

# The preliminary application of assessment system for cancer pain management

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**Abstract. – OBJECTIVE:** To apply the assessment system for cancer pain management preliminarily, explore the issues in cancer pain diagnosis and treatment, and analyze the differences between oncology department and non-oncology in cancer pain diagnosis and treatment.

**PATIENTS AND METHODS:** The validated questionnaires were collected from department of medical oncology of three hospitals including Xuzhou Central Hospital. Subjects included 41 doctors, 43 nurses, 50 patients, and 12 wards. The data was analyzed to find the main issues as far in cancer pain management. Twelve units of oncology department and 15 units of non-oncology in three hospitals including Xuzhou Central Hospital were assessed with assessment system for cancer pain management. Rank test was conducted to analyze the differences in cancer pain diagnosis and treatment between oncology department and non-oncology.

**RESULTS:** The average scores of doctors, nurses, wards were 85.4, 88.5, 83.8, respectively, while the average score of patients was 68.7. The percentile of analgesic efficacy and safety in patients was 81.7 and the percentile of analgesic opinion changes was only 55.8, indicating that it was necessary to enhance the education of concept about pain management. The average scores of assessment were  $82.2 \pm 2.1$  and  $39.9 \pm 3.6$  for oncology and non-oncology, respectively. The Wilcoxon value of Rank test was 120.0, indicating the significant difference between the two ( $p < 0.01$ ). It suggests that there is still a great shortage in cancer pain diagnosis and treatment in non-oncology, and there is an urgent need to further strengthen the cancer pain management-related continuing education.

**CONCLUSIONS:** In cancer pain treatment-related clinical work, patients' pain education still needs to be strengthened; in comparison with oncology, the cancer pain management-related continuing education for non-oncology also needs to be strengthened.

**Key Words:**

Cancer pain management, Assessment, Patient education, Non-oncology continuing education.

## Introduction

Pain is one of the most common symptoms of cancer patients. It is defined by International Association for the Study Pain as follows: pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage<sup>1,2</sup>. About 1/4 newly diagnosed patients with malignant tumor, 1/3 patients who are receiving treatment, and 3/4 advanced cancer patients have pain symptoms<sup>3,4</sup>. Pain makes the patient discomfort, and can cause or aggravate anxiety, depression, insomnia, fatigue, loss of appetite and other symptoms<sup>5-7</sup>, and seriously affects the patients self-care ability, daily activities, and communications with family and friends<sup>8</sup>. Thus, it not only becomes one of the important factors affecting the overall quality of life in patients<sup>9</sup>, but also increases the burden of the society at the same time<sup>10</sup>. As a result, in clinical work, pain has become the fifth vital sign besides body temperature, blood pressure, respiration, and pulse<sup>11</sup>. Cancer pain control has become the first problem to be solved in palliative treatment<sup>12</sup>.

In 1986, the World Health Organization (WHO) promulgated the guidelines for cancer pain control<sup>13,14</sup>, which provides a basis for the standardization of diagnosis and treatment of cancer pain. Then, the guidelines for clinical practice issued by America National Comprehensive Cancer Network (NCCN) have attracted much attention of scholars at home and abroad,

becoming one of the most influential guidelines for the treatment of cancer pain after guidelines of WHO in 1986<sup>15</sup>. At the same time, many government organizations and academic groups in the world also set up the guide for their national conditions<sup>16-21</sup>. All of these make cancer pain management evidence-based.

Although the American Pain Society (APS) has made efforts to improve pain assessment and treatment level and, therefore, sets the recommended guidelines<sup>22,23</sup> which result in the improvement in pain diagnosis and treatment level<sup>24,25</sup>, the phenomenon of lack of attention to the treatment of cancer pain and inadequate treatment is still widespread when comparing with other tumor treatment<sup>26-29</sup>. WHO ever put forward that “in 2000 the goal of cancer patient painless would be achieved in the whole world,” and further appealed that “pain relief is a basic human right” in the second Asia Pacific Conference on pain control in 2001<sup>26</sup>. However, there is still a gap from this goal even in many developed countries until now<sup>30,31</sup>. Cancer pain has become a universal problem in the world, and WHO also has listed the control of cancer pain as one of four key cancer comprehensive plannings<sup>32</sup>.

