

# Perception of barriers to postoperative pain management in elderly patients in Polish hospitals with and without a “Hospital Without Pain” Certificate – a multi-center study

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## Abstract

**Introduction:** In 2005–2050, the global population of elderly people will increase by 12%. This will lead to increased demand for such healthcare services as hospital care or surgical interventions. Pain in elderly patients is a substantial problem. Insufficiently controlled postoperative pain continues to be a widespread phenomenon. Pain management in Poland is usually based on nursing care supervised by an anesthesiologist or surgeon. The aim of the study was to identify barriers to effective nurse-controlled analgesia in postoperative pain management in elderly patients in hospitals with and without a Hospital Without Pain certificate.

**Material and methods:** The study was conducted after the approval of the study protocol by the Independent Bioethics Committee for Scientific Research of the Medical University of Gdansk. The study project was multi-center and was conducted from July 2012 to December 2013. The research was questionnaire-based and used the Polish version of the Nurses' Perceived Obstacles to Pain Assessment and Management Practices questionnaire. The project included 676 nurses from hospitals awarded the Hospital Without Pain Certificate and 926 respondents from hospitals without the certificate.

**Results:** After calculating the overall average result in particular groups, healthcare system-related problems were first among the barriers hindering pain management in elderly patients ( $M = (C = 3.81, N/C = 3.87)$ ). Patient-related barriers were second ( $M = 3.77$ ). Physician- and nurse-related barriers took the subsequent positions, with very similar scores  $M = (C = 3.47, N/C = 3.44)$  and  $M = (C = 3.46, N/C = 3.44)$ , respectively.

**Conclusions:** The greatest barriers to pain management in elderly patients are related to the healthcare system. Nurses from Hospital Without Pain certified hospitals devoted significantly more time to relieving pain through non-pharmacological methods.

**Key words:** barriers, nursing care, pain management, advanced age.

## Introduction

The beginnings of pain management – dating back to the turn of the 1960s and 1970s – originated in the United States, from where it spread to Western Europe almost a decade later. The theoretical foundations

of the phenomenon of pain, published in 1965 by two American physicians, Melzack and Wall, initiated a long-lasting process of change in the attitudes of the medical community to the problem of pain [1]. A number of studies conducted in the USA in the 1970s clearly revealed that the healthcare system lacked individuals or teams responsible for pain therapy. The second conclusion of the studies was the statement that it was not sufficient only to disseminate information on pain management but pain management had to be given priority [2].

Over three decades have now passed. In the meantime the United States has popularized programs resolutely defining pain management as the top priority in patient rehabilitation, particularly in such domains as palliative care, interdisciplinary pain management centers, postoperative pain relief and postpartum pain management [3–5]. Pain management has taken on organizational forms. In 1978, the American Pain Society and the National Hospice Organization were founded. In 1986, the International Pain Foundation was founded with the aim of supporting public and professional education concerning pain disorders and their treatment. Additionally, there was development in specialist literature, partly or fully concentrated on pain management issues [6–8]. Practically a decade after laying the foundations for the pain management theory, the problem of pain began to gain significance in other countries too. Since 1994, the French government has held nurses and physicians, anesthesiologists in particular, responsible for ensuring adequate postoperative pain relief. They also emphasize the patient's right to obtain information about acute pain and its effective management [9]. Since 1995, the number of hospitals with Acute Pain Teams in the UK has significantly increased. The establishment of the teams has obviously heightened the awareness that adequate pain management translates into patient well-being. Nevertheless, despite repeated agreements with professional organizations, certain hospitals still do not have an Acute Pain Service (APS), and recent data indicate that some APSs confronted by financial problems are not able to provide such services [10]. It is now estimated that the absence of adequate pain management affects 80% of the world population, a phenomenon posing a serious problem in over 150 countries [11]. At the level of particular states, the heaviest burden of inadequate pain management is borne by the weakest: the elderly, pregnant and breastfeeding women, children, people coping with addictions to harmful substances, and the mentally ill [12]. There are still significant obstacles to comprehensive pain management which limit the ability to manage it effectively. The

Agency for Healthcare Research and Quality in the USA divides pain management barriers into: healthcare system-, medical staff- and patient-related barriers [13–17].

### Elderly patients

In 2005–2050, the global population of elderly people will increase by 12%. This will lead to increased demand for such healthcare services as hospital care or surgical interventions. Pain management in special groups of patients, including elderly patients, can prove an especially demanding task. As compared to younger patients, pain in elderly patients is usually not properly diagnosed and it is not treated using adequate methods. Elderly patients are in the group running a higher risk of postoperative complications and at risk of their widespread pain being undiagnosed or insufficiently managed [8, 18, 19]. Insufficient management of acute pain can be more marked in patients with cognitive disorders, depression, agitation, concomitant conditions, social isolation, under-reporting of all symptoms and altered response to analgesics [19]. Dementia is a barrier to pain evaluation; it is characterized by memory loss, personality changes and loss of such functions as sight, abstract thinking and linguistic skills. Moreover, pain-related behaviors may be absent or difficult to interpret. On the other hand, symptoms associated with dementia may actually be related to pain, for instance aggressive behavior may be a defensive reaction of people incapable of expressing that they are in pain [18, 20]. Due to sensory and perceptive disorders, elderly patients have difficulty completing the 0–10 numeric pain rating scale [21]. Pain evaluation in elderly patients can be underestimated since some patients wrongly believe that pain is part of the process of aging. In other cases such as cancer patients, pain assessment can be underestimated for fear of disease progression. The patient may have fatalistic thoughts, including the unfounded conviction that if pain can help in diagnosis, then it must have a therapeutic effect [14]. There is also a mistaken belief that elderly patients experience pain less intensely than other groups of patients. Elderly patients often suffer from many disorders and potential sources of pain, which may make the interpretation of pain symptoms more difficult. An additional factor hindering proper evaluation of a patient's postoperative pain status is the fact that more and more patients undergoing surgery suffer from chronic pain upon admission to a hospital. In their case a unidimensional method of pain assessment may prove highly fallible. It is advisable to use multi-plane pain assessment scales, by means of which it is possible to determine the location of pain, its intensity, character, duration

