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Original Article

The First Comprehensive Survey of the Practice of Postoperative Pain Management in Hungarian Hospitals – a Descriptive Study

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ABSTRACT

Background: Pain management is a key issue in health care. Providers adopt promising technological developments, like Acute Pain Service, at differing speeds, with countries, such as the USA and Germany taking the lead. Where Hungary stands is unknown, as the practice of pain management has not yet been comprehensively reviewed in that country.

Aim: To explore the practice of postoperative pain management in Hungarian hospitals by addressing the questions of who is responsible for it, who measures pain and how, what kind of pain relief technologies are used, and who takes care of patients during duty hours.

Methods: We carried out a survey covering Hungarian hospitals with operational license for surgery, traumatology, orthopedics and anesthesiology between December 2019 and March 2020. The response rate was 72%, and we analyzed 135 questionnaires.

Results: We identified only 2 hospitals with an Acute Pain Service. In the majority of hospitals, the attending physician orders pain relief therapy. During duty hours the surgeon on duty takes care of pain management in 52.1% of the cases. Among pain relief therapies, intravenous infusions (74.1%) and oral medication (67.4%) are the most frequent. Ward nurses measure postoperative pain (77.8%) with unidimensional scales. According to 59.7% of the respondents, pain is not measured and documented at rest. Written protocols are available in 34.4% of the departments.

Conclusions: Compared with other countries, pain management in Hungary lags behind with significant room for improvement. Development and implementation of pain management protocols with appropriate education is the key intervention point.

Postoperative pain management is a key issue in contemporary health care, and its significance is increasing with the increasing number of surgical interventions worldwide. In the United States, the estimated number of operations ranges from 48 to 100 million per year (Coluzzi et al., 2015; Gan et al., 2014; Petti et al., 2018; Sinatra, 2010; Zaccagnino et al., 2017). In light of these high numbers, and their implications on health care organizations, resource use, quality of life, and productivity, it is not surprising that postoperative pain management is considered an important health, economic, and social issue (Pozek et al., 2018).

Postoperative pain is a common issue that poses a challenge to the health care staff caring for surgical patients (Stamer et al., 2002; Webb & Kim, 2018). Several studies have already established that the bulk of patients experience medium level or severe pain after operations (Gan et al., 2014; Park et al., 2020; Rockett et al., 2017; Sinatra, 2010; van Boekel et al., 2021; Wikström et al., 2020; Yazıcı et al., 2022). A Dutch study estimated this to be over 75% (van Boekel et al., 2015), while another study found that over 70% of those patients, who had postoperative pain, experienced this as medium or grave (Park et al., 2020). After certain procedures, such as thoracotomy, mastectomy, and coronary bypass, 30% to 50% of patients developed persistent, chronic pain (Polanco-García et al., 2017; Rawal 2016). Similar figures have been reported in a study of Asian patients, showing the prevalence

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of postoperative pain to be more than 80% (Subramanian et al., 2016).

Patients consider pain relief very important (Le-Wendling and Tighe, 2017). Postoperative pain detrimentally affects the quality of life of patients (Fang et al., 2017), by, for example, reducing their mobility, which in turn has an adverse effect on respiration, decreases the oxygenation of the body, and may result in pneumonia (Hayes & Gordon, 2015; Park et al., 2020; Petti et al., 2018). Further problems may arise from the treatment of pain, or its lack thereof, such as the common side effects of nausea, tiredness, and drowsiness (Meissner et al., 2008), or chronic postoperative pain, which can be the result of inadequately managed pain (Meissner et al., 2008; Park et al., 2020; Pozek et al., 2018). In addition to its health effects, inadequate pain management also increases costs, for instance by longer length of stay and the high costs of treating complications (Hayes & Gordon, 2015; Meissner et al., 2008; Petti et al., 2018; Pozek et al., 2018; Torabi Khah et al., 2020).

One of the reasons for the high prevalence of severe postoperative pain is the inadequacy of pain relief. According to a 2017 Croatian survey, one-third of traumatology patients were not involved in the assessment of their pain, and the pain of 40.4% of them wase measured only occasionally (Farčić et al., 2017). Furthermore, in Poland in 2018 pain was not regularly assessed using any validated scale (Piotrkowska et al., 2020) in half of patients. The importance of using validated scales for pain assessment has been shown by a recent study, where 160 patients reported higher pain scores estimated by nurses (Yang, et al., 2020).

