Discrepancies between patient and nurse perceptions of post-operative pain: shortcomings in pain control

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Abstract

In this study of 60 patients and 30 nurses the objectives were to identify the degree of concordance between patient and nurse ratings of post-operative pain, and to assess the use of pain control methods used by nursing staff in the control of post-operative pain. Discrepancies existed between nurse and patient perceptions of post-operative pain experienced by patients 72 hours post-operatively with nurses significantly under-rating pain levels compared to patients. Unless patients complained of pain, nurses made no formal assessment of the patient's need for analgesia. There were often significant delays between requests for *pro re náta (prn)* analgesia and drug administration. Nurses tended to set higher priorities for institutional tasks, relying on analgesics for pain control rather than utilizing preparatory or non-pharmacological methods of pain control. This failure to use effective preparation plus non-pharmacological means of pain control in the management of post-operative pain has significant cost implications in terms of greater drug utilization and longer in-patient stays. This is in addition to the discomfort for patients from inadequate control of post-operative pain. These results indicate strong grounds for improving post operative pain control.

Keywords: Pain; Ratings; Nurse; Patient; Costs

Introduction

Pain is usually a very unpleasant experience. Much of this unpleasantness arises from cognitive-perceptual rather than pure sensory processes. Uncertainty about levels of post-operative pain exists prior to surgery, resulting in considerable anticipatory anxiety for many patients. The anxiety provoking nature of anticipated or actual discomfort has several consequences. These include avoidance behaviours, increased muscular tension stimulating more sensory activity, and anxiety and depression, resulting in a heightened experience of pain. Restricted hospital environments provide few distractions and can limit the means of coping otherwise available to the patient. One result is that patients experience more intense and protracted pain. Continual pain has adverse effects upon bodily functions, disturbing gastric, colonic, cardiac, pressor, respiratory, and renal activity. In addition, high levels of anxiety and pain increase glucocorticoid activity, compromising immune function, prolonging wound healing and thereby hospital stay.[1, 2] All of these effects can and are exacerbated by anxiety.[3] Pain comes to dominate the patients' perceptual field resulting in a thoroughly miserable experience.

It can be difficult to interpret another's feeling or emotion. Similarly, it is difficult to make another individual understand what one feels. Yet, the health professional is forced constantly to make treatment decisions and in the management of pain, these are almost always based on informal guesses about the patient's pain experience. Characteristically, the administration of analgesics is made on the basis of the amount of pain informally reported by a patient. During assessment, the nurse's perception of the patient's pain is a function of information and cues from the patient, her past personal experience with pain, her frame of reference based on her knowledge and experience of previous patients, plus her own empathic skills. In current practice, nurses usually ask patients 'Have you any pain?' Formal objective measurement is seldom employed. It is extremely difficult

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to assess the intensity of the pain stimulus of a patient in such circumstances. In the absence of any formal assessment of pain, a standardized regimen of post-operative analgesia followed by *pro re náta (prn)* (as requested by patient) administration is almost universally prescribed in Hong kong hospitals, on the assumption that a set dosage will be adequate. Yet patients experiencing the same intensity of pain will not necessarily respond to it in the same ways and hence the adequacy of current procedure must be in question.

In light of these points, this study examined current nursing practice in the control of post-operative pain. This study was aimed at exploring the degree of concordance between nurses' and patients' perception of post-operative pain and the range of management approaches used. The study tested the following null hypotheses:

1. Nurses do not underestimate the intensity of patients' pain.
2. Nurses do not rely exclusively on analgesia, using other systematic non-drug interventions for managing acute post-operative pain.
3. Patients are not experiencing moderate to severe post-operatively pain arising from a failure of assessment by nurses and from inadequate analgesia.

Methods

Subjects

Patients: All patients on two surgical wards in a regional acute government hospital in Hong Kong, undergoing elective abdominal surgery for removal of benign (n = 11) or malignant (n = 42) tumour of the colon or stomach, or for removal of hernial sac and repair of the abdominal wall (n = 7) during October and November 1992 were included in the study. Informed consent for voluntary participation was obtained with only one refusal. Thirty female (mean age 57.5 years, range 37 to 77) and 30 male (mean age 60.5 years, range 37 to 75) patients were recruited.

