LABOR MARKET NEEDS ANALYSIS University of Kragujevac

1. Organization of the health care system in Serbia

The regulations for the plan of healthcare institutions network *("Official Gazette RS", 42/2006, 119/2007, 84/2008, 71/2009, 85/2009, 24/2010, 6/2012, 37/2012, 8/2014, 92/2015, 111/2017, 114/2017 - corr., 13/2018 and 15/2018 – corr.*) have determined the type, number, structure and disposition of healthcare institutions in the public sector as well as the number of hospital beds and referent institutions. The health care system in Serbia is organized at three levels – primary, secondary and tertiary level. The data about the resources (staff, equipment, space, and medications) and diagnosed illnesses have been obtained from the official healthcare statistical reports which institutions from all three levels of the healthcare system are obliged to deliver to institutes for public health to whose jurisdiction they belong. Private practice, which has been recognized in the system of health care, does not completely fulfill the requirements, i.e. some privately owned healthcare institutions do not report on their operations, so the data from this sector are still not relevant for any kind of analysis. The healthcare in the Šumadija District is organized on three levels (*Table 1*).

Table 1. The organization of the health care institutions with the number and organization of hospital beds in the Šumadija District

Šumadija District			The number of hospital beds (stationary type)
1.	Primary Healthcare (PHC)	Primary Health Care Centre Kragujevac	
2.		Primary Health Care Centre Aranđelovac	
3.		Primary Health Care Centre Topola	
4.		Primary Health Care Centre Rača	
5.		Primary Health Care Centre Batočina	
6.		Primary Health Care Centre Knić	

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7.		Primary Health Care Centre Lapovo	
8.		Pharmacy Kragujevac (for City of Kragujevac and Topola, Batočina, Lapovo, Knić, Rača Municipality)	
9.		Pharmacy Šumadija, Aranđelovac	
10.		The Employees Health Institute "Zastava"	
11.		Dental Institute Kragujevac	
12.		Emergency Center	
13.	Secondary Healthcare	General Hospital Arandjelovac	142
14.		Specialized Hospital "Bukovicka Banja" Arandjelovac	90
15	Tertiary Healthcare	Clinical Center Kragujevac	1118
16.	Multilevel Healthcare	Institute of Public Health Kragujevac	

Source: The organization of the health care institutions, *The Institute of Public Health Kragujevac*

2. Overview

Pain is not only associated with a wide range of injuries and diseases but is also a disease itself. Certain medical conditions are followed by pain and associated symptoms which arise from a specific cause, such as postoperative pain or pain associated with the malign diseases. However, there are certain medical conditions where the pain is a primary problem like in neuropathic pains and headaches.

Recent studies have indicated that there are more than 1.5 billion people worldwide with chronic pain which means that 3 – 4.5% of the global population suffers from neuropathic pain (*Global Industry Analysts, Inc. Report, January 10, 2011. http://www.prweb.com/pdfdownload/8052240.pdf.*).

Pain is a tremendous cost for a state health care system due to high rehabilitation costs and lower work productivity and it is a huge emotional and financial burden for patients and their

families. The costs of unrelieved pain arise from longer hospital stays, increased rates of rehospitalization, increased outpatient visits and decreased the ability to perform daily activities. Unrelieved chronic pain frequently results in the inability to perform work tasks and maintain health insurance.

The developed countries have been continually conducting research about pain incidence in their populations, the burdens to society (DALY, QALY), healthcare costs, the influence of pain on mental health and life quality. According to a recent Institute of Medicine Report, Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research, pain is a significant public health problem that costs society at least $560 – $635 billion annually, an amount equal to about $2,000.00 per U.S. citizen. This includes the total incremental cost of pain healthcare which ranges from $261 to $300 billion and $297 to $336 billion due to lost productivity (based on days of work missed, hours of work lost, and lower wages). Public awareness about this issue must be increased and serious measures must be taken to meet all the challenges associated with this issue.