However, there is no mature and effective system to assess the diagnosis and treatment for cancer pain in the world. Although previous authors try to use the defined daily doses (DDDs) or the number needed to treat (NNT) index<sup>33</sup> to assess cancer pain management, all of these methods can only evaluate indirectly by a certain angle, with difficulties in achieving a comprehensive, scientific, objective, standardized, especially quantitative evaluation. To this end, we first established a standardized, scientific, comprehensive, objective, quantifiable assessment system for cancer pain management.

We obtained 75 evaluation indexes of three levels by Delphi method to assess whether cancer pain treatment was standard and calculated weights of relevant index. Then, according to the four indexes of first level, the system was split into four subevaluation system: doctors, nurses, patients, and ward. Validated questionnaires were designed according to the specific indexes and the conversion of percentile was conducted. The four subsystems were integrated into an overall assessment system through the relevant weight coefficients. Finally, complete reliability and validity test was conducted to ensure the feasibility of the whole assessment system for cancer pain

management, which included the test-retest reliability, split half reliability, the Krone Bach coefficient, content validity, and construct validity analysis<sup>34</sup>.

## **Patients and Methods**

### ***Assessment Objects and Methods***

The doctors, nurses, patients, and wards of Xuzhou Central Hospital, Affiliated Hospital of Xuzhou Medical College and Xuzhou Tumor Hospital were assessed. Doctors and nurses involved in this assessment were all frontline medical workers. Patients with malignant tumor diagnosis and a history of cancer pain and without mental diseases were included. Before assessment, the purpose, significance of assessment, and personal data confidentiality were introduced to subjects. The assessment was by self-rating and for the patients' loss of the ability to read, family or the relevant medical staff read and recorded patients' answers. No reading staff views were allowed to doping in this process in order to avoid measurement bias as much as possible. Ward assessment was conducted by investigators according to the objective conditions of all the wards in the survey. Twelve units of oncology department and 15 units of non-oncology (including departments of thoracic surgery, gastrointestinal surgery, thyroid and breast surgery, urinary surgery, neurosurgery, bone surgery, obstetrics and gynecology, and traditional Chinese medicine) in the above three hospitals were assessed with assessment system for cancer pain management. The mean scores of oncology and non-oncology were calculated.

### ***Comparisons of Subsystems***

The questionnaires from 41 doctors, 43 nurses, 50 patients, and 12 wards were scored and analyzed on the basis of assessment system for cancer pain management. Further detailed analysis was made of subsystem with lower scores to understand the present status of diagnosis and treatment of cancer pain and issues existing at present.

### ***Comparison Between Oncology and Non-oncology***

The mean scores of oncology and non-oncology were calculated. The rank test was conducted to detect the differences in cancer pain management between oncology and non-oncology.

### Statistical Analysis

All the data were analyzed using Statistical Package for Social Science version 13.0 software (SPSS Inc, Chicago, IL, USA) and expressed as Means  $\pm$  SD. Significant differences were assessed by one-way analysis of variance (ANOVA). A probability value of less than 0.05 was considered to indicate a statistical significance.

## Results

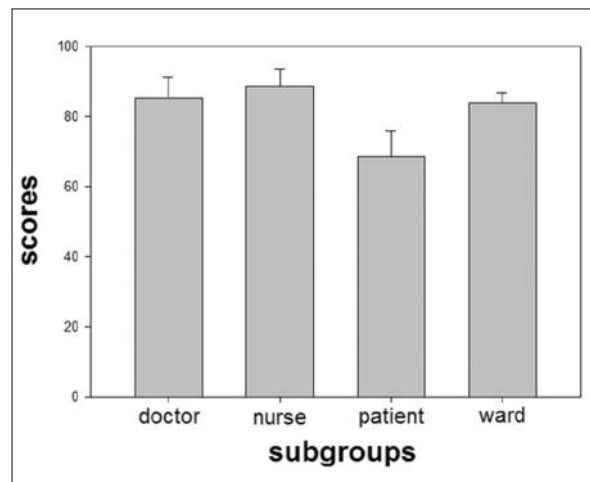
### Comparisons Among four Subsystems

Questionnaires from 41 doctors, 43 nurses, 50 patients, and 12 wards were scored according to the score standard of assessment system for cancer pain management. The results were as follows (Figure 1): the average scores of doctors, nurses, patients, and wards were  $85.41 \pm 5.93$ ,  $88.46 \pm 5.09$ ,  $68.67 \pm 7.14$  and  $83.75 \pm 3.11$ , respectively. The score of patient subsystem was significantly lower than the other three.

