

# Euthanasia of Patients with the Chronic Renal Failure

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## ABSTRACT

*This study deals with frequency and form of euthanasia in dialysis patients with chronic renal failure (CRF) in Bosnia and Herzegovina (B&H) within the period from 2000 to 2006. Of total number of 2700 patients on dialysis we examined  $n=753$  of them. Examinees with the Balkan Endemic Nephropathy (BEN) ( $n=348$ ) were in the first group, and the Control group was formed of patients with other diseases ( $n=405$ ). In this study the following methods were used: adapted Questionnaire from the Renal Registry of B&H, Beck's Anxiety Inventory (BAI), Hamilton's Depression Rating Scale (HDRS) and Mini-Mental Scale of Estimation (MMSE). Age of the BEN group of patients ranged:  $64.77 \pm 8.86$  and the control one  $53.85 \pm 3.60$ . Multivariate analysis for the BEN group with passive euthanasia was: 0.760 (95%, CI=0.590–0.710) ( $p=0.001$ ) and for the active one was 0.450 (95%, CI=0.125–0.510) ( $p=0.001$ ). Euthanasia is associated with the rural life and renal heredity, and psychological BAI scale-total, HDRS-total and MMSE-total. For the BEN group passive euthanasia is 3.75% as well as active 0.86%. The findings stressed that euthanasia of dialysis patients requires better nephrological-psychiatric control and social care in B&H as well as complete program for the CRF samples protection too.*

**Key words:** euthanasia, dialysis, chronic renal failure, patients

## Introduction

Dialysis raises ethical questions in XXI century medicine and euthanasia is one of the most difficult ethical topics<sup>1-4</sup>. Ethical aspects in decision making concerning euthanasia or leaving someone's life to other persons are an age-old problem of medicine<sup>5-6</sup>. Dialysis avoidance as an attempt of faster death at home<sup>7</sup> with the closest family affected by the disease<sup>8</sup>. Euthanasia of these patients is withdrawal of dialysis when the therapeutic effect is less than the gain for patient<sup>9</sup>. Decision making to withdraw the dialysis is usually preceded by 1 to 4 deaths of the patients being in the terminal phase of the renal disease<sup>10</sup>. Data from literature show that voluntary withdrawal from dialysis by the patient is a frequent way of dying resulting in 20–25%<sup>11</sup> of mortality rate in USA.

There are 24 dialysis centers in B&H, 2770 patients of whom 14.7% with Balkan endemic nephropathy (BEN). Prevalence of the patients with BEN was 380.00 pmp and in the northeast of B&H it was 840 and 520 pmp. Incidence of the new dialyzed patients was 105.0 pmp<sup>12</sup>.

Euthanasia of patients with chronic renal failure (CRF) existed in B&H within the period from January 2000 to December 2006. Euthanasia on dialysis is more frequent in the northern parts of B&H as well as (BEN) and can not be easily discovered. Mortality rate of the dialyzed patients in B&H in 2001 were 14.5%, in 2002 12.7% in 2003 11.24%, in 2004 11.0% and in 2005 10.7%<sup>12</sup>. Mortality rate of dialysis patients was 11.24% and 10.00% of them had BEN.

This contributes to the global psycho-social<sup>13</sup> and medico-legal importance<sup>14</sup> of this problem in B&H. Ethical aspects in B&H are waste research area<sup>15</sup>, and they are more pronounced<sup>16</sup> with regard to problems in neighborhood<sup>17</sup> of B&H, and modernization of dialysis and better public health services in B&H<sup>18–20</sup>.

This study deals with frequency and form of euthanasia in dialysis patients with CRF on hemodialysis in B&H within the period from January 2000 to December 2006. This study is the first one of that kind in B&H, which makes it especially important, and on the other hand, it imposes all sorts of limitations concerning further research.

## Materials and Methods

### Subjects

The study included 753 patients living in B&H, being dialyzed. They were classified into two groups: BEN (Balkan endemic nephropathy) patients and Controls, patients with other diseases resulting in chronic renal failure (CRF).

