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National survey of pain clinics in Croatia: Organization and services

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Objective. To analyze organization and therapeutic procedures administered in tertiary outpatient pain clinics in Croatia. **Methods.** Data about organization of pain clinics, its personnel, equipment, continuing medical education, therapeutic procedures, research activities and relations with pharmaceutical industry were collected using questionnaires. **Results.** Twenty-two Croatian pain clinics were included in the study. Most of the pain clinics employ exclusively anesthesiologists and nurses. The most frequently prescribed therapeutic procedures in pain clinics were pharmacotherapy, transcutaneous electrical nerve stimulation, acupuncture and trigger point injections. Almost all pain clinics provide educational material for patients. Most of the pain clinics have regular interactions with pharmaceutical companies. Prescribing decisions were based mostly on information from scientific meetings, research articles and consultations with colleagues. Information sources which are considered to be the gold standard – the systematic reviews of The Cochrane Collaboration – were used less frequently (n=12; 57%) than advertising materials from pharmaceutical companies (n=16; 76%). Few physicians and other pain clinics staff had scientific degrees or academic titles or were involved in a research project. **Conclusion.** The national study about pain clinics in Croatia pointed out that there is room for improvement of their organization and services. Pain clinics should employ health-care professionals with diverse backgrounds. They should offer treatments backed by the highest-level of scientific evidence. Since pain is a major public health issue, pain clinic staff should engage more in research to contribute to the growing field of pain research, to enhance capacities for pain research in Croatia, to incorporate scientific evidence into their daily decision-making and to enable evidence-based practice.

Introduction

Pain is an unpleasant sensory and emotional experience associated with real or potential tissue damage (1). Clinics for pain treatment (i.e. pain clinics) are specialized health care units employing experts in pain management. The main activity of pain clinics is the treatment of patients with acute and chronic pain, education of health care professionals and patients, participation in professional and scientific meetings, participation in the preparation of guidelines and research in the field of pain. Patients with chronic pain have a tendency towards depression, anxiety and social isolation so they require a great level of dedication and continuous care. Many of these pa-

tients require an interdisciplinary approach, which should be offered in pain clinics (2).

The first clinic dedicated to pain management was established by John J. Bonica and Lowel White in 1961 at the University of Washington at Seattle, USA. Dr. Bonica advocated an interdisciplinary approach to the treatment of complex pain disorders. Interdisciplinary approach to pain management includes collaboration of anesthesiologists, neurologists, rehabilitation physicians, psychiatrists and other professionals that address many facets of pain (3). Pain clinics provide a specialised service for patients with more complex and intractable pain problems (4). At the time of the study, Croatia had 22 pain clinics registered with the Croatian Health Insurance Fund (CHIF) (5).

Therapeutic procedures prescribed in pain clinics may include pharmacotherapy, regional anesthesia, epidural analgesia, transcutaneous electrical nerve stimulation (TENS), ultrasound (US), laser treatment, magnetic therapy, acupuncture, trigger point injections and a number of other treatments in the domain of conventional and alternative medicine (6). A recent study conducted at the pain clinic of the University Hospital Split showed that the clinic did not offer an interdisciplinary approach to the pain treatment, and for the majority of non-pharmacological therapies offered in the pain clinic there is no evidence about their effectiveness (7). There are no studies about therapeutic procedures provided by other pain clinics in Croatia, their working conditions and staff, their organization of practice, links with the pharmaceutical industry, or their involvement in education and research.

National studies about the organization and procedures offered at pain clinics are rare in medical literature. For optimal functioning, pain clinics require adequate space and equipment for therapeutic interventions, as well as diverse team of health professionals. However, many pain clinics in Croatia lack adequate space and a multidisciplinary teams that represent current standard in pain treatment, as recommended previously (3). Our previous study conducted in one pain clinic showed that patients were generally satisfied with pain clinic services, but suggested increasing number of staff, a better approach to each patient, and better organization of work (8). However, one of our previous studies also showed that pain clinics offer treatments that are not necessarily evidence-based (7).

The aim of this study was to analyze the organization of tertiary outpatient pain clinics in Croatia and of the therapies they provide. Information gained in this study may provide recommendations for further development of pain clinics for the benefit of patients suffering from pain.

Methods

The study was conducted among head physicians of the 22 tertiary outpatient pain clinics in Croatia in 2013 by using a questionnaire (Appendix 1). The study was approved by the Ethics Committee of the University of Split School of Medicine. An informed consent was obtained by all physicians participating in the study.

