

DRAFT RESEARCH PAPER

**Palliative Care for Elderly - An Analysis of Needs  
and Resources in Croatia. Part 1**

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## ABSTRACT

Sixteen % of the Croatian population are older than 65 years of age with the increasing trend of ageing. Older people have often more problems and disabilities, and need specialised health care services. Palliative care (PC) is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness. PC has recently been recognised in the Republic of Croatia and an important step was legislative incorporation of its services. We investigated different morbidity and mortality parameters of the population that are prerequisite for any rational analysis and planning of the PC services. We conclude that Croatian population is ageing, that different aspects/providers of PC services are needed, and that different diseases require diverse parameters for the planning of rational PC treatment and team organization. In addition to the legislative incorporation of the PC a long term strategy at the national and local level is needed, with defined PC services and providers.

## INTRODUCTION

The Republic of Croatia has according to the statistical analysis, done in 2001 year, 16% of the population older than 65 years of age with the increasing trend of ageing since the number of young people < 15 years is 17% (1, 2). Countries of the EU have similar structure, with the 16.2% population of people older than 65 years of age (1, 2). Consequently, the Republic of Croatia belongs to the countries with a high percent of elderly inhabitants (1-4).

Most of the deaths in European and other developed countries occur in people aged over 65 (5). Older people have often more problems and disabilities, and need specialised health care services that require collaboration and partnership between different groups (5). Their problems are different from the

younger population. It is important to notice that according to the Recommendations of the Council of Europe health care system should be patient-oriented and that citizens should necessarily participate in decisions regarding their health care (6).

Palliative care (PC) is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual (5). Instead to be something that only specialized teams provide, PC should be an integral part of care and take place in any health setting (5).

The problem of palliative care has recently been recognised in the Republic of Croatia (7). An important step was legislative incorporation of the palliative care services (8). The Committee for Palliative Care of the Ministry of Health, Republic of Croatia and Croatian Society for Hospice/Palliative Care gave significant contribution to this process.

However, similarly to other developing countries comparatively little research has been carried out on the needs for PC, and there is no general strategy for a long term incorporation of PC into health care system. We investigated different morbidity and mortality parameters of the population that are prerequisite for any rational analysis and planning of the PC services.

## MATERIALS AND METHODS

The statistical data related to different morbidity and mortality parameters of the population were collected from the Zagreb Institute of Public Health. We analysed the morbidity and mortality of: cardio-vascular, respiratory, digestive, endocrine, genito-urinary, muco-skeletal and nervous systems, skin, eye, ear, psychiatric

disorders, infections and neoplastic diseases/tumors. The data of the targeted population were from 1998-2002.

## RESULTS AND DISCUSSION

During the 1998-2002 period the morbidity parameter of the Croatian population was characterised with a constant rise of values in the subgroup  $\geq 65$  years, and with a constant drop in the age group  $< 65$  years. This trend is noticed for both males and females. The fact that female morbidity is much higher than the male in the  $\geq 65$  group may be also connected with lower life expectancy in the old male population (females live longer). The morbidity ratio of two basic age groups ( $\geq 65$ : $< 65$ ) was 0.404 in 1998, 0.422 in 1999, 0.440 in 2000, 0.451 in 2001 and 0.473 in 2002. This also reflects constant rise in the morbidity of  $\geq 65$  age group important for the planning of the PC services.