One of the most important components of pain management is regular pain assessment and its documentation, in which nurses should play a key role (Hoogervorst-Schilp et al., 2016). Recent reports suggest that the documentation regarding pain assessment and treatment might be insufficient in some cases (Rababa et al., 2021; Shoqirat et al., 2019), however these skills can be improved by training and education (Dang & Stafseth, 2022). Because documentation requirements are usually declared in pain treatment protocols, the presence of written protocols contribute to pain management efficacy (Gonzales, et al., 2021).

In Hungary adequate pain management is not only an ethical imperative for health professionals, but also a legal obligation defined by Article 98, section (2), point b) of Act CLIV on Health (Hungarian National Assembly, 1997). Most people, either as a patient or relative, face this problem at least once in their life. Unfortunately, we know very little about the topic, as no comprehensive survey has been carried out so far in Hungary about the practice of pain management in Hungarian health care providers.

To explore, where Hungary stands in terms of postoperative pain management, first, we wanted to implement a comprehensive review of its practice by identifying which professionals are involved in the treatment of pain, who measures pain, how frequently, and with what pain measurement tools; what roles nurses play in the process; what kind of pain relief methods are in use; who takes care of patients during duty hours; as well as how much pain relief activities are regulated in the hospital. Second, we wanted to know, how many hospitals had actually adopted the Acute Pain Service (APS) technology to organize and operate pain relief, and what their main characteristics were regarding the number and composition of doctors and other health professionals in the pain team, the process and documentation of pain management, as well as the protocols, which are applied to guide their work. The review of the current situation can provide an excellent basis to identify both good practices that can be rolled out countrywide, and problems or shortcomings to be faced with and addressed.

To answer these questions, we have carried out a survey among Hungarian hospitals from the end of 2019 to early 2020. Our findings regarding APS have already been published elsewhere (Lovasi et al., 2021). Most importantly we have identified only two hospitals with a functioning APS, which reinforced our earlier impression that the technology has hardly been adopted in Hungary so far (Lovasi et al., 2020). The objective of this paper is to provide a comprehensive review of postoperative pain management in Hungary in all hospitals regardless of whether or not they have an APS, since the fundamental questions about the process of pain management (who, what, how) apply to all institutions and departments, which have to care for patients experiencing postoperative pain. In this paper we first summarize the methodology of the survey, describe its results, and discuss them in the context of the international literature.

Methods

To meet our objectives, we designed and implemented a survey among Hungarian hospitals providing services in surgery, traumatology, orthopedics, and anesthesiology, regardless of their ownership or financing status. Given that on the basis of our earlier research we assumed that APS was not widespread in the Hungarian health system, it was important to include surgical specialties in addition to anesthesiology. The sampling frame was provided by the National Public Health Center, the authority responsible for issuing operational licenses to health care providers. We compiled the questionnaire on the basis of the literature, and after a pilot testing and ethical approval of our study, we sent it out to the identified hospitals. Participation in the survey was entirely voluntary and no financial compensation was paid to the respondents. The data collection period lasted from December 2019 to March 2020. The questionnaire covered three topics: (1) institution related data; (2) postoperative pain assessment, treatment, and documentation related data; and (3) postoperative pain management policy and protocol related data (Table 1). The questionnaire had to be filled out by a representative of the surgery, traumatology, orthopedics, and anesthesiology departments separately. This meant that we expected to receive minimum 2 and maximum 4 filled in questionnaires per hospital.

The statistical analysis of the responses was carried out by the Statistical Package for the Social Sciences (SPSS) version 24.0 (IBM Corp., Armonk, NY, USA). The details of sampling, data collection and analysis can be found in another publication, which presented, analyzed, and discussed the findings of this survey regarding APS (Lovasi et al., 2021).

At the time of our survey there were 72 hospitals operating in Hungary, which met the inclusion criteria. Since most of these hospitals had more than one of the listed specialties covered, and we asked each hospital to fill in a separate questionnaire for each specialty, we got back 135 analyzable questionnaires from 52 hospitals. Our sample therefore covers 72.2% of institutions providing inpatient care in the listed surgical specialties. Unfortunately, not all questionnaires were 100% complete. Because of the missing answers, the number of responses that could be analyzed did not always add up to 135. The actual number of answers that could be included in the analysis is represented with “N” at each question. As far as the respondents are concerned, their distribution according to position is shown in Figure 1. Heads of departments constitute the largest part of our sample with 60.2%, followed by specialists, and head nurses, with 20.3% and 9%, respectively. We refer the reader to the aforementioned publication for further details on the composition of our sample (Lovasi et al., 2021).

