Thirty postoperative adults were surveyed using face-to-face interviews in their homes after hospital discharge. Participants were asked to describe their pain communication during their inpatient hospitalization and pain-related problems after discharge. This study reports the content analysis of participant responses to their pain after discharge. Eighteen (60.0%) described pain-related problems after discharge. Seven (23.3%) identified pain-related fears or complications. Six (20.0%) identified analgesic management problems. Six (20.0%) described difficulty with positioning or moving. Four (13.3%) described sleep disruption from pain. The results identify several pain-related problems encountered by postoperative patients after hospital discharge. Shortened hospital stays make effective postdischarge pain management an essential aspect of care for surgical patients. Teaching patients additional pain management skills, including when and how to communicate with health care providers when pain-related issues occur at home, may lead to more effective pain relief for patients.

**Postoperative Pain After Hospital Discharge**

DEBORAH DILLON MCDONALD  
University of Connecticut

Pain management by postoperative patients at home takes on greater significance as hospital stays continue to shorten. Barriers to effective pain management in the hospital may also hamper effective pain management when postoperative patients return home. These barriers include low pain relief expectations by the patient (Ward & Gordon, 1996), fear about addiction (Francke, Garssen, Abu-Saad, & Grypdonck, 1996;...
Ward et al., 1993; Zalon, 1997), and avoidance of analgesics due to unpleasant side effects (McDonald, McNulty, Erickson, & Weiskopf, in press; Ward et al., 1993). Patients at home do not have the same access to health care providers as they do in the hospital setting. Patients may be less likely to telephone their physician at midnight when their pain becomes a problem than they would be to call their nurse when hospitalized. Inadequately treated postoperative pain leads to unnecessary suffering and has been associated with prolonged recovery time (Wattwil, 1989). Identification of common pain problems after hospital discharge might suggest better ways to prevent or treat postoperative pain at home. This study was part of a study that examined how postoperative patients communicate their pain during their hospital stay (McDonald et al., in press). The purpose of the current study was to begin initial exploration of pain problems encountered by postoperative adult patients after their discharge to home.

POSTDISCHARGE PAIN AND PAIN PREVENTION EFFORTS

Pain after hospital discharge has been included as one of several variables used to assess patient concerns after an invasive procedure. Forty women discharged within 72 hours after major gynecological surgery reported adequate pain relief at home (Ng & Hogston, 1994). Only 2 of 12 appendectomy patients (9 adults and 3 children) who needed to see their physician after discharge did so because of pain (Ramesh & Galland, 1993). Pain was the second most frequently cited concern for 47 (12.5%) coronary artery bypass graft patients after their discharge to home (Wu, 1995). Patients who used cryotherapy after arthroscopic knee surgery reported that their mean most pain rating on the 100 mm Visual Analogue Scale (VAS) was approximately 45 mm on day one (Lessard, Scudds, Amendola, & Vaz, 1997). It is difficult to ascertain whether the decreased pain problems reported by Ng and Hogston (1994) and Ramesh and Galland (1993) reflect decreased pain with certain procedures, method problems with measuring pain incidence, or some other factors. Results from Wu (1995) and Lessard et al. (1997) suggest that pain after hospital discharge may be a problem for some patients.
Pain after discharge has also been examined in the context of testing the efficacy of analgesics or other techniques for decreasing pain after general surgery. People undergoing laparoscopic appendectomies had less pain duration than open appendectomy patients (Attwood, Hill, Murphy, Thornton, & Stephens, 1992). Administering oral ketoprophen and a bupivacaine mesosalpinx infiltration prior to tubal sterilization resulted in less pain than either treatment by itself (van Ee, Hemrika, de Blok, van der Linden, & Lip, 1996). Preoperative administration of oxymorphone was associated with significantly less incidence of pain than fentanyl for adult gynecologic and urologic patients (Shafer, White, Urquhart, & Doze, 1989). Hernia repair patients receiving an oral nonsteroidal anti-inflammatory drug (NSAID) reported significantly less pain compared to patients receiving morphine following a hernia repair (McEvoy, Livingstone, & Cahill, 1996). A lateral popliteal sciatic nerve block provided significantly longer duration of analgesia than ankle blocks for foot surgery patients (McLeod, Wong, Vaghadia, Claridge, & Merrick, 1995). Knee arthroscopy patients given intraarticular morphine had less pain than patients given bupivacaine or saline 24 hours after the surgery (Jaureguito, Wilcox, Cohn, Thisted, & Reider, 1995). Patients using ice after exercise during their convalescence from arthroscopic knee surgery had significantly fewer affective dimensions of pain than patients not using ice (Lessard et al., 1997). Results from these studies suggest that postoperative pain can be decreased after discharge when procedure specific analgesics and treatments are used. Identifying frequently encountered postdischarge pain problems may further strengthen pain prevention efforts.