The latest national Research on Health of the Population in the Republic of Serbia, conducted by the Ministry of Health in cooperation with the Institute for Public Health in Serbia "Dr Milan Jovanovic Batut", included an investigation of pain intensity and incidence, pain influence of everyday activities and painkillers consumption in Serbian population in 2013. The results show that 46% of the citizens of Šumadija and West Serbia had physical pain. 69.3% of them used some kind of medication and 82.5% had difficulties in performing everyday tasks (*Table 2*).

Table 2.

What kind of pain have you had during the previous 4 weeks?

	Serbia (%)	Šumadija and West Serbia (%)
Have not felt pain	52.3	53.9
Very low	7.4	7.1
Low	8.6	8.8
Moderate	18.0	17.2
Strong	11.2	10.3

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Very strong	2.6	2.5
I do not know	0.0	0.0
Total	100	100

How has the pain influenced your daily activities during the last four weeks (including indoors and outdoors activities)?

	Serbia (%)	Šumadija and West Serbia (%)
Not at all	19.4	17.5
Little	30.2	30.6
Moderatelly	27.7	28.2
A lot	16.5	15.7
Very much	6.2	8.1
Total	100	100

Have you used medications for the pain?

	Serbia (%)	Šumadija and West Serbia (%)
Yes	68.1	69.3
No	31.9	30.7
Total	100	100

According to the legislative in the field of healthcare (*Rulebook on the content and scope of rights on healthcare from obligatory health insurance and participation fees for 2015 – Official Gazette RS, 1/2015*), patients are guaranteed pain treatment through palliative care as a comprehensive and continual care about insured person suffering from malign tumours, heart and blood vessel diseases, diabetes, obstructive lung diseases, HIV/AIDS, car accident injuries and traumatisms in terminal stages.

Pain therapies use analgesics and non-steroid anti-inflammatory and anti-rheumatic drugs which requires a multidisciplinary approach, i.e. the close cooperation of anesthesiologists, oncologists, clinical pharmacologists and other specialists, in order to profound awareness and knowledge of both doctors and patients about the rational use of medications.

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Table 3. The use of analgesic (N02) in the Republic of Serbia, 2007 – 2015, in DDD on 1000 citizens per day [1]

N02- Analgesics (N02A – Opioids, N02B – Other analgesics and antipyretics, N02C – Antimigrenics)	**DDD/1000 inhabitants/ day**
2007	11.767
2008	10.404
2009	20.190
2010	13.500
2011	13.518
2012	7.822
2013	5.264
2014	7.389
2015	6.688
M01A – Nonsteroidal anti-inflammatory and antirheumatic drugs (M01AB – Acetic acid derivatives and related substances, M01AC – Oxicams, M01AE – Propionic acid derivatives, M01AH – Coxibs), M01AX – Other nonsteroidal anti-inflammatory and antirheumatic drugs)	**DDD/1000 inhabitants/ day**
2007	81.055
2008	81.343
2009	71.988
2010	45.839
2011	60.568
2012	54.335
2013	55.615
2014	63.082
2015	62.766

[1] ATC/DDD methodology, recommended by World Health Organization, presents a determined average daily dose for most common indications for which a medication is prescribed.

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Source: The consumption of finished drugs for human use in the Republic of Serbia, *Agency for drugs and medical means of Serbia.*

During the analyzed period the consumption of opioid analgesics in the Republic of Serbia decreased while the consumption of nonsteroid anti-inflammatory and anti-rheumatic drugs increased (*Table 3*).

3. The organization of the healthcare system for pain treatment

The medical staff capacities on the primary level of healthcare in Serbia are determined based on the number of citizens in the region and in stationary institutions based on the number of hospital beds.

Palliative care, at the level of primary health care, deals with pain treatment. Palliative care is performed in healthcare centers (*Department for home treatment and care*) and in institutes for gerontology and palliative care. In the Šumadija District, three out of seven health care centers (Kragujevac, Aranđelovac and Knić) have organized services for home treatment and care while in the remaining four centers such needs are met through adult health care (general medicine services, emergency medical services or polyvalent patronage).