The ANOVA among multiple groups showed that no obvious differences were detected among doctor, nurse, and ward subsystems. However, there was significant difference in score of patient subsystem when comparing these three (Table I). It indicated that in cancer pain treatment-related clinical work, patients' pain education still needed to be strengthened.

To further explore the reason for the lower score in patient subsystem, it was split into two parts according to the frame structure obtained in the first part that was analgesic efficacy and safety (efficacy) and analgesic opinion changes (opinion) in patients. The percentile of efficacy in patients was  $81.7 \pm 7.71$  and the percentile of opinion was only  $55.8 \pm 11.37$ . It indicated that there were no significant differences between the score of efficacy and doctor, nurse, ward subsystem; however, the score of opinion was really lower (Figure 2).

The ANOVA among five subsystems showed that except the difference between nurse and ef-



**Figure 1.** The average scores of doctor, nurse, patient, and ward subsystems.

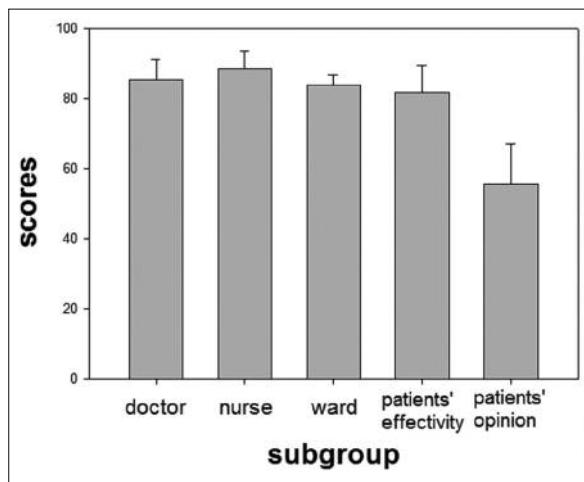
fectivity subsystems, paired comparisons among doctor, nurse, ward, and effectiveness revealed no significant differences. When comparing with other four subsystems, opinion subsystem score was significant lower by paired comparison (Table II). It indicated that in cancer pain treatment-related clinical work, defects in patients mainly derived from the lack of understanding of analgesic treatment-related knowledge, and related concepts needed to be further rectified and improved.

### Comparison Between Oncology and Non-oncology

Twelve units of oncology and 15 units of non-oncology (including departments of thoracic surgery, gastrointestinal surgery, thyroid and breast surgery, urinary surgery, neurosurgery, bone surgery, obstetrics and gynecology, and traditional Chinese medicine) in three hospitals including Xuzhou Central Hospital, Affiliated Hospital of Xuzhou Medical College, and Xuzhou Tumor Hospital were assessed with assessment system for cancer pain management. The average

**Table I.** ANOVA results of comparisons among four subsystems (doctor, nurse, patient, and ward).

Comparison	Diff. of Ranks	Q	$p < 0.05$
Nurse vs. patient	77.735	8.838	Yes
Nurse vs. ward	26.993	1.955	No
Nurse vs. doctor	13.157	1.425	Do not test
Doctor vs. patient	64.578	7.248	Yes
Doctor vs. ward	13.836	0.997	Do not test
Ward vs. patient	50.742	3.733	Yes



**Figure 2.** The average scores of doctor, nurse, ward, patients' effectivity, and patients' opinion subsystems.

scores of assessment were  $82.22 \pm 2.03$  and  $39.27 \pm 3.58$  for oncology and non-oncology, respectively (Figure 3).

The Rank test was conducted and the Wilcoxon value of rank test was 120.0 with  $Z = -4.392$ , indicating the significant difference between the two ( $p < 0.01$ ). It suggests that there is still a great shortage in cancer pain diagnosis and treatment in non-oncology, and there is an urgent need to further strengthen the cancer pain management-related continuing education and popularize related knowledge of cancer pain management.

