Pain from zero to ten: effects of a pain monitoring program for nurses

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Chapter 8

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INTRODUCTION

Nurses are faced on a daily basis with the challenge of managing their patients' pain. According to the nursing process, nurses' tasks related to pain management can be divided into five major phases: 1) assessment of pain, 2) formulating the nursing diagnosis, 3) planning of pain reducing interventions, 4) implementation of pain reducing interventions, and 5) evaluation of pain reducing interventions. Despite many technological advances inadequate treatment of pain is still widely reported. Various reasons have been given for the inadequate pain treatment related to nurses. Firstly, systematic assessment of patients' pain is essential in understanding patients' pain experience; however measurement instruments are not always used systematically by nurses (phase 1, 2 and 5 of the nursing process). This implies that there is inadequate communication between patients, nurses, and physicians (phase 1). Secondly, there is a lack of documentation about pain in nursing records (phase 3). Thirdly, attitudes, misconceptions, prejudices, and subsequent behavior of nurses and other health care personnel have been found to influence nurses' undertreatment of patients' pain (phase 4). Finally, the amount of analgesics that nurses administer to patients is frequently less than physicians have ordered (phase 4), and non-pharmacological pain treatments such as massage and relaxation are rarely used by nurses.

In this thesis, the feasibility and effects of a Pain Monitoring Program (PMP) for nurses and patients are investigated. The aim of the program is to overcome the barriers that prevent adequate pain management within the scope of the nursing process. The core of the PMP consists of educating nurses and implementing daily pain assessment. The education element is aimed to increase nurses' knowledge about pain and pain management, and to train them to effectively use the information given by patients. Daily monitoring of pain is essential for diagnostic purposes and for evaluating pain treatment. It was hypothesized that the PMP would lead to more pain knowledge and a daily assessment of pain by nurses, resulting in an improvement of nurses' pain management behavior, and consequently leading to a reduction in patients' pain.

The main study was conducted in three hospitals (one university and two general hospitals) involving two care settings (medical and surgical wards). A quasi-experimental design with a non-equivalent control group was used to evaluate the PMP. In total, 240 nurses from nine wards and 703 patients participated: 358 patients in the control group and 345 in the intervention group. To study the effects of the PMP on all kinds of pain problems, patients with acute and chronic pain were included, as well as patients with malignant and non-malignant pain. Thus, four pain categories could be distinguished: 1)
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acutely malignant pain, 2) chronic malignant pain, 3) acute non-malignant pain, and 4) chronic non-malignant pain. Included patients were interviewed twice, i.e. at the beginning and at the end of hospitalization.

As a sequel to the main study, a follow-up study was performed in five general hospitals, which focused on implementation of the PMP with minimal assistance and in which long-term effects were monitored and evaluated. This step was essential, because too many research studies have never been adopted in nursing practice, and follow-up is frequently not evaluated in relation to professional nursing standards. A total of eleven wards with 277 nurses and 115 physicians participated. A pretest-post-test design without a control group was used.

This chapter presents the conclusions and general discussion of the two studies. The main conclusions are described along the research questions as described in Chapter 1. Methodological and theoretical reflections, and implications for clinical practice and future research concludes this chapter.

CONCLUSIONS AND GENERAL DISCUSSION

The pain education program: effects of the PMP on nurses’ pain knowledge and attitude

Pain education for nurses is needed to ascertain basic knowledge and skills in pain management, and to train nurses to assess pain on a daily basis. In both studies it was found that nurses had knowledge deficits and prejudices with regard to pain and pain management (Chapters 2 and 7). For example, nurses had inadequate knowledge about opioid analgesic drugs; this is not surprising because the majority of nurses indicated that they received little or no training in pain management during their basic education (Chapter 2).

The PMP resulted in an increase in nurses’ pain knowledge, especially with regard to the use of opioid analgesic drugs (Chapters 2 and 7). Nurses’ attitude to pain management also changed: they stated to pay more attention to patients’ pain and felt better equipped to relieve patients’ pain.