The strategy for palliative care (*Official Gazette RS, 17/2009*) requires changes and additions to be made in the Rulebook in terms of establishing closer conditions for conducting healthcare in health institutions and other forms of health services (*Official Gazette RS, 43/06 – in further text: the Rulebook*). These changes assume the obligations to establish services for home treatment and care in health centers in municipalities with more than 25.000 citizens and an increase in staff from the existent norms to one doctor and five nurses on 25.0000 inhabitants. The analysis of the existent staff in services of home treatment and care (the current number of doctors and medical nurses – technicians) has shown that the number of doctors is in accordance with the current Rulebook while the number of medical nurses – technicians is not and that their numbers should be increased.

The analysis of the burden on doctors (the number of visits per doctor) shows that with respect to the number of doctor visits and doctors available, the burden is in accordance with the prescribed standards. The analysis of the burden on medical nurses and technicians (the number

of medical services per a nurse/technician) shows an increased work volume on the available staff and increased burden with respect to the prescribed standards.

The doctors and medical technicians of the *Home Treatment Service* in the *Health Care Center Kragujevac* are included in the continuing medical education for pain therapy. The project for the palliative care of the terminal oncological patients has been planned for the future period.

Table 4. PAIN as a diagnosis – acute states and first visits with chronic conditions, Service for Adult Healthcare, Primary Health Care Center Kragujevac, 2013 – 2017

Adult health care	**2013**	**2014**	**2015**	**2016**	**2017**
F62.8 - Syndroma personae dolorosae chronica	0	0	0	0	0
R51 – Cefalea	249	282	272	268	364
R52.0-R52.9 - Dolor	5	2	5	19	84
R10 - Dolores in abdomine	1442	1959	2024	2140	1099
M54.9 - Dorsalgia	1	9	34	38	99
N64.4 - Mastodynia		1	4	13	37
R07.1-R07.4 - Dolores in pectore	21	57	62	145	477
M75.8 Dolores in humeri	1	3	6	15	17
F45.4 Dolores in psychogenes	5	7	0	1	2
R07.0 Dolores in pharyngis	0	1	2	2	10
H92.0 Otalgia	27	18	33	67	305
M25.5 Arthralgia	73	129	172	300	343
H57.1 Dolor oculi	5	3	12	9	20
M79.6 Dolor extremitatis	0	4	64	98	67

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R10.2 Dolor pelvicus et perinaealis	0	0	0	1	13
M54.5 Dolor lumbalis	13	10	46	79	336
K14.6 Glossalgia	0	0	0	3	1
K08.8 Odontalgia	0	0	0	0	0
N23 Colica renalis	683	626	666	662	476
Total number of episodes of acute pain	**2525**	**3111**	**3402**	**3860**	**3750**

The *General Medicine Service* in *Health Care Center Kragujevac* reports that the number of acute episodes of the pain has increased during the five-year period, primarily the number of headaches, chest pain, otalgia, arthralgia and lumbar pain (*Table 4*). During the same period, the consumption of analgesics (ampoule therapy) has also increased (*Table 5*).

Table 5. The data about the analgesics ampoule therapy per measure unit, Primary Health Care Centre Kragujevac, 2013 – 2017

Year	The number of ampoules
2013	65802
2014	66474
2015	70773
2016	71057
2017	75683

The decree on the plan for healthcare networks has prescribed the capacity of hospital institutions for continual treatment and care (geriatrics, palliative care, chemotherapy, physical medicine and rehabilitation) with 0.2 hospital beds per 1000 inhabitants (Article 22. paragraph 1).

The strategy for palliative care indicates that of 0.2 hospital beds per 1000 inhabitants for prolonged treatment and care, 0.04 per 1000 inhabitants should be reserved for palliative care.

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One doctor, a specialist in intern medicine, and five nurses should be appointed to 10 hospital beds in palliative care from the current staff.