and impact on the system [22]. Elderly and poorly educated patients are reluctant to take pain medications for fear of adverse reactions or addiction [23]. Studies indicate that a common obstacle to optimum pain management in elderly patients is their reluctance to bother the nurses taking care of them, which results in not reporting pain symptoms directly to the nurse. Patients may think that their mention of pain will divert the doctor's attention from the underlying disease, and the view that "good" patients do not talk about pain persists among them [24]. An analysis of available multi-center studies shows that obstacles to adequate treatment in Western countries include ethnic and racial discrimination, age and gender. Among the patients studied, women were administered more analgesics than men. In addition, elderly patients had to wait longer for pain medications and received much lower doses and smaller amounts of opioid analgesics [17].

### Pain management in Poland

Postoperative pain is inadequately relieved in over a half of the patients. The reasons for this are complex. The most important reasons seem to be organizational problems, insufficient knowledge of pain relief, lack of time and the complexity of pain management procedures. The primary criteria for the choice of an analgesic are medical staff habits, availability of analgesics or the price of individual packaging (not including the total costs, e.g. the costs of possible complications). Postoperative pain management in Poland needs significant improvements; therefore the Polish Pain Research Society (PTBB) took steps aimed at introducing postoperative pain management standards. In 2007, a team of experts from the Polish Pain Research Society and the Polish Gynecological Society developed guidelines on the management of acute pain after gynecological procedures. In June 2008, the PTBB prepared and published the Postoperative Pain Relief Guidelines 2008. The guidelines placed special emphasis on the issues of safety of administered analgesics and the necessity of regular monitoring of postoperative pain as well as medical staff education in postoperative pain relief. The Polish Pain Research Society and the Polish Anesthesiology and Intensive Care Society, the Polish Surgeons' Society, the Polish Gynecological Society and the Polish Orthopedics and Traumatology Society initiated the Hospital Without Pain Program awarding a Hospital Without Pain Certificate to entities complying with particular criteria and thus contributing to the improved quality of postoperative pain management in Polish hospitals [25]. In the first quarter of 2009 only three hospitals received certificates. A total of 32 departments and 145

hospitals operating in Poland have been awarded the certificate so far.

In 2011, an updated version of the guidelines was drawn up: Guidelines 2011 on Acute and Postoperative Pain Management.

### Principles of certification by the Polish Pain Research Society

A hospital as a whole or a single hospital department can participate in the certification program. A hospital/department applying for a certificate must comply with the following criteria [25]:

- Attendance of medical staff (anesthesiologists, physicians of various surgical specialties and nurses) at training courses in postoperative pain relief (e.g. Pain Management School) once a year.
- Regular monitoring of pain intensity in all patients undergoing surgery, 4 times a day.
- Informing patients of the possibilities and methods of postoperative pain relief prior to the procedure.
- Keeping records of pain assessments and management in accordance with pain management recommendations.
- Monitoring any adverse reactions of the therapy used in the attached adverse reactions form.

Winning the certificate requires a great deal of commitment on the part of the facility, but it is also associated with benefits. The implementation of procedures required for the certificate contributes to cutting the costs of patient hospitalization owing to fewer postoperative complications and earlier dismissals from hospital, and additionally it raises the facility's prestige. The benefits drawn from the certificate by a hospital or department flow directly to the patients as they gain the guarantee that postoperative pain relief in a given hospital is up to the highest standards. In Poland, pain management according to PTBB guidelines is usually based on nursing care supervised by an anesthesiologist or a surgeon. A team of nurses and physicians perform work according to their usual employment contracts and duties. No extra costs for the hospital are involved, but there is an additional workload for nurses because of the excessive patient-nurse ratio.

The aim of the study was to identify barriers to effective nurse-controlled analgesia in postoperative pain management in elderly patients in hospitals with and without the Hospital Without Pain certificate.

### Material and methods

The study was conducted upon the approval of the study protocol by the Independent Bioethics Committee for Scientific Research of the Medical University of Gdansk, approval number NKB-

BN/238/2012. The study project was multicenter and it took over a year. The study was questionnaire-based. It used a questionnaire collecting demographic data of our own design and the Polish version of the questionnaire by Coker *et al.* – Nurses' Perceived Obstacles to Pain Assessment and Management Practices. The questionnaire included 40 questions intended to assess how often the obstacles defined by nurses impeded optimum pain assessment and its management in elderly patients. With the authors' permission, two questions in the questionnaire were modified to adapt the questions to the issues of postoperative therapy. The original versions of the tools were analyzed in terms of factor accuracy, internal coherence and discriminating strength. Reasoning on the internal consistency of the questionnaire scales was performed by calculating Cronbach's  $\alpha$  coefficient of internal consistency. The psychometric parameters obtained were satisfactory.

Cronbach's reliability  $\alpha$  coefficient values of 0.7 and more were accepted as values confirming reliability of the scale.