BEN group consists of 348 patients from the endemic environment. They are changed with regard to their families and behavior, hereditary factor can not be excluded and behavior factors were included. BEN is associated with anxiety before and during dialysis. Dialysis centers initiated studying of BEN in B&H. Patients who were previously treated due to mental problems or if they were used for some other purposes were not included into the study. There were 137 excluded patients (n=137).

Control group consists of 405 patients of dialysis. They have been diagnostically changing (n=405). Criteria for control group formation from the dialysis patients were chronic renal failure (CRF) and nephrological diagnosis of the disease with other pathogenesis. The group had 20% of cases with chronic glomerulonephritis, 15% of chronic pyelonephritis, more than 7% of polycystic renal disease, diabetes 8% of patients, renal tuberculosis present in 1.0% of them and 10% were patients with other causes of CRF. Other somatic and mental diseases which could have some effect upon mental health and behavior changes with at least 3 months of dialysis treatment were included. There were 1880 excluded patients.

BEN group consists of 183/165 male/female patients, aged  $64.77 \pm 8.86$ . Control consists of 208/197 male/female patients aged  $53.85 \pm 13.6$ .

### Process of investigation

Patients were observed from January 2000 to December 2006. This study was necessary due to lack of explanation for the fatal outcome in CRF patients<sup>12</sup>. This study has been made in 2007 at the Faculties of Medicine in Mostar, Belgrade and Foča. All the time during dialysis patients had psychological problems and psychological as well as behavioral factors have not been sufficiently analyzed, which is primarily both nephrologists' and psychiatrists' concern if they are included into the study.

Regarding psychopathologic aspect, regions with endemic nephropathy are also regions with the highest suicide rate in B&H<sup>18</sup>. The patients were followed up during previous five years and then the groups were formed according to the mentioned criteria including incidence of the diseases of unknown etiology (BEN) and the more and more frequent and necessary dialysis in other diseases causing CRF. Groups were compared according to the data from dialysis centers collected at the end of each year for the Renal Registry of B&H adapted for examination of the mental health, as well as according to psychological testing which make the basic part of all data. Patients are regularly processed through the Renal Register of B&H. In the same way the Registry was multidisciplinary updated in accordance with new experience and achievements in connection with dialysis as a permanent process or treatment which precedes renal transplantation. In this way the data base usable for the further research is created.

### Questionnaires

Questionnaires for determination of the mental health variables are:

1. Data from the dialysis centers collected at the end of each year for the Renal Registry of B&H and adapted for the mental health examination<sup>12</sup> have been used in this study. These are individual questionnaires for each patient including: gender, age, place of birth and residence, diagnosis of the primary renal disease, date of the first dialysis, its method, data on transplantation, existence of the co-morbidity in the family and settlement, dialyzing of other family members, outcome of the diseases, mortality of the family members due to CRF. Data were analyzed and compared with those of patients with other primary diseases.
2. BAI (Beck's Anxiety Inventory) consists of 21 questions and it is one of the three most often used questionnaires in modern examinations related to symptoms of the general anxiety<sup>21</sup>. Patients answer each question estimating its level on the Likert's scale from 1 (not present) to 3 (very expressed). The total of all answers is 63 which is in fact intensity of the general anxiety symptoms. BAI items are marked from 1 to 21 as: 1) numbness (insensitivity) to touch or numbing, 2) sensation of heat, 3) instability in legs, 4) inability to relax, 5) fear of the worst, 6) vertigo and dizziness, 7) heart palpitation and tachycardia, 8) instability, 9) horridness, 10) nervousness, 11) sensation of suffocation, 12) hand shaking, 13) sensation of trembling, 14) fear of losing control, 15) difficulties with breathing, 16) fear of dying, 17) anxiety, 18) digestion difficulties, 19) faintness, 20) blush, 21) sweating (not caused by heat).
3. HDRS (Hamilton's Depression Rating Scale) with 21 questions<sup>22</sup>. Score of the Hamilton's scale (21 items) determines the severity of depression: 0–8 without depression, 8–17 minor depression, 17–24 moderate and more than 24-marked depression. HDRS items were analyzed in 5 groups: 1) depression, 2) anxiety/agita-

tion, 3) cognitive disorders, 4) retardation and 5) vegetative disorders.