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Table 1
The Structure and Main Topics of the Questionnaire

Topic	Questions	Other information
Institution related data	1. Position of respondent professional	Single-choice closed question
Postoperative pain assessment, treatment, and documentation related data	1. Methods used for postoperative pain treatment	Multiple-choice closed question with free text option
	2. Person responsible for prescribing pain treatment for the first 24 hours	Multiple-choice closed question with free text option
	3. Ward RNs allowed to administer IV-PCA boluses	Single-choice closed question
	4. Ward RNs allowed to adjust IV-PCA boluses	Single-choice closed question
	5. Ward RNs allowed to administer epidural boluses	Single-choice closed question
	6. Ward RNs allowed to adjust epidural boluses	Single-choice closed question
	7. Ward RNs allowed to administer peripheral nerve block pump boluses	Single-choice closed question
	8. Person responsible for after-hours postoperative pain management	Multiple-choice closed question with free text option
	9. Pain assessment tool	Multiple-choice closed question with free text option
	10. Pain assessment person	Multiple-choice closed question with free text option
	11. Pain assessment at rest	Yes-no question
	12. Pain assessment with movement	Yes-no question
	13. Frequency of postoperative pain assessment	Multiple-choice closed question with free text option
	14. Documentation of pain assessment	Single choice closed question
Postoperative pain management policy and protocol related data	1. Written protocol for postoperative pain management (presence and content)	Yes-no questions
	2. Hospital meetings or training courses on postoperative pain management	Yes-no questions
	3. Person providing instruction for the courses or meetings	Multiple-choice closed question with free text option

RN = registered nurse; IV-PCA = intravenous patient-controlled analgesia.

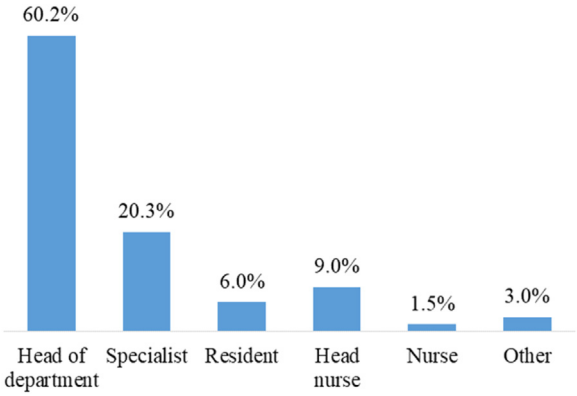

Figure 1. The distribution of survey respondents according to position (N=133).

Results

In Hungary, out of the 52 responding hospitals, there are 2 hospitals, which have APS. The characteristics of these pain teams are described, analyzed, and discussed in detail elsewhere (Lovasi et al., 2021). The analysis included all 52 hospitals and all the valid answers to the items of all the 135 questionnaires. As we will see, APS plays only a minor role, because of the limited number of hospitals, which have already adopted the method.

Health Care Staff, who Administer Postoperative Pain Relief, and the Most Frequently Applied Methods

According to our respondents it is the attending physician (73.3%) and the anesthesiologist (69.6%), who most frequently order pain therapy for the first 24 hours after an operation, while the APS pain team is mentioned least frequently with 1.5% (N = 135). In this case, multiple answers were allowed and 55.6% of our sample chose only one specialist (attending physician or anesthesiologist), while 44.4% chose two (attending physician and anesthesiologist) (Table 2).

Regarding pain therapies, respondents could pick multiple answers, too (Table 3). The first three most frequently mentioned options are intravenous infusion (74.1%), oral medication (67.4%), and intravenous bolus (57.8%). On average 3.8 (±1.97 SD) methods are used by the hospital departments (N = 135).

