Comprehensive Hospitals Nurses’ Cognition on Palliative Care in Shandong Province, China: A Cross-Sectional Study

Hailing Yang¹, Meimei Shang², Chunhua Sun³, Lihua Li⁴, *Chao Wang⁵

¹. Nursing Department, Qilu Hospital of Shandong University, Jinan 250012, P.R. China
². Nursing Department, Shandong Cancer Hospital and Institute, Jinan 250117, P.R. China
³. Health Manage Department, Qilu Hospital of Shandong University, Jinan 250012, P.R. China
⁴. Urology Surgery Department, The Third Affiliated Hospital of Shandong Province, Jinan 250031, P.R. China
⁵. Outpatient Department, Qilu Hospital of Shandong University, Jinan 250012, P.R. China

*Corresponding Author: Email: wvrd6q@163.com

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Abstract

Background: Palliative care is an essential part of medical practice, however, it has developed slowly in China. We aimed to analyze the current situations of the cognition on palliative care among the nurses in Shandong Province, China.

Methods: This was a cross sectional study. Investigation of 1050 nurses came from 5 third-class hospitals and 5 second-class hospitals in Shandong Province, China from Jul to Oct in 2018. The questionnaire included 4 parts: general information of the subject, the questionnaire of palliative nursing knowledge, attitude, and the behavior. Data were collected by the APP. Overall, after eliminating the invalid questionnaires, 1026 questionnaires were included in the final analyses. The software Stata 14.2 was used for all statistical analyses.

Results: The score of knowledge and attitude was low, the practice was higher. Multivariate analysis results: the significant independent variables of univariate analysis were included in the multivariate non-conditional logistic regression model for analysis. Some departments had statistical significance in knowledge multivariate Logistic regression analysis. The multivariate logistic regression analysis of practice was significant for physical health and religious beliefs. The statistical variables of the total score of cognition were gender, age of care, health status and religious beliefs.

Conclusion: Nursing knowledge is lacking and attitude remains to be improved as soon as possible. It is vital to improve the cognition of palliative care of nurses in Shandong general hospitals by developing relevant rules and regulations, strengthening the supervision of relevant ant departments, and enhancing training for nurses.

Keywords: Palliative care; Knowledge; Cross-sectional study; Nurses; China

Introduction

Palliative care (PC) is vital but it remains limited, inaccessible, or even absent in low and middle income countries (1). Palliative care with the Economist Intelligence Unit ranking China 71 of 80 countries in 2015 (2). With the change of medical model, aging and the change of disease spectrum, it is inevitable to carry out (3) in China. Despite China has made great progress during
the past few decades, it continues to face significant barriers (4,5). There are more than 30 thousand registered nurses have nursed for 100.7 million people in Shandong Province, therefore, it is critical for nurses to clearly understand cognition status of PC in comprehensive hospitals. We aimed to analyze the current situations of the cognition on palliative care among the nurses in Shandong Province, China.

Methods

Setting and Participants
The participants were recruited from 5 third-class hospitals and 5 second-class hospitals during Jul to Oct in 2018 in Shandong Province. The stratified cluster sampling of 1050 nurses were selected: first of all, according to the geographical distribution of Shandong Province, the convenient sampling method was used to extract one third-class hospital and one second-class hospital in the municipality under its jurisdiction, and then we contacted with the staff of the nursing department of the hospital to solicit their consent and collaboration, to confirm that the sampling department was in line with the study and to confirm the plan of this study. Secondly, the cluster stratified sampling method was used to randomly select the nurses of 6 departments.

Data sources/ measurement
With the help of the nursing department, the nurses who meet the inclusion criteria were asked to answer questions by the APP of www.wenjuan.com to fill out the questionnaires. Overall, 1050 questionnaires were collected online. After eliminating the invalid questionnaires, 1026 questionnaires were included in the final analyses. The software Stata 14.2 was used for all statistical analyses.

The knowledge questions were adopted from the PC Quiz for Nursing (PCQN) also modified according to the prevailing context of health institutions in China by Zou Min (6). The PCQN is a 20-question inventory about knowledge toward PC. The response ranges from 0 (“No” or “Don’t know”) to 1 (“Yes”). The higher the score is, the knowledge is better. The Cronbach’s value for PCQN was 0.758.

The Bradley attitude assessment questionnaire including 12 questions: positive rating and negative rating. Each question was rated on a five-point Likert-type scale, positive ranging from 5 (“absolutely not”) to 1 (“absolutely yes”) and negative ranging from 1 (“absolutely not”) to 5 (“absolutely yes”). The higher the scores are, the more good an individual attitude to PC. This questionnaire was developed among the Chinese population in mainland China and so far has achieved satisfactory validity and reliability (6). It’s Cronbach’s value was 0.794.

The practice questionnaire to PC is 8-question inventory of three subcategories, including physiological care, psychological care and social role care (7). Each question was rated on a five-point Likert-type scale, ranging including 1 (“often do”), 2 (“can do”), 3 (“indeterminacy”), 4 (“less”), 5 (“rarely”). The higher the one-dimensional scores are, the more a nurse implemented practice to PC. The scale was developed among the Chinese nurses in mainland China and so far has achieved satisfactory validity and reliability. It’s Cronbach’s were 0.910. The authors had access to information that could identify individual participants during or after data collection in this study.

Bias
Most of directors of nursing from all over province have contacted about study design before done. With their help, we got the consent form participants so that they knew how to answer on the right way. We have recruited two persons whom come from university for statistical analysis.
Quantitative variables and Statistical methods

Stata Software (ver. 14.2) was used to analyze the data, and a two-sided $P$-value < 0.05 was considered as a statistical significance. The socio-demographic and work-related characteristics variables of nurses were obtained via descriptive. Quantitative variables were calculated as mean standard deviation (SD), and qualitative variables were expressed with number and percentage. Then independent sample $t$-tests was conducted to explore factors related to cognitive on PC, respectively. To determine the factors predicting cognitive on PC, multiple linear regression models with conditional stepwise analysis were used. $P$-value ≤ 0.05 have statistic difference.

In the study, the scoring rating = mean/total scores × 100%, dividing higher level (>85%), medium level (60%~85%), lower level (<60%).

Ethical approval

The study was approved by the hospital Ethics Committee, number is: (Ke) Lun Shen No. (2016109).

Results

Table 1 shows the Socio-demographic and work-related characteristics of nurses (N=1026).

Table 2 shows that 47.95% of the respondents knew the definition of PC, only 47.95% agreed that PC was being given when patients’ conditions were deteriorating. Table 3 shows that the majority of knowledge learned from networks or other sources (26.61% and 32.16%). However, professional training sources accounted for only 14.72% from data.

Table 1: Characteristics of nurses and Crude analysis of cognition on palliative care among Nurses in Shandong Province (point) (N=1026)

| Item          | Characteristics | Number | Percentage (%) | Cognition $\chi^2/U$ | Cognition $P$-value | Belief $\chi^2/U$ | Belief $P$-value | Action $\chi^2/U$ | Action $P$-value |
|---------------|