4. MMSE (Mini Mental State Examination) is useful for the long-term follow-up of cognition and it is estimated as a reliable and valid<sup>23</sup>. It was partly changed for this study. The scale consists of 11 questions and maximum score is 30. Maximum score for the first five questions is 21 and for the next 6 it is 9. The score under 23 suggests cognitive disorders. MMSE consists of the following questions: 1) orientation/time, 2) orientation/ space 3) memorization, 4) attention and calculation, 5) reproduction, 6) language–nominations, 7) repetition, 8) coordination, 9) practice 10) gnosis and 11) cognition.

### Statistics

Statistical methods and procedures in the study are standardized for: mean value, standard deviation and frequency of results. Validity of the difference between group characteristics was done by descriptive analysis on EPQ test; direct and indirect signs of anxiety on BAI test, signs of depression on the HDRS test and cognition measured on the MMSE test. The following descriptive statistical methods were used: central tendency (arithmetic mean value), variability measures (standard deviation)

and relative numbers (structure indicators) with Chi square test and the Mann-Whitney's U-test.

Univariate and multivariate regression models were used in the analysis of correlation between dialysis avoidance and euthanasia. Hypotheses were tested on the level of statistical significance (alpha level) ( $p < 0.05$ ), with OR (odd ratio) and CI (confidence interval) at 95% of significance. Statistical processing was performed on PC using Word Excel 10 for the data base and tables and using »SPSS« statistical software 10.0: SPSS Inc, Chicago, IL, USA<sup>24</sup>.

### Results

Pattern of sample with chronic renal failure (CRF) is presented in Table 1. The largest number of BEN patients (84.0%) lives in the northeastern part of B&H, while patients from the Controls are from all parts of B&H.

BEN patients were on the average  $5.36 \pm 3.36$  years on dialysis and patients from Control group were  $2.57 \pm 3.51$  years on dialysis ( $p < 0.001$ ). In BEN patients, 12.38% were on dialysis more than 120 months, 24.45% from 60–119 months, 48.55% from 12–59 months and 14.62% patients less than 12 months.

TABLE 1  
PATTERN OF SAMPLE WITH CHRONIC RENAL FAILURE (CRF)

Parameter	BEN N = 348	Controls N = 405	p	OR	CI	
	X ± SD	X ± SD			Lower	Upper
Gender (male/female)	183/165	208/197	0.050	0.870	0.110	0.830
Age (mean ± SD)	64.77 ± 8.86	53.85 ± 13.6	0.050	0.935	0.960	1.110
Years on dialysis	5.36 ± 3.36	2.57 ± 3.51	0.001	0.710	0.535	0.985
Marital status: Married/Single	212/136	207/198	0.003	0.120	0.320	0.380
Education: >8; 12 > 12	190/139/19	244/128/33	0.001	0.910	0.670	1.210
Employment: yes/no	133/215	217/188	0.001	0.975	0.150	0.990
Accommodation: House/Apartment	300/48	284/121	0.001	0.955	0.140	0.650
Abuse: alcohol/drug/nicotine	255/15/78	210/11/184	0.001	0.750	0.210	0.470
Father's education: <8; 12; > 12	226/97/25	301/44/60	0.001	0.835	0.435	0.490
Father's occupation: Worker/Clerk	291/57	344/61	0.001	0.895	0.775	0.980
Mother's education: <8; 12; > 12	309/35/2	326/67/12	0.012	0.420	0.270	0.730
Mother's occupation: House wife/Clerk	289/59	348/57	0.080	0.940	0.430	0.720
Settlement: rural/ urban	236/112	252/153	0.001	0.570	0.770	0.910
Migration: yes/no	113/235	163/242	0.001	0.250	0.870	0.970
Renal heredity: yes/no	284/64	153/252	0.001	0.640	0.210	0.650
Avoidance of dialysis: yes/no	104/244	129/276	0.011	0.810	0.720	0.910
Wish to die: yes/no	39/319	23/382	0.267	0.970	0.510	0.970
Non-assisted death: yes/no	13/335	2/403	0.001	0.650	0.540	0.730
Assisted death: yes/no	3/345	1/404	0.041	0.710	0.580	1.190
Death at home is better: yes/no	98/250	57/348	0.001	0.125	0.120	0.350

