Pain Management in Nursing Practice of Intensive Care Post-Operational Stage Patients

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Abstract

Background: Pains are one of the commonest symptoms of illness in any branch of the medicine. International Association for the Study of Pain defines pains as an unpleasant sensations and emotions associated with the real and potentially possible tissue damage or are described as such damage. In spite of different causes and mechanisms, pains always are subjective sensations with multidimensional nature, formed by physical, emotional and cognitive components. Post-operational pains represent a kind of acute pains and are related to extensive lung tissue injuries and traumatic edemas of surgical wounds that turn into the sources of long lasting pathological impulsations. There is a certain risk for intensive care unit patients to evaluate their pains and it is based on utilization of pain assessment scales and pain management resulting from the severity of patient's condition.

Aim of the study: The aim of the work was to study the pain management in post-operational period of intensive care unit patients.

Material and methods: Study utilizes quantitative research method. As an investigation tool was chosen questionnaire. Study took place in intensive care and post-operative observation wards in two university type clinics in Latvia. In research were involved 50 intensive care unit nurses and 50 postoperative period patients (74% - female, 26% – male) undergoing treatment in intensive care and post-operative observation wards.
In the research participated nurses, 10% of them were with lenght of service in health care 0-3 years , 26% - 4-15 years, 34 % - 16-29 years, but 24% -30 years. But, nurses particularly from the intensive therapy ward and anesthesiology: 26 % of respondents had length of service 0-3 years, 28 % - 4-15 years, 30 % - 16-29 years and 16 % over 30 years. Professional education of respondents: secondary vocational education – 58%, 1st level higher professional education – 28%, higher education – 14%. 98% of respondents were women, 2% men.
P.Stradiņš Medical College of the University of Latvia Ethics commission has given the permission to conduct the study. There are no risks associated with this study. Data is collected only via survey and responses to the survey will be confidential. Participation is voluntary.
Statistical data analyses were performed using MS Office Excel program. For assessment of statistical credibility was utilized x^2 test method (Chi-square method).

Results: One of the preoperational stage tasks is to provide patients with the information about the post-operational stage pain assessment and possibility of pain relief therapies. Research data

present that information was rather sufficient and patients felt safe. Such answers were given by the 32% nurses and 72% patients. 62% patients consider that pains are normal sensation in post-operational stage and 14% of nurses agree with them.
In pain management of intensive care patients 5% of nurses utilize pain assessment scales (verbal or visual analogue scale). 59% of respondents like to question patients about their pains, whereas 25% mention, that they assess pains by performing activation of patient or by changing their position. 8% of respondents use special equipment but did not inform patients about it.
Evaluating the mutual connection between the nurse's length of service and visual, as well as analogous pain scale, the acquired data point at mutual connection between the nurses with working experience more than 15 years and the use of analogous and verbal pain evaluation scale ($p < 0.02$).

Conclusions: Efficiency of pain management in post-operational stage increases due to psychological preparation and information of patients about the post-operational stage pains and methods that can be used in assessment of pain intensity and possible pain relief therapies already in pre-operational stage. In intensive care practice verbal and visual analogue scales are utilized less while more common and for patients more understandable are nursing staff's questions about the pains they experience. Pain management is mostly based on World Health Organization's advised "analgesic ladder" guidelines, monitoring data and it's analyze.

Keywords: acute pain, assessment of pain, nursing, pain management in intensive care, pain assessment scales.

Introduction

Pains are one of the commonest symptoms of illness in any branch of medicine. International Association for the Study of Pain defines pains as an unpleasant sensations and emotions associated with the real and potentially possible tissue damage or are described as such damage. In spite of different causes and mechanisms, pains always are subjective sensations with multidimensional nature, formed by physical, emotional and cognitive components.

Severe or less severe pains may cause any medical manipulation in the body connected with the organ and tissue damage. Anxiety about pains is still the leading psycho emotional manifestation in patients undergoing surgery.
Statistic data show, that 15% of patients experience mild pains or did not experience pains at all, therefore, exists risk of unreasonable administration of analgesics. 15% of patients experience intensive pains – they receive inadequate conventional post-operational analgesic (Vasiļevskis, 2000). It is important to take into account general principles of post-operational analgesics – post-operational pain intensity progressively decreases depending on dimension and place of operation. Normally intensive pains experience patients in thoracic surgery $\geq$ 4 days, upper abdominal surgery $\geq$ 3 days, lower abdominal surgery $\geq$ 2 days and peripheral or surface surgery $\geq$ 1 day.