Responsibilities of Nursing Professionals

To explore the role of nursing professionals we asked how much nurses were involved in certain pain relief therapies either independently or on doctors' orders. The results are presented in Table 4. First, the relevant therapies are used by less than half of our sample. Epidural analgesia (EDA) is the most prevalent, both the setting of the pump (47.7%) and the administering of boluses into the pump (49.2%). It is followed by intravenous patient-controlled analgesia (IV-PCA) with 30.8% for administering boluses into the pump and 26.2% for setting the pump, while the administering of boluses into the pump of peripheral nerve blockade (PNB) is the last, with 21.5%. Second, when it comes to the involvement of nursing professionals, they are hardly allowed to make decisions independently (1.5%-4.6%), however, only a small number are fully excluded to apply these methods (0%-1.5%). Usually, nurses carry out the tasks based on doctors' orders (20%-43.8%).

Pain Relief During Duty Hours

Next, we wanted to identify the health professionals who were involved in managing pain during out of hours and the weekend. Multiple options were available and the departmental representatives, who completed the questionnaire (N = 135), on average chose 1.7 (±0.89 SD) answers. Over one-third of the respondents picked one professional (35.6%), another 35.6% went for two, 21.5%

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Table 2
Who is responsible for postoperative pain management in the first 24 hours after the operation? (N = 135)

Person Responsible for Postoperative Pain Management in the First 24 Hours	Number of Respondents	% of Respondents (n = 135)
Attending physician	99	73.3%
Anesthesiologist	94	69.6%
APS team	2	1.5%

APS = acute pain service.

Table 3
The Share of Pain Relief Methods Used (percentage, multiple answers were allowed N = 135)

Method	Proportion of Respondents Using the Method
IV infusion	74.1%
Per os medicine	67.4%
IV bolus	57.8%
SC/IM. injection	57.0%
EDA perfusor	50.4%
IV bolus using EDA cannula	32.6%
PNB pump	18.5%
IV-PCA	14.6%
Other	4.4%

IV = intravenous; SC/IM = subcutaneous/intramuscular; EDA = epidural analgesia; PNB = peripheral nerve block; IV-PCA = intravenous patient-controlled analgesia.

chose three or more, while 7.3% did not answer. Among the respondents with a single answer, over half said that it was the doctor on duty (52.1%, n = 25), followed by the ward nurse with 16.7% (n = 8). Among the respondents with two choices, roughly half said that it was the combination of the surgeon on duty and the ward nurse (47.9%, n = 23), while according to the other half, it was the combination of the former and the anesthesiologist on telephone duty (43.8%, n = 21).

Pain Assessment

Next, we explored the pain measurement tools in use. The respondents chose 1.5 options (±0.86 SD) on average (N = 135). The subjective assessment of postoperative pain was indicated in 36.3% of the sample. The most frequently mentioned pain measurement tool was the Visual Analogue Scale (VAS) with 37.0% (Table 5).

According to 77.8% of the respondents, the ward nurse carries out the assessment of pain and 2.2% of the respondents indicated that the APS assesses pain (N = 135). In most of the departments, postoperative pain is not measured on a regular basis, either at rest (59.7%), or during activity (65.9%, N = 129). As far as the first 24 hours after the operation are concerned, we emphasize that 32.8% of our sample only occasionally assess the pain of patients (N = 130), while 9.9% gave other answers, such as "it depends on the patient and the operation", "cases are decided on an individual basis", or "I do not know" (Fig 2).

We also addressed the question of recording the measured values. We found that the documentation was comprehensive in 23.7% of our sample, partial in 56.5%, while 19.8% did not record their findings at all (N = 131).

Table 5
The Percentage Distribution of Scales to Measure Postoperative Pain According to Their Prevalence (N = 135)

Pain Assessment Methods	Number of Respondents	% of Respondents (n = 135)
Visual Analog Scale	50	37.0%
Numeric Rating Scale	30	22.2%
Verbal Descriptor Scale	44	33.6%
Face Scale	23	17.0%
Subjective assessment	49	36.3%

The Internal Regulation of the Management of Postoperative Pain

We found that a written protocol was available in 34.4% of the surveyed hospital departments, while 65.6% of the respondents claimed that their institution had no such document, which would guide the practice of pain management (N = 131). We asked the respondents to specify the content of the protocol if it was available. According to their answers, almost all of the documents include the options of pharmaceutical therapies (97%), and 90% designate the persons who prescribe the pain relief treatment. The frequency of pain measurement is determined in 77% of the protocols, and 70% define the threshold that warrants an intervention. The least frequently mentioned components were the enumeration of nonpharmaceutical treatment options (37.5%) and the education and training of staff members (17.5%).