BEN – Balkan Endemic Nephropathy, N – sample size, X – mean, SD – standard deviation, p – probability, OR (Odds ratio), CI (confidence interval)

BAI of patients with the chronic renal failure is presented in Table 2. BAI-total and other variables are higher in group with BEN comparing to Control group ( $p=0.001$ ). All variables show anxiety in both BEN and Control groups. The highest values on stratified Chi square have: sensation of choking, horridness, numbness, sensation of heat, fear of the worst ( $p<0.001$ ).

Depression (HDRS) of patients with the chronic renal failure is presented on the Table 3. In the BEN group values for: depression, cognitive disorders and retardation are higher, then in Controls, but in Controls, values for anxiety and vegetative disorders are higher then in BEN group. Between groups, there is a high significance for: depression ( $p<0.001$ ), and cognitive disorders, retarda-

**TABLE 2**  
BAI (BECK'S ANXIETY INVENTORY) OF PATIENTS WITH THE CHRONIC RENAL FAILURE

Parameter	BEN N=348	Controls N=405	p	OR	CI	
	X ± SD	X ± SD			Lower	Upper
Numbness	2.08 ± 0.80	1.03 ± 0.92	0.001	0.636	0.925	1.175
Sensation of heat	1.84 ± 0.71	0.85 ± 0.93	0.001	0.630	0.926	1.174
Instability in legs	1.93 ± 0.68	1.08 ± 0.98	0.001	0.611	0.878	1.118
Inability to relax	1.86 ± 0.64	0.99 ± 0.88	0.001	0.599	0.880	1.116
Fear of the worst	1.86 ± 0.80	0.82 ± 0.97	0.001	0.622	0.719	0.964
Dizziness	1.79 ± 0.67	0.93 ± 0.94	0.001	0.605	0.722	0.960
Heart palpitation	2.34 ± 0.84	1.15 ± 1.03	0.056	0.568	0.752	0.975
Instability	1.77 ± 0.68	0.89 ± 0.92	0.001	0.554	0.755	0.973
Horridness	1.55 ± 0.74	0.68 ± 0.88	0.001	0.653	0.912	1.168
Nervousness	1.59 ± 0.67	1.10 ± 0.74	0.001	0.515	0.401	0.604
Sensation of choking	1.83 ± 0.88	0.75 ± 0.91	0.001	0.655	0.954	1.210
Shivering of hands	1.25 ± 0.72	0.51 ± 0.72	0.001	0.524	0.636	0.841
Sensation of shivering	1.13 ± 0.70	0.49 ± 0.71	0.001	0.515	0.531	0.734
Fear of losing control	1.40 ± 0.77	0.55 ± 0.78	0.001	0.565	0.735	0.957
Breathing difficulties	2.00 ± 0.92	0.81 ± 0.91	0.001	0.606	1.060	1.324
Fear of death	1.49 ± 0.74	0.65 ± 0.86	0.001	0.590	0.718	0.950
Frightfulness	1.32 ± 0.69	0.61 ± 0.76	0.001	0.533	0.605	0.814
Digestion difficulties	1.21 ± 0.69	0.65 ± 0.76	0.001	0.531	0.451	0.659
Unconsciousness	1.10 ± 0.63	0.57 ± 0.66	0.001	0.472	0.438	0.623
Blush	0.88 ± 0.59	0.32 ± 0.52	0.001	0.403	0.479	0.638
Sweating	0.93 ± 0.66	0.46 ± 0.60	0.001	0.459	0.384	0.564
BAI – total	33.14 ± 15.82	10.24 ± 13.52	0.001	0.578	0.770	0.890

BEN – Balkan Endemic Nephropathy, N – sample size, X – mean, SD – standard deviation, p – probability, OR (Odds ratio), CI (confidence interval)