The Rulebook proscribes that departments for prolonged treatment and care in general hospitals should have eight doctors of medicine and 50 medical nurses – technicians with higher or high school education (Act 19.1), in specialized hospitals five doctors of medicine and 75 nurses/technicians (Act 25.1) and in clinics for intern medicine and rehabilitation the number of specialists in the appropriate fields should be 8 with 20 medical nurses and technicians (Act 26.1).

The strategy for palliative care assumes the establishment of the unit for palliative care with 5 beds in *General Hospital Aranđelovac* and 10 beds in *Clinical Center Kragujevac* (The Clinic for intern diseases – endocrinology, nephrology, neurology, pulmonology, radiology, oncology and infective diseases). Thus, the regulations assume the establishment of a *hospice* within the current capacities of the Center but we still do not have any data about the implementation of this measure and the extent to which the project has been realized.

What currently does exist in the *Clinical Center Kragujevac* is a *Center for Oncology and Radiology* with the *Department for Chemotherapy* with *Admission Diagnostics Polyclinic Unit for Chemotherapy* which has a pain treatment infirmary that has been working for 10 years now for both stationary and infirmary patients. *The Service for Anesthesiology and Reanimation* also has the *Department for pain therapy*, a section for therapy of acute and chronic pain, where stationary patients have been treated for postoperative pain.

Pain treatment involves the participation of doctors with different specialties – oncologists, anesthesiologists, neurologists, physical medicine specialists and surgeons. The analysis of the staff structure in the *Clinical Center Kragujevac* for 2017 shows that given specialties surpass the established norms while medical nurses/technicians are in deficit (*Table 6*).

We should also note that, according to the relevant *Rulebook on anesthesiology and reanimation,* one specialist of anesthesiology with reanimation and two nurses/technicians should be appointed per 16 surgical beds, i.e. one anesthetist per each operating room, anesthesiology clinic, pain clinic, and one anesthetist in an intensive care and care unit for base

monitoring. In the *Clinical Center Kragujevac*, anesthesiologists, as a basic specialty for this issue, are in significant deficit (*Table 6*).

Table 6.

Work – service (according to the Statute)	**The numbers of the employed (on indefinite time period) financed from the fund of compulsory health insurance**					
	Total number of the doctors of medicine	**Total norm for the doctors of medicine**	**Subtraction in the number of doctors**	**Total number of medical nurses**	**Total norm for the nurses**	**Subtraction in the number of nurses**
Surgical disciplines						
General and thoracic surgery clinic	27	25	2	105	123	-18
Center for Plastic Surgery	4	4	0	11	18	-7
Center for Neurological Surgery	8	6	2	20	33	-13
Center for Vascular Surgery	10	8	2	16	36	-20
Obstetrics & Gynecology Clinic	29	35	-6	80	132	-52
Clinic for Otorhinolaryngology and maxillofacial surgery	9	11	-2	18	44	-26
Clinic for Orthopaedics and Trauma Surgery	15	22	-7	39	100	-61
Ophthalmology Clinic	10	9	1	22	35	-13

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Pediatric Surgery Clinic	6	9	-3	15	34	-19
Neurological Clinic	**18**	**16**	**2**	**47**	**53**	**-6**
Center of Oncology and Radiology	**28**	**22**	**6**	**57**	**94**	**-37**
Anesthesiology and Reanimation Center	**37**	**63**	**-26**	**53**	**139**	**-86**
Physical Medicine and Rehabilitation Center	**7**	**8**	**-1**	**44**	**40**	**4**
Psychiatric Clinic	**16**	**12**	**4**	**27**	**40**	**-13**

Source: The Report on Work Plan of the Clinical Center of Kragujevac, 2017, *The Institute of Public Health Kragujevac*

The documents regulating palliative care proscribe that 599 patients per 100,000 inhabitants require palliative care. The legislation also recommends that 12 healthcare professionals are required as staff per 100,000 citizens. At the tertiary level, one doctor is recommended on 250 hospital beds.