Nurses: Five male and 25 female Registered Nurses, (mean age 27.2 years, range 23 to 37) were randomly selected on the same two surgical wards from which patients were recruited, and requested to complete a two part questionnaire. All nurses were actively working as part of their normal work roster on the wards where the study was carried out.

Assessment

Patients completed a questionnaire consisting of two sections. The first section dealt with personal information including: age, sex, occupation, educational level, marital state, monthly income, previous hospitalization, operation, wound size and site, and present operation. The second section assessed the patient's knowledge, understanding of, and psychological responses to, their disease, surgery and analgesic administration; a retrospective report of the level of pain anticipated prior to surgery; what, if any information was given on how to minimize post-operative pain, and patients' degree of satisfaction with the doctor's explanation about the operation.

A further six questions required each patient to rate their daily pain intensity on a 10-point scale, with '0' indicating no pain, '2' mild pain, '5' moderate pain, '8' extreme pain and '10' excruciating pain. This method avoids the poor reliability that occurs in linear visual analogue scales when used to make comparisons between individuals. The location of pain was recorded to exclude pain arising from other sources. Information was also gathered on patients' reaction to post-operative pain, focusing on the timing of reported pain, and any non-drug interventions preferred by patients to reduce post-operative pain. A full explanation was given to all subjects prior to completion of pain ratings.

The research was carried out in two busy surgical wards, in which manpower was inadequate. Therefore, it was not practical to measure patient's pain level hourly and only the peak of pain was recorded daily. A detailed record of the route, amount, times and type of both temporal and *prn* prescribed analgesic used was made for each patient. This enabled us to detect whether any complaint of pain was due to insufficient dosage or to a delay in administration.

Nurses completed a questionnaire which assessed personal information including age, sex, marital status, working experience, previous hospitalization and personal surgical experiences. They also completed questions assessing nurses' knowledge and beliefs regarding post-operative pain, analgesia administration, current nursing practice and skill in pain relief. Finally, nurses were also asked to rate the patient's pain using the same 10-point pain rating scale as the patients.

Analgesia

All patients were under the care of two teams of surgeons working on the same unit. It was assumed that these surgical teams had the same philosophy of care and that any differences in patients' pain experiences were therefore not attributable to different management. All patients were prescribed and administered pethidine as a post-operative analgesic. Patients received a standard regimen of analgesia for post-operative pain control. Four hourly injections of pethidine were given on the first day post-operatively, and thereafter on a *prn* basis.

Procedure

Patients were admitted to the wards at least two days before surgery. Following informed consent, which included, importantly, assurances of confidentiality of their replies, patients later underwent major or minor abdominal surgery. All were interviewed by one investigator (LWC) and completed their questionnaires. Each patient rated their pain daily between post-operative days 3 to 7, using a close-ended questionnaire. It is unlikely that patients could have reliably completed the questionnaire before post-operative day 3 as they were not adequately recovered from anaesthetic and had experienced post-operative stress (e.g. severe pain, fluid and electrolyte imbalance and some anaesthesic effects).

Nurses recruited as subjects in the study who were on duty at the time of assessment were asked to rate the level of pain for each patient who was a subject. Nurses were not assigned to rate the same patient on subsequent days. Simultaneously, patients rated their own pain. Both groups of subjects' ratings were therefore of a given patient at the same time.

Quality and quantity of care was assumed to be equal among the surgical and nursing teams.

Data analysis

Each nurse's and patient's five daily pain ratings were summed. These were then compiled into group data for patients and nurses. The dependent nature of the ratings and the small sample size involved dictated the use of non-parametric data analysis. All analyses were carried out using either Wilcoxon's or Chi Squared tests. Elsewhere Students's t-test is used. Percentages are rounded to the nearest whole number.

Results

Analgesia used

Four hourly injections of pethedine were given to 43 patients and a further 17 patients received additional *prn* administered pethedine during the post-operative period.

