

Case Report

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Barriers perceived by nurses in the optimal treatment of postoperative pain

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Abstract: It is currently estimated that the lack of adequate pain management affects 80% of the global population and the phenomenon poses a serious problem in more than 150 countries. On a national level, the greatest burden of inadequate treatment is borne, among others, by elderly patients. The purpose of the paper was to compare the prevalence of barriers to optimum postoperative pain management in elderly patients, observed by nurses in a clinical, provincial and municipal hospital in Poland. The research project was a multi-center one and took over a year. The study was questionnaire-based. It used the Polish version of the Nurses' Perceived Obstacles to Pain Assessment and Management Practices questionnaire. The study included a total of 1602 nurses working at a clinical, provincial and municipal hospital.

In the university hospital, difficulties in pain assessment related to the healthcare system occurred statistically significantly more often.

Keywords: Barriers; Nursing care; Postoperative pain; Advanced age

1 Introduction

Correct management of pain is obligatory to help patients improve swiftly during immediate postoperative period. The lack of prompt assessment and management may trigger postoperative complications and lengthen hospital stays. Nurses play a critical role in assessing postoperative pain, regardless of recent developments in nursing care, there is evidence suggesting that patients still experience substantial postoperative pain [1-3]. Adequate postoperative pain management results in easy and early mobilization, shortened hospitalization, patient satisfaction and lower hospital costs [4, 5].

Postoperative pain assessment and management can be successful if well planned, delivered in a consistent, evidence-based way and based on patients' assessment of their own pain on every occasion. It is multifactorial and no two patients with similar treatment procedures experience same pain, hence, nurses need to be alert to this possibility. Pain can be considered as the fifth vital sign and protocols, team work, and regular pain evaluations are needed to reinforce postoperative pain management [6-9]. There are many barriers that influence the delivery of effective pain management these might be healthcare professional-related, system-related, or patient-related [4].

The purpose of the paper was to compare the prevalence of barriers to optimum post-operative pain management in elderly patients.

2 Methods

2.1 Design and data collection

A mixed method, a descriptive exploratory survey and a qualitative content analysis, were used to describe Polish nurses perceived of barriers to postoperative pain in older adults.

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Hospital director was asked for permission to collect data in his/her organization, and to provide a letter of permission to collect data. Twenty-five hospitals were randomly selected for the study; however, only eleven hospitals agreed to participate in this study. The head nurse (or the coordinator) distributed the questionnaires to nurses. Time commitment was anticipated at 20 minutes to complete the questionnaire. The head nurse was to collect all questionnaires and then send them back to the researcher in a sealed envelope within two weeks after receiving the questionnaires.

The study was carried out upon the approval of the study protocol by the Independent Bioethics Committee for Scientific Research of the Medical University of Gdańsk.

2.2 Participants

The data were collected at multiple sites for over one year. A total of 2000 nurses working on surgical wards participated in the study. The respondents were informed that the study was anonymous and that the data collected would be used exclusively for scientific purposes. Participation in the study was voluntary. Consent was also obtained from the managers of facilities.

2.3 Questionnaire development

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 [10]. The questionnaire included 40 questions 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 were modified to adapt 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 a coefficient – values of 0.7 and more were accepted as values confirming reliability of the scale.

The Polish-language version of the questionnaire 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.

2.4 Statistical analysis

All the statistical calculations were performed using STATISTICA 10.0 data analysis software system (www.StatSoft.com). Quantitative variables were characterized by descriptive statistics of mean, standard deviation, median, minimum and maximum value (range) and 95% CI (confidence interval). And qualitative variables were presented by means of group size and percentage values (per cent). The W. Shapiro-Wilk 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's 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 test F (ANOVA - analysis of variance) or of the Kruskal-Wallis test (if the conditions for using ANOVA were not met). 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 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 $p < 0.05$.

3 Results

3.1 Demographic & personal characteristics

The study included a total of 2000 respondents, from whom a total of 1602 correctly completed questionnaires were obtained. The largest proportion of nurses (40.9%) participating in the study were in the 31-40 age bracket. Work seniority of the nursing staff was defined in several time brackets. The most respondents (24.2%) were in the 16-20 years group. An analysis of the respondents' level of education showed that most of the respondents declared secondary education (57.7%), and the least – a bachelor's degree (10.7%). 56.4% of the study subjects worked at a provincial hospital, and the vast majority worked on a surgical ward (65.5%).

96.8% of the respondents worked as unit nurses. Only 40.3% of the respondents had access to the Internet at work. Table 1 presents the demographic characteristics of the nurses participating in the study.

