16	12	102
Praputnjak	10	6	5	6	5	8	10	8	9	10	77
Rijeka	43	47	55	59	58	59	92	73	84	78	648
Trsat	9	5	6	15	7	8	14	11	11	14	100
Veprinac	4	6	10	9	11	15	11	7	?	?	73
Total	160	198	193	276	272	256	261	291	267	257	2.431

Europe was hit by harsh climatic aberrations. Particularly cold was 1816, when most crops failed, leading to a disastrous outbreak of famine in 1817 – a challenge Hapsburg reforming bureaucracy could not stand up to<sup>83</sup>. In addition, recent Napoleonic occupation had worn the economy to the bone, and, according to famous Croatian historian Tadija Smičiklas, »...in parts of the country without proper roads, people would simply die of starvation«<sup>84</sup>.

In an earlier research on famine in the countries of former Yugoslavia between 1816 and 1819, Grga Bogić brings data for a number of regions, but admits expressly that he lacks information about famine in Slovenia and Istria<sup>7</sup>. Extensive research by Danice Božić Božančić, and Šime Peričić that followed was limited to Dalmatia alone<sup>9–11</sup>. Not a single reference was made to Quarnero and the hinterland. By contrast, Miroslav Bertoša made a vivid and detailed description of famine in Istria, with examples from death registries evidencing the grim living reality of the local people, yet never losing sight of the neighbouring areas. He believed that it was very important to investigate the circumstances in Rijeka, the Littoral, and islands of the Quarnero Bay<sup>8</sup>. By now, no relevant study has been published on famine in Quarnero and hinterland, save for a few notes such as those by chronicler Srećko Kabalin, who mentions 17 deaths by starvation in Novi Vinodolski in 1817<sup>85</sup>. A few more fragmentary notes such as this could be found in local print, but they are scarce and unreliable for research. Whatever primary sources remain are the registry books kept in parishes.

Of 21 parish registries processed in our study, 15 explicitly referred to starvation as cause of death. In many other places however, this cause was underrecorded. In

Rijeka, which was the region's capital, not a single death by starvation was recorded between 1816 and 1825<sup>5</sup>, even though the death rate significantly soared to 390 ( $p < 0.05$ ) in 1817<sup>4</sup>. This rate was particularly high in infants and children one month to nine years of age and in adults between 30 and 70 years<sup>3</sup>. The most likely reason for increased death rate was general poverty accompanied by malnutrition, which must have led to the development of a number of diseases. The town of Bakar, which counted nearly as many inhabitants as Rijeka or Kastav at the time<sup>86</sup>, recorded a single death by starvation in 1817, yet the total death toll was twice as high as in the other nine studied years. The toll of 52 deaths by starvation in the town of Kastav was 50% higher in 1817 than in the other nine years. Bakar, Rijeka, and Kastav are urban areas, yet Kastav seems to be the only to have dearly paid the starvation death toll. This is because the parish of Kastav included a number of villages, whose residents made a living farming<sup>87</sup>, and starvation seems to have mostly reaped lives in rural areas, while urban centres weathered the disaster much better, thanks to a greater variety of jobs<sup>88</sup>.

This study has shown that the death rate in 1817 increased over 50% in all parishes in respect to the other years<sup>7</sup>, and that birth rate and number of marriages dropped. This is why population growth was negative in all parishes save for Fužine, Volosko, Praputnjak, Lič, and Novi Vinodolski.

In addition to cases where starvation was recorded as cause of death, one should keep in mind that it sped up the progress of most chronic diseases through exhaustion on one hand, and slowed down or prevented recovery from common acute, mostly infectious epidemic diseases through immune system dysfunction on the other.



This is why *hydropsio*, *hydrops* or *dropsy* (ascites) was much more common in middle-aged and older adults than in young adults and children as a symptom of worsened chronic diseases of the heart, liver, or kidney. However, in years of famine, this diagnosis became unusually common in children and young adults, which points to the characteristic »famine oedema« as a consequence of protein deficiency. The term *hydropsio* was often accompanied by *debilitas et inedia*, the first corresponding to weakness and malnutrition, which supports starvation as the cause of death.

Of acute diseases, epidemic of typhoid fever probably played a major role, its peak coinciding with starvation in 1817. The disease was spread by soldiers returning from Napoleonic battlefields to their homes devastated by famine and poverty. Exhausted by war and hunger, many an unfortunate soldier developed the symptoms of wandering mania, left their homes again in search for food, became tramps, and transmitted the typhus among local people. A common diagnosis found in our death registries was also *febre maligna*, which includes all serious acute diseases. However, as this description was often accompanied by terms *petechi* and/or *febre intermitens*, it is quite likely that it referred to common acute paediatric diseases involving a rash, but epidemic typhus can not be excluded. If high temperature was accompanied by rash and subcutaneous bleeding, then epidemic typhus was highly likely the cause of death.