The data on the number of surgeries may be valuable due to acute postoperative pain but still need to be addressed with a reserve since there are certain indications that the number of surgeries is decreasing. According to the Eurostat data, the overall number of surgical operations and the ten most common surgical interventions decreased from 2010 to 2015.

Since 2008, there has been an initiative issued by an institution of social protection of the old citizens (*Gerontology Center Kragujevac*) to local officials to establish a unit of palliative care in stationary conditions in their institution. The project documentation was prepared with budget calculations and the other more specific measures were taken within their facilities.

4. Groups of disease and medical conditions requiring pain therapy

A health condition of the general population, which is measured by morbidity and mortality, is a crucial factor in the process of standardization of staff required for pain treatment. The current demographic trends predict a further increase in the number of older population with prolonged life expectancy which will result in a growth of the population aged 80 or more. This

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expansion of this age group in the general population will increase the incidence of patients with chronic medical conditions (with comorbidities) and pain.

Pain as a clinical manifestation is a symptom of almost all diseases. It is present during deliveries which are a pure physiological act. Pain is thus a problem of significant volume and severity which becomes probably most evident with malignant diseases in terminal stages of a disease. Here only some of the diseases that are most frequent and followed with most severe pain will be addressed.

The data of the Population register for cancer in Central Serbia and Šumadija District show that standardized rates of cancer incidence per 100,000 inhabitants of both genders were increasing from 1999 – 2015 (*Table 7*). The mortality rate per 100,000 inhabitants was having slight variations with an increase in both genders in Central Serbia and a decrease in the Šumadija District (*Table 8*).

Table 7. Standardized cancer incidence rates per 100.000 population, males/females, Central Serbia, Šumadija District, 1990 – 2015

All locations (C00 – C97)	**Central Serbia**		**Šumadija District**	
	males	**females**	**males**	**Females**
2015	297.6	256.7	307.7	295.3
2014	279.2	236.3	324.6	301.0
2013	274.7	234.8	346.4	322.7
2012	289.5	246.7	323.6	299.5
2011	303.6	259.2	358.7	334.5
2010	291.8	250.9	307.2	306.1
2009	304.7	258.6	355.4	325.5
2008	282.5	240.1	344.8	309.0
2007	290.1	242.2	337.9	317.5
2006	282.8	240.6	349.8	324.3
2005	278.6	238.6	349.1	309.0
2004	285.5	246.6	322.8	291.0

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2003	275.7	240.7	315.0	263.4
2002	275.7	240.4	297.2	263.0
2001	275.9	239.3	312.1	257.3
2000	258.9	229.5	301.1	274.7
1999	228.4	204.4	265.4	252.2

Source: Cancer incidence and mortality in the Central Serbia, *The Institute of Public Health of Serbia "Dr Milan Jovanović Batut"*

Table 8. Standardized cancer mortality rates per 100,000 population, males/females, Central Serbia, Šumadija District, 1990 – 2015

All locations (C00 – C97)	**Central Serbia**		**Šumadija District**	
	Males	**females**	**males**	**Females**
2015	164.8	102.8	137.2	82.1
2014	160.9	105.7	140.3	98.8
2013	161.8	102.3	141.8	90.2
2012	164.9	105.8	139.7	97.4
2011	170.2	106.1	147.9	92.0
2010	170.4	108.8	164.5	112.6
2009	169.5	109.5	172.2	108.7
2008	167.6	107.7	155.8	112.2
2007	168.4	103.0	173.9	110.0
2006	163.9	105.8	156.0	98.4
2005	163.2	106.3	160.5	113.6
2004	160.5	105.3	144.4	102.2
2003	161.8	122.4	160.6	110.0
2002	156.5	99.0	160.0	95.4
2001	155.1	101.7	153.3	98.2
2000	156.9	100.7	163.7	97.8
1999	153.2	100.4	143.5	100.4

Source: Cancer incidence and mortality in the Central Serbia, *The Institute of Public Health of Serbia "Dr Milan Jovanović Batut"*

The data from the Clinical Center Kragujevac reveal that additional activities of the staff are required to manage the increasing number of patients with prolonged pain conditions such as malignant diseases, neurological diseases and patients on palliative treatment. Table 9 presents the numerical prevalence of malign diseases in comparison to neurological diseases in 2017 at the Clinical Center Kragujevac. Both groups of diseases are characterized with prolonged duration of intense painful conditions, with both acute and chronic pain present, which requires the additional engagement of the staff especially of those who are trained in pain therapy.