3.2 Healthcare system-related barriers

Ten questions concerning the healthcare system were isolated from the survey – they are presented in Table 2. The obstacle the most frequently reported by the respondents was the lack of possibility of discussing the pain management therapy of an elderly patient directly with the team $M=4.37$. The least frequently reported problem was inadequate time to deliver non-pharmacologic pain relief measures $M= 3.00$.

3.3 Healthcare professional-related barriers

Five questions concerning physician-related barriers were isolated from the survey – the results are presented in Table 3. The problem most frequently identified by nurses was the physicians' reluctance to prescribe adequate analgesics for elderly patients because of concerns about possible overdosing in patients with dementia or delirium $M=3.68$. The respondents definitely less frequently pointed to such problems as their ward colleagues' attitude to pain management in elderly patients as a barrier to pain management, with the average result $M=3.0$

Further questions concerning nurse-perceived barriers to optimum pain assessment and management in elderly patients and related to the nursing staff were

Table 1: Socio-demographic characteristics of nurses.

Variables	N	%
Gender (n=1602)		
Female (F)	1530	95.5
Male (M)	72	4.5
Age (n=1602)		
mean=40,23; Range=21-62; SD=7,61		
21-30	167	12.8
31-40	532	40.9
41-50	487	37.5
51-62	114	8.8
Years of Nursing Experience (in years)		
mean=17,94; Range=42; SD=8,76		
1-5	153	9.5
6-10	120	7.5
11-15	226	14.1
16-20	387	24.2
21-25	337	21.0
26-30	281	17.5
31-35	83	5.2
36-42	16	0.9
Current Role (n=1602)		
Staff Nurse (SN)	1545	96.8
Charge Nurse (CN)	57	3.2
Education (n=1602)		
Registered Nurse	925	57.7
Bachelor of Science in Nursing	172	10.7
Master of Science in Nursing	505	31.5
Types of Hospital		
University (1)	308	19.2
Provincial (2)	904	46.4
Municipal (3)	390	24.3
Hospital department		
Anesthesia and Intensive Care Unit (1)	266	16.6
Surgery (2)	1049	65.5
Orthopedic (3)	227	14.2
Oncology (4)	60	3.7
Internet availability (n=1602)		
Yes (Y)	646	40.3
No (N)	956	59.7

isolated and they are presented in Table 4. Ignorance of pain intensity in elderly patients because of insufficient time spent with them was the most frequently perceived problem $M=3.90$. The respondents definitely less frequently pointed to their own reluctance to administer analgesics to elderly patients for fear of overmedication as a barrier to pain management; the average result was $M=2.55$.

Table 2: Characteristics of the frequency of barriers to optimum pain assessment and management in elderly patients related to the health-care system.

Barrier	Mean	Standard deviation
Disorganized system of care (e.g., having to hunt for narcotic keys, obtain co-signatures, find drugs, etc.)	3.53	1.85
Not having a consistent way of assessing pain, from one time to the next, in each older patient	3.79	1.43
Not having policies/procedures/guidelines that contribute to my knowledge of acceptable best practices around pain assessment and management in older adults	3.44	1.50
Not having a documented approach to pain assessment for each older patient	3.61	1.64
Not having a documented pain treatment plan for each older patient	3.73	1.64
Unavailable comfort measures as alternatives/supplements to pain medications in older patients (e.g., hot/cold packs, mattresses, chairs)	3.68	1.54
Inadequate time to deliver non-pharmacologic pain relief measures	3.00	1.60
Inadequate time for health teaching with older patients (e.g., p.r.n. drug order, alternatives, addiction, etc.)	4.28	1.56
Lack of opportunity to discuss an older patient's pain management directly with care team	4.37	1.67
Lack of opportunity to consult with clinical pharmacist about pain relief in older patients	4.35	1.87

Table 3: Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients associated with physicians.

Barrier	Mean	Standard deviation
Physicians' lack of trust in the nursing assessment of pain in older patients	3.60	1.60
Physicians' lack of knowledge and experience with prescribing pain medications	3.47	1.50
Antipsychotics are considered before pain medications in agitated patients	3.55	1.34
Physicians' reluctance to prescribe adequate pain relief in older patients for fear of overmedicating those with dementia or delirium	3.68	1.52
The "older person is dying anyway" attitude among colleagues on the unit	3.00	1.90

3.4 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 5. It was demonstrated that elderly patients' difficulties with completing the pain rating scale were the most frequently perceived problem, and the average result in each of the hospitals was $M=4.43$. The respondents the least frequently reported a problem of elderly patients' reluctance to take analgesics because of fear of addiction $M=3.16$.