The Polish-language version of the questionnaires was prepared by translating them from English into Polish and then back-translating by two independent translators. The language adaptation and use of the tools for the present study took place with the written permission of the authors.

The study included a total of 2000 nurses working in hospitals with the Hospital Without Pain certificate and in hospitals without the certificate. The respondents were informed that the study was anonymous and the data collected would be used exclusively for scientific research. Participation in the study was voluntary. Permission was also obtained from each facility.

For practical reasons, the questionnaire survey was divided into four parts. They concerned barriers associated with: the healthcare system, physicians, nurses and patients.

The respondents could choose one of the seven answers to questions: 1 – never interferes, 2 – very rarely interferes, 3 – rarely interferes, 4 – occasionally interferes, 5 – frequently interferes, 6 – very frequently interferes, 7 – always interferes.

### Statistical analysis

All the statistical calculations were performed using the statistical package StatSoft. Inc. (2011) Statistica (data analysis software system), version 10.0., www.statsoft.com (SN JGNP3087539302AR-E) and an Excel calculation spreadsheet.

Quantitative variables were presented as the arithmetic mean, standard deviation, median, minimum and maximum value (range) and 95% CI (confidence interval). Qualitative variables were presented as number and percentage. The Shap-

iro-Wilk  $W$  test was used to verify whether a quantitative variable came from a normally distributed population, and Levene's (Brown-Forsythe's) test was used to verify the hypothesis of equal variances. The significance of differences between the two groups (uncorrelated variables model) was examined by means of significance tests: Student's  $t$ -test (or Welch's test in the event of inhomogeneity of variance) or Mann-Whitney  $U$  test (if the conditions for using Student's  $t$ -test were not fulfilled or for variables measured on an ordinal scale). The significance of differences between more than two groups was measured by means of the Kruskal-Wallis test. If statistically significant differences between groups were found, Dunn's post hoc tests were used.

For a model of two correlated variables, Student's  $t$ -test or Wilcoxon signed-rank test was used (if the conditions for using Student's  $t$ -test were not fulfilled or for variables measured on an ordinal scale). The significance of differences between more than two variables in a model of correlated variables was verified by means of repeated measures analysis of variance or Friedman's test (if the conditions for using repeated measures analysis of variance were not fulfilled or for variables measured on an ordinal scale).

Chi-square ( $\chi^2$ ) independence tests were used for qualitative variables (using Yates correction for below 10 cells, Cochran's conditions test or Fisher's exact test, accordingly).

To establish the correlation (strength and direction) between variables, a correlation analysis was used by calculating Pearson's or Spearman's correlation ratios. The significance level assumed in all the calculations was  $p = 0.05$ .

## Results

### Respondent characteristics

The study included a total of 2000 respondents from whom a total of 1602 correctly completed questionnaires were obtained. The project participants included 676 nurses from hospitals awarded the Hospital Without Pain certificate and 926 nurses from hospitals without the certificate. The study group was internally diverse in terms of place of employment, level of education and access to the Internet.

Table I illustrates the demographic characteristics of the nurses participating in the study. Work seniority of the nursing staff participating in the study was defined as overall work seniority during full-time employment in the ward. The average work seniority of the nurses was  $17.9 \pm 8.7$  years. Most nurses worked full-time in both hospitals – 1549 (97.0%). In both groups the most respondents worked as unit nurses – 1544 (96.4%).

**Table I.** Socio-demographic characteristics of nurses in hospitals with and without the certificate

Parameter	Certificate (N = 676)	No certificate (N = 926)	Total (N = 1602)	P-value
Duration of employment:				
Mean, standard deviation	18.0 ±8.6	17.9 ±8.8	17.9 ±8.7	Z = -0.83
Range	1.0–42.0	1.0–42.0	1.0–42.0	p = 0.4085
Median	19.0	18.0	18.0	
95% CI	17.4–18.7	17.3–18.4	17.5–18.4	
Working time, n (%):				
Full time	649 (96.4)	900 (97.4)	1549 (97.0)	$\chi^2 = 3.42$
Part time (permanent)	11 (1.6)	16 (1.7)	27 (1.7)	p = 0.1806
Part time (irregular)	13 (1.9)	8 (0.9)	21 (1.3)	
Gender, n (%):				
Female	649 (96.0)	881 (95.1)	1530 (95.5)	$\chi^2 = 0.68$
Male	27 (4.0)	45 (4.9)	72 (4.5)	p = 0.4089
Age:				
Average, standard deviation	40.23 ±7.47	40.19 ±7.66	40.21 ±7.58	Z = -0.86
Range	22.0–62.0	21.0–61.0	21.0–62.0	p = 0.3922
Median	40.0	40.0	40.0	
95% CI	39.6–40.7	39.7–40.6	39.8–40.5	
Hospital department, n (%):				
Anesthesia and ICU	111 (16.4)	155 (16.7)	266 (16.6)	$\chi^2 = 28.06$
Surgery	480 (71.0)	569 (61.4)	1049 (65.5)	p = 0.0001
Emergency	74 (10.9)	153 (16.5)	227 (14.2)	
Gynecology	11 (1.6)	49 (5.3)	60 (3.7)	
Appointment, n (%):				
Staff nurse	657 (97.2)	887 (95.8)	1544 (96.4)	$\chi^2 = 2.30$
Charge nurse	19 (2.8)	39 (4.2)	58 (3.6)	p = 0.3160
Education, n (%):				
Registered nurse	383 (56.7)	541 (58.4)	924 (57.7)	Z = -0.32
Bachelor of Science in Nursing	82 (12.1)	90 (9.7)	172 (10.7)	p = 0.7488
Master of Science in Nursing	211 (31.2)	295 (31.9)	506 (31.6)	
Working hours per week:				
Mean, standard deviation	44.2 ±15.9	44.4 ±9.0	44.3 ±12.4	Z = 1.75
Range	20.0–389.0	1.0–100.0	1.0–389.0	p = 0.0797
Median	40.0	40.0	40.0	
95% CI	43.0–45.4	43.8–45.0	43.7–44.9	
Internet availability, n (%):				
Yes	276 (40.8)	332 (35.9)	608 (38.0)	$\chi^2 = 4.58$
No	386 (57.1)	568 (61.3)	954 (59.6)	p = 0.1014
Sometimes	14 (2.1)	26 (2.8)	40 (2.5)	

