Modular transitional nursing intervention improves pain-related self-management for cancer patients
Study protocol for a randomized controlled trial
Beibei Miao, MM, Yali Sun, MM, Ling Gong, MM, Wei Liu, MM

Abstract
Objective: To explore the effect of modular transitional nursing intervention on the improvement of self-management of the patients with cancer pain.
Method: This study will be conducted from March 2021 to May 2022 at Affiliated Hospital of Beihua University. The experiment was granted through the Research Ethics Committee of Affiliated Hospital of Beihua University (4348–019). Eighty patients are analyzed in our study. The patients will be included if they are between 18 and 70 years old and are diagnosed with cancer, the pain intensity score on moderate level, the pain lasts for more than 3 days, and the patients who have signed the written informed consent. While the patients will be excluded if they have a documented history of drug or alcohol abuse, and patients with limited performance, and patients have a surgery in the past 3 days. The primary result mainly expresses as intergroup differences in self-management disorders (Barriers Questionnaire-II) associated with the cancer pain. And the secondary results include the quality of life (QOL) and pain intensity. All the analyses are implemented with SPSS for Windows Version 20.0.
Results: Table 1 will show the clinical outcomes between the 2 groups.
Conclusion: A modular transitional nursing intervention appears to reduce pain in cancer patients.
Trial registration number: researchregistry6262.
Abbreviation: QOL = quality of life.
Keywords: cancer, modular transitional nursing intervention, pain, protocol, self-management

1. Introduction
Many cancer patients suffer from a variety of symptoms, which can affect their social and physical functioning.[1,2] For the cancer patients, pain is one of the most burdensome and feared physical symptoms.[3,4] A recent study indicated that in the cancer patients, the incidence of pain remains high: 64 percent in those with terminal, advanced and metastatic disease, and 59 percent in those receiving anti-cancer treatment.[5] The factors associated with the ineffective pain management can be divided into 3 categories, namely, patients, healthcare providers and healthcare system. In the healthcare system, “curing” is more concerned than “caring” for cancer patients, including the management of symptom. Health care providers often lack the knowledge and attention about the management of pain and patients are unwilling to report pain to physician. Fear of drug resistance, drug addiction and worry about the side effects can also affect their intake of painkillers. Despite pain education programs have increased the knowledge of nurse and patient in the management of pain, none of these programs, as far as we know, has improved the pain results.[6–10] Goldberg et al[11] have explored the educational effects of nurses on topics related to pain. Nevertheless, these interventions did not result in any obvious reduction in patients pain severity.

There is increasing evidence of the importance of transitional nursing interventions, nevertheless, the influence of educational interventions that utilize transition preparation for the patients with cancer pain during hospitalization has not been recognized. Hence, the purpose of our investigation is to assess the influence of Self Care Improvement through Oncology Nursing to reduce patients barriers and improve pain management in cancer patients.

2. Methods
This study will be conducted from March 2021 to May 2022 at Affiliated Hospital of Beihua University. The experiment was...
The patients will be included if they are between 18 and 70 years old and have cancer, with pain intensity score on moderate level, it lasts for more than 3 days, and the patients who have signed the written informed consent. While the patients will be excluded if they have a documented history of drug or alcohol abuse, and patients with limited performance, and patients having surgery in the past 3 days.

2.2. Intervention

In intervention group, Self Care Improvement through Oncology Nursing program is managed through the specially trained nurses. The counseling courses are divided into 3 modules. The first module, namely, pharmacologic management of pain, introduces a reliable pain evaluation, the use of the pain medications, and the communication about patient pain. The second module, namely the non-pharmacologic management of pain, contains the information about the influence of adjuvant pain managements and gives the patient a CD instructing them to independently perform the progressive muscle relaxation. While the third module (namely the discharge management related to pain) is designed to help the patients cope properly with potential self-management issues associated with pain in the process of transition to the outpatient care. Advice is provided on how to adhere to the self-management methods learned in the first and second modules after discharge. The checklist is provided to ensure appropriate discharge management is implemented. At the aim of ensuring that the consultation is tailored to the personal needs, but standardized in accordance with basic model, we offer an evaluation of the patients skills, knowledge, perceptions and attitudes of resources, and provide the indicative questions. Each question is associated with the intervention, for instance, offer the information on the types of application and the plans of pain medication. In control group, the patients are given care as usual, involving the standard pharmacological treatment of pain, but there is no standardized written material and teaching application, nor other evidence-based management options.

2.3. Outcomes

The primary result mainly expresses as intergroup differences in self-management disorders (Barriers Questionnaire-II)[12] correlated with the cancer pain. And the secondary results include the quality of life (QOL) and pain intensity.