To sum up, counting the overall average result, the problems related to the healthcare system came first with

the average result of $M=3.77$. Second, there were patient-related barriers, where the average result was $M=3.75$. They were followed by physician-related $M=3.46$ and nurse-related barriers $M=3.44$.

3.5 Demographic variables and nurse perception

The Spearman rank-order correlation coefficient was used to measure the strength and direction of association between variables. No correlation was found between the subjects' age, duration of employment and the perception of problems by nurses. The analysis showed a significant

Table 4: Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients associated with nursing staff.

Barrier	Mean	Standard deviation
Difficulty contacting or communicating with physicians to discuss pain assessment findings in older patients	3.79	1.61
Not expecting pain in older patients on our unit unless the diagnosis provides a clue to pain as a potential symptom	3.21	1.33
Difficulty believing pain reports by older patients because they are inconsistent from one time to the next, and do not match their non-verbal behaviour	3.48	1.24
Not knowing how much pain is acceptable to each older patient (e.g., pain tolerance, discomfort level)	3.86	1.31
Not knowing older patients' pain levels due to inadequate time spent with them	3.90	1.40
Not knowing whether to believe the older patient's pain report or the family's perception of the person's pain instead	3.82	1.32
Concentrating on administering regularly scheduled medications and not checking for and offering p.r.n. pain relief unless the patient requests it	3.47	1.36
My own reluctance to give pain medication to older patients for fear of overmedicating	2.55	1.36
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)	2.95	1.40
Uncertainty about how to best time the administration of p.r.n. pain medications when ordered along with scheduled pain medications in older patients	3.11	1.25
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	3.15	1.38
Lack of clinical confidence in assessing a variety of types of pain in older patients	3.71	1.42
The tendency to document only if pain relief is not achieved or if the patient refuses pain medication	3.42	1.52
Difficulty contacting or communicating with physicians to discuss treatment of pain in older patients	3.82	1.57

relationship between organizational problems and the level of nurses' education. (Table 6).

For comparison of the barriers in the assessment of pain perceived by nurses working in wards of surveyed hospitals, the Kruskal-Wallis test was used. In the university hospital, organizational problems were statistically significantly more frequent than in the provincial or municipal hospital (Table 7). Nurses statistically significantly more often reported such problems on the Anesthesiology and Intensive Care Unit (Table 8). To calculate the correlation between the position of work, use of the Internet and the problems perceived by nurses the non-parametric Mann-Whitney U test was used. There were no statistically significant relationships.

4 Discussion

Pain management is of vital importance in nursing practice. It is a critical issue for patients as well, yet they still suffer from suboptimal pain control. Recent years have seen a growing interest in the field of postoperative pain with immense efforts to improve its management [11-14].

The most frequently perceived barriers to pain assessment and management were healthcare system-related barriers with the chief problem being the lack of proper communication with the "pain team" to discuss the pain therapy to be administered to a patient [15,16]. As a consequence the delivery of effective pain management may be delayed or even neglected. One must bear in mind that nurses serve as intermediaries between physicians and patients and play the key role in the monitoring of patients'

Table 5: Frequency characteristics of obstacles to optimal pain assessment and treatment in elderly patients, associated with the patients.

Barrier	Mean	Standard deviation
Older patients' difficulty with completing pain scales (e.g., 0-10)	4.43	1.28
Older patients' reluctance to take pain medication for fear of addiction	3.16	1.36
Older patients not wanting to bother the nurses	3.60	1.33
Older patients denying their disease process by denying pain	3.52	1.24
Older patients' willingness to put up with chronic pain	3.87	1.21
Older patients' reluctance to take pain medications because of side effects (e.g., constipation, how it makes them feel, etc.)	3.53	1.35
Difficulty assessing pain in older people due to language barriers	3.35	1.50
Difficulty assessing pain in older people due to problems with cognition (delirium, dementia, etc.)	4,02	1.36
Difficulty assessing pain in older people due to sensory problems (hearing deficits, vision deficits, etc.)	4.13	1.25
Difficulty assessing pain in older people due to alterations in mood (depression, etc.)	4.00	1.19
Patients reporting their pain to the doctor, but not to the nurse	3.74	1.62

Table 6: Age, duration of employment, education and perception of problems by nurses.