Questionnaire

The questionnaire consisted of 34 questions about the organization, personnel and equipment available in a pain clinic, professional training of the staff, therapeutic procedures offered by a pain clinic, research activities conducted in a clinic and relationships with the pharmaceutical industry (Appendix 1). The questionnaire was developed specifically for the purpose of this study.

General questions addressed the year of pain clinic establishment, surface area of the pain clinic, the number of physicians working in the clinic and their specializa-

tion, the number of nurses working in the clinic, availability of other professionals except physicians and nurses, the information whether the pain clinic was registered by the CHIF, availability of electronic patient records, working hours of the pain clinic, the average number of patients per week, procedures for data collection.

In order to obtain information about professional training of the staff, the following data were collected: whether employees of the pain clinics attended continuing medical education (CME) courses and whether they organized lectures for patients. Availability of educational materials for patients was also studied. Physicians were also asked how therapies were chosen and which of the therapeutic procedures of alternative and complementary medicine were offered in the pain clinic.

The following information about research activities in pain clinics were collected: number of physicians with MSc and PhD degree, number of physicians holding an academic degree (assistant professor, associate professor, full professor), and a number of research projects. Scientific output was analyzed from the number of research manuscripts on pain. Frequency and type of contacts with the pharmaceutical industry were also analyzed, as well as funding received from the pharmaceutical industry.

Data analysis

The study did not use any personal patient data. The names of the persons who responded to the questionnaire were known to only two researchers and their names were not recorded or used during the data analysis. The data were entered into an electronic spreadsheet and analyzed by descriptive statistics. Collected data were analyzed using GraphPad Prism software (GraphPad Software Inc., San Diego, CA, USA).

Results

Pain clinics in Croatia

Out of 22 pain clinics in Croatia, 21 participated in the study. Six pain clinics were in Zagreb, 2 were in Rijeka and the rest were distributed in other Croatian towns. Territorial distribution of pain clinics in Croatia

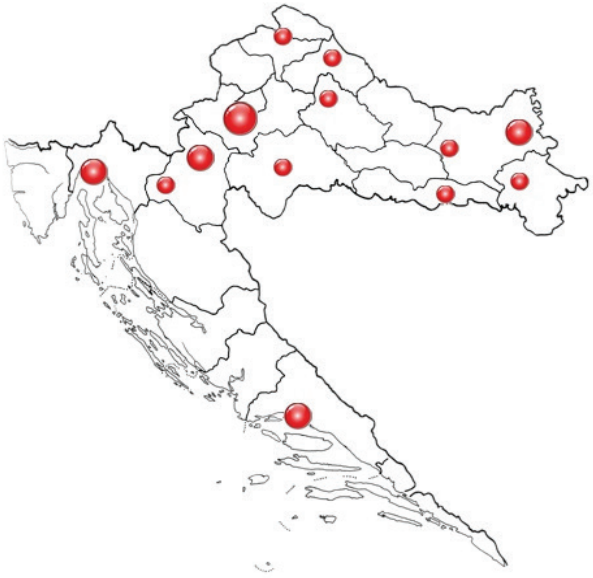

Figure 1 Territorial distribution of pain clinics in Republic of Croatia.

shows that they were mostly located in the continental part of Croatia (Figure 1).

The first Croatian pain clinic was established in Karlovac in 1979, followed by five more that were established before 2000. Pain clinics in Croatia worked for a median of 12 years (range: 3-35). The size of pain clinics varied considerably. The median surface area of the clinics was 25 m^2 (range: 9-150 m^2). The Clinic for Anesthesiology, Reanimation and Intensive Care Hospital Centre Zagreb (Jordanovac) had the smallest area of 9 m^2, while the pain clinic in Hospital Koprivnica had the largest area of 150 m^2.

The average number of patients visiting pain clinics per week was 81.7 (range: 10-320). The average number of patients who visited clinics for the first time was 14 per week (range: 2-30). Information about therapeutic procedures conducted in the clinics and the most common diagnoses could be easily retrieved in 13 (62%) clinics that used electronic patient records.

Pain clinic personnel

Pain clinics mostly employed physicians, anesthesiologists and nurses. Four (19%) pain clinics employed experts that were not physicians and nurses: General Hospital Koprivnica (a psychiatrist, a psychologist, a physiotherapist and, when needed, a priest), Clinical hospital Merkur (two neurologists and a psychologist), Clinical Hospital Osijek (an administrator) and Clinical hospital center "Sestre milosrdnice" (a neurologist, a physiotherapist, a psychiatrist, when needed). The median number of anesthesiologists per pain clinic was 3.5 (range: 1-7). The median number of nurses was 1 (range: 1-6).