Table 9. The numerical prevalence of malignant diseases in comparison to neurological diseases, 2017 at the Clinical Center Kragujevac

Group diagnosis	**Individual group diagnosis**	**Structure diagnosis (%)**
C0-C97	3632	90.3
D0-D09	9	0.2
G43, G44, G50, G53, G54, G62	186	4.6
M50, M51, M31.5, M79	195	4.8
Total	4022	100,0

Table 10. The number of Caesarean deliveries and in epidural anesthesia, 2012 – 2016, Šumadija District

Total number of deliveries	**Number of caesarean delivery**	**Number of births in epidural anesthesia**	**CD+EA**	**Other**	**Participation of Caesarean delivery**	**Participation of epidural anesthesia**
1	2	3	4 (2+3)	6 (1-4)	7	8
2017						
Šumadija District						
2964	750	155	905	2059	25.30	5.23
Department of Obstetrics and Gynaecology, General Hospital Arandjelovac						

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465	155	57	212	253	33.33	12.26
Obstetrics & Gynecology Clinic, Clinical Center Kragujevac						
2499	595	98	693	1806	23.81	3.92
2016						
Šumadija District						
2734	650	139	789	1945	23.77	5.08
Department of Obstetrics and Gynaecology, General Hospital Arandjelovac						
430	105	57	162	268	24.42	13.26
Obstetrics & Gynecology Clinic, Clinical Center Kragujevac						
2304	545	82	627	1677	23.65	3.56
2015						
Šumadija District						
2705	619	113	732	1973	22.88	4.18
Department of Obstetrics and Gynaecology, General Hospital Arandjelovac						
444	151	15	166	278	34.01	3.38
Obstetrics & Gynecology Clinic, Clinical Center Kragujevac						
2261	468	98	566	1695	20.70	4.33
2014						
Šumadija District						
2524	532	146	678	1846	21.08	5.78
Department of Obstetrics and Gynaecology, General Hospital Arandjelovac						
392	122	1	123	269	31.12	0.26
Obstetrics & Gynecology Clinic, Clinical Center Kragujevac						
2132	410	145	555	1577	19.23	6.80
2013						
Šumadija District						
2538	535	79	614	1924	21.08	3.11
Department of Obstetrics and Gynaecology, General Hospital Arandjelovac						
487	144	0	144	343	29.57	0.00
Obstetrics & Gynecology Clinic, Clinical Center Kragujevac						
2051	391	79	470	1581	19.06	3.85

2012						
Šumadija District						
1306	251	17	268	1038	19.22	1.30
Department of Obstetrics and Gynaecology, General Hospital Arandjelovac						
251	76	0	76	175	30.28	0.00
Obstetrics & Gynecology Clinic, Clinical Center Kragujevac						
1055	175	17	192	863	16.59	1.61

Source: The report on the plan performance for health institutions from 2012 – 2017, *Institute of Public Health Kragujevac*

Baby delivery is a natural physiological act and condition that now almost exclusively takes places in a hospital. Delivery is accompanied by intense pain so there is an increasing need to relieve or even eliminate the pain. The data from the above table show that the numbers of deliveries with Caesarian section have been increasing and that they exceed 20% in the total number of deliveries in the hospitals of Šumadija District. We can suppose that a certain number of C-sections is being performed just to avoid pain and this issue definitely requires special analyses in the future since every imperial cut requires the involvement of anesthetists (*Table 10*).