Implementation of daily pain assessment: value for nurses, physicians and patients

The core of the PMP was the implementation of daily pain assessment. Before nurses started to work with the daily pain assessment, a large majority stated they would be willing to register pain on a daily basis (Chapter 2). Daily pain assessment proved to be feasible in clinical practice: it fitted in with the nurses’ daily routine, took little additional time, and
enquiring about patients’ pain was not difficult for nurses, whether patients were in pain or not (Chapters 3 and 7). These results are confirmed by the fact that nurses assessed patients’ pain in 74% of the cases. However, nurses also reported some obstacles connected with daily pain assessment. According to the nurses, some patients had difficulty with giving a pain score and needed extra instruction and not all physicians showed sufficient interest in patients’ pain scores. On the other hand, when physicians were specifically asked about daily pain assessment, almost 50% claimed that they always looked at the pain scores during their rounds (Chapter 7). Taken together, nurses and physicians had a positive attitude towards pain assessment and the majority wanted to continue assessing pain on a daily basis after the implementation period (Chapters 3 and 7).

Patients were also positive about daily pain assessment and appreciated being asked about their pain twice a day (Chapter 3). In agreement with nurses, more than 40% of the patients initially had problems with giving a pain score. However, almost all patients were able to give a pain score.

Thus, it can be concluded that daily pain assessment is feasible and appreciated by nurses, physicians and patients. However, some settings adapted to the PMP more readily than others, as seen by the differences between the hospitals and care settings. Nurses from medical wards were more positive about daily pain assessment than nurses from surgical wards, resulting in a better professional compliance.

**Effects of the PMP on communication, assessment and documentation**

Nurses need to be informed about patients’ pain in order to perform appropriate measures to alleviate pain. However, communication about pain and assessment of pain is often a problem, e.g. in the control group only 44% of the nurses were able to estimate patients’ pain correctly (Chapter 4). The PMP proved to be beneficial: after the introduction of the pain score, 68% of the nurses made a correct estimation. It is promising that especially patients with higher pain levels benefited most from the PMP: i.e. agreement between patients’ and nurses’ pain ratings improved from 38% in the control group to 73% in the intervention group.

Effects of the PMP on communication between patients and nurses, and between patients and physicians are conflicting. Improvement of communication with patients was reported by 40% of the nurses (Chapter 7). However, patients in the intervention group did not report more frequent communication with nurses and physicians about pain than patients in the control group (Chapter 4). On the contrary, patients in the intervention group reported more often than patients in the control group, that nurses and physicians gave no information to them about pain and pain management. Nevertheless, the patients who were informed, reported that the quality of information given by nurses improved after implementation of
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the PMP. Several explanations can be given for these conflicting results. First, daily pain assessment focuses more attention on pain, so patients in the intervention group may have been more aware of their pain and had higher expectations than patients in the control group. Second, patients were asked retrospectively about communication; it is noteworthy that despite measuring pain twice daily, 23% of the patients in the intervention group reported that they did not talk about pain with the nurses. Only in 12% of the patients was pain monitored less than 50% of the time. Apparently, assessing pain by asking a pain score is not always considered as ‘communication about pain’ according to these patients. A better method may have been to examine the extent of communication between patients and nurses, and between patients and physicians, by means of participating observations. Such observations would allow a more objective assessment as to when and how nurses and physicians communicate with patients in pain.47,48

Poor communication and assessment resulted in limited documentation of pain in nursing records (Chapter 4). The PMP succeeded in increasing nursing documentation; nurses documented more about ‘patients’ pain intensity’, ‘pain location’, ‘things that increase or decrease pain’, and ‘pain duration’. Documentation about pain increased particularly for patients in medical wards and for patients with high pain levels. This is an important result, because patients with moderate to severe pain have more need for effective pain management.

Effect of the PMP on the administration of analgesics by nurses

An important aspect of the nurses’ role in pain management is to administer the analgesics prescribed by physicians. Before implementation of the PMP, 74% of the patients who were prescribed analgesics actually received them from the nurses (Chapter 5); after implementation of the PMP more patients (82%) received analgesics. Particularly analgesics that were prescribed on a PRN basis (Pro Re Nata; when required) were administered more often. The extent to which nurses administered analgesics to patients improved, particularly for patients with moderate to severe pain. Furthermore, the doses of administered non-opioids increased at the first interview and more patients received weak opioids at the second interview.