**TABLE 3**  
DEPRESSION (HDRS) OF PATIENTS WITH THE CHRONIC RENAL FAILURE

Parameter	BEN N=348	Controls N=405	p	OR	CL	
	X ± SD	X ± SD			Lower	Upper
Depression	2.810 ± 0.42	0.33 ± 0.21	0.001	1.690	0.970	1.350
Anxiety	1.40 ± 0.50	2.95 ± 0.22	0.003	0.995	0.860	0.985
Cognitive disorders	1.66 ± 0.43	0.33 ± 0.21	0.002	0.995	0.810	0.945
Retardation	1.91 ± 0.41	0.40 ± 0.25	0.002	1.210	0.910	1.210
Vegetative disorders	1.12 ± 0.25	2.36 ± 0.24	0.005	0.975	0.925	1.120
HDRS-Total	51.50 ± 5.40	24.370 ± 0.23	0.001	0.925	0.870	1.120

BEN – Balkan Endemic Nephropathy, N – sample size, X – mean, SD – standard deviation, p – probability, OR (Odds ratio), CI (confidence interval)

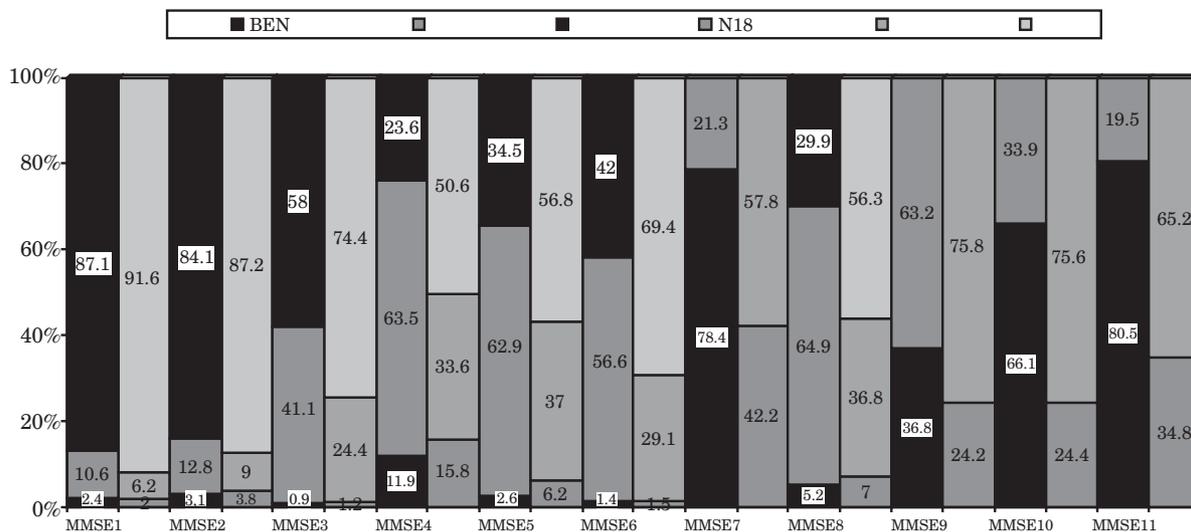


Fig. 1. Mini-mental state examination (MMSE) of patients with the chronic renal failure.

tion, anxiety and vegetative disorders ( $p < 0,005$ ). HDRS-total is higher in BEN group than in Controls.  $OR = 0,925$  (95%  $CI = 0,870-1,129$ ) ( $p < 0,001$ ).

On Figure 1 is presented MMSE (Mini Mental State Examination) of patients with the chronic renal failure. By using MMSE test statistically significant difference between the average scores for groups BEN and Controls in the total for orientation was not obtained. For attention difference is statistically significant: ( $p < 0,005$ ), while for all other items Chi square test showed highly statistically significant differences so that MMSE total, and the BEN group patients had lower average scores than the Controls group ones.  $OR = 0,590$  (95%  $CI = -0,350-0,075$ ) ( $p < 0,001$ ).