Professional training, including meetings and educational programs, are available in 28.9% of the responding departments (N = 128), which are almost exclusively led by anesthesiologists (91.9%, N = 37). The participants mostly consist of anesthesiologists, specialists of surgical departments, young doctors in residency training, and nurses.

Discussion

Our study is the first of its kind to comprehensively review the practice of postoperative pain management in Hungarian hospitals, according to the characteristics deemed important by the literature. We consider an important achievement that close to three-quarters of the relevant surgical inpatient care providers participated in the survey and that over 60% of the respondents were

Table 4
Nursing Responsibilities in Administering Pain Relief Therapies (N = 130)

Method	Not Used	Physicians Order	Decision by the Nurse	Not Allowed for Nurses
IV-PCA bolus	69.2%	26.9%	3.8%	0%
IV-PCA pump adjustment	73.8%	22.3%	2.3%	1.5%
EDA bolus	50.8%	43.1%	4.6%	1.5%
EDA pump adjustment	52.3%	43.8%	3.8%	0%
PNB pump	78.5%	20%	1.5%	0%

IV-PCA = intravenous patient-controlled analgesia; EDA = epidural analgesia; PNB = peripheral nerve block.

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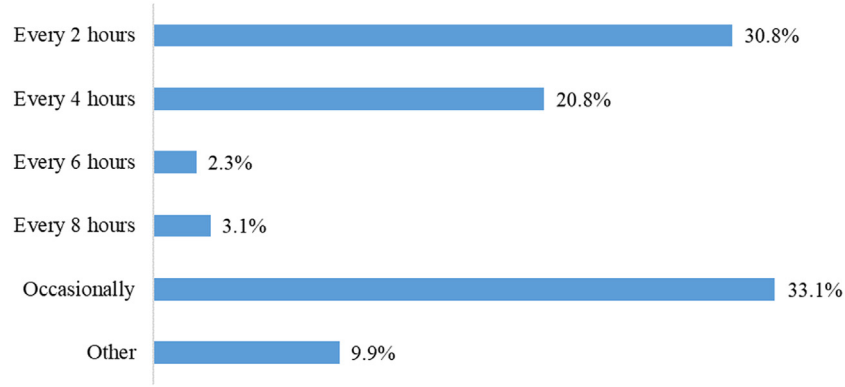

Figure 2. The frequency of pain measurement during the first 24 hours after the operation, percentage (N=130).

heads of departments, who actually filled in the questionnaire. We are convinced that their participation increases the validity of our findings, because they are responsible for the operation of their departments and have a comprehensive view, oversight and awareness of its activities. Further, such a response rate is especially remarkable in light of the chronic human resource shortages of the Hungarian health system, which makes every additional task over and above patient care increasingly difficult to undertake (Gaál et al., 2011; Girasek et al., 2017). The willingness of the health care staff to participate in our survey, thus might indirectly signify that they consider the topic of the study important, which in itself constitutes a good starting point on the basis of which the development of clinical practice can be built.

Specialties Involved in Postoperative Pain Management

Appropriate pain relief requires knowledge and understanding of the various types of pain, medications, and multimodal or regional anesthesia, which are possessed by anesthesiologists at best (Le-Wendling and Tighe, 2017). In addition, effective pain management is unimaginable without the regular measurement and documentation of pain scores, the education of patients on the benefits and side effects of pain relief technologies, and the measurement and documentation of patient satisfaction (Sinatra, 2010). At the same time, the health professionals responsible for pain management should be in close cooperation with the surgical specialists, which is also a prerequisite to better monitor patient status and achieve better outcomes in terms of pain relief (Boezaart et al., 2013). All these requirements are best met with the establishment of multidisciplinary pain teams, that is an APS, as has been demonstrated by several studies. An APS increases patient safety, patient satisfaction, and decreases length of stay (Buckenmaier et al., 2012; Lee et al., 2010; Rawal 2016; Rockett, et al., 2017; van Boekel et al., 2015; Wheatley et al, 1991). It has an important role to diminish the side effects of pain relief, such as nausea and vomiting (Wheatley et al., 1991), to increase pain management knowledge among health professionals by coordinating education and further training (van Boekel et al., 2015; Wheatley et al., 1991), as well as to develop pain management protocols, to carry out pain management research, and to contribute to the organization of clinical audits, which evaluates the implementation of these protocols (van Boekel et al., 2015; Webb & Kim, 2018).