In evaluating nurses’ administration of analgesics, not only is the percentage of patients administered analgesics important, but also the agreement between the prescribed and administered analgesics with regard to type, dosage and frequency. Although more patients received analgesics after implementation of the PMP, nurses in the intervention group deviated substantially from what physicians had prescribed. It is not completely clear why there is a substantial discrepancy between what was ordered and what was administered. Perhaps nurses withhold analgesics from patients or patients refuse to take analgesics. It is
known that patients frequently refuse to take analgesics because of side effects (e.g., drowsiness, constipation, etc.), fear of becoming addicted to analgesics, or because the pain has gone. To clarify this it would have been useful to ask nurses whether patients refused to take the analgesics offered to them.

**Effect of the PMP on patients' pain**

Although the most important outcome measure to evaluate pain treatment is pain intensity, a decrease in pain intensity alone does not necessarily mean that health care providers have treated patients' pain in a adequate way. For example, when a patient initially scores pain as an ‘8’ and reports a ‘6’ after being treated, the pain has decreased but is still substantial. According to the APS a score of five or higher on an 11-point numeric rating scale means that a patient is inadequately treated for pain; the patient is considered to have *substantial pain*. This cut-off score of five or more can be used for both Present Pain Intensity and for Average Pain Intensity. Another approach to evaluate pain treatment is to have patients determine their own threshold for tolerability of pain, by asking them at which number they prefer to have a change in their analgesic therapy. Patients who indicate their Present Pain Intensity above their Tolerable Pain Intensity are considered to have Intolerable Pain. Thus, a patient who states that his Tolerable Pain Intensity is ‘7’ has tolerable pain when his Present Pain is ‘6’, and *intolerable pain* when his Present Pain is ‘8’.

Results of the study showed that the percentage of patients who were inadequately treated for their pain during the first and second interview ranged from 13.1% (Intolerable Pain at second interview) to 69.5% (Substantial Average Pain at first interview), depending on the measure used (Chapter 6). This is in congruence with other findings; De Wit et al., compared several measures and reported similar results. Using the criterion from the APS (Substantial Present Pain) at the first interview 46% of the patients were not adequately treated for their pain, whereas using patients' own criterion (Tolerable Pain Intensity) only 27% were treated inadequately at the first interview.

The PMP proved to be effective in reducing patients' pain and decreased the percentage of patients with inadequate pain management by approximately 10%. This result was found in all outcome measures used. Patients with acute non-malignant pain particularly benefited from the PMP.

To evaluate characteristics of pain patients that might predict change in pain intensity, a regression analysis was conducted. Results showed that reduction in pain scores between the first and second interview could be predicted. Firstly, by pain intensity measured at the first interview. Other variables that predicted reduction in pain score were the intervention itself (PMP), patients' emotional and role functioning, and the extent to which nurses were
informed about patients’ pain. This result points at the important role that nurses play in reducing patients’ pain.

Follow-up study: implementation of the PMP in daily clinical practice

Because the implementation of research results in clinical nursing practice is important, the PMP was implemented in a clinical setting with a minimum of assistance (Chapter 7). Results showed that both nurses and physicians were positive about daily pain assessment and wanted to continue with it in the future. Professional compliance with daily pain assessment by nurses was satisfactory, but gradually decreased from 75% to 59% after seven months. Apparently, daily pain assessment had lost its novelty and incentives are needed to motivate nurses to continue with daily pain assessment. Only by means of a long-term follow-up the standard of assessing pain in at least 75% of the patients daily can be achieved. Therefore, a Continuous Quality Assessment/Improvement process should be used.45,46

As in the main study, the follow-up study showed that nurses had moderate knowledge about pain management. Physicians’ knowledge about pain management was also investigated in this follow-up study and it was found that physicians, like nurses, had a number of shortcomings in their pain knowledge. The PMP proved to be effective in enhancing nurses’ pain knowledge. Nurses were also more satisfied about the quality of pain treatment after introduction of the PMP. Physicians were not included in the education program, therefore the effects of the PMP on physicians’ pain knowledge were not studied.