Postoperative pain after discharge to home has been studied across patient populations ranging from coronary artery bypass to arthroscopic knee surgery patients. With few exceptions (i.e., Lessard et al., 1997), when measures of pain were included, the studies tended to focus on one dimension of pain, pain intensity. Little data exists about other dimensions of pain such as sensory dimensions or the impact on mobility and activities of daily living. No study reported asking patients to identify what they felt were pain problems after discharge. There may exist some common pain problems that have not been identified but could be prevented. This study provides
initial exploration of patients’ perspectives of their pain problems after discharge by addressing the question, What pain problems do postoperative patients have after their discharge to home?

METHOD

DESIGN AND SAMPLE

A descriptive survey design was used for this quantitative study, which was part of a study that examined how postoperative patients communicate their pain (McDonald et al., in press). The purposive sample (N = 30) consisted of 10 White, 10 Black, and 10 Latinos, with blocking for gender (5 women and 5 men in each group). One major medical center, one medium-sized hospital, and two small community hospitals in the northeastern United States participated in the study. The study met approval for human subjects’ protection from the internal review boards (IRBs) at the university and participating hospitals. The interviewer provided informed consent to each participant.

Sample eligibility criteria included: between the ages of 18 and 64, recent postoperative inpatient, experienced at least moderate physical pain during at least one point in their postoperative hospital stay (rated as a 4 or greater on a 1 to 10 scale, with 1 being no pain and 10 being the worst pain possible), no terminal diagnosis, and no history of substance abuse. A pain level of 4 or higher on a 10-point pain intensity scale was generally considered moderate or greater pain.

The mean participant age was 40.3 years (SD = 13.49), with a range of 18 to 63 years. The majority (n = 24) (80.0%) had a high school education or greater. Two Spanish-speaking participants were interviewed with the assistance of an interpreter.

PROCEDURE

A brief description of the procedure for the pain communication study provides background for the current study. The author conducted 22 of the 30 interviews, and a research assistant doctoral student conducted the remaining 8 interviews. The author trained the research assistant and examined the
audiotaped interviews to ensure that the interviews were conducted in a similar manner. The interviews took place between March 1996 and July 1997. The home interviews generally lasted 30 minutes and consisted of the following: informed consent, demographic data, and the audiotaped interview. Most interviews took place within 1 week of hospital discharge. Pain problems would be expected to be greatest during the more immediate postoperative recovery period. The first 9 questions of the author-developed interview addressed issues related to communicating pain during the postoperative hospital stay. These results are reported in another manuscript (McDonald et al., 1998). Examples of the questions include: “Tell me about the physical pain that you had during your recent hospital stay” and “How did you make your pain known to the nurses and/or doctors?”. The 10th and final question addressed postoperative pain after discharge and asked, “How has your pain been since you have come home from the hospital?”. The open-ended question allowed patients to respond with their own words. This question was included in the study for ethical reasons. Participants who identified a problem with pain after discharge were encouraged to contact their physician. Responses to this question provided the sole source of data for the present study.