Post-operational pains represent a kind of acute pains and are related to extensive lung tissue injuries and traumatic edemas of surgical wounds that turn into the sources of long lasting pathological impulsations.
Surgical trauma is accompanied by marked metabolic deviation, as well as changes in endocrine and immune systems. Therefore may develop many mechanisms slowing down intestinal actions, causing alteration in respiratory function and hypoxemia. Hence assessment of acute post-operational pains and effective prevention may improve functional results, lessen body response to stress of operation, prevent complications and improve life quality (Kehlet et al., 1989).
Chronization of acute pains results in changes of pain perception and management. Pains are inadequately long- lasting. Morphological changes are no more important and nociceptive pains may combine with psychogenic pains (Hurley et al.,2010)
In order to evaluate the pain intensity and quality in clinical practice are used scales and questionnaires based on the critical self-examination of the subjective senses of the individual and self-assessment of pains. Common one-dimensional pain rating scales are visual analogue scale, numerical pain rating scale and verbal pain scale (LaBel, 2006; Green et al.,2011).
There is a certain risk for intensive care unit patients to evaluate their pains and it is based on utilization of pain assessment scales and pain management resulting from severity of patient's condition, communication ability and utilized treatment therapy (Erdek et al.,2004;Jack et al.,2011; Ballantyne,2006).
Efficiency of pain management in post-operational stage patients depends on work organization model of intensive care staff, ensuring team work principles – nurse – physician (anesthetist, reanimatologist).

Aim, material and methods

The aim of the work was to study the pain management in post-operational period of intensive care unit patients.

Study utilizes quantitative research method. As an investigation tool was chosen questionnaire.
Study took place in intensive care and post-operative observation wards in two university type clinics in Latvia. In research were involved 50 intensive care unit nurses and 50 post-operational period patients undergoing treatment in intensive care and post-operational observation wards.
Questions used in questionnaire for intensive care nurses and intensive care as well as post-operational observation ward patients were similar and were structured as follows

- general part (age, professional education, professional work experience, gender, medical background);
- questions about the usability of assessment methods in intensive care;
- questions that characterize patients' information about pain management possibilities in post-operational stage, usability of analgesic tactic and usability of perioperative pain therapy.

Questions were structured as conjunctive questions anticipating possibility to choose one from the number of answers. Therefore, in calculation of answers, percentage was counted basing on the number of respondents of each group (question with one answer) and on the sum of answers on one particular question. Questions can be classified as questions related to facts, actions or knowledge. They were based on information about pain management strategy and guidelines for

intensive care patients in post-operational stage. Research was performed in 2010 - 2011. During the study code of ethics for nurses and patient rights protection were followed. P.Stradiņš Medical College of the University of Latvia Ethics commission has given the permission to conduct the study. There are no risks associated with this study. Data is collected only via survey and responses to the survey will be confidential. Participation is voluntary. Statistical data analyses were performed using MS Office Excel program. For assessment of statistical credibility was utilized x^2 test method (Chi-square method).