METHODOLOGICAL AND THEORETICAL REFLECTIONS

Study design

When investigating the effects of an intervention, a randomized controlled trial is considered the most appropriate design. In the main study, nurses could not be randomly assigned to different treatment groups because the PMP would, to some extent, affect all nurses on a ward. Thus, a randomized trial was not possible.38 Consequently, a quasi-experimental design with a non-equivalent control group is the best method of choice.38,39 No significant differences were found between patients in the control and the intervention group with regard to gender, age, number of days admitted, diseases, and treatment. However, compared to cancer patients in the control group, the intervention group of patients with cancer showed significant differences regarding tumor status and extension. These differences were corrected by including tumor status and tumor extension as covariates in the analyses.
Patients were interviewed twice and the first interview was planned to be a baseline measurement. Due to the clinical setting in which the study took place, it was not possible to interview patients on the day of admission. Patients were interviewed for the first time on the third or fourth day after their admission. At day three or four, however, patients had already been exposed to the intervention, because nurses had asked for their pain scores several times. Consequently, the first interview in the intervention group was not a real baseline measurement. Results showed that changes had indeed already occurred at the first interview: patients’ pain intensity was lower in the intervention group than in the control group and nurses administered analgesics more often to patients in the intervention group.

In the main study, three time periods can be distinguished: a period in which control group patients were included who were given the usual care by nurses, a period in which nurses were educated and daily pain assessment was implemented, and a period in which intervention group patients were included. Because, more than one year elapsed between the inclusion of the control group and intervention group patients, there was a risk of a ‘history effect’, i.e. the results may be influenced by other events that took place during the study period. However, this is not likely because the period between the end of the data collection for the control group and the start of the data collection for the intervention group was only three months: during that period no major changes in hospital policies took place. Furthermore, the study was conducted in multiple settings, so a slight policy change in one ward would be unlikely to have the same history effect in all the settings.

During the interviews, research nurses asked patients in the control and intervention group for their pain scores. Preferably, the assessment of pain in the control group should have been in an unobtrusive way, e.g. without directly asking patients about their pain. However, it is impossible to assess pain without enquiring because pain is “whatever the experiencing person says it is and exists whenever he says it does.” Thus, by necessity, patients in the control group were already exposed to the numeric rating scale and can not be considered as a ‘real’ control group.

A final limitation of the design in the main study is the difficulty in differentiating between the effects of the PMP and an effect caused by the presence of research nurses on the wards during the no-intervention period. Awareness of being involved in a study on pain assessment may be sufficient to cause bias, as nurses may change their behavior and obscure the results. This means that the observed differences might have been greater had the nurses not been aware of their participation. However, a double-blind approach is not feasible in a clinical situation.

With regard to the follow-up study, some limitations and shortcomings should also be addressed. First, there was no control group in the follow-up study. With a lack of control group it is possible that the increase in pain knowledge was caused by other factors than the
PMP. On the other hand, nurses from eleven wards in five hospitals were included in this study, so one can assume that other factors are neutralized. Second, the sociodemographic characteristics who filled in both pretest and post-test differed from those who completed only a pretest or post-test questionnaire. The turnover rate of nurses was high: there is only 7-month follow-up data on about half the nurses in the study population; these nurses can be considered the backbone of the ward.

Nurses

Results of the studies showed that nurses from surgical wards were less positive about daily pain assessment than their colleagues from medical wards. Furthermore, the beneficial results of the PMP were less convincing for nurses from surgical wards than for nurses from medical wards. The question arises, why different results were found between the nurses from the two care settings. An explanation might be that nurses working on surgical wards have a different attitude towards pain than nurses working on medical wards,\(^9,19,57\) perhaps related to differences in the prevalence of pain, pain duration, and in pain treatment between the two care settings. On surgical wards, almost all patients have acute pain after surgery which will decrease after a few days.\(^58\) On medical wards, a lower percentage of patients are in pain and the majority of pain patients experience chronic pain. In general, patients with acute pain give more behavioral cues when they are in pain than patients with chronic pain.\(^59,60\) Thus, nurses on surgical wards might feel less inclined to ask patients about their pain: they may feel they know which patients are in pain and know by experience that this pain will not last long. Another explanation might be that the frequency of daily pain assessment is less suitable for surgical patients than for medical patients. In contrast to medical patients, surgical patients have moderate to severe pain during the first postoperative days which then decreases: therefore, perhaps pain should be assessed more frequently during the first days after surgery and then less often after a few days.

Patients

In total 703 patients from two general hospitals and one university hospital participated in the main study. In each hospital, patients from two surgical wards and one medical ward were included. Positive effects of the program on patients were found in all hospitals and care settings. Patients were included in the study when they were in pain or when they had a prescription for analgesics. In total, 8.6% (\(N = 66\)) of the patients who were eligible for participation refused and 9% (\(N = 63\)) of the patients dropped out before the second interview. Because, the percentage of refusers and drop-outs was very low in this study, this increases generalization of the study results and decreases the risk of bias.