P\* – is for the test of difference between hospital with certification and hospital without certification.

In hospitals both with and without certificates, women comprised the largest group – 1530 (95.5%).

One hundred and forty-nine (65.5%) people from the study groups worked in the surgical ward. The place of work significantly differed among hospitals with and without certificates. The group from certified hospitals significantly less frequently worked in emergency, obstetrics and gynecological wards – the difference is statistically significant ( $\chi^2 = 28.06$ ;  $p = 0.0001$ ). An analysis of the level of education of the study subjects showed that the most respondents reported having a secondary education (924; 57.7%), and the fewest a bachelor's degree (172; 10.7%). Only 608 (38.0%) respondents had access to the Internet at work, while 954 (59.6%) reported no access. Interestingly, a comparative analysis indicated that respondents from hospitals without certificates reported that they had Internet access more often than respondents from hospitals with certificates.

The study groups practically did not differ in gender, length of employment in the profession, working time, age and position.

### Organizational barriers

Ten questions concerning the healthcare system were isolated from the survey – they are pre-

sented in Table II. The most frequently observed obstacle in both hospitals was the lack of possibility of consulting a clinical pharmacist about pain management in elderly patients with the mean score ( $M$ ) of 4.28 in hospitals with certificate ( $C$ ) and 4.37 in hospitals without certificate ( $N/C$ ). The next problem identified was the lack of possibility of directly discussing pain management therapy of an elderly patient with the mean  $M = (C = 4.27, N/C = 4.44)$ . The subjects definitely less frequently stated that such problems as no rules/procedures/guidelines interfered with pain management – the average result in both hospitals was  $M = 3.0$ . Statistically significant differences were found – in certified hospitals the barrier related to insufficient time for non-pharmacological pain management methods occurred significantly less frequently ( $Z = -2.346$ ;  $p = 0.019$ ).

### Physician-related barriers

Five questions concerning physician-related barriers were isolated from the survey – the results are presented in Table III. The problem most frequently identified by nurses was the physicians' distrust of the pain rating by nurses in elderly patients – the average result was  $M = (C = 3.71, N/C = 3.60)$ . The next problem identified by the respondents was the physicians' reluctance to pre-

**Table II.** Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients, associated with the health care system in hospitals with and without the certificate

Barriers	Hospital	Mean	Standard deviation	P-value
1 Lack of opportunity to discuss an older patient's pain management directly with the team	C	4.27	1.67	$Z = -1.855$ ; $p = 0.064$
	N/C	4.44	1.69	
2 Lack of opportunity to consult a clinical pharmacist about pain relief in older patients	C	4.284	1.85	$Z = -0.970$ ; $p = 0.332$
	N/C	0.37	1.90	
3 Inadequate time for health teaching with older patients (e.g., drug ordering as needed alternatives, addiction, etc.)	C	4.144	1.57	$Z = -1.572$ ; $p = 0.116$
	N/C	0.28	1.57	
4 Inadequate time to deliver non-pharmacologic pain relief measures	C	3.854	1.62	$Z = -2.346$ ; $p = 0.019$
	N/C	0.06	1.62	
5 Not having a consistent way of assessing pain, from one time to the next, in each older patient	C	3.783	1.44	$Z = -0.796$ ; $p = 0.426$
	N/C	0.74	1.45	
6 Unavailable comfort measures as alternatives/supplements to pain medications in older patients (e.g., hot/cold packs, mattresses, chairs)	C	3.683	1.55	$Z = -0.341$ ; $p = 0.733$
	N/C	0.65	1.55	
7 Not having a documented pain treatment plan for each older patient	C	3.663	1.69	$Z = -0.432$ ; $p = 0.666$
	N/C	0.71	1.65	
8 Not having a documented approach to pain assessment for each older patient	C	3.593	1.68	$Z = -0.749$ ; $p = 0.454$
	N/C	0.55	1.65	
9 Disorganized system of care (e.g., having to hunt for narcotic keys, obtain co-signatures, find drugs, etc.)	C	3.543	1.79	$Z = -0.480$ ; $p = 0.631$
	N/C	0.50	1.87	
10 Not having policies/procedures/guidelines that contribute to my knowledge of acceptable best practices around pain assessment and management in older adults	C	3.403	1.52	$Z = -0.310$ ; $p = 0.757$
	N/C	0.40	1.52	

Hospital\* C – hospital with certification, N/C – hospital without certification.  $P^*$  – is for the test of difference between hospital with certification and hospital without certification.