Organization of pain clinics

There were 18 (86%) pain clinics with a CHIF contract. All pain clinics used computers for typing and printing patient records. Most of the pain clinics had easily accessible archives of treated patients (n=20; 95 %), with 16 (76%) of them using electronic archives. A total of 15 (71%) clinics were open every working day. The median of weekly working hours in pain clinics was 35 (range: 10-42).

Therapeutic procedures available in the clinics

All pain clinics prescribed pharmacotherapy. Some of the clinics also provided other therapies, most commonly TENS, acupuncture and injection of trigger points (Table 1).

Table 1 Therapies used in pain clinics

Type of treatment	n (%)
Pharmacotherapy	21 (100)
TENS	19 (90)
Acupuncture	17 (81)
Injection of trigger points	16 (76)
Magnetotherapy	12 (57)
Epidural analgesia	11 (52)
Regional blocks	10 (48)
Ultrasound	10 (48)
Epidural catheter	9 (43)
Intrathecal injections	4 (19)
Subcutaneous administration of drugs (using pumps)	2 (10)

TENS=Transcutaneous electrical nerve stimulation.

When asked about complementary therapies available to patients, 7 pain clinics indicated that they offered some complementary therapies, listing the following interventions: laser acupuncture, phytotherapy, minimally invasive treatment of pain under control of fluoroscope in the operating room, VIP Bioptron lamp, psychotherapy based on the analysis of anxiety and depression test, intravenous application of analgesics, chiropractic services, group psychotherapy and phytotherapy.

Educational activities

All clinics engaged in educational activities for their personnel or patients. Educational materials for patients were available in all clinics, prepared either by pharmaceutical companies, Croatian Association for the Treatment of Pain or employees of the clinics. Less than half of the clinics organized CME courses (Table 2).

Table 2 Type of educational activities in the pain clinics

Educational activities	n (%)
Promotional materials for patients	20 (96)
Promotional materials for patients created by the pharmaceutical industry	20 (96)
Promotional materials for patients created by Croatian Association for the treatment of pain or other medical organization	13 (62)
Courses for patients organized by pain clinic personnel	12 (57)
Continuing medical education courses organized by pain clinic personnel	10 (48)
Promotional materials for patients created by pain clinic personnel	8 (38)

Selecting prescription drugs

When prescribing pharmacological interventions in pain clinics, most of the physicians indicated that they based their prescription choice on knowledge from scientific meetings (n=20; 96%), research papers (n=20; 96%) and consultations with colleagues (n=20; 96%). Information sources which are considered the gold standard – systematic reviews of The Cochrane Collaboration – were used less frequently (n=12; 57%) than advertising materials of pharmaceutical companies (n=16; 76%) for making prescribing decisions.

Contacts with pharmaceutical companies

Physicians at the heads of the Croatian pain clinics indicated different types of interactions with pharmaceutical companies, including receiving visits from pharmaceutical industry representatives and getting information about the products and receiving funding for various purposes (Table 3).

Table 3 Interaction with pharmaceutical companies

Type of contact with pharmaceutical companies	n (%)
Dialogue with representatives and getting information material about products	20 (96)
Funding of scientific meetings organized by the employees of pain clinics	9 (43)
Funding of CME courses	11 (53)
Financing travel expenses and registration fees for scientific meetings	17 (82)
Financing travel expenses and registration fees for CME courses	14 (67)
Presentation (dinners, meetings with company representatives)	3 (14)
Donations of devices used in the treatment and diagnosis	3 (14)
Donations to purchase devices that are not used in the treatment and diagnosis	0 (0)

CME=Continuing medical education.

Amount of money spent by pharmaceutical companies for the listed activities annually was less than 1.630 USD in 8 (39%) pain clinics, between 1.630 USD and 4.890 USD in 7 (35%) pain clinics and between 4.890 USD and 11.420 USD in 1 (4%) clinic. Head of one clinic indicated that they did not receive any funding from pharmaceutical companies, while one indicated that it was not known how much pharmaceutical companies annually spent for the listed activities.

Scientific profile of physicians working in pain clinics

Very few physicians and other employees of pain clinics had scientific degrees and academic titles. Median number of physicians with MSc degree was 1 (range 0-3); median number of PhD degrees was 0.6 (range: 0-2), the median number of physicians with

academic titles was 0.4 (range: 0-1), while among non-physician employees median number of those with academic titles was 1.1 (range: 0-4).