Results

Characteristic of nurses- respondents

Analyzing the length of service in medicine, 10% (5/50) of intensive care nurses mark off experience in health care 0-3 years, 26% (13/50) 4-15 years, 34 % (17/50) - 16-29 years. More than 30 year work experience in health care have 24 % (12/50) of nurses, whereas, work experience in intensive care and in the branch of anesthesiology 26 % (13/50) of nurses have 0-3 years, 28 % (14/50) 4-15 years, 30 % (15/50) 16-29 years and 16 % (8/50) over 30 years.
Professional education of respondents: secondary vocational education – 58% (29/50), 1st level higher professional education – 28% (14/50), higher education – 14% (7/50).
Certificates in anesthesiology and intensive care have 58% (29/50) of nurses and lack 42% (21/50) of nurses. 98% of respondents were women, 2% men.
Characteristics of respondents – patients
Gender of respondents: 74% (37/50) - female, 26% (13/50) - male.
Distribution of respondents by age: 14% (7/50) between 18-30, 32% (16/50) - 31-45, 34% (17/50) - 46-60, 20% (10/50) more than 61 years old.
Education of patients – elementary education – 4% (2/50), secondary education – 26% (13/50), secondary vocational education – 38% (19/50), higher education – 32% (16/50).
Patients' previous experience in connection with their presence in intensive care unit was checked out in the inquiry. 64% (32/50) of respondents were in intensive care for the first time, but 36% (18/50) of respondents repeatedly.
Evaluating connection between patients information security with being in the intensive therapy ward, it can be concluded that information security does not impact the first or the repetitive being in the intensive therapy ward ($x^2 = 16.190$, degree of freedom 9, $p < 0.06$).
One of the pre-operational stage tasks is to provide patients with the information about the post-operational stage pain assessment and possibility of pain relief therapies. "Information was rather sufficient and patient felt himself safe", such answer was given by the 32% (16/50) of nurses and 72% (36/50) of patients. "Information was rather sufficient, but the patient was frightened", such answer mention 50% (25/50) of respondents – nurses and 20% (10/50) of respondents - patients. "Information was rather insufficient, but the patient felt himself safe", such answer choose 10% (5/50) of respondents - nurses and 6% (3/50) of respondents - patients. "Information was rather insufficient and the patient was frightened" answer 8% (4/50) of respondents – nurses and 2% (1/50) of respondents – patients. (Figure 1)
Difference in answers arises, if both groups of respondents are compared. On the question does post-operational stage pains are normal occurrence and can be suffered 62% (31/50) of respondents-patients consider the answer "rather yes", accordingly 14% (7/50) of respondents –

nurses agree with it. Only 4% (2/50) of patients tick off "rather no" and 16% (8/50) of respondents-nurses agree with them. With statement, pain sensation should be assessed in context with operations and patients individually, agree 70% (35/50) of respondents – nurses and 34 % (17/50) of respondents-patients.

In pain management of intensive care patients 6% (3/50) of nurses utilize pain assessment scales (verbal or visual analogue scale). 72% (36/50) of respondents-nurses like to question patients about their pain experience, whereas, 28% (14/5) assess pains by performing activation of patient or by changing their position, 18 % (9/50) of respondents use special equipment but did not inform patients about it. Nurses did not use behavioral pain scale.

Evaluating the mutual connection between the nurse's length of service and visual, as well as analogous pain scale use, the acquired data point at mutual connection between the nurses with working experience more than 15 years and the use of analogous and verbal pain evaluation scale ($x^2 = 7.912$, degree of freedom 2, $p < 0.02$).

Evaluating efficiency of pain management in post-operational stage in intensive care patients 50% (25/50) of respondents-nurses consider it effective, 48% (24/50) - satisfactory and 2% (1/50) - insufficient. Patients evaluate pain management basing on the presence of pains. 42% (21/50) of respondents, characterizing pain intensity, mention, that particularly did not experience pains, 46% (23/50) of patients experience mild pains, 12% (6/50) experience severe pains. 84% (42/50) of respondents-patients mention that pain management is sufficient and 16% (8/50) – satisfactory.

Evaluating the mutual connection between patients pain intensity and pain control, the acquired results point at the mutual connection between these criteria – patients, who felt medium pain received sufficient pain control ($x^2 = 9.849$, degree of freedom 3, $p < 0.02$).

Pain management is mostly based on the World Health Organization's advised "analgesic ladder" guidelines. Analyzing its application in clinical practice 26% (13/50) of respondents – nurses mention answer "rather yes", 14% (7/14) –"rather not", 32% (16/50) – "it is only physician's competence", 16% (8/50) cases support point of view that always, while analyzing operation, are taken into account WHO guidelines for pain relieve, but 12% (6/50) of nurses consider that there is a lack of information about "analgesic ladder". (Figure 2)

Pain management in intensive care starts with the information obtained by nurse about performed operation, as well as about post-operational analgesic administered in operating room or ward. Information may come from anesthetist's or anesthetic nurse's records in anesthetic card or observation chart.

58% (29/50) of respondents – nurses mention that analgesic therapy starts in the operating room and continues in intensive care unit (perfusion i/v or epidural), 19% (9/50) of patients receive analgesic therapy in the operating room, 16% (8/50) receive immediately after admittance to intensive care unit, 6% (3/50) mention that patient received analgesic therapy already in the pre-operative ward, 2% (1/50) – often there is a lack of such information.

40% (20/50) of respondents – nurses mention that application of WHO guidelines on pain management reduce the discomfort caused by pain sensation, partially reduce answer 30% (15/50), whereas, 30% (15/50) of nurses have not received sufficient information about it.