**Table III.** Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients associated with physicians, in hospitals with and without the certificate

Barrier	Hospital	Mean	Standard deviation	P-value
1 Physicians' lack of trust in the nursing assessment of pain in older patients	C	3.71	1.63	$Z = -1.369$ ; $p = 0.171$
	N/C	3.60	1.62	
2 Physicians' reluctance to prescribe adequate pain relief in older patients for fear of overmedicating those with dementia or delirium	C	3.65	1.50	$Z = -0.300$ ; $p = 0.764$
	N/C	3.67	1.53	
3 Antipsychotics are considered before pain medications in agitated patients	C	3.57	1.36	$Z = -1.028$ ; $p = 0.304$
	N/C	3.52	1.36	
4 Physicians' lack of knowledge and experience with prescribing pain medications	C	3.47	1.54	$Z = -0.097$ ; $p = 0.923$
	N/C	3.48	1.51	
5 The "older person is dying anyway" attitude among colleagues on the unit	C	2.95	1.87	$Z = -0.310$ ; $p = 0.756$
	N/C	2.93	1.90	

Hospital: C – hospital with certification, N/C – hospital without certification.  $P^*$  – is for the test of difference between hospital with certification and hospital without certification.

scribe adequate analgesics because of concerns about the possible overdosing in elderly patients with dementia or delirium  $M = (C = 3.65, N/C = 3.67)$ . The respondents definitely less frequently pointed to such problems as the ward physicians' attitude to pain management in elderly patients as a barrier to pain management  $M = (C = 2.95, N/C = 2.93)$ .

#### Nurse-related barriers

Another 14 questions concerning nurse-perceived barriers to optimum pain assessment and management in elderly patients and related to the nursing staff were isolated and they are presented in Table IV. It was demonstrated that ignorance of pain intensity in elderly patients because of insufficient time spent with them was the most frequently perceived problem – the average result was  $M = (C = 3.90, N/C = 3.87)$ . The second factor interfering with pain management as indicated by the respondents was ignorance of the acceptable pain intensity in particular elderly patients – the average result was  $M = (C = 3.89, N/C = 3.80)$ . The respondents definitely less frequently indicated their own reluctance to administer analgesics to elderly patients for fear of overmedication as a barrier to pain management  $M = (C = 2.54, N/C = 2.37)$ .

#### Patient-related barriers

Another 11 questions concerning patient-related barriers to optimum pain assessment and management in elderly patients perceived by nurses were isolated and they are presented in Table V. It was demonstrated that elderly patients' difficulties with completing the pain rating scale (e.g. 0–10) was the most frequently perceived problem, and the average result was  $M = (C = 4.36, N/C = 4.45)$ . Another issue was difficulties with pain rating due to sensory problems (hearing impairment, poor eyesight) – the average result was

$M = (C = 4.15, N/C = 4.17)$ . The nurses definitely less frequently stated that elderly patients' reluctance to take analgesics because of side effects affected pain management  $M = (C = 3.21, N/C = 3.18)$ .

To sum up the frequency of barriers to pain management in elderly patients by counting the overall average result in particular groups, health-care system-related problems came first, with the average result  $M = (C = 3.81, N/C = 3.87)$ . Secondly, there were patient-related barriers, where the average result was  $M = 3.77$  and did not differ between the studied groups of hospitals. They were followed very closely by physician-related barriers, where the overall average result was  $M = (C = 3.47, N/C = 3.44)$ , and nurse-related barriers with  $M = (C = 3.46, N/C = 3.44)$ .

#### Demographic variables and nurse perception

No correlation was found between the subjects' age, work seniority and the perception of problems by the nurses.

Statistically significant differences were noted among wards where the study was conducted. In all wards, organizational barriers were detected. In hospitals with a certificate organizational problems were statistically significantly more frequent in gynecological wards than in surgical ones;  $\chi^2(3) = 12.525$ ;  $p < 0.006$ . In hospitals without certificates organizational problems were statistically significantly less frequent in surgical wards than in emergency wards;  $\chi^2(3) = 9.874$ ;  $p < 0.020$ .

No statistically significant differences were noted between hospitals with certificates and hospitals without certificates and nurse-perceived problems in pain management in elderly patients ( $p > 0.05$ ). In the combined group of hospitals with and without certificates, organizational problems increased with education, but with no statistical significance.

**Table IV.** Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients associated with nursing staff, in hospitals with and without the certificate