Scientific activities in pain clinics

Four (20%) pain clinics had employees conducting a research project. In 12 (57%) pain clinics data collected from patients were used for research purposes. Range of number of scientific papers published by employees of pain clinics in the last 5 years indexed in *Current Contents* (CC) was 0-5. A number of scientific papers published by the employees in the last 5 years indexed in *Index Medicus* ranged from 0 to18. A number of scientific papers about pain published in CC and in journals from pain research area ranged from 0 to 3. Number of scientific papers about pain published by employees in the last five years in *Index Medicus* and in journals from pain research area ranged from 0 to 10. Data about the most common diagnoses in the analyzed pain clinics were not presented hereby because they were answered by a very few physicians.

Discussion

Geographical distribution of pain clinics in Croatia showed that most of them were located in the continental part of the country. This clustering of clinics in the central part of Croatia puts the rest of the country at a disadvantage regarding the ease of access to pain clinics. The first pain clinic was founded in 1979, while the majority of Croatian pain clinics were founded after 2000. Pain clinics mostly employ physicians and nurses. They have electronic patient records and most of them work every weekday. All clinics prescribe pharmacotherapy, but also provide a range of other services. Nearly all clinics maintain regular contacts with pharmaceutical companies regarding drug information and many of them receive funding for scientific and professional training. Most of the pain clinics have educational materials for patients. Very few employees of pain clinics hold scientific and academic titles, and their research activities were modest.

This study showed that pain clinics in Croatia are staffed almost exclusively with physicians and nurses. However, an indication that this is changing came from the 3rd Croatian Congress on pain therapy in Osijek, Croatia in May 2014. The head of the pain clinic from Osijek introduced the first multidisciplinary program for the treatment of chronic pain in Croatia. The program started recently and it would be desirable for other pain clinics to follow the example set by the Osijek pain clinic (9). Space areas of the pain clinics indicate that they do not have the same spatial conditions and that some very small pain clinics may not have adequate conditions for delivering multifaceted patient-carer interaction.

Information about therapeutic procedures and common diagnoses in pain clinics are valuable for planning health care services and improvement of pain management facilities (10). In all pain clinics in Croatia, pharmacotherapy was the basic modality of pain management, same as in other pain clinics in the world. Despite the availability of many drugs for pain treatment, pain control is not optimal due to the use of ineffective drugs or prescribing low doses (11). It has been recommended that a combination of analgesics with non-pharmacological treatment should be used for pain management (for example a combination of pregabalin and TENS) (12). The results of this study indicate that, in addition to pharmacotherapy, Croatian pain clinics also frequently prescribe TENS, acupuncture and injection of trigger points. Pain clinics in the world are increasingly using TENS for musculoskeletal and neuropathic pain (13). However, evidence supporting the use of TENS for

chronic pain is scarce. A Cochrane systematic review on TENS for low back pain (LBP) found conflicting evidence regarding the benefits of TENS for chronic LBP, which does not support the use of TENS in the routine management of chronic LBP (14). There was insufficient evidence about the effectiveness of TENS for cancer-related pain (15). No randomized controlled trials were found about TENS for phantom pain and stump pain in adults (16). Conflicting evidence was found for TENS regarding pain outcomes in rheumatoid arthritis (17).

Acupuncture was offered in most Croatian pain clinics. Prescription of acupuncture in the United States is slowly increasing and it is prescribed as a supplement or replacement method for the treatment of chronic pain syndromes (18). The effectiveness of acupuncture for treatment of chronic pain was analyzed in a series of systematic reviews. The evidence of moderate or low quality shows that compared with standard therapy or no therapy, acupuncture relieves pain in patients with fibromyalgia (19). Some specific evidence suggests that the acupuncture may be effective for pain relief during labor and dysmenorrhea, although additional research is required for definitive confirmation (6, 20). There is no evidence that supports the effectiveness of acupuncture for irritable bowel syndrome, endometriosis or cancer pain (21-23). Therefore, it can be concluded that there is conflicting evidence on the effectiveness of acupuncture for pain relief and further clinical trials on this subject are necessary.

Magnetotherapy was offered by more than half of the pain clinics, even though evidence about its effectiveness for pain management is also scarce (24). The same can be said for therapeutic ultrasound for pain treatment, for which recent systematic reviews have shown no evidence or low-quality evidence for its efficacy in multiple conditions (24-27).