All transcripts were checked for accuracy and corrected by either the author or a second doctorally prepared nurse. The author used content analysis methods based on Holsti (1969) and Weber (1990) to examine the participant responses. Content analysis reduces large amounts of narrative data to smaller, more manageable amounts. Responses to the question of pain after hospital discharge were organized by the author into naturally occurring descriptive categories. Frequencies were then calculated. The Folio VIEWS (1993) software program was used to manage the transcripted data but was not used to conduct the content analyses.

### FINDINGS

Eighteen (60.0%) postoperative adults described problems with pain on returning home after surgery. Table 1 lists the surgical procedures for these 18 adults. Participants' descriptions of their pain illustrate some of the pain characteristics
encountered at home. Participant 22 underwent a cervical disk repair with a hip resection. He had indicated to the interviewer that the hip bothered him. When the interviewer asked him to rate his pain at home since surgery on a 1 to 10 scale, with 1 being no pain and 10 being the worst pain possible, he replied, “I would say an 8.” Participant 7 had a lumbar laminectomy. He described his pain as “very sore in the mornings. Like this morning I was very, very, very sore.” Participant 9 had a fractured ankle repair. She stated, “Well it has gotten slowly better. It has been 2 weeks now, 2 weeks tomorrow. I am still in pain, and I still take pain killers.” Participant 24 had surgery for a heart valve replacement. After surgery she stated, “I really didn’t have much pain to be truthful. . . . I had more pain when I was home. I have something that makes this cramp here in my hand. Yes in me muscles in me foot. . . . Me back hurts me a lot.”

PAIN-RELATED FEARS OR COMPLICATIONS

Seven (23.3%) participants identified pain-related fears or complications. Examples include the following participant responses. Participant 17 had a laparoscopic cholecystectomy. She worried about a new pain that she began to experience after returning home. She stated,

Like this pain, like, I had three or four times. So, because it is something sharp. It is like something fast. It comes very fast, very painful, lasts like maybe few seconds. I’m not sure about that. It’s like I feel my stomach. I never feel that pain before, after surgery.

Participant 21 had a cleft palate repaired with a hip excision. She described an incident while carrying laundry at home after surgery. She stated,

I turned the wrong way and I heard a pop and I felt a pop. It hurt. It actually hurt real bad. So I had to go to my doctor that afternoon because of my mouth and I said to him, you know, that I didn’t know what I did and he said you probably just pulled a muscle. You know, I had my pain medication again to help swelling and stuff, and he said to take that. I felt uncomfortable when I came home and I called my other doctor, the one who did the hip. He called me back and he told me that, you know, and I told him I was afraid. I thought I did something. He said you probably
pulled a muscle. He said just relax and let it heal.....I walked on crutches for 2 days. . . . The pain was so severe.

Participant 29 had a partial thyroidectomy. She had canceled the initial interview because she wanted to see her surgeon after her pain had increased after her hospital discharge. She stated, “It was a little more painful than the day before. So yeah, I just basically just went (to see the physician) and had myself double checked.”

**ANALGESIC MANAGEMENT PROBLEMS**

Six (20.0%) participants identified analgesic management problems. Each participant described a different problem with his or her analgesic. Participant 2 underwent an anterior cruciate ligament repair. He stated,

I took a tablet before I went to bed and probably woke up around four, four thirty. Then I realized I was hurting. I hobbled out there to get a drink, now I just keep something there so I can swallow it when I wake up. But, I wasn’t prepared for that and ah that was very very painful. That was the worst part.

Participant 3 underwent a lumbar diskectomy. He stated, “I was on Tylox when I came home and it was upsetting my stomach real bad. So he (the physician) put me on the Tylenol with