Barrier	Hospital	Mean	Standard deviation	P-value
1 Not knowing older patients' pain levels due to inadequate time spent with them	C N/C	3.90 3.87	1.41 1.40	$Z = -0.781$ ; $p = 0.435$
2 Not knowing how much pain is acceptable to each older patient (e.g., pain tolerance, discomfort level)	C N/C	3.89 3.80	1.35 1.32	$Z = -1.673$ ; $p = 0.094$
3 Not knowing whether to believe the older patient's pain report or the family's perception of the person's pain instead	C N/C	3.84 3.78	1.31 1.33	$Z = -1.181$ ; $p = 0.238$
4 Difficulty contacting or communicating with physicians to discuss treatment of pain in older patients	C N/C	3.82 3.83	1.56 1.59	$Z = -0.188$ ; $p = 0.853$
5 Difficulty contacting or communicating with physicians to discuss pain assessment findings in older patients	C N/C	3.77 3.81	1.59 1.62	$Z = -0.427$ ; $p = 0.670$
6 Lack of clinical confidence in assessing a variety of types of pain in older patients	C N/C	3.70 3.69	1.44 1.42	$Z = -0.177$ ; $p = 0.860$
7 Difficulty believing pain reports by older patients because they are inconsistent from one time to the next, and do not match their non-verbal behavior	C N/C	3.60 3.60	1.23 1.24	$Z = -0.214$ ; $p = 0.831$
8 Concentrating on administering regularly scheduled medications and not checking for and offering p.r.n. pain relief unless the patient requests it	C N/C	3.53 3.43	1.30 1.40	$Z = -1.803$ ; $p = 0.071$
9 The tendency to document only if pain relief is <i>not</i> achieved or if the patient refuses pain medication	C N/C	3.43 3.40	1.58 1.52	$Z = -0.488$ ; $p = 0.626$
10 Not expecting pain in older patients on our unit unless the diagnosis provides a clue to pain as a potential symptom	C N/C	3.24 3.21	1.27 1.35	$Z = -0.812$ ; $p = 0.417$
11 Uncertainty about how to best time the administration of p.r.n. pain medications when ordered along with scheduled pain medications in older patients	C N/C	3.15 3.09	1.22 1.28	$Z = -1.255$ ; $p = 0.209$
12 Not having a consistent way of receiving tips from nurses on previous shifts about pain assessment and management strategies for each of my older patients	C N/C	3.14 3.15	1.41 1.39	$Z = -0.119$ ; $p = 0.905$
13 Inconsistent practices around giving p.r.n. medications for an older patient (because the decision to administer pain medication is up to the assigned nurse, and varies from one to another)	C N/C	2.97 2.93	1.43 1.42	$Z = -0.677$ ; $p = 0.498$
14 My own reluctance to give pain medication to older patients for fear of overmedicating	C N/C	2.54 2.57	1.38 1.37	$Z = -0.330$ ; $p = 0.741$

Hospital: C – hospital with certification, N/C – hospital without certification. P – is for the test of difference between hospital with certification and hospital without certification.

The analysis demonstrated significant differences in a certified hospital between the use of the Internet during working time and patient problems. The nurses who use the Internet significantly more often reported problems with pain rating by patients ( $Z = -2.193$ ;  $p < 0.05$ ). In hospitals without a certificate, the nurses who use the Internet significantly more often reported organizational problems with pain rating ( $Z = -2.096$ ;  $p < 0.05$ ).

## Discussion

Postoperative pain management constitutes a multifaceted problem confronting both members of interdisciplinary medical teams and nurs-

es providing direct care of patients. Nurses can observe a number of obstacles to their efforts at ensuring optimum pain assessment and management [26]. The results of our studies based on a relatively large representative group provide valuable information on the adequacy of the perception of barriers and show a growing tendency in the perception of barriers to postoperative pain management by nurses in the hospitals taking part in the Hospital Without Pain Project.

The most common healthcare system-related barrier to pain management perceived by nurses was the lack of possibility of consulting a clinical pharmacist. The problem is mentioned decidedly more often by nurses from hospitals with the certificate. The barrier is very important because

**Table V.** Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients, associated with the patients, in hospitals with and without the certificate

Barrier	Hospital	Mean	Standard deviation*	Value of <i>p</i>
1 Older patients' difficulty with completing pain scales (e.g., 0–10)	C N/C	4.36 4.45	1.27 1.30	$Z = -1.486$ ; $p = 0.137$
2 Difficulty assessing pain in older people due to sensory problems (hearing deficits, vision deficits, etc.)	C N/C	4.15 4.17	1.21 1.27	$Z = -0.172$ ; $p = 0.863$
3 Difficulty assessing pain in older people due to alterations in mood (depression, etc.)	C N/C	4.08 4.00	1.13 1.22	$Z = -1.525$ ; $p = 0.127$
4 Difficulty assessing pain in older people due to problems with cognition (delirium, dementia, etc.)	C N/C	4.02 4.04	1.34 1.37	$Z = -0.139$ ; $p = 0.889$
5 Older patients' willingness to put up with chronic pain	C N/C	3.90 3.87	1.22 1.22	$Z = -0.463$ ; $p = 0.643$
6 Patients reporting their pain to the doctor, but not to the nurse	C N/C	3.72 3.74	1.61 1.63	$Z = -0.268$ ; $p = 0.788$
7 Older patients not wanting to bother the nurses	C N/C	3.70 3.59	1.34 1.34	$Z = -1.528$ ; $p = 0.126$
8 Older patients denying their disease process by denying pain	C N/C	3.57 3.52	1.28 1.26	$Z = -0.611$ ; $p = 0.541$
9 Older patients' reluctance to take pain medications because of side effects (e.g., constipation, how it makes them feel, etc.)	C N/C	3.50 3.57	1.30 1.37	$Z = -0.940$ ; $p = 0.347$
10 Difficulty assessing pain in older people due to language barriers	C N/C	3.36 3.35	1.47 1.52	$Z = -0.399$ ; $p = 0.690$
11 Older patients' reluctance to take pain medication for fear of addiction	C N/C	3.21 3.18	1.37 1.40	$Z = -0.353$ ; $p = 0.724$

Hospital: C – hospital with certification, N/C – hospital without certification. *P* – is for the test of difference between hospital with certification and hospital without certification.

of the great significance of pharmacists' co-operation with physicians or nurses for the following issues: supplying wards with the necessary analgesics, ordering medications complying with recommendations as well as support in and consultancy on drug incompatibilities, administration methods or occurrence of adverse reactions – if new analgesics are introduced by the therapeutic team. The recommendations of the PTBB can be implemented by the ward staff only if the proper analgesics are available. Hospitals are sometimes short of medications or wards receive them in quantities inadequate for the demand, which results in administering an inappropriate medication for the category of pain or a prescribed medication is administered on demand only.