Other non-pharmacological methods for pain treatment were offered in several Croatian pain clinics. When pain clinic representatives were asked about complementary therapies used in their pain clinics, they listed several interventions that belonged to the conventional medicine, such as psychotherapy or intravenous application of analgesics. This indicates that not all physicians contacted were aware of the concept of complementary therapies.

There are several international manuscripts about the organization and delivery of pain services that could be used as a guidance for improving pain management (28-32). Educational activities in most pain clinics in Croatia focus on providing educational materials for patients developed by pharmaceutical companies, and less frequently on educational materials developed by the Croatian Association for the Treatment of Pain or employees of the clinics. There are educational activities that have been proven as effective for pain relief and pain clinics should consider using such interventions (33).

Most of the contacted physicians in pain clinics in Croatia prescribed medications based on information from scientific conferences, research papers, consultations with colleagues and educational materials from pharmaceutical companies. The most seldom used sources of information for prescribing decisions in pain clinics were systematic reviews produced by The Cochrane Collaboration. The previous nation-wide study showed that Croatian physicians lack knowledge about evidence-based medicine (EBM) and are not familiar with Cochrane systematic reviews (34). Activities of the Cochrane Croatia, which was founded in 2009, have focused on building awareness about EBM and systematic reviews in Croatia and neighboring countries (35). A study conducted among medical students has shown that those exposed to EBM curriculum have better knowledge and more positive attitudes towards EBM (36). It

is expected that further educational activities of the Cochrane Croatia may contribute to increased awareness of physicians about evidence in medicine.

Most of the contacts with pharmaceutical companies in pain clinics in Croatia involved visits by pharmaceutical company representatives, obtaining funding for attending scientific meetings and CME courses. It has been shown that contact with pharmaceutical companies should be limited in order to obtain prescribing treatment based on scientific evidence (37). In the Croatian Health Care system, pharmaceutical companies frequently send their representatives to meet with physicians (38). There is a Contract from 2010 on ethical marketing aimed towards regulating contacts between representatives of pharmaceutical companies and physicians, but it is not known what the effects of this Contract are (39).

In this study, few physicians and other employees of pain clinics had scientific and academic titles or a research project, and data collected in pain clinics were rarely used for research purposes. The research results gained in everyday practice can be immediately applied to patients and are necessary for the implementation of EBM (40). Earlier analysis of bibliometric trends on research in the field of pain in Croatia has shown an upward trend in research on pain, but these research activities were modest and of low quality (41). Therefore, it would be advisable to strengthen the Croatian research capacity in the area of pain for the benefit of patients.

A limitation of this study is its cross-sectional design. Collecting additional information about pain clinics would provide even more information about their organization and services. Further studies on this subject could explore in more detail the number of different drugs and therapies prescribed in the pain clinics, advanced interventions, type of training for pain clinic staff, possibility to train on cadavers and number of workshops organized by pharmaceutical and other companies attended by the pain clinic staff.

Conclusion

The national study about tertiary outpatient pain clinics in Croatia showed that they suffer from a number of weaknesses. Since pain is a major public health issue, pain clinic staff should engage more in research to contribute to the growing field of pain research, to enhance capacities for pain research in Croatia, to incorporate scientific evidence into their daily decision-making and to enable evidence-based practice.

What is already known on this topic

- *The first pain clinic was established in 1961 in the USA.*
- *Pain clinics are an important part of health care specialized for pain management.*
- *It is advisable to have professionals from different health-related disciplines in pain clinics for the treatment of complex pain disorders.*

What this study adds

- *This is the first national survey of pain clinics in Croatia.*
- *Most of the pain clinics in Croatia have been founded in the last 15 years and their geographic distribution leans towards central Croatia.*
- *Pain clinics in Croatia mostly employ only physicians and nurses.*
- *Many treatments available in the analyzed pain clinics are not evidence-based.*
- *Pain clinic employees have frequent contacts with pharmaceutical industry representatives.*
- *Research activities in the analyzed pain clinics are scarce.*

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Conflict of interest: The authors declare that they have no conflict of interest.

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Appendix 1. Questionnaire

Dear Sir/Madam,
This study is conducted in agreement with the Croatian association for the treatment of pain (HDLB). The aim of the questionnaire is to gain insight into organization and practice of pain clinics in Croatia. Overview of the conditions and practices of pain clinics in Croatia will enable us to provide recommendations for improvement and to coordinate activities on a national level, with the goal of improving pain management.
The questionnaire is intended for the heads of the pain clinics. We would kindly ask for very precise responses. We thank you in advance for participating in this study.