## Discussion

The understanding and cooperation of patients and families is essential in the process of the treatment of cancer pain<sup>35</sup>. Among the causes of

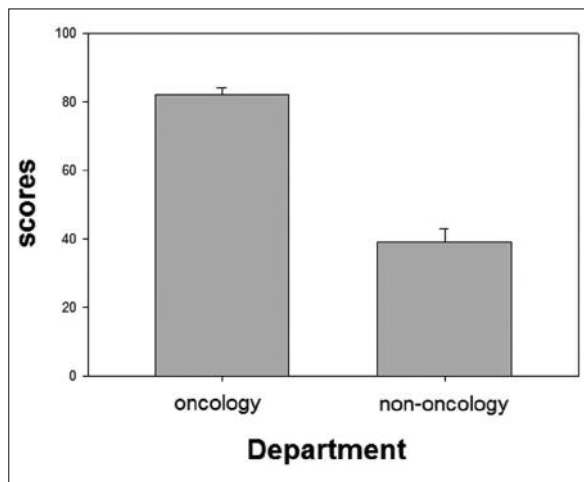
poor pain control, patient factor accounts for a large proportion like the medical staff factor, mainly including concealing their illness, no reporting pain forwardly, irregular use of analgesics, and cognition deviation for the treatment of pain<sup>36</sup>. As the results above, in the system for cancer pain management, the understanding about the concept in patients and their families is the obvious weak link, which needs further education about pain control-related knowledge.

There are a lot of knowledge about cancer pain control, among which the nine core indexes obtained by Delphi method are the key points. That is, let the patients and their families explicitly recognize that pain relief is a basic human right; report your pain, pain relief is important, there is no medical benefits to endure the pain; most pain can be well controlled by analgesics; oral medications are preferred; pain medications need to be taken in time, not just when pain; one drug is invalid, while other drugs may be effective; patients receive pain control treatment under the guidance of the medical staff, no adjustment of drug dosage and protocol by oneself was allowed; morphine and similar drugs (oxycodone and fentanyl) are commonly used for the treatment of cancer pain, and addiction is rare; communicate and discuss the condition with medical personnel and adjust the treatment goals and measures in the pain control process<sup>36-39</sup>.

If each patient fully understands and accepts these opinions, even not all the problems could be solved, the overall effect of the treatment of pain would improve significantly on the basis of existing<sup>40</sup>. Besides, this is a sufficiently simple method with strong operability to get the maximum benefits with minimum costs, as long as the medical staff have this consciousness and promote the opinions to patients actively.

**Table II.** ANOVA results of comparisons among five subsystems (doctor, nurse, ward, patients' effectivity, and patients' opinion).

Comparison	Diff. of Ranks	Q	$p < 0.05$
Nurse vs. patients' opinion	114.631	9.717	Yes
Nurse vs. patients' effectivity	41.251	3.497	Yes
Nurse vs. ward	35.193	1.900	No
Nurse vs. doctor	17.834	1.440	Do not test
Doctor vs. patients' opinion	96.797	8.099	Yes
Doctor vs. patients' effectivity	23.417	1.959	No
Doctor vs. ward	17.359	0.932	Do not test
Ward vs. patients' opinion	79.438	4.357	Yes
Ward vs. patients' effectivity	6.058	0.332	Do not test
Patients' effectivity vs. patients' opinion	73.380	6.468	Yes



**Figure 3.** Comparison of scores between oncology and non-oncology.

Knowledge about cancer pain standardized diagnosis and treatment are already very popular in oncology at present. However, in our survey, the condition of cancer pain management is not optimistic in the cancer-related non-oncology departments. Many patients with early cancer may initially accept surgical treatment. Although the probability of cancer pain in these patients is smaller than in patients with advanced cancer in oncology, when pain does happen, their quality of life would be even worse than that in patients with advanced cancer if no effective treatment is available<sup>41</sup>.

## Conclusions

Cancer pain management-related knowledge is in urgent need of popularizing in cancer-related departments, such as departments of thoracic surgery, gastrointestinal surgery, thyroid and breast surgery, urinary surgery, neurosurgery, bone surgery, and obstetrics and gynecology. Even the surgeons should also be responsible for the overall quality of life in patients. Thus, the cancer pain management-related continuing education needs to be strengthened, particularly for cancer-related non-oncology departments.

## Conflict of Interest

The Authors declare that there are no conflicts of interest.

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