Very essential in post-operational stage pain management is to monitor vital indicators (pulse rate, blood pressure, breathing frequency, SpO_2) consider 42% (21/50), 52% (26/50) acknowledge that very important role play cooperation between the persons involved in nursing process *nurse-physician*, *nurse-physician-patient*, 26% (13/50) carry out physician's instructions about analgesic administration, analyzing pain sensation influencing factors and efficiency of

medicine, 36% (18/50) in pain management introduce medications with the help of perfusion pumps, infusion hair, epidural catheter, etc., 6% (3/50) recognize that painkillers, in coordination with physician, administer only if patient demands them, as well as 8% (4/50) in pain management follow patient's subjective complaints about pains.

Discussion

Hans Selye has recognized that stress is human's emotional and physical overload that strike human if demands are put forward him that threaten to exceed his ability or the limits of his strength (Nucho et al.,2004). It usually is followed by the neuroendocrine reactions which are directed to restore balance in the body. If the patient is in well-disposed mood and sufficiently informed, post-operational stage pains are less typical. Therefore, taking into account patient's individuality, it is very important to explain to patient his situation and ease his anxiety about post-operational pains, especially if patient will spend some time in intensive care unit. Information can be brought by anesthetist-reanimatologist, anesthetic nurse, as well as intensive care nurse. Research, conducted in Canada about post-operational care efficiency criterion in cardiological patients, put forward multidisciplinary pain management approach (Gelinas et al. 2006). Pain assessment is a team work created by physician, nurse and other nursing staff (Brown et al.,2006), and one of the principal objectives is to provide objective pain analyze and well timed pain prevention.

Nurse – scientist P. Benner observes that all nurses have enough competence, knowledge as well as experience (Steven, 2008) and that exist several levels of nurse competence – starting from trainee and leading to consultant, depending on the work experience obtained with years spent in one and the same ward. In inquiry took part nurses with sufficient work experience in medicine, especially in intensive care and anesthetic branch.

Study demonstrates that very essential thing in pain management is patient's psychological preparation for operation and sufficient amount of information about the post-operational stage. More than 50% of both group respondents confirm it. They indicate that the information received about the post-operational pain sensations was sufficient and they feel safe. As other studies show, hospitalized patients experience unsafety and fair about treatment and nursing manipulations due to the lack of information (Coutaux et al.,2008).

In intensive care unit in patient pain assessment can be utilized the behavioral pain scale (Mularski et al.,2010;Herr et al.,2006). Given inquiry acknowledges that this method is not used and pains are evaluated mainly verbally.

Research, performed in Germany, about post-operational pain monitoring in early post-operational stage (110 respondents), observe that in the first day following operation pain intensity is not assessed adequately – pains are not accordingly evaluated or moderate pains are overestimated (Gross et al., 2002). Pain management for intensive care patients in post-operational stage is a process that includes evaluation of the patient as individuality, evaluation of performed operation, the role of technologies used, analyze of pain intensity competences, advised guidelines and algorithms.

In literature about the pain management in post-operational stage prevail unified standpoint that utilization of timely received and appropriate analgesic methods, not allowing to reach the maximal pain level, may give optimal analgesic level and positive result of pain management

(Soliman et al.,2001) Intensive care units in Latvia utilize World Health Organization's and World Federation's of Societies of Anesthesiologists recommended pain relieving four step system or "analgesic ladder". Study confirms that 72 % of respondents (nurses) their daily nursing work organizes based on these guidelines.

Conclusions

Efficiency of pain management in post-operational stage increases due to psychological preparation and information of patients about the post-operational stage pains and methods that can be used in the assessment of pain intensity and possible pain relief therapies already in pre-operational stage. In intensive care practice verbal and visual analogue scales are utilized less while more common and for patients more understandable are nursing staff's questions about the pains they experience. Pain management is mostly based on World Health Organization's advised "analgesic ladder" guidelines, monitoring data and it's analyze.

Inquiry acknowledges that suggested guidelines about the start of timely received analgesic therapy and management for the patients in pre-operational or operational stages and constant therapy in the post-operational stage in intensive care, utilizing technologies, is widely used in intensive care practice. Efficient results will be ensured, if, together with the pain management in post-operational stage patients will be performed successful mutual cooperation between the nurse, physician and patient.