**Table 1. Morbidity of the Croatian population in 1998-2002 period.**

Years	Male <65	%	Female <65	%	Male $\geq 65$	%	Female $\geq 65$	%	Total	% <65	% $\geq 65$
1998	190275	35.06	196284	36.17	71075	13.10	85036	15.67	542670	71.23	28.77
1999	195742	35.42	192753	34.88	74511	13.48	89656	16.22	552662	70.30	29.70
2000	197427	35.06	193572	34.38	78294	13.90	93778	16.65	563071	69.44	30.56
2001	184745	34.32	186175	34.59	75805	14.08	91560	17.01	538285	68.91	31.09
2002	185039	33.81	186437	34.07	80161	14.65	95654	17.48	547291	67.88	32.12

The cardio-vascular morbidity parameter, a major morbidity cause in the Croatian population (2), follows the results of the total population morbidity and constantly rises in the age groups  $\geq 65$  years (Table 2). Similar is valid for the third, fourth and fifth major specific morbidity parameter of the Croatian population: digestive tract diseases, respiratory diseases and genito-urinary diseases (Tables 3-5, Appendix). The latter trend was not observed for the second major morbidity parameter tumors/neoplasms (Table 6, Appendix), probably

because of the fact that tumor morbidity is also complexly related to the genetic population parameters.

In addition to the described negative morbidity trends of the older population it is noticeable that the proportion of cardiovascular morbidity (Table 2) and digestive tract diseases morbidity (Table 3, Appendix) within total morbidity values rises for the population  $\geq 65$  years. This result reflects two major organ systems that are targeted by different diseases in the old age.

It is important to notice that in addition to the PC services related to tumor diseases and pain management, ageing of the Croatian population and prevalence of cardio-vascular and digestive diseases requires careful planning of the PC providers, their locations, local organization and funding.

**Table 2. Cardio-vascular morbidity in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male $\geq 65$	Female $\geq 65$	Total	% <65	% $\geq 65$	Mb % <65	Mb % $\geq 65$
1998	17232	11105	18422	23173	542670	40.52	59.48	5.22	7.66
1999	17438	11340	19194	24193	552662	39.88	60.12	5.21	7.85
2000	19415	11758	20302	25529	563071	40.48	59.52	5.54	8.14
2001	17763	11355	20483	25040	538285	39.01	60.99	5.41	8.46
2002	17846	10868	21140	25592	547291	38.06	61.94	5.25	8.54

Almost identical to the morbidity are trends of the mortality parameter in the Croatian population (1998-2002). Table 7 shows a constant rise in the mortality of the population  $\geq 65$  years and a drop in the younger age groups <65. This negative trend is noticed for both males and females, and followed by the drop of the mortality in the younger age groups. The fact that female mortality is much higher than the male in  $\geq 65$  group may be also connected with lower life expectancy in the old male population (females live longer), as discussed previously for the results of the morbidity (Table 1).

The mortality ratio of two basic age groups ( $\geq 65$ : $<65$ ) was 2.81 in 1998, 2.83 in 1999, 3.02 in 2000, 3.13 in 2001 and 3.35 in 2002. This reflects the constant rise in the mortality  $\geq 65$  age group that is also likely to be the result of population ageing, since there were no basic improvements in the Croatian healthcare services and their quality during the 1998-2002 period.

**Table 7. Mortality of the Croatian population in 1998-2002 period.**

Years	Male <65	%	Female <65	%	Male $\geq 65$	%	Female $\geq 65$	%	Total	% <65	% $\geq 65$
1998	9423	18.11	4246	8.16	16977	32.64	21373	41.09	52019	26.28	73.72
1999	9383	18.06	4200	8.08	17230	33.16	21141	40.69	51954	26.14	73.86
2000	8696	17.31	3808	7.58	16793	33.42	20951	41.70	50248	24.88	75.12
2001	8395	17.00	3548	7.19	16584	33.59	20844	42.22	49371	24.19	75.81
2002	8174	16.22	3404	6.75	17457	34.63	21375	42.40	50410	22.97	77.03

The cardio-vascular mortality parameter, a major cause of death in the Croatian population (2), follows the results of the total population mortality and constantly rises in the age groups  $\geq 65$  years (Table 8). Similar is valid for the second, third, fourth and fifth major specific mortality parameter in the Croatian population: tumors/neoplasms, trauma and poisoning, digestive tract diseases and respiratory (Tables 9-12, Appendix).