Barriers	Age		Duration of employment		Education	
	rHO*	p	rHO*	p	rHO*	p
Organizational Barriers	0,032	0,197	0,007	0,766	0,048	0,057
Physician-Related Barriers	0,021	0,402	0,037	0,136	0,029	0,239
Nurse-Related Barriers	0,038	0,127	0,010	0,701	0,015	0,559
Patient-Related Barriers	0,017	0,509	0,011	0,649	0,019	0,458

*Spearman rank order correlation coefficient

pain [17,18]. Communication about pain is fundamental to patient comfort, hence clear, concise and well-timed communication between nurses and physicians is compulsory for pain management. It seems very important that the healthcare administrators should try and emphasize the importance of collaborative and supportive relationships between team members [1,3,12,14].

Physicians' reluctance to prescribe adequate analgesics for fear of possible overdosing in elderly patients with dementia may originate from inadequate knowledge among physicians about opioids and misconceptions about their use and side effects [15,16].

The analysis of nurse-related barriers reveals that ignorance of the pain intensity acceptable by elderly patients poses a problem. Pain is under-reported and ill-treated in the elderly with cognitive deficit. With declining verbal communications, the assessment becomes

more and more difficult [17]. Hence it should occur at the earliest possible stage of dementia when communication abilities are preserved. It should be noted that in an elderly with dementia the pain assessment techniques will be much more time consuming than in other patients and that is why the accessibility of enough nursing staff is the cornerstone for any care plan [18,19]. Additionally, it is imperative for nurses to have knowledge and proficiency to provide uniform painless care and this can be accomplished through regular ongoing education in pain assessment and management. Serious efforts should be spent in nursing colleges and hospitals to prepare and provide nurses with wide-ranging tools to assess and manage pain correctly [20, 21].

Patients' expressing his pain as precisely as possible is vital for the patient. The nurse may want to educate the patient and his family on the importance of accurate

Table 7: Type of hospital and perception of problems by nurses.

Barriers	Hospital*	N	M	SD	H	df	p
Organizational Barriers	1	308	4,09	1,13	16,47	2	0,000
	2	909	3,78	1,11			
	3	385	3,81	1,07			
Physician-Related Barriers	1	308	3,46	1,17	0,49	2	0,784
	2	909	3,47	1,13			
	3	385	3,42	1,07			
Nurse-Related Barriers	1	308	3,49	0,92	0,72	2	0,699
	2	909	3,44	0,93			
	3	385	3,43	0,93			
Patient-Related Barriers	1	308	3,75	0,81	3,50	2	0,174
	2	909	3,80	0,82			
	3	385	3,73	0,76			

* 1- University, 2 – Provincial, 3- Municipal

†Kruskala – Wallisa test

Table 8: Hospital department and perception of problems by nurses.

Barriers	Hospital* department	N	M	SD	H	df	p
Organizational Barriers	1	266	3,98	1,15	13,66	3	0,003
	2	1049	3,78	1,10			
	3	227	3,98	1,10			
	4	60	3,96	1,01			
Physician-Related Barriers	1	266	3,74	1,06	43,15	3	0,000
	2	1049	3,33	1,13			
	3	227	3,57	1,09			
	4	60	3,84	1,09			
Nurse-Related Barriers	1	266	3,63	0,90	19,14	3	0,000
	2	1049	3,41	0,94			
	3	227	3,48	0,90			
	4	60	3,28	0,887			
Patient-Related Barriers	1	266	3,89	0,84	7,82	3	0,050
	2	1049	3,77	0,80			
	3	227	3,67	0,79			
	4	60	3,77	0,86			

* 1- Anesthesia and Intensive Care Unit, 2 – Surgery, 3- Orthopedic, 4- Oncology

†Kruskala – Wallisa test

reporting [1, 15]. The patient ought to realize that it is crucial to report pain in a timely fashion, once it arises. Effective pain control can only take place if the patient effectively communicates the pain level and characteristics to the nurse [19].

5 Limits of the study

The authors divided the questions into groups associated with different types of barriers by themselves, already after completing questionnaires by respondents. The lack of a priori division could affect the quality of the answers given by the respondents.

6 Conclusions

Barriers to pain assessment related to the healthcare system were statistically significantly more frequent in university hospitals.

7 Implications for practice

There are still inadequately used options for postoperative pain relief and pain management needs substantial improvement. There is a requirement for organizational and political obligation to improve postoperative care of the elderly. This study can contribute to the enhancement of pain management quality by supporting and developing practical guidelines or management algorithms for nurses, helping to effectively implement new pain management practices.

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