Ratings of post-operative pain

Summed post-operative pain scores had a potential range of 5 to 10. Predictably, mean post-operative pain ratings decreased with the number of post-operative days. The highest pain ratings were given on the second day post-operatively. Male and female patients' ratings of pain were significantly different with females giving higher ratings of pain than males (Wilcoxon's $T = 64.5$, $n = 23$; $p < 0.05$). There were significant differences in ratings of pain between nurses' and patients' ratings of pain. Summed pain scores given by patients (females $\bar{X} = 8.8$; males $\bar{X} = 7.8$) were higher than those given by the nurses ($\bar{X} = 7.0$). Female patients gave significantly higher ratings of pain than did nurses when rating female patients, ($T = 22$, $n = 26$; $p < 0.05$). The same pattern was seen in relation to pain ratings for male patients, ($T = 64$, $n = 23$; $p < 0.05$).

However, 30 minutes after analgesia administration. there were no significant differences between both patients and nurses in ratings of pain (female patients $T = 129$; $n = 22$; n.s., male patients $T = 85$, $n = 22$; n.s.).

Interventions used in managing acute post-operative pain

Nurses were asked to choose what interventions they used in managing a patient's post-operative pain. All nurses described analgesia administration as a nursing intervention for post-operative pain relief. Moreover, 73% of nurses reported using this method as a first choice.

A comparison between nurses who use analgesia only with those who use additional methods of pain control indicated that analgesic administration was significantly more frequently preferred by nurses compared to non-analgesic methods of pain control ($\chi^2 = 30$, $df = 1$, $P < 0.05$). for managing acute post-operative pain.

Pain complaints by patient and pain detected by nurses

Despite the *quarter in die* (qid) analgesia regimen requiring nurses to give regular injections on the first post-operative day, nurses frequently missed the injection time and waited until the patient reported pain before administering pethidine. Sixteen (26%) patients reported delayed analgesia administration following pain complaints to nurses. Despite this, 41 (68%) patients stated that they usually remained calm when pain occurred. Moreover, 29 (48%) patients were either worried about possible addiction to, or unsure about the side effect of, the medication they received for pain.

When we looked at the number of pain complaints made by patients compared to those recorded by the nurses caring for those patients there were significant differences between the number of occasions moderate or greater pain was detected by staff (mean number of occasions patient was estimated to be in pain, $\bar{X} = 0.7$, $sd = 1.39$ for male patients; $\bar{X} = 0.57$, $sd = 1.22$ for female patients) and the number of times moderate or greater pain was reportedly experienced by patients (mean number of occasions pain was experienced by

male patients, $\bar{X}$ = 4.9, sd = 3.89, and by female patients $\bar{X}$ = 3.77, sd = 2.89); Nurses vs male patients' estimation of pain frequency differed significantly ($t = -5.6$, $df = 58$, $p < 0.05$); as did nurses vs female patients' estimation of pain frequency ($t = -5.57$, $df = 58$, $p < 0.05$). No significant differences were observed between male and female patients in terms of the frequency of pain experienced ($t = 1.28$, $df = 58$, n.s.): patients experienced moderate to severe post-operative pain six to seven times more frequently than it was being identified by staff.

Information giving by staff

Twenty-three (38%) patients had prior information about how to minimize post-operative pain. This came either from the patient's own previous surgical experience or from staff (physiotherapist, doctor, or nurse). Twenty (33%) of these patients reportedly received their information from nurses. Seventeen (28%) patients were given no prior information on pain control.

Although 49 (82%) patients claimed no knowledge of the possible complications of their operation and 34 (57%) claimed no knowledge of their prognosis, 52 (87%) of patients stated that they were satisfied with the doctor's information giving. At the same time, patients didn't think that the nurses instead of doctors should provide information and coping strategies.

Discussion

Before discussing these findings, it is important to point out the limitations of the study. Of importance is that patients were required to report their experiences retrospectively. This may have led to recall bias. One interviewer, not blind to the aims of the study collected data allowing the possibility of observer bias. It is also important to consider that patients' respect for and gratitude toward the staff in the busy wards, together with fear of giving offence, may have created a reluctance to endorse statements which imply criticism. However, this also would point to under-reporting of problems, not the opposite.

The findings reported in this study concerning discrepancies in ratings of post-operative pain between patients and nurses and the inconsistent use of interventions in controlling post-operative pain clearly indicate that nurses underestimate both the frequency and the intensity of patients' post-operative pain experience. These conclusions agree with previous studies.[4]

The lack of preparation pre-surgically for patients on how to manage their pain, the failure to administer analgesia promptly on the first post-operative day and the significant failures to detect patients in pain all suggest a low priority is being given to post-operative pain control. Why should this be?