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### Table 1

**Types and Frequencies of Surgical Procedures (n = 18)**

<table>
<thead>
<tr>
<th>Surgery</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diskectomy</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>Laminectomy</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Shoulder arthroplasty</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Anterior cruciate ligament repair</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Fractured ankle repair</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Maxillary exploration</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Cardiac valve replacement</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Laparoscopic cholecystectomy</td>
<td>2</td>
<td>11.1</td>
</tr>
<tr>
<td>Appendectomy</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>Bilateral breast reduction</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Cleft palate repair with hip fusion</td>
<td>1</td>
<td>5.6</td>
</tr>
<tr>
<td>Partial thyroidectomy</td>
<td>1</td>
<td>5.6</td>
</tr>
</tbody>
</table>
codeine." Participant 9 stated, "The first prescription he gave me just made the room swim. I couldn’t stand it, so he gave me a different one which was not as bad." Participant 4 underwent a shoulder arthroplasty. He described his rationale for how he premedicated himself prior to his physical therapy sessions. He stated,

I usually take one instead of two. . . . I live about 20 minutes away from this house. And, I don’t like to drive. . . . I don’t get drunk . . . but just kind of drowsy. So I don’t want to be on the road with that. So, I would rather experience a little more pain than not get here safe. Instead of endangering someone else’s life on the road or something like that.

Participant 6 underwent an appendectomy. He described his analgesic as effective for 90 minutes. When the interviewer pointed out that he was only taking one pill and the prescription was for one to two pills, he stated, "Yeah, but it will last longer." Participant 26 underwent a lumbar laminectomy. He stated,

I came home and the medication . . . that I was having there seems to be working adequate but then they don’t give you that medication to bring with you at home. . . . I had to come home and go to the chemist and get fresh medication from the chemist to take care of my pain. . . . But the actual pain medication when I leave here, I didn’t have any pain medication from there, for what, probably about 6 hours or something like that. . . . So then I came home and I had some Ibuprofen that I was taking before I went in there . . . I mean this Ibuprofen was working for me before but then I wasn’t quite sure. . . . But then the doctor called me up on Tuesday and asked me how I was doing with pain . . . and I said I was doing very well. I’m having terrible pain in my back. Going down my legs, you can feel it down my legs, doctor. . . . So he said to me, take 600 mg three times a day and that, from the first dose of that, that really get me on my feet.

MOBILITY

Six (20.0%) described difficulty with positioning or moving. Examples of pain-related problems with movement or positioning include the following participant statements. Participant 3 stated, "When I came home I had to walk up these stairs, and I almost died. I almost crawled up them." Participant 4 stated,
I find that the day I have physical therapy, for the first 4 or 5 hours afterwards, I am pretty well shot. I can do a lot of the exercises and motions that she has me do. Then she does a few extensions and I just feel like things are just ripping apart inside my shoulder. I've run the Boston marathon before and had my knee blow out at the halfway point. It's one thing to have your pain self-inflicted and you keep telling yourself to keep going but when you are laying on a bench and someone is inflicting it upon you it's a little different. But, yeah it's very painful. . . . I was in so much pain from being there because that went on for a good 15, 20 minutes, that same motion, back and forth, back and forth. So, I was in constant pain, so intense.

Participant 20 underwent a bilateral breast reduction. She stated,

I would have the same trouble getting in and out of bed when I first got here the first week, but my husband would help me in and out of bed and when he had to go to work, I would sit up you know, for a little while and then some of my coworkers, sometimes they would come by, would help me get up.

SLEEP

Four (13.3%) described sleep disruption from pain. Participant 4 stated, “I just have a hard time sleeping still.” Participant 20 stated, “I can't sleep. I don't sleep at all.”

DISCUSSION

Postoperative pain problems at home after discharge may occur with greater frequency than previous studies indicate. The majority of the patients in this study described some pain problem after hospital discharge. The general pain problems included fears and complications associated with the pain, analgesic management problems, mobility difficulty, and sleep disruption. These problems provide a beginning description of acute pain problems that might be experienced by some postoperative patients after discharge home. There may be other pain problems not identified in this study. Some problems identified may be idiosyncratic to this particular sample. The participants represented a range of surgical procedures. Some
orthopedic patients identified more pain problems than the other patients did.