General information about the pain clinic

- Hospital where the pain clinic is located? _____
- Head of the pain clinic: _____
- Contact of the pain clinic head: _____
- When was the pain clinic founded (year)?_____
- What is the surface area of the space where pain clinic is located? _____
- How many physicians are employed in pain clinic and what are their specialties? _____
  _____
- How many nurses are employed in the pain clinic?_____
- How many professionals work in the pain clinic, which are not physicians or nurses?
  _____
- Please indicate background of those other professionals _____
  _____
- Do you have contract with Croatian Health Insurance Fund? Yes No
- Do you write patient records with a printer? Yes No
- Dou you have archives of treated patients' records? Yes No
- If yes, do you have electronic archives? Yes No
- Is the pain clinic open every working day? Yes No
- How many hours per week is the pain clinic open to patients? _____ h
- How many patients, on average, visit the pain clinic per week? _____
- How many first visits, on average, do you have per week? _____
- Are the data for the previous two questions based on the regular statistical follow-up of the pain clinic activities? Yes No
- If the pain clinic has electronic archives of patients' records, can these archives be used to retrieve data about therapies and diagnoses? Yes No
- Please indicate the 5 most common diagnoses in the pain clinic _____
  _____

Therapeutic procedures
- What type of therapeutic procedures the pain clinic offers (multiple answers allowed):
  a) Pharmacotherapy
  b) Regional blocks
  c) Trigger point injections
  d) Epidural analgesia

e) Epidural catheter
f) Intrathecal administration of drugs
g) Subcutaneous administration of drugs
h) TENS
i) Magnetic therapy
j) Ultrasound
k) Laser therapy
l) Acupuncture
m) Other _____

- Does the pain clinic offer complementary medicine therapies? Yes No
- If yes, please indicate which ones: _____
  _____
- Does the pain clinic offer alternative medicine therapies? Yes No
- If yes, please indicate which ones: _____
  _____

Professional activities
- Do the pain clinic employees organize continuing medical education courses?
  Yes No
- Do the pain clinic employees organize educational activities for lay persons and patients?
  Yes No
- Does the pain clinic offer educational materials for patients? Yes No
- Does the pain clinic offer educational materials for patients that were prepared by the pain clinic employees? Yes No
- Does the pain clinic offer educational materials for patients that were prepared by the HDLB or another professional organization? Yes No
- Does the pain clinic offer educational materials for patients that were prepared by the pharmaceutical companies? Yes No

How do you choose which drugs will you prescribe (multiple answers allowed):
a) Based on information from research symposia
b) Based on research articles
c) Based on The Cochrane Library
d) Based on materials provided by pharmaceutical companies
e) Based on consultations with colleagues

Relations with pharmaceutical companies

- Do the pain clinic employees have a contact with pharmaceutical industry representatives?
  Yes No
- How many physicians from the pain clinic were sponsored by pharmaceutical industry in any way during the last year? _____
- Please describe type of contact with pharmaceutical industry representatives:
  a) Conversation with drug reps and receiving promotional materials about their products
  b) Financing research symposia organized by the pain clinic employees

c) Financing organization of continuing medication courses
d) Financing travel expenses and fees for attending research conferences
e) Financing travel expenses and fees for continuing medical education
f) Representation (dinners, socializing with pharmaceutical companies' representatives)
g) Donations for buying equipment used for treatment and diagnostic purposes
h) Donations for buying equipment that is not used for treatment and diagnostic purposes

What was the total cost of all pharmaceutical companies' investment during the last year for all those activities indicated above, in the pain clinic (expenses of all activities combined):

a) less than 10.000 HRK
b) 10.000 – 30.000 HRK
c) 30.001 – 70.000 HRK
d) more than 70.000 HRK

Research profile

- How many physicians employed in the pain clinic have a MSc degree? _____
- How many physicians employed in the pain clinic have a PhD degree? _____
- How many physicians employed in the pain clinic have an academic title (assistant, associate or full professor)? _____
- How many other pain clinic employees have an academic title (assistant, associate or full professor)? _____
- How many pain clinic employees have a research project? _____
- Who is financing the research project(s) and what is its value? _____
- Do you use data collected in the pain clinic for research purposes? Yes No
- How many research publications did pain clinic employees published in the last 5 years that are indexed in CC and in Index Medicus:
  a) CC: _____
  b) Index Medicus: _____
- How many of those research publications are studies from the field of pain and published in the pain-related journals?
  a) CC: _____
  b) Index Medicus: _____