It seems obvious that the adoption of APS is the way forward in pain management, yet our findings show that it is mainly the specialist, who carried out the operation (i.e., the doctor in charge of the patient), responsible for ordering the pain treatment in Hungary, and pain teams play only a minor role with only two hospitals using this technology at all. Of course, this raises the question, whether or not surgical specialists and ward nurses really have the necessary knowledge and skills to manage pain relief in a comprehensive manner and perform a full range of pain relief activities, in the absence of APS and anesthesiology support.

The Deployment of Pain Relief Methods

As far as the methods of pain therapy are concerned, it is positive that the Hungarian respondents use a mix of technologies. Nevertheless, this mix involves intramuscular and subcutaneous injections in more than half of the cases, despite that one of the fundamental quality indicators of pain relief is the deployment of modern methods of anesthesiology and the avoidance of intramuscular injections (Chou et al., 2016; Gordon et al., 2010). According to our findings neither EDA, nor patient controlled technologies are among the frequently used methods. In contrast, a German survey has found that 88% of hospitals used EDA in all types of departments, even including hospitals without APS (Erlenwein et al., 2016). Several advantages of the deployment multimodal techniques have already been published, such as the diminishing use of opioids, reduced length of stay, fewer surgical complications, as well as the more effective and safer drug use, based on the synergies of active substances (Goldberg et al., 2017; Pozek et al., 2018; Sullivan et al., 2016).

It is not yet known what the barriers to deployment modern technologies are in Hungary. All the factors described in the literature, such as access problems, the resistance of the health care staff (Coluzzi et al., 2015), the more complicated operation (compared to the use of simple infusions), which requires more knowledge and effort on the part of health professionals, or the fact that patients have to be educated, as well (Coluzzi et al., 2015), may play a role.

Nursing Competencies and Responsibilities

Our findings show that the potential of nursing professionals are hardly capitalized on in pain management by Hungarian hospitals. First, those modern pain relief technologies, which can be implemented with the greater involvement and responsibility of nurses, are not widespread. Second, even in the hospitals, where these are actually applied, nurses can administer medicines only on the order of the doctor. They are not allowed to make decisions autonomously, within their own scope of authority. In contrast, the international literature recommends the employment of at least one highly qualified pain nurse per 250 beds, as a way to

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increase both the quality and the efficiency of pain management (Boezaart et al., 2013; Meissner et al., 2018; Rockett et al., 2017). Pain nurses have an extended discretion to implement pain management tasks on their own. They are an important relay between the patient and the doctor, they assess pain, report back to the doctor, are qualified to work and administer pain relief medicines independently on the basis of protocols (Goldberg et al., 2017; Samolsky Dekel, 2018; Webb & Kim, 2018). As Rawal has pointed out, in the absence of pain nurses, the quality and efficiency of pain management suffers and its practice is inhumane, as well, because the needed pain relief interventions suffer unnecessary delays and waste the valuable work time of both the doctors and the nurses (Rawal, 2016). Without proper knowledge and authority, the ward nurse has to call the doctor to seek his or her approval, each time an intervention is deemed necessary in the pain relief regimen administered to the patient. In addition to the possibility that a less experienced clinician responds to the call, the patient suffers a lot just by waiting for the therapy change to be approved. Searching for the doctor wastes the time of the nurse, while the involvement of the doctor wastes her or his time, which may result in the delay of other, more important tasks. Unfortunately, the current Hungarian practice is close to what has been described by Rawal, as pain nurses are virtually nonexistent in the health care of Hungary.