In addition to the described negative mortality trends of the older population it is noticeable that the proportion of cardio-vascular causes of death within the total mortality values drops for the population  $\geq 65$  years in 2002 (Table 8). It remains to be seen if this drop is the result of intensive preventive medicine projects focused on the prevention of cardio-vascular diseases that have been conducted during the last decade.

The fact that morbidity parameter of cardio-vascular diseases is still rising rises some doubts (Table 2). From the standpoint of the PC planning morbidity parameter may be of more importance for the cardio-vascular diseases that are

major mortality and morbidity parameter in Croatia. This is due to the fact that cardio-vascular patients either die quickly, in which case there is no major need for PC services, or in the case of chronic disease due to the long-lasting disability require PC.

Different situation is with tumor diseases. It is interesting to note that the proportion of tumor mortality within a total population mortality, contrary to the morbidity parameter, rises in 1998-2002 period for the  $\geq 65$  years group, and remains the same in  $< 65$  group (Table 9, Appendix). This is not surprising since it is much more difficult/expensive to provide and execute efficient medical antitumor treatment in the old age population ( $\geq 65$ ). When considering any PC service organization for this type of diseases one should bare in mind that in the case of population  $\geq 65$ , mortality parameters (contrary to cardio-vascular diseases) might be more relevant for efficient planning.

**Table 8. Cardio-vascular mortality in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male $\geq 65$	Female $\geq 65$	Total	% <65	% $\geq 65$	Mt % <65	Mt % $\geq 65$
1998	2998	1207	9115	13666	52019	15.58	84.42	8.08	43.79
1999	3028	1283	9166	13598	51954	15.92	84.08	8.30	43.82
2000	2730	1176	9028	13778	50248	14.62	85.38	7.77	45.39
2001	2685	1077	9005	13775	49371	14.17	85.83	7.62	46.14
2002	2642	969	9337	13750	50410	13.53	86.47	7.16	45.80

Place of death is also important component for any type of planning related to PC. Table 13 shows that from 2000 year Croatian hospitals are the major places where people die. Generally speaking almost the same percentage of people die in hospitals and homes, and this amounts to  $>90\%$  of all cases. Table 13 clearly shows the rise of reported deaths in hospitals and nursing homes, and a slight drop of deaths reported at home (despite of all restrictions of the healthcare system, due to the reforms and insufficient funding). Number of deaths reported in nursing homes slightly rises but it is still less than 5%, and all other facilities/places represent  $<5\%$ .

Basic statistics related to the place of death issues is essential to define placement of different PC teams targeting specific areas of interest.

**Table 13. Place of death of the Croatian population in 1998-2002 period.**

Year	Hospitals	%	Nursing homes	%	Home	%	Other	%	Total
1998	23919	45.72	1586	3.03	24602	47.03	2204	4.21	52311
1999	23923	46.05	1698	3.27	24470	47.10	1862	3.58	51953
2000	23547	46.86	1756	3.49	23229	46.23	1714	3.41	50246
2001	23218	46.86	1932	3.90	22752	45.92	1650	3.33	49552
2002	23891	47.24	2279	4.51	22662	44.81	1737	3.43	50569

## CONCLUSION

1. The results of our investigation, at this point of our project, identify major population parameters of morbidity, mortality and places of death in order to provide the basis for further planning of PC and related services.
2. Croatian population is ageing, and some specific aspects of PC are needed (not necessarily at the same place and under the same type of service/provider).
3. Different diseases might require different parameters for the planning of efficient PC treatment and team organization.
4. In addition to the legislative incorporation of the PC long term strategy on the national and local level is needed, with defined PC services and providers.
5. The problem of PC services has to be discussed and presented to different organizations (government, health care, non-profit, etc.) and media.