On the basis of results of the univariate logistic regression model for multivariate analysis was made. For the BEN group the relative risk of passive euthanasia is 3.75% 0.760 (95%  $CI = 0,590-0,710$ ) ( $p = 0,001$ ), as well as active 0.86% 0.450 (95%  $CI = 0,125-0,510$ ) ( $p = 0,001$ ). Euthanasia is associated with living in rural house and renal heredity. Psychopathological BAI was total, HDRS was total and MMSE was total. In Controls group passive euthanasia is 0.50%:  $R = 0,850$ , 0.510 (95%,  $CI = 0,620-0,790$ ) and the active one is 0.24%:  $R = 0,310$ ,  $OR = 0,230$  (95%  $CI = 0,015-0,350$ ) ( $p = 0,001$ ).

## Discussion

Before analysis of results it should be known that euthanasia has both research deontological and legal aspect according to which it is banned in B&H. Religious thesis confirms that there is no murder without sin<sup>25</sup> and that sinless life is impossible<sup>26</sup>.

Most of our patients with BEN are from the north-eastern (84.0%) and central part in B&H. Patients with other forms of CRF are from all parts of B&H. Taking into account observation period and previous studies on dying in B&H, there are reliable data that there is a so-

cial aspect of euthanasia. Age in the BEN group patients is late seventies, 1/3 of them are lonely, with co morbidity in the family and settlement, rural way of life and heredity ( $p = 0,001$  in Table 1). This reveals everything about persons who except for poor health prognosis have ruined all foundations<sup>27</sup> serving to make living at that age easier<sup>28</sup>. Chronic dialysis aggravates patients' condition so that their health problems become multiple<sup>29</sup>. Choice should be made between prolonged quantity or quality of life<sup>30</sup>.

In BEN group endemic gives a net-like grieving resulting in a net-like form of fading out of life, which Cohen in 2006 termed as preventive act<sup>31</sup>. Euthanasia is disappearance in the moment when death is certainty. CRF and co-morbidity associated with the social deprivation lead to one or other form of death. They only do not lead to better and healthier life<sup>26</sup>. Patients in the Controls group have different diagnostic set less hereditary and endemically determined. Besides, they are almost in the old age and the lack of trans generational work of grieving results in less frequent, but more drastic forms of death, often associated with co-morbidity and vascular complications<sup>32</sup>.

»Hastening death« is the current term for the forms of passive and active euthanasia or non-voluntary and involuntary euthanasia<sup>1</sup>. Passive euthanasia is for the BEN group 3.75% and in Controls group is 0.50%. This shows dynamics of behavioral way of life requiring efficiency, life without pain and dynamics from birth to death<sup>3</sup>. Passive form of euthanasia is the best finding in this study and it is the most appropriate for the time being in B&H. For many other activities in societies in transition there are solutions »no-one is to blame, but the loss is obvious«<sup>33</sup> and »transient extinction of life« is also mentioned by other authors<sup>18</sup>. Nobody is responsible for death except incurable disease<sup>3</sup>. Equivalents of euthanasia are: avoidance of dialysis<sup>4</sup>, social and psychological retraction<sup>32</sup>, dementia, suicide due to poor quality of life<sup>33</sup>.

In our study the highest level of frequency had these variables: sensation of choking, hardness, numbness, sensation of heat, fear of the worst as well. On MMSE, significant values of cognitive damage are present in both groups. High scores of anxiety, depressive and cognitive variables in BEN group show that the approaching death has emotional engagement. We agreed with the Cohen's LM et al (2006) thesis<sup>34</sup> that mourning in dialyzed patients results in lower expression of thanatophobia variables<sup>32</sup>. It is clear now that verbal expression<sup>34</sup> and clinical observation<sup>35</sup> in consideration of the quality of life<sup>36</sup> are lower in comparison with the result of psychological tests in our study. Controls group had lower values on all variables, but not less significant results which show that soon death is possible in the total of all variables.

During the last day of life 81% of patients had not sufferings although 42% of them had pains and 5% of them had intractable pains<sup>11</sup>. Easier death had those who died in the hospital or had home care, than those hospitalized in centers for patients care.