The data also reveal that there is a significant number of deliveries performed in epidural anesthesia and that this number has been constantly rising (*Table 10*). It is indisputable that epidural anesthesia trends require an additional involvement of the staff specialized in anesthesiology.

In order to determine the criteria for staff standardization in pain medicine, we must undertake a comprehensive approach which would take into consideration the health care status of the population, the number of hospital beds, the number of services, the number of surgeries, deliveries with anesthesia and palliative care services. The analyzed data, however, indicate that some of those criteria are more objective than the others and thus more relevant. They provide certain indications in which direction the standardization of the staff in pain medicine should move.

Since there are a few or no pain infirmaries, the staff standardization for pain treatment in inpatient hospital care may start with the establishment of a pain clinic in each hospital with one specialist for pain therapy. Thus the recommendation is to have one specialist in each hospital by 2023. In outpatient care, which is crucial for patients suffering from pain whose medical conditions do not require hospital treatment or who continue treatment after hospitalization, the recommendation is to start with one specialist of pain medicine per 100,000 inhabitants by 2023.

The defined criteria represent a starting point for the next five years that can be revised if it proves necessary. One of the HEPMP Project goals is to improve the capacities of higher education and create adequate educational programs. The target year 2023 leaves a five-year time period that is an acceptable time span in which the staff for pain medicine can be educated, trained and properly developed.

The development of medical staff for pain medicine will be beneficial for patients and will meet the healthcare requirements of the population. Their response to recommended measures will be further used to adjust and correct the criteria in pain medicine staff in the future.

5. Education

In our country there are two national guides for pain therapy: *Guide for diagnostics and treatment of chronic pain in malign etiology* and *Guide for palliative care of oncological patients*, which are both available on the web presentation of the *Ministry of Health of the Republic of Serbia*. There are no national guides for secondary and tertiary level of healthcare which could be used in prevention and therapy of painful conditions in hospital circumstances and which could be used with patients who are not only oncology patients or patients with trauma but also with patients who, for example, have undergone surgical procedures.

We are convinced that further education should not be organized only through educational conferences and seminars but that this issue should find its place in formal education, in curriculums of the universities, specialist and subspecialist studies. In addition, the topic deserves its place in national and international academic projects which would focus on pain conditions and their treatment and therapy.

Our healthcare system has recognized a need to educate healthcare workers in pain therapy and the specialization known as *Palliative care* has subspecialization named *Pain Medicine* (*Rulebook on specializations and subspecializations of medical workers and medical associates – Official Gazette RS, 10/13, 91/13*).

The goals of specializations in the field of palliative care are to provide theoretical and practical knowledge of palliative medicine to doctors. It includes all aspects of palliative care needed for patients with severe, chronic incurable diseases, starting with diagnosis, over all disease phases until the death.

The subspecialization in pain medicine can be further studied by doctors with specializations in the following fields: Anesthesiology, Reanimation and Intensive Care, Internal medicine, Pediatrics, Neurology, Physical medicine and rehabilitation, General practice, General surgery, Abdominal surgery, Vascular surgery, Thoracic surgery, Orthopedics and Traumatology, Pediatric surgery, Neurosurgery, Plastic surgery, Maxillofacial surgery, Urology, Cardiac surgery, Psychiatry, Child and adolescent psychiatry, Infectology, Radiology, Clinical Pharmacology. The goal of this subspecialization is to deepen the knowledge of those doctors who are interested in problems which affect the patients with both acute and chronic pain and with both malign and non-malign pathology. The Šumadija District lacks an educated doctor in palliative care and pain medicine.

6. Conclusions

For the successful establishment and inclusion of units for pain therapy in the existent system of healthcare the following measures are crucial:

- Adaptations of the current legislation of the healthcare system;
- the inclusion of organizational units for pain treatment into the current health care system of the Republic of Serbia,
- Providing the availability of opioids and other medications for pain therapy according to the continual development of the list of essential drugs,

- Education of medical staff and medical associates, patients and their families and the general public about pain therapy.

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