2.4. Statistical analysis

Through utilizing the software of IBM SPSS Statistics for Windows, version 20.0, all the data can be analyzed (IBM Corp., Armonk, NY, USA). Afterwards, all the data are described with appropriate characteristics such as mean, median, standard deviation as well as percentage. The qualitative parameters for the groups are evaluated by $t$ test. The categorical variables are determined by the $\chi^2$ tests. When $P$ is less than .05, it is viewed to be significant in statistics.

3. Result

Table 1 will show the clinical outcomes between the 2 groups.

4. Discussion

Our experiment is the first to explore the effects of modular transitional nursing intervention to improve the management of pain and decrease patient barriers for the cancer patients. Pain remains one of the most painful and prevalent symptoms in the cancer patients, especially in the end-stage of this disease.[13,14] Forty percentage of patients with the early cancer or intermediate cancer and 90 percent of patients with the advanced cancer suffer from moderate to severe pain, and approximately 70 percent of cancer pain patients do not get enough pain relief.[15] The pain associated with cancer is a main healthcare challenge.[16] Despite various opioids may be appropriate for the survivors of moderate to severe pain, most of the cancer survivors do not need them for their pain problems. Furthermore, as more than 40 percent of the cancer survivors live more than 10 years, there is an increasing concern about the opioids long-term side effects and the risks of overdose, abuse, and misuse in the cancer survivors.[17,18] Studies have indicated that the inadequate exchange of information between health care providers, the lack of communication with the patients and their family members in the transition period, and the high incidence of post-hospital adverse events suggest that the inadequate nursing transition from the hospital to family is frequent. Thus, we conducted this investigation to explore the effect of modular transitional nursing intervention on the improvement of self-management of the patients with cancer pain.

5. Conclusion

A modular transitional nursing intervention appears to reduce pain in cancer patients.

Author contributions

Beibei Miao finishes the manuscript.
Ling Gong collects data.
Wei Liu plans the study design.
Yali Sun reviews the study protocol.
Data curation: Yali Sun.
Formal analysis: Yali Sun.
Funding acquisition: Wei Liu.
Investigation: Ling Gong.
Methodology: Ling Gong.
Writing – original draft: Beibei Miao.

References

[1] Portenoy RK. Treatment of cancer pain. Lancet 2011;377:2236–47.
[2] Fink RM, Gallagher E. Cancer pain assessment and measurement. Semin Oncol Nurs 2019;35:229–34.
[3] Paice JA. Pain in cancer survivors: how to manage. Curr Treat Options Oncol 2019;20:48.
[4] Can G, Mushani T, Rajhi B, et al. The Global Burden of Cancer Pain. Semin Oncol Nurs 2019;35:315–21.
[5] Arslan D, Koca T, Akar E, et al. Cancer pain prevalence and its management. Asian Pac J Cancer Prev 2014;15:8557–62.
[6] Shahrizary S, Shiryazdi SM, Shiryazdi SA, et al. Oncology nurses knowledge and attitudes regarding cancer pain management. Asian Pac J Cancer Prev 2015;16:7501–6.
[7] Toba HA, Samara AM, Zyoud SH. Nurses’ knowledge, perceived barriers, and practices regarding cancer pain management: a cross-sectional study from Palestine. BMC Med Educ 2019;19:167.
[8] Bennett MI, Flemming K, Closs SJ. Education in cancer pain management. Curr Opin Support Palliat Care 2011;5:20–4.
[9] Martin MY, Pisu M, Kvåle EA, et al. Developing effective cancer pain education programs. Curr Pain Headache Rep 2012;16:332–42.
[10] Lovell MR, Lurie T, Boyle FM, et al. Patient education, coaching, and self-management for cancer pain. J Clin Oncol 2014;32:1712–20.
[11] Goldberg JL, Burehne PS, Giney PK. Nursing education: review of assessment, clinical care, and implications for practice regarding older adult patients with cancer. Clin J Oncol Nurs 2018;22:19–23.
[12] Jacobsen R, Modrup C, Christrup L, et al. The Danish Barriers Questionnaire-II: preliminary validation in cancer pain patients. Pain Pract 2009;9:266–74.
[13] Chang VT, Janjan N, Jain S, et al. Update in cancer pain syndromes. J Palliat Med 2006;9:1414–34.
[14] Zappertella G. Breakthrough pain in cancer patients. Clin Oncol (R Coll Radiol) 2011;23:393–8.
[15] Cheung WY, Le LW, Zimmermann C. Symptom clusters in patients with advanced cancers. Support Care Cancer 2009;17:1223–30.
[16] Margarit C, Julia J, Lopez R, et al. Breakthrough cancer pain - still a challenge. J Pain Res 2012;5:559–66.
[17] Datto CJ, Hu Y, Winbroadt E, et al. Opioid utilization patterns among patients with cancer and non-cancer pain. J Opioid Manag 2019;15:11–8.
[18] Mercadante S, Bruera E. Opioid switching in cancer pain: From the beginning to nowadays. Crit Rev Oncol Hematol 2016;99:241–8.