The lack of utilizing this opportunity to improve patient care may be explained by the shortage of health professionals, mentioned before (Gaál et al., 2011; Girasek et al., 2017), which in turn may impede the modern pain management equipment and technologies to gain ground. Since the surgeons perform operations all day and do not have time to pay attention to these pain management tasks, while nurses do not get the necessary education, they rather not deploy these technologies. It is a paradox, that one of the solutions to ease these human resource shortages is the involvement of and task shifting to highly qualified nurses with extended discretion, yet the human resource shortages are the main reason that these unwanted practices are entrenched in the Hungarian health system, and the main obstacle of changes to happen. One of the intervention points to break out of this paradox, is the clarification of competencies and the revision of the regulation of responsibilities, which unfortunately has not happened, partly because of resistance from the medical profession (Oláh, Máté, Betlehem, & Fullér, 2015). Because of the lack of specific regulations of the competency of nurses in Hungary, if a hospital does deploy modern pain relief technologies, most ward nurses administer medicine into the equipment on the order of the doctor, usually in possession of the necessary experience, but in the absence of the necessary special qualification and without written authorization and permission. This practice should be resolved as soon as possible with the establishment of clear, legally enabled competencies and educational requirements, not just between nurses and doctors, but also within the nursing profession, such as between the ward nurse and the highly qualified pain nurse. This is not at all an impossible task, as a Chinese example shows, where pain nurses were trained to prepare pain treatment plans, perform pain assessment, and follow-up the analgesia pumps (Fang et al., 2021). Such an improvement would benefit the patients with better access and quality of care, the health professionals with more job satisfaction, and the system as a whole with a more efficient use of scarce resources.

Pain Assessment and its Documentation

Pain assessment is a crucial part of effective pain management to relieve postoperative pain, which is an important component of patient satisfaction and hospital performance (Bruckenthal & Simpson, 2016; Hayes & Gordon, 2015; Yüceer, 2011). The measurement of pain is usually carried out by nurses because they are the hospital staff that spends the most time with patients (Bruckenthal & Simpson, 2016; Hayes & Gordon, 2015; Yüceer, 2011), and according to our survey results, Hungary is no exception. As far as pain measurement tools are concerned, ward nurses use scales, which are described in the literature (Coll et al., 2004; Gries, et al., 2017; Lapkin et al., 2019; Montes et al., 2017), but in one-third of the hospital departments, pain assessment is based on subjective judgement of nurses, which is a cause for concern. Of course, subjective assessment on the basis of the clinical picture plays a role in the case of non-cooperating patients with dementia, but for all the others, the use of pain scales provide more accurate results (Lovasi, Gaál, Léber, & Lám, 2022; Lovasi, Lám, Léber, & Gaál, 2022). Polish and Latvian surveys reported similar practices, according to which pain therapies are carried out based on customs, and instead of using pain scales, more than half of the nurses subjectively assess the pain of patients (Borys et al., 2018; Strode and Seimane, 2011). Further, despite their advantages, multidimensional scales were not mentioned by our survey respondents at all (Lovasi et al., 2022).

The documentation of the measurement results is also a crucial part of effective pain management, without which the accurate monitoring of pain is impossible. Only the recorded scores can be easily followed up, and provide a solid basis for the selection of the appropriate intervention. Unfortunately, our findings show that this a weak point of practice in Hungary, which certainly needs to be improved. Pain is measured and documented at rest in 40.3%, and on activity only in 34.1% of the hospital departments, while only 23.7% of our respondents record the measured value in each case. According to several studies, postoperative pain should be measured and documented both at rest and during activity, because it is not possible to determine accurately when to intervene and what the outcome of the intervention has been without it (Erlenwein et al., 2016; Nasir et al., 2011; van Boekel et al., 2015; Wikström et al., 2020). According to a Croatian study, those patients, whose pain was not assessed, had more severe pain (Farčić et al., 2017).

One of the reasons for these findings can be the lack of specialized pain nurses, which in turn is partly attributable to the lack of appropriate legal regulations on their competencies and scope of authority in practice (Oláh et al., 2015).

Regulation of Postoperative Pain Management

Our results show that there is no written pain management protocol in over two-thirds of hospital departments, which obviously makes it difficult to provide standard, consistent care across the whole health system. This is also a weak point of Hungarian hospitals in international comparison. According to a Spanish study, pain management protocols were available in 97% of hospital with APS, while in 55% of those with no APS (Montes et al., 2017). In the USA 55% of the responding hospitals reported having a written protocol, and this proportion was higher among hospitals with APS (Nasir et al., 2011). In 2012, 86.7% of the respondents used operative protocols in Italy (Coluzzi et al., 2015). According to a Dutch report, 97% of hospitals had a written pain management protocol (van Boekel et al., 2015). Further advantage of postoperative pain protocols helps to reduce the demand of analgesics and increase the use of pharmacologic strategies (Gonzales, et al., 2021).

Where such protocols do exist in Hungarian hospitals, their content (pain assessment and reassessment, interventions to be performed in case of inappropriate pain control, order of emer-

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gency calls) by and large corresponds to what is recommended in the literature (Coluzzi et al., 2015; Nasir et al., 2011).