A major reason often cited to defend established care practices in Hong Kong invokes limited staff numbers. However, what such arguments, in effect, indicate is that the priority given by staff to subjective or psycho-social issues in patient care is lower than that given to other tasks. These other tasks predominate because they, not the patient on whom the tasks are performed, become the principal focus of staff activity. In other words, in complex or critical post-operative care, a hierarchy of tasks, the next level dependent on the last builds up. Managing the patient becomes in effect recording central venous pressure (cvp), for example. This is dependent upon observing and maintaining the equipment necessary to provide this information, maintaining the cvp line, ensuring sterility, recording and charting and all of the other tasks which need to be carried out to achieve a record of cvp. At the bottom of the hierarchy is what the patient feels or experiences.

In the absence of formal assessment of the patient's level of discomfort, pain is likely to become a non-issue for the staff unless the patient actively complains about pain. Patients however, may be unwilling to complain. They may be reticent to make demands on busy staff and may wish to avoid being perceived as complaining, anticipating this might be to their detriment in some way. There may be a lack of knowledge regarding what might be expected post-operatively. Given the low frequency of information-giving to patients about post-operative pain control, it is not unreasonable to assume that patients simply may not know that they can ask for analgesia if they are in pain. In other words, patients may not have been adequately informed about what treatments are available. This latter interpretation is supported by the finding that despite a lack of information and inadequate pain control, most patients were satisfied with their care and few complaints were made, despite the reassurance of confidentiality. It is clear that some patients understood very little about the nature of the medication they were given.

A number of other interpretations exist for these results, all of which reflects poor communication between patients and nurses. Despite being busy nurses may assume that if a patient has pain and it is troublesome, he would report it. In contrast, the patient may not ask for medication believing that the nurses will know when it is needed. Two patients reported being reluctant to tell the nurse they had pain because they felt uncomfortable ringing for a nurse they knew to be busy. When they experienced unbearable pain patients tended to ask for analgesia but often the nurse was preoccupied with a different task and thereafter failed to attend to the patient's analgesia needs after finishing the task. Patients explained this as nurses 'forgetting'.

The relief of pain is a basic responsibility of health professionals, and drugs for this purpose account for the second largest group of prescriptions in hospitals.[5] Analgesic administration should be the first line of defense against the acute pain associated with major surgery. Non-pharmacological measures are important supplements to pharmacological intervention. The lack of systematic use of non-drug interventions to deal with pain again reflects the need of the health professionals for greater awareness of psycho-social factors in patient care.

There is substantial evidence showing that effective psychological preparation of the surgical patient can reduce analgesic requests by as much as 50% and post-operative hospital stay by two days, on average.[1] Lack of nursing knowledge and support from administration for individual assessment and health education may prevent the perception that giving information to patients is a critical component of effective nursing care. It can strongly influence patients' satisfaction and is a major determinant of patient adherence.[6] Effective information giving can also decrease patient anxiety. It is notable that patients felt that information and education on coping should be provided by doctors. This is consistent with findings from elsewhere.[7]

Adequate pre-operative intervention clearly results in a higher tolerance of pain (thus reducing analgesic use), a more accepting and cooperative attitude towards post-operative treatment, earlier ambulation, and earlier discharge from the hospital.[8] Information regarding the sensations to be experienced seems to be more effective in reducing distress than does information regarding the procedures to be used.[9] Unfortunately, even when lack of manpower and time are not problems, many patients and nurses tend to regard analgesics as almost the only major method of pain relief.

There are clear indications that two important changes need to be made to overcome the problems in pain management post-operatively in Hong Kong hospitals. These are first, clear pre-operative information on (a) the nature of the discomfort the patient can expect post-operatively, (b) education on techniques the patient can use to minimize discomfort when coughing or turning, for example, and (c) clear instructions on post-operative analgesia, what it is and it's effects are, and how and when to request it. The second change is to introduce *systematic* assessment of patients' pain post-operatively. This would be facilitated by a shift from task to patient-based nursing models within the Hospital Authority, and encouragement and training to enable this should be emphasised.

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