Ashby M, et al, 2005 interpret the reasons of dialysis withdrawal: not to be a buried for others and personal experience with regard to quality of life deterioration<sup>37</sup>. Risk assessment is necessary in order to identify the patients who could benefit<sup>38</sup> from advice or some other intervention and give up the passive euthanasia. Advices and more active therapy are important<sup>39</sup>. Dialysis withdrawal is in fact passive euthanasia. The majority of authors emphasize the feeling<sup>5</sup> from surroundings as the main factor<sup>40</sup> of dialysis withdrawal<sup>41</sup> together with all problems of uncertain prognosis<sup>42</sup>.

Forms of active euthanasia are in our conditions banned, which is also the case in most countries in the world<sup>4</sup>. Active rapid death has no its basis in religious norms in B&H, but there is some social, family and endemic belief that death in one's own home is better. Most of deaths due to active hindrance are again associated with biologic factors in B&H, where younger, the so called healthy population saves first itself and then the other in the achievable extent<sup>35</sup>.

Active euthanasia is also related to recent war conflicts and transition. Reality for all vulnerable groups as well as for patients in B&H is: unemployment, multiple migrations<sup>3</sup>, and difficulties of the returnees were faced

with<sup>36</sup>. Serious cognitive disorders in both groups confirm (MMSE) different end of life. Active euthanasia in 0.24% (Controls) of cases and 0.86% of BEN cases comprised death at home surrounded by persons with the same diseases who this way of dying consider euthanasia, but it is better to die at home among the closest family. We could speak only hypothetically about more active medical staff-assisted death in B&H, but there are no indicators for this. More frequent suicide of CRF patients in B&H in compare with general population is indirect indicator that something might be done such as more active efforts concerning approach of soon death.

Many studies accept the idea of dialysis withdrawal<sup>43</sup> with the basic argumentation that life without quality<sup>44</sup> is worthless in patients with CRF because they burden their close surrounding, expert teams and the entire society as a universal limitation<sup>45</sup>. Hypothesis is confirmed owing to present indicators for dialysis withdrawal and death at home with closest family affected by the same disease. Euthanasia of patients with CRF in B&H for the period 2000–2006 proved this. In order to obtain better results our first questionnaire should be institutionally authorized. This means academic agreement, social participation, better ethic and legal norms in B&H. Further research of euthanasia in B&H is objectively in connection with the lack of necessary ethic institutions in B&H.

## Conclusion

Dialysis avoidance as an attempt of faster death at home with the closest family affected by the disease needs better medical-legal protocol. So, euthanasia of dialysis patients requires better nephrological – psychiatric control and social care in B&H as well as complete program for the CRF samples protection too.

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## EUTANAZIJA KOD PACIJENATA SA KRONIČNOM RENALNOM INSUFICIJENCIJOM

### SAŽETAK

U radu je prikazano istraživanje učestalosti i oblik eutanazije kod pacijenata s kroničnom renalnom insuficijencijom (KRI) koji su se nalazili na dijalizi u Bosni i Hercegovini (BiH) u periodu od 2000–2006. godine. Od 2700 pacijenata na dijalizi u istraživanje je uključeno 753. Prvu grupu čine pacijenti sa Balkanskom endemskom nefropatijom (BEN) (n=348) dok kontrolnu grupu čine pacijenti sa ostalim bolestima (n=405). U istraživanju su korišteni: prilagođeni upitnik iz Renalnog registra BiH, Beckov test anksioznosti-BAI, Hamiltonova skala depresivnosti-HDRS i Skala procjene mentalnog zdravlja-MMSE. Pacijenti BEN grupe su prosječne dobi:  $64,77 \pm 8,86$ , a kontrolne  $53,85 \pm 13,6$ . U grupi BEN pasivna eutanazija je 0,760 (95%,CI=0,590–0,710) ( $p=0,001$ ) a aktivna 0,450 (95%,CI=0,125–0,510) ( $p=0,001$ ). Eutanazija je češća kod osoba iz ruralnih predjela, sa renalnim hereditetom, kao i s povišenim vrijednostima BAI-total, HDRS-total i MMSE-total. Za grupu BEN pasivna eutanazija je 3,75% a aktivna 0,86%. Dobiveni nalazi pokazuju da pacijenti na dijalizi zahtijevaju organizirani program društva u BiH koji uključuje redovne nefrološke i psihijatrijske kontrole pacijenata sa KRI.