



## Original article

## Application of transitional care model in cancer pain management after discharge: a randomized controlled trial

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## ABSTRACT

**Objective:** We sought to determine any benefits of applying a transitional care model in the continuum of cancer pain management, especially after patients' discharge from the hospital.

**Methods:** A total of 156 eligible participants were recruited and randomly assigned into intervention or control groups. The control group received standard care, while the intervention group received extra, specialized transitional care of pain management. Outcomes were measured at weeks 0 and 2–4 and included demographic data, the Brief Pain Inventory, Global Quality of Life Scale, and Satisfaction Degree of Nursing Service. Adequacy of analgesia and severity of pain were assessed with the Pain Management Index and interview findings.

**Results:** After 2–4 weeks of intervention, there was a significant difference in the change in average pain score between intervention and control groups ( $P < 0.05$ ). Reductions in pain scores were significantly greater in the intervention group than in the control group (difference: 0.98,  $P < 0.05$ ). Regarding pain management outcomes, there was a significantly better condition in the intervention group compared with the control group; in the intervention group, 79% of patients had adequate opioids, whereas in the control group, only 63% of patients reported having adequate opioids. Furthermore, there was a significant difference between the two groups in quality of life (QOL) scores ( $P < 0.05$ ); the intervention group had significantly higher quality of life than the control group (difference: 1.06). Finally, there was a significant difference in the degree of satisfaction with the home nursing service; the intervention group had a significantly higher degree of satisfaction with the home nursing service in three aspects: quality, content, and attitude of service.

**Conclusions:** The application of a transitional care model in cancer pain management after discharge could help patients to improve their cancer pain management knowledge and analgesics compliance. In addition, the continuum of care service will contribute to effective communication between health care providers and patients, which could further improve their relationship.

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## 1. Introduction

Transitional care is defined as a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations, for instance, from hospital to the patient's home.<sup>1</sup> It includes logistical arrangement, education of the patient and family, as well as coordination among health professionals involved in the transition.<sup>1</sup> The transitional care model can be described as a bridge between two places of care.

Patients suffering from cancer often require a shift from different stages of treatment approach and a change of different locations. Therefore, due to the illness progression and complex care needs of cancer patients, high quality of transitional care becomes a more and more essential part of providing care to such a group of people.

Numerous doctors and nurses engaged in cancer care recognize that a proportion of the patients either at presentation or during the course of therapy will show advanced and progressive disease or symptoms,<sup>2–5</sup> for instance, cancer pain. According to the previous review, pain is experienced by 53% of patients with cancer at any stage of disease, and one-third of these patients grade it as moderate or severe.<sup>6,7</sup> Furthermore, unrelieved severe pain will affect people's quality of life and increase levels of anxiety and depression.<sup>8–10</sup> Pain also has a significant impact on care givers.<sup>11</sup>

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In China, pain management in grade-three hospitals has been attracting more and more attention. Many hospitals have established a series of strategies of pain management, but how to help patients to manage their pain when they are discharged from the hospital is still under exploration. Many patients revealed that cancer pain is well managed in the hospital setting, whereas at home, cancer pain brings them and their family anxiety and frustration. One of the most frequent problems faced by cancer patients at home is pain, patients with which accounted for 54%.<sup>12</sup>

Some of barriers result from concerns, such as fear of addiction, which have led to suboptimal use of opioids.<sup>13–15</sup> Others are because patients and their caregivers lack sufficient pain management knowledge. When patients have such troublesome symptoms, they do not know from whom and where they could seek help.

It is clear that the care of patients suffering from cancer is not limited in the hospital setting; home care is also an important part. With the primary goal of improving cancer patients' quality of life (QOL), we conducted a randomized controlled trial to investigate any benefits of applying a transitional care model in the continuum of cancer pain management.