Orthopedic surgery may present greater challenges for postoperative pain management. Five of the six patients with analgesic management problems were orthopedic patients. Three of these patients also experienced sleep disruption. The postoperative pain intensity may be greater for orthopedic surgery than in many other surgeries. Orthopedic patients had the highest incidence of pain in the postanesthesia care unit (PACU) in a study of 10,008 ambulatory surgery patients (Chung, Ritchie, & Su, 1997). Although some research has investigated more effective pain management for orthopedic surgical patients (i.e., Lessard et al., 1997), further studies testing pain prevention treatments may be particularly important for this group of surgical patients.

Although the fears and complications associated with postoperative pain were highly individualized, this type of problem may be important to recognize and develop contingency plans for. Several of the participants contacted their physician to discuss their concern, with adequate resolution. Two separate physicians minimized the patient’s concerns, and the patient continued to be in severe pain for several days, in one case. This single case may be an exception. The situation does suggest that some patients may need assistance in communicating with health care providers when the provider does not understand what has been described by the patient (i.e., the severity of the pain problem). A pilot study that coached people with lung cancer to communicate their pain in a way that their nurse would recognize resulted in greater agreement between the nurse and patient about the pain (Wilkie, Williams, Grevstad, & Mekwa, 1995).

General study limitations must be considered when evaluating this study. Results from this study reflect responses to a single open-ended interview question. No additional pain measures were used to describe the pain characteristics experienced by the patients at home after discharge. Pain problems that might emerge later in the recovery period would not be reflected in this study. A sample size of 30, although relatively large for the data collection method of face-to-face interviews, remains small for the survey design of this study. Finally, all
participants were from one region in the United States. The results may not be generalizable to other areas.

APPLICATIONS

Making pain after discharge a visible issue may sensitize health care providers to initiate earlier, more effective pain management prevention for home care. Preventive measures for potential pain problems could be incorporated into discussions with patients and their families prior to hospital discharge. The patients in this study provided several helpful suggestions for preventing pain problems at home. These suggestions include: receiving an analgesic dose just prior to discharge to assist in pain relief when traveling home; arranging to have analgesic prescriptions filled and available on arrival home; placing analgesic within safe, easy access during the night when a nighttime dose might be needed; planning ahead for how to negotiate stairs, high beds, and so on that could exacerbate the pain; carefully following activity restrictions such as no moderate to heavy lifting; and premedicating with an analgesic prior to physical therapy with a ride to and from the therapy.

Low pain relief expectations remained a problem for some of the participants. Patients and families may need further teaching about the detrimental results of inadequately managed pain such as decreased mobility (McDonald & Sterling, 1998) and the problems associated with decreased mobility (i.e., atelectasis and thromboplebitis) (Olsen, Johnson, & Thompson, 1967). Helping patients set and attain their own pain goals in the hospital could promote successful goalsetting at home.

Perhaps most important of all is the need to teach patients how to communicate their pain management needs to their health care providers. Although several patients in this study initiated successful communication with their providers, many failed to do so. One participant described his average pain intensity at home as an 8 (on a 1 to 10 scale). Patients need to be taught pain communication skills such as how to describe their pain using the jargon that health providers use. For example, teaching patients to use a pain intensity scale (Super,
1996) along with their own words and to include pain location provides specific ways to communicate the pain. Communication accommodation theory (Coupland, Coupland, Giles, & Henwood, 1988) identified specific communication skills, some of which might be useful for patients in communicating pain management needs to their health care providers. Examples of these skills include increased explicitness and taking one’s own turn in the conversation instead of being a passive participant.

This study provides insight into some pain problems experienced by postoperative patients at home after hospital discharge. Preventive measures can be initiated in the hospital setting or earlier to avoid or diminish these pain problems. Further research is needed to identify additional pain problems and to test specific pain prevention efforts. Orthopedic patients may be especially vulnerable to pain problems after discharge. Teaching patients pain management skills, including when and how to communicate with health care providers when pain-related issues occur at home, might lead to more effective pain relief for patients.

REFERENCES


Deborah Dillon McDonald, R.N., Ph.D., is an associate professor in the University of Connecticut School of Nursing.