Another problem observed concerns difficulties contacting or communicating with physicians to discuss pain management. Similar results were presented in the study of Elcigil, where out of 247 nurses studied, 70% had difficulties contacting or communicating with physicians to discuss pain management in patients [15]. In the study of Egan, this barrier was also ranked first [27]. In Poland there are no separate teams for acute pain management; treatment is primarily based on nursing care supervised by an anesthesiologist or a surgeon, similarly to Scandinavian countries.

Our country, however, lacks properly trained nurses, standard recommendations and management schemes prepared jointly by an anesthesiologist, a surgeon and a ward nurse. The lack of cooperation between nurses and physicians disorganizes pain management, which is still not considered a priority in Poland, and the negative effects of this gap can clearly be seen in our results. Nowadays, nurses do not have the right qualifications to independently decide about the pharmacological treatment of postoperative pain, and due to the absence of a doctor's order or its modification in relation to the intensity of pain, the patient may not receive the medication in time. Nurses' qualifications are sometimes abused, which may lead to adverse reactions [8]. The study by Kerkhof and Goldstein demonstrated that a vast majority of APS teams in Canada depend on the work of qualified nurses who have completed qualification and specialization courses [28]. Owing to a cooperative relationship between the two professions, the barriers encountered by nurses could be eliminated by a well-cooperating team. To overcome this barrier, it is necessary to educate the staff, emphasizing the importance of teamwork.

It is surprising that nurses in certified hospitals spent much more time relieving pain using non-pharmacological methods. A much higher

percentage of nurses in other studies declare that they have no time for alternatives to pharmacological pain management [15, 23]. Methods of non-pharmacological pain management continue to be a neglected therapeutic option mostly because of time constraints and lack of qualified staff [13]. Nurses in Poland, due to their lack of qualifications and qualifications as well as miscommunication with the doctors' team with regard to pain relief, more often take steps aimed at relieving pain using non-pharmacological methods (physical therapy, massage, body positioning, physical activity and biofeedback). Our studies show that nurses do understand the idea of the Hospital Without Pain Program, but because there is no cooperation with physicians, they attempt to help patients suffering from pain by using non-pharmacological methods, despite the significant workload they have.

It is worth noting that the nurse-perceived barriers less frequently impede optimum pain management. The lack of rules/procedures/guidelines proved to be a slight barrier to pain management – similar results were obtained by Egan [27]. However, in the study by Elcigil, more than half of the nurses studied found the lack of procedure to be a significant obstacle [15]. Introduction of procedures and management algorithms in everyday practice in Poland is quite a difficult task because for many decades in Poland practically no postoperative pain management procedures were in force. In the UK, despite the national guidelines on the management of pain conditions, the study by Lewis showed that they were insufficiently followed by practicing physicians [29]. However, there are reports stating that the existence of guidelines on pain management positively affects the knowledge and attitudes of medical staff [30].

One of the greatest physician-related obstacles to pain management is physicians' distrust of pain ratings by nurses. The totally opposite result was obtained by Elcigil *et al.* in their study in which over half of the respondents disagreed with the statement [15]. Nurses in Poland gained professional independence in 1996, but it appears that out of fear for too much freedom and influence on therapeutic processes, physicians play down the importance of their qualifications. Such an attitude negatively affects the entire therapeutic and nursing process.

The analysis of nurse-related barriers reveals that ignorance of pain intensity in elderly patients due to insufficient time spent with them is the most frequently perceived problem. A review of nursing textbooks in the UK from the perspective of the topic of pain management showed that only 0.5% of the total content concerned pain [12].

Workload is the central problem to pain management supervised by nurses. In surgical wards in our country there are on average 8 to 20 (or more) patients per nurse because facilities do not observe the employment standards for nursing staff, and unless this issue is solved, problems with pain management quality are likely to continue. A shortage of staff is an obstacle to optimum patient care in developing countries, while it is not always an obstacle in the developed ones [15].

As far as patient-related barriers are concerned, nurses believe that elderly patients find it difficult to complete pain rating scales. In the study by Elcigil *et al.*, over half of the nurses indicated this problem [15]. Because of sensory and perceptible disorders, elderly patients have difficulty completing the 0–10 numeric pain rating scale [20].

Postoperative pain management in elderly patients continues to be a cause for concern in spite of the enormous efforts to improve pain assessment and management by introducing hospital certification. Due to the failure to implement and enforce the guidelines of scientific societies by hospitals, pain management in Polish hospitals continues to be a neglected area.

It seems appropriate for medical directors of hospitals to become more involved in overcoming the barriers and enforcing compliance with procedures by placing more emphasis on hospital audits. They should also strive for better cooperation between physicians and nurses [31]. The Polish Accreditation Center, while performing audits, should place a greater emphasis on compliance with recommendations in keeping with the PTBB, and the PTBB itself should tighten up the requirements concerning medical staff training and control the organizational problems.

In conclusion, the facility's possession of the Hospital Without Pain certificate was not found to decrease the nurses' perception of barriers to postoperative pain management in elderly patients. Considering the 5-year duration of the Hospital Without Pain campaign, healthcare system-related barriers constitute the key reason for concern. Nurses from hospitals with the Hospital Without Pain certificate devoted much more time to pain relief using non-pharmacological methods.

### Implications for practice

Although there are possibilities of pain relief after surgery, they are still insufficiently used. The myth that "it has to hurt" after surgery still persists in Polish society. Postoperative pain management in Poland needs considerable improvement. In Poland, no study using standardized research tools has yet been conducted on the subject of the most frequent barriers and factors impeding acute pain management controlled by nurses.