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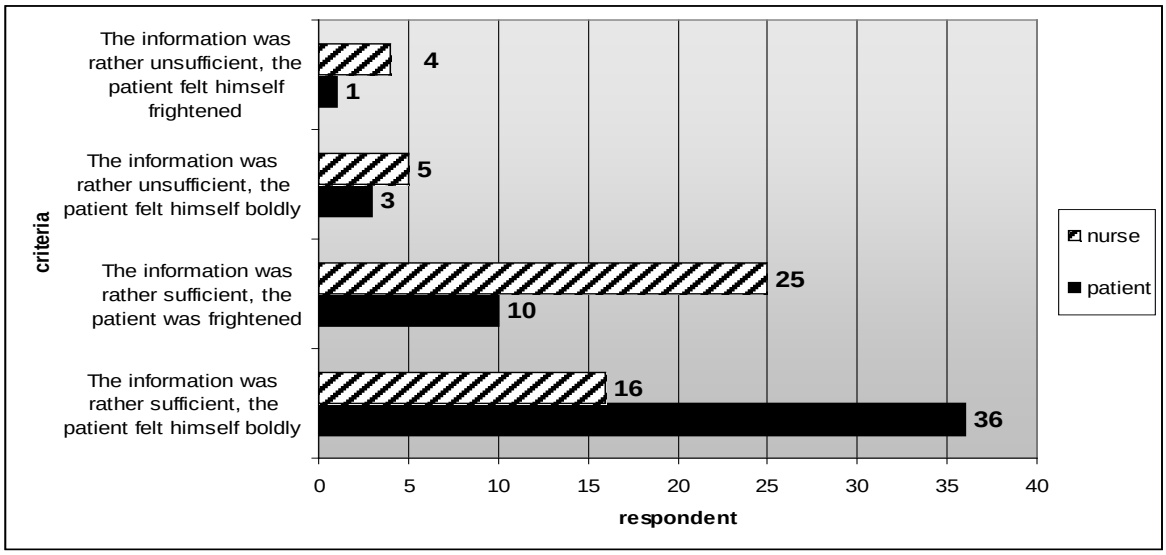

Figure 1: Respondents' view about received information in pre-operational stage

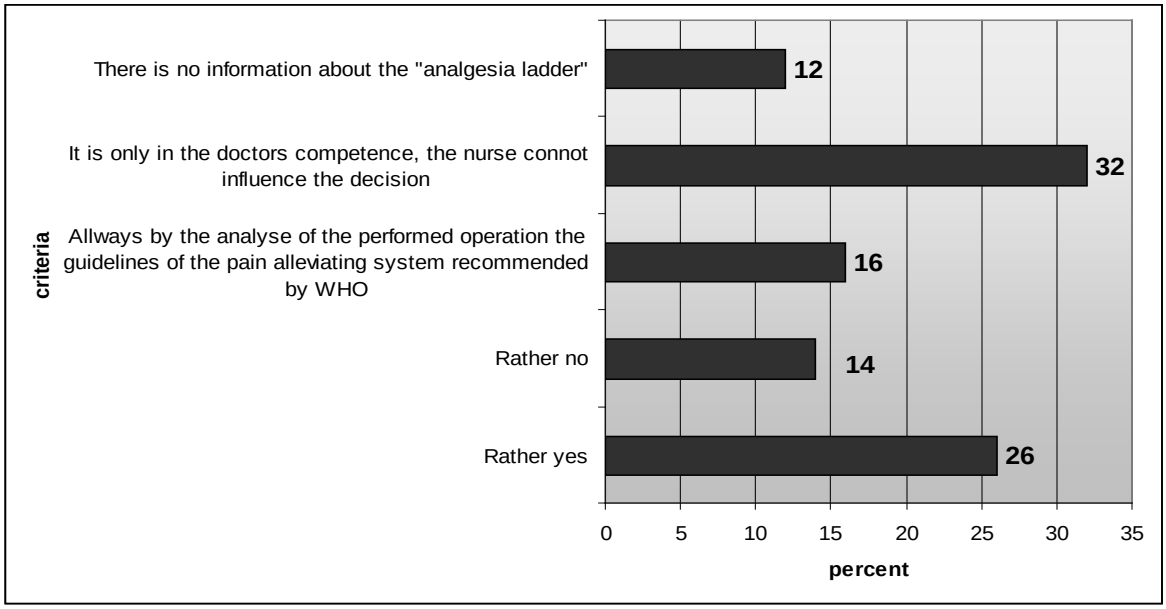

Figure 2: Utilization of WHO guidelines in intensive care units