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## Appendix

**Table 3. Digestive tract disease morbidity Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mb % <65	Mb % ≥65
1998	22482	17443	8147	8829	542670	70.17	29.83	7.36	3.13
1999	22760	16996	8296	8959	552662	69.73	30.27	7.19	3.12
2000	22880	17302	8946	9570	563071	68.46	31.54	7.14	3.29
2001	22415	16746	8756	9300	538285	68.44	31.56	7.28	3.35
2002	21094	15367	9058	9385	547291	66.41	33.59	6.66	3.37

**Table 4. Respiratory tract morbidity in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mb % <65	Mb % ≥65
1998	24385	18448	6211	4768	542670	79.60	20.40	7.89	2.02
1999	24224	18457	6594	5110	552662	78.48	21.52	7.72	2.12
2000	22008	17142	6336	4838	563071	77.80	22.20	6.95	1.98
2001	20671	15911	6307	4609	538285	77.02	22.98	6.80	2.03
2002	19095	14572	6179	4473	547291	75.97	24.03	6.15	1.95

**Table 5. Genito-urinary tract disease morbidity in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mb % <65	Mb % ≥65
1998	9011	24506	4934	4434	542670	78.16	21.84	6.18	1.73
1999	9425	24274	5106	4794	552662	77.29	22.71	6.10	1.79
2000	9240	24035	5185	4948	563071	76.66	23.34	5.91	1.80
2001	9680	24751	5206	5153	538285	76.87	23.13	6.40	1.92
2002	9850	24170	5363	5477	547291	75.84	24.16	6.22	1.98

**Table 6. Tumor morbidity in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mb % <65	Mb % ≥65
1998	18186	27318	12785	12468	542670	64.31	35.69	8.39	4.65
1999	18996	26139	13803	12238	552662	63.41	36.59	8.17	4.71
2000	20909	25891	14920	13209	563071	62.46	37.54	8.31	5.00
2001	18548	25249	13447	11800	538285	63.43	36.57	8.14	4.69
2002	19191	25873	14396	12923	547291	62.26	37.74	8.23	4.99

**Table 9. Tumor mortality in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mt % <65	Mt % ≥65
1998	2579	1605	3965	3135	52019	37.08	62.92	8.04	13.65
1999	2802	1550	4120	3108	51954	37.58	62.42	8.38	13.91
2000	2632	1475	4220	3401	50248	35.02	64.98	8.17	15.17
2001	2647	1443	4314	3371	49371	34.73	65.27	8.28	15.57
2002	2591	1481	4526	3567	50410	33.47	66.53	8.08	16.05

**Table 10. Trauma and poisoning mortality in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mt % <65	Mt % ≥65
1998	1591	435	623	524	52019	63.85	36.15	3.89	2.20
1999	1417	384	594	544	51954	61.28	38.72	3.47	2.19
2000	1446	333	591	527	50248	61.41	38.59	3.54	2.22
2001	1340	323	549	530	49371	60.65	39.35	3.37	2.19
2002	1241	291	561	614	50410	56.59	43.41	3.04	2.33

**Table 11. Digestive tract disease mortality in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mt % <65	Mt % ≥65
1998	901	325	689	628	52019	48.21	51.79	2.36	2.53
1999	917	293	772	666	51954	45.69	54.31	2.33	2.77
2000	788	282	756	681	50248	42.68	57.32	2.13	2.86
2001	820	248	686	617	49371	45.04	54.96	2.16	2.64
2002	763	249	768	614	50410	42.27	57.73	2.01	2.74

**Table 12. Respiratory tract mortality in Croatia during 1998-2002 period.**

Years	Male <65	Female <65	Male ≥65	Female ≥65	Total	% <65	% ≥65	Mt % <65	Mt % ≥65
1998	285	100	960	839	52019	17.63	82.37	0.74	3.46
1999	280	104	1180	974	51954	15.13	84.87	0.74	4.15
2000	239	83	949	772	50248	15.76	84.24	0.64	3.43
2001	217	94	909	719	49371	16.04	83.96	0.63	3.30
2002	250	67	982	806	50410	15.06	84.94	0.63	3.55