Such a study can contribute to the improvement of pain management quality by supporting and developing practical guidelines or management algorithms for nurses, facilitating effective implementation of new pain management practices.

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### Conflict of interest

The authors declare no conflict of interest.

### References

1. Melzack R, Wall PD. Pain mechanisms: a new theory. *Science* 1965; 150: 971-9.
2. Fagerhaugh S. Pain expression and control on a burn care unit. *Nurs Outlook* 1974; 22: 645-50.
3. Drayer RA, Henderson J, Reidenberg M. Barriers to better pain control in hospitalized patients. *J Pain Symptom Manag* 1999; 17: 434-40.
4. Grant PS. Analgesia delivery in the ED. *Am J Emerg Med* 2006; 24: 806-9.
5. Ross S, Grant A, Counsell C, Gillespie W, Russell I, Prescott R. Barriers to participation in randomised controlled trials: a systematic review. *J Clin Epidemiol* 1999; 12: 1143-56.
6. Rawal N. Organization, function, and implementation of acute pain service. *Anesthesiol Clin North Am* 2005; 23: 211-25.
7. Breivik H, Stubhaug A. Management of acute postoperative pain: still a long way to go! *Comment on Pain* 2008; 37: 441-51.
8. Mędrzycka-Dąbrowska W, Ogrodniczuk M, Dąbrowski S, Basiński A. Organization and function of acute pain services in the UK *Anestezjol Rat* 2012; 6: 332-40.
9. Nagi H. Acute pain services in the United Kingdom. *Acute Pain* 2004; 5: 89-107.
10. De Rond M, De Wit R, Van Dam F. The implementation of a pain monitoring programme for nurses in daily clinical practice: results of a follow up study in five hospitals. *J Adv Nurs* 2001; 29: 590-8.
11. Yanuka M, Soffer D, Halpern P. An interventional study to improve the quality of analgesia in the emergency department. *Can J Emerg* 2008; 10: 435-9.
12. Ferrell BR, Virani R, Grant M, Juarez G. Analysis of pain content in nursing textbooks. *J Pain Symptom Manag* 2000; 19: 216-28.
13. Coulling S. Nurses' and doctors' knowledge of pain after surgery. *Nurs Stand* 2005; 19: 41-9.
14. Duignan M, Dunn V. Barriers to pain management in emergency departments. *Emergency Nurse* 2008; 15: 30-4.
15. Elcigil A, Maltepe H, Esrefgil G, Mutafoglu K. Nurses' perceived barriers to assessment and management of pain in a university hospital. *J Pediatr Hematol Oncol* 2011; 33: 33-8.
16. Goodacre SW, Roden RK. A protocol to improve analgesia use in the accident and emergency department. *J Acid Emerg Med* 2001; 13: 177-622.
17. Motov SM, Khan AN. Problems and barriers of pain management in the emergency department: are we ever going to get better? *J Pain Res* 2009; 2: 5-11.
18. Aubrun F, Marmion F. The elderly patient and postoperative pain treatment. *Best Pract Res Clin Anaesthesiol* 2007; 21: 109-27.
19. Cavaliere TA. Management of pain in older adults. *J Am Osteopath Assoc* 2002; 102: 481-5.
20. Kaye AD, Baluch A, Scott JT. Pain management in the elderly population: a review. *Ochsner* 2010; 10: 179-87.
21. Taylor LJ, Harris J, Epps CD, Herr K. Psychometric evaluation of selected pain intensity scales for use with cognitively impaired and cognitively intact older adults. *J Assoc Rehabil Nurses* 2014; 30: 55-61.
22. Ware LJ, Bruckenthal P, Gail CD, O'Conner-Von SK. Factors that influence patient advocacy by pain management nurses: results of the American Society for Pain Management Nursing Survey. *J Am Soc Pain Manag Nurses* 2011; 12: 25-32.
23. Coker E, Papaioannou A, Kaasalainen S, Dolovich L, Turpie I, Taniguchi A. Nurses perceived barriers to optimal pain management in older adults on acute medical units. *Appl Nurs Res* 2010; 23: 139-46.
24. Herr KA, Spratt K, Mobily PR, Richardson G. Pain intensity assessment in older adults: use of experimental pain to compare psychometric properties and usability of selected pain scales with younger adults. *Clin J Pain* 2004; 20: 207-19.
25. Misiotek H, Mayzner-Zawadzka E, Dobrogowski J, Wordliczek J. 2011 Recommendations on management of acute and postoperative pain. *Ból* 2011; 12: 9-33
26. Pellino TA, Willens J, Polomano RC, Heye M. The American Society of Pain Management Nurses practice analysis: role delineation study. *Pain Manag Nurs* 2002; 3: 2-15.
27. Egan M, Cornally N. Identifying barriers to pain management in long-term care. *Nursing Older People* 2013; 25: 25-31.
28. Kerkhof VD, Goldstein E. A survey of directors of Canadian academic acute pain management services: the nursing team members role. *Can J Anaesth* 2002; 49: 579-82.
29. Lewis LM, Lasater LC, Ruoff BE. Failure of a chest pain clinical policy to modify physician evaluation and management. *Ann Emerg Med* 1995; 25: 9-14.
30. Horbury C, Henderson A, Bromley B. Influences of patient behavior on clinical nurses' pain assessment: implications for continuing education. *J Contin Educ Nurs* 2005; 36: 18-24.
31. Harmer M, Davies KA. The effect of education, assessment and a standardised prescription on postoperative pain management. The value of clinical audit in the establishment of acute pain services. *Anaesthesia* 1998; 53: 424-30.