Because the intention was to study a cross-section of pain patients in the hospital,
patients with different pain complaints were included: i.e. acute and chronic pain, malignant and non-malignant pain. Pain management in patients with chronic non-malignant pain differs from that of the other three categories: i.e. patients with chronic non-malignant pain receive not only analgesics but also non-pharmacological pain management, behavioral rehabilitation and surgery.\(^{61,62}\) Before the start of the study there was concern that daily pain assessment in patients with chronic non-malignant pain might result in overemphasizing patients' pain complaints; this, in turn, could influence patients negatively because one aspect of their treatment might be directed to incorporating pain in their life. Nevertheless, some positive effects of the PMP were found for these patients. It is unclear why patients with chronic non-malignant pain can benefit from the PMP because their pain endures for a long time. An explanation might be that systematic attention is paid to their pain. Another possible explanation might be that a subgroup of these chronic patients also experience acute pain \((N=45; 24.3\%)\), which is now successfully managed with analgesics.

The PMP had a positive effect on the professional outcomes as well as on the patient outcomes. The program was most effective in patients with moderate to severe pain with regard to assessment, documentation and administration of analgesics by nurses. This was not reflected in a greater reduction in patients' pain scores in the group of patients with moderate to severe pain. Thus, in accordance with the literature, there was no direct relation between improvement in professional outcomes and patient outcomes.\(^{9,37,45,50,63,64}\)

**The Pain Monitoring Program**

The PMP consisted of educating nurses and implementing daily pain assessment. The program was entirely built around the nurses that cared for patients. In the main study, physicians received no separate training, but ‘only’ received written information. Actively involving physicians would have benefited the program, because efforts to change pain management practice should be extended to all members of the pain management team.\(^{9,65}\) e.g. by educating physicians and nurses at the same time.\(^{66,67}\)

The pain education program lasted only three hours, which is probably too short to change professional behavior; however, a 3-hour program was the maximum available time for ward nurses. If it is impossible for all nurses on a ward to follow a more extensive education program, perhaps a few nurses per ward could receive more intensive education and develop to ‘Pain Nurses’;\(^{68,69}\) they could then function as a role model for their colleagues.\(^{70,71}\) Nurses who can serve as role models are important for changing inappropriate attitudes, legitimizing the importance of providing pain relief, and reinforcing actual knowledge of their colleagues.\(^{72}\)

With regard to daily pain assessment, the protocol has to be adjusted to the needs of the individual care setting. Nurses were instructed to assess pain twice a day in all patients.
However, the results of the study indicate that on surgical wards it is advisable to assess pain more frequently in the first postoperative days and reduce the frequency after a few days. On medical wards, assessing pain twice a day in all patients seems to be appropriate. Only patients who can not give a pain score (e.g. confused patients) should be excluded beforehand from the daily pain assessment with the numeric rating scale.

According to Francke it is important to translate pain program items into ward policy. Therefore, implementation of daily pain assessment on surgical wards should be combined with the implementation of standard postoperative pain management protocols. This promotes the use of what nurses have learned and enables nurses and physicians to act on the collected pain scores. Because most patients in medical wards have chronic pain that requires an individual approach, standard pain management protocols might be less relevant in this care setting; for these latter patients it may be useful to implement pain anamnesis in addition to daily pain assessment, and educational interventions that focus on the individual patient. With an extensive multidimensional pain assessment tool, more information can be gathered about pain, which is needed to adequately manage complex pain problems. Because patients often lack knowledge about pain, educational interventions for patients should be considered, e.g. the Pain Education Program of De Wit et al. Their program is tailored to the needs of the individual patient and is devised to teach patients to better cope with their pain.