## 2. Methods

### 2.1. Settings and participants

We recruited a total of 156 hospitalized patients from two districts (Jianye and Xuanwu District) in Nanjing urban areas who were receiving regular chemotherapy and radiation therapy in the participating hospital during the period from August 2014 to November 2014. The selection criteria were that patients had cancer pain scores  $\geq 2$  of 10 in the past week, a life expectancy of more than 3 months for measurement of outcomes, older than 18 years, and signed informed consent. Exclusion criteria were cognitive, visual, or hearing impairment. The interval between two times of hospitalization therapy was on average 2–4 weeks, which means that during the course of therapy, every patient had to stay at home at least for 2–4 weeks.

### 2.2. Study design

#### 2.2.1. Establishment of multidiscipline teams (MDTs) for providing transitional care of pain management

The MDTs are composed of the pain management group of Oncology in Nanjing First Hospital, 36 general physicians and nurses from 18 community hospitals from the Jianye District and Xuanwu District. All members of MDTs had received a series of training sessions on knowledge and practical skills on pain management and passed a final test before the start of the study.

#### 2.2.2. Intervention

Participants were randomly assigned into two groups<sup>1</sup>: control group and<sup>2</sup> intervention group.

**2.2.2.1. Control group.** After admission, patients received standard care during chemotherapy and radiation therapy according to the standard of nursing care developed by the Department of Nursing Management. When patients were discharged from the hospital, nurses and doctors conducted regular health guidance to patients and their families, including health lifestyle, drug use, and referral information.

**2.2.2.2. Intervention group.** In addition to the same care services as the control group, participants in this group also received extra transitional care services.

- (1) Two days before discharge from the hospital, patients and their caregivers received a specialized session on how to manage pain at home. They also received the booklet of pain management developed by the authors. The content of the booklet included use of analgesics, the observation method of adverse reaction of analgesics, the knowledge of home self-care, how to seek help at the community level, and the contact information of community MDTs members.
- (2) One week after discharge from the hospital, a team organized by local community doctors and nurses who are members of MDTs conducted a home visit for every eligible patient, and provided individual pain management services according to patients' and their caregivers' needs.
- (3) At home, the patients and their families could consult community members of MDTs on pain management problems during working hours. If necessary, community doctors and nurses could further consult the specialized pain management group of oncology in Nanjing First Hospital.

### 2.3. Data collection

The demographic data collected included age, sex, type of tumor, education level, and marital status.

Outcomes of management are as follows:

- (1) Wisconsin Brief Pain Inventory (BPI). The BPI questionnaire includes items regarding the presence of pain, site of pain, severity on average, at present and at its worst in the past month on a 0–10 scale, current medication and percentage response, characteristics of pain, and degree of interference.<sup>16</sup>
- (2) Pain Management Index (PMI). This is a measure of adequacy of analgesia by comparing the most potent analgesic used by a participant relative to the level of their reported pain. Analgesic strength is categorized as 0 (no analgesic), 1 (paracetamol or other nonsteroidal anti-inflammatory drug), 2 ("weak" opioid), or 3 ("strong" opioid). We categorized pain into four levels according to the worst pain item from the BPI (scored from 0 to 10): 0 (no pain = 0), 1 (mild pain = 1–4), 2 (moderate pain = 5–6), and 3 (severe pain = 7–10). The PMI is calculated by subtracting the pain score from the analgesic score. A negative result indicates inadequate analgesia, and zero or positive value indicated adequate analgesia.<sup>17</sup>
- (3) Uniscale for Global Quality of Life,<sup>18</sup> which is a well-established measure of QOL.
- (4) The Satisfaction Degree of Nursing Service, which includes the degree of satisfaction with both hospitalization and home nursing services. The evaluation score is composed of three aspects: the quality of service (30%), content of service (40%), and attitude of service provider (30%).

Data were collected 2 days before discharge and at patients' admission for next hospitalization. The interval between the first and second therapy was normally 2–4 weeks.

### 2.4. Statistical method

All analyses were performed with SPSS 13.0. The comparisons of data were applied with *t*-test and *P* < 0.05 was considered as statistically significant.

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