Instead of the standard set of terms describing the cause of death, a parish priest would use his own words, which illustrate well the circumstances in which death occurred. A case in point is a note of 25 May 1816 in the book from Veprinac, which says the following: »...Addi 26. maggis in Abbazia sdinaseguentefu ritrovato semivivo sott orapprovramento d'inedia...« (The deceased was found barely breathing in conditions of poverty and long starvation)<sup>64</sup>.

Demographic changes caused by starvation and poverty include a significant drop in the number of marriages, a drop in the birth rate, and increased morbidity and mortality. Fewer people get married in hungry years, as weddings involve feasts with plenty of food and drink,

which are in want during the crisis. People would then wait for the rainy days to stop, and the number of marriages would rise after the crisis<sup>89</sup>. We therefore assumed that poverty and starvation had affected the number of marriages in our area of interest as well, and analysed relevant data for parishes which kept the books in order for the whole study period between 1816 and 1825. One look is enough to see that the number of marriages from 1816 to 1819 was significantly lower, ranging between 160 and 193 a year, than in the years that followed, when it soared with minor variation to between 256 and 291. This suggests that the drop in the marriage rate between 1816 and 1819 is the consequence of famine, and the relative boom that followed a sign of recovery.

Other plausible demographic change caused by general poverty would have been increased migration, but circumstances did not favour any such thing; there were still no signs of commercial or industrial development in the region to mobilise impoverished rural and urban population as workforce. Similarly, overseas migration became an option only fifty years later.

Our findings strongly corroborate research done by Bertoša in the neighbouring Istria<sup>8</sup>. Similar findings have been reported by Danica Božić Božančić<sup>9</sup> and Šime Peričić<sup>10,11</sup> further south for Dalmatia, and Valentino Lago vividly testifies about famine in Italy and most of the south and southeast Europe in his book *Memorie sulla Dalmazia (Memories of Dalmatia)*: »...Grande carestia in Dalmazia, al pari che in Italia e nella maggior parte dei paesi dell'Europa centrale e meridionale...« (Great famine in Dalmatia, equal to that in Italy and in most countries of the central and southern Europe...)<sup>90</sup>.

## Conclusion

Our research and analysis of data from registries of baptism, marriage, and death, with starvation as cause of death in the focus, has demonstrated that between 1816 and 1825, and in 1817 in particular famine took its toll in 21 parishes of Quarnero and hinterland, leaving a deep mark on local demography, just like in the neighbouring parts of Croatia and Europe.

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## GLAD KAO UZROK SMRTI U KVARNERSKO-GORANSKOJ REGIJI U RAZDOBLJU OD 1816. DO 1825. GODINE

### SAŽETAK

Naš cilj bio je istražiti glad kao uzrok smrti i posljedične socio-demografske promjene na području kvarnersko-goranske regije u Hrvatskoj u razdoblju od 1816. do 1825. godine s posebnim osvrtom na najkritičniju 1817. godinu poznatu kao »godinu gladi«. Kao izvor su korištene matične knjige krštenih, vjenčanih i umrlih iz 21 župe koje se danas nalaze u Državnom arhivu u Rijeci. Registrirani i statistički obrađeni su podaci prema datumu krštenja (rođenja), vjenčanja i smrti, prema spolu i dobi, a kod umrlih dodatna pozornost posvećena je dijagnozama uzroka smrti. U ispitanoj razdoblju kršteno (rođeno) je 15.701 dijete, a umrlo 11.021 osoba. Glad kao uzrok smrti navodi se ukupno u 255 slučajeva s time da je najviše, čak 198 slučajeva zabilježeno u kritičnoj 1817. Zbog omjera rođenih i umrlih (1,147:1545) jedino je te godine zabilježen negativni prirodni priraštaj u gotovo svim župama. Postotak umrlih od gladi u ukupnom mortalitetu te je godine za cijelo područje iznosio 12,8% a najviši postotak zabilježen je u Veprincu (33,3%), Crikvenici (23,3%) i Kastvu (15,8%). Gledano prema spolu među umrlim od gladi prevladavaju muškarci (56,7:43,3%). Prema dobi mladih od 20 godina je 42 (16,50% svih umrlih) s time da je među njima najviše djece u razdoblju od jedne do četiri



godine (69,04%), a među odraslima od ukupno 213 (83,50% svih umrlih) najviše (26,27%) ih je u dobi između 60 i 69 godina. Promatrajući stope nataliteta i nupcijaliteta od 1816. do 1818. godine utvrđen je u globalu manji broj rođene djece i sklopljenih brakova, da bi se zatim stope naglo povećale i zadržale na istoj razini uz minimalne oscilacije. Ovim se radom pokazalo da je i Kvarnersko-goranskoj regiji početkom 19. stoljeća, a napose 1817. godine glad uzela svoj danak i ostavila traga u demografskoj slici, slično kao i susjednim krajevima u Hrvatskoj i Europi.