RECOMMENDATIONS

Implications for clinical practice

This thesis demonstrated the feasibility and beneficial effects of a PMP for nurses on all phases of the nursing process (Figure 2 in Chapter 1). Results of the studies showed that nurses’ knowledge increased as an result of the PMP, nurses’ compliance with daily pain assessment was high and that daily pain assessment was feasible and valued by nurses, physicians and patients. Furthermore, the PMP proved to be effective in improving nurses’ assessments of patients’ pain, documentation about pain in nursing records and nurses’ administration of analgesics. Finally, the PMP proved to reduce patients’ pain intensity and to decrease the percentage of patients with substantial and intolerable pain. Therefore, it can be concluded that institutionalizing nursing pain management procedures through daily pain assessment and pain education is worthwhile. Because the program proved feasible and effective in a heterogeneous patient population in multiple care settings, hospitals and nursing wards are recommended to consider implementation of the PMP in routine nursing practice.
Hospitals that want to implement the PMP should consider several issues beforehand. First, nurses need to consider pain management as a key element of their care; if they think that pain management is handled adequately, they are less motivated to expend sufficient effort. Therefore, before implementation, it is advisable to establish whether or not nurses consider pain as a problem on their ward. A second issue is the involvement of other health care providers (e.g. physicians) with the use of pain assessment; if physicians are not committed to the program, nurses will become discouraged. A third issue is that patients may have problems with giving a pain score; when many patients are unable to give a pain score (e.g. due to confusion), nurses will become unenthusiastic. Fourth, if the workload of nurses is too high, if they have no time to elicit a pain score and act upon it, and if nursing management fails to stimulate nurses, nurses might be less inclined to continue with daily pain assessment. A checklist (e.g. the Probability of Adoption Assessment Guide of Horsley and Crane) can be used to explore the characteristics and resources of a potential hospital or nursing ward (and the characteristics and requirements of the proposed innovation), as these factors may impede successful implementation. To help hospitals and nursing wards with the implementation of the PMP, an extensive manual was developed incorporating an instruction video for nurses in which patients, nurses, and physicians explain daily pain assessment. Using this manual, hospitals and nursing wards are able to implement the program with minimal assistance. The manual can also be used for innovations regarding nursing problems other than pain.

The main study showed that nurses had little or no training in pain management during their basic education. Thus, a deficiency in pain knowledge by nurses is almost to be expected. Nursing schools should therefore integrate basic education of pain management into the curricula.

**Future research**

As mentioned earlier, several components can be added to the PMP that may make the intervention more powerful. First, multidisciplinary programs should be developed in which nurses and physicians are educated simultaneously. In this way nurses and physicians are given the opportunity to discuss pain management issues and learn team skills. Second, the PMP would benefit if ‘Pain Nurses’ are designated on the wards; they can function as a role model for their colleagues, facilitate the adaptation of the PMP to a particular setting and support the program on the long term. Third, the introduction of standard postoperative pain management protocols on surgical wards should be considered, thereby facilitating the use of collected pain scores for nurses and physicians. Fourth, to adequately deal with the complicated problems of patients with chronic pain, the introduction of pain anamnesis on medical wards should be considered. As patient
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compliance with analgesics can be problematic, pain education programs for patients might serve to increase patients' knowledge about pain and pain management, and stimulate them to actively participate in their own pain treatment. Each of these new components should be tested for both feasibility and effects on professional and patient outcomes.

Non-pharmacological pain reducing interventions were an important part of the education program. Whether nurses applied these interventions more frequently after implementation of the PMP could not be ascertained, as there was hardly any information about non-pharmacological pain reducing interventions in the nursing records. This might be due to the fact that these interventions were not performed at all or that nurses did not account for them in the nursing records. It would have been better to ask nurses directly whether or not they performed these non-pharmacological pain reducing interventions. In future research, the effect of the PMP on non-pharmacological pain reducing interventions should be addressed more properly.

In the main study, patients experienced difficulties with giving a pain score. More studies are needed to identify which factors inhibit the patient's use of a pain score and whether a more elaborate instruction program for patients will reduce these problems.

The follow-up study showed that nurses' compliance with daily pain assessment was satisfactory during the first five months of the intervention period, in the remaining two months professional compliance gradually decreased. Future research should focus on how to prevent this reduction in compliance, e.g. by Continuous Quality Assessment/Improvement programs, or perhaps the frequency of daily pain assessment for medical and surgical patients should be adjusted.

With regard to the outcome measures, more research is necessary to study the discrepancy between ordered and administered analgesics, and to establish which of the patient outcome measures (Pain Intensity Scores, Pain Intensity Markers or the Tolerable Pain Intensity Scale) is most suitable for assessing reduction in patients' pain. The reasons why patients with acute non-malignant pain benefit more from the program than patients with acute malignant pain needs investigation.

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