As far as training in pain management is concerned, our findings show that most Hungarian hospitals do not organize in-house education. This is another problematic point, since in-house programs are more accessible to personnel already burdened with a heavy workload, especially during times of external shocks, such as the COVID-19 pandemic. Information on pain management education varies in the literature, some focus on nurses, while others on doctors (Erlenwein et al., 2016). In Hungary, education and training is another potential intervention point to improve the practice of pain management. The volume of in-hospital training programs should be increased for all the specializations relevant in pain management. A program for the establishment of legal, structural, and professional prerequisites of a wider adoption of APS could be a seed to facilitate this process, as a well-functioning APS assumes the role of the coordination and management of education and training activities. An interesting direction for further research could be the follow up and monitoring of the spread of APS in Hungarian hospitals after the COVID-19 pandemic ends. It is certain that without an active health policy to facilitate the adoption of the technology, the necessary changes will happen much slower—even though the investment needed here would provide a return in terms of quality, access, and efficiency in the short term.

Limitations

While we are convinced about the validity and usefulness of the findings of our study, particularly on the basis of the high response rate and the willingness of heads of departments to participate in our survey, we have to acknowledge the limitation of the research. With the exception of one provider, we have been unable to involve the private sector because of the reluctance of hospital management to participate in the survey. While a couple of private providers, who obtained operating licenses, do not actually offer operations, hence there would have been nothing to report on in the frame of our survey, a few others do perform operations, and the lack of their participation resulted in the missed opportunity to compare the public and the private sectors in this respect. In the public sector, the high workload of hospitals and, within them hospital workers, certainly limited the willingness to respond, and despite the acceptable response rate, even better participation might have been achieved with allocating more time for the data collection period. Finally, the method of data collection made it impossible to identify the responding hospital departments in all the cases, which limited the scope of data analysis (Lovasi et al., 2021).

Conclusions

Despite the difficulties and complexities of the task at hand, we attempted to provide a comprehensive review of postoperative pain management in Hungary for the first time, with the involvement of anesthesiologists and representatives of surgical specialties, as well. The survey of Hungarian inpatient care providers of surgical services has confirmed our earlier impression that pain teams play a negligible role, with an APS adopted only by two Hungarian public hospitals. It is not surprising then that pain therapy is ordered mainly by the operating doctors for the first 24 hours after the operation, and the application of modern pain relief technologies is not widespread. Pain assessment is usually carried out by ward nurses, specialized pain nurses are absent from the system, and the level of pain is frequently determined subjectively. Finally, two-thirds of the surveyed hospital departments do not have a written pain management protocol.

This study has provided us with a snapshot of the present status, and identified the potential intervention points to improve the quality, access, and efficiency of pain therapy, the effect and implementation of which should be monitored with future, follow-up surveys. Among others, Hungarian health policy should focus on the establishment of the legal, professional, and financial prerequisites of the wider adoption of APS, and health professionals have to be motivated to participate in the work of pain teams. Pain management knowledge should be given more emphasis in the education and training of nurses. The training of highly qualified nurses with extended competencies and scope of authority should be developed further, together with the legal regulation of their licenses to practice in pain management.

Clinical Implications

From the perspective of clinical practice, the first step should be adoption of local pain management protocols and standard operation procedures (SOPs) which provide a detailed regulation of the operational framework of pain teams, the necessary qualifications of their members, the designation of the leader of the pain team, the professionals responsible for pain assessment, the frequency of pain measurement, the professionals in charge of ordering the pain therapy, the roles and responsibilities of each professional in the implementation of pain relief technologies, as well as the rules of administration and documentation of these activities in each Hungarian hospital with a surgical portfolio. The key is the clear definition and delineation of competencies on the basis of which the tasks can be divided most efficiently among the various health professionals. Practice-oriented education and training also plays an important role in the development and division of competencies, which should be made available not just in general, but within the individual hospitals, tailored to the local context and training needs, for all the surgical specialists, anesthesiologist, nurses, physiotherapists, and dieticians. Finally, on the basis of the internal regulatory framework, bilateral agreements should be concluded between the anesthesiology and the operating departments.

Despite its limitations, we are convinced that our study has provided a valuable insight into the current practice of postoperative pain management in Hungarian hospitals, and serves a solid basis for policy making and the development of clinical practice for the sake of patients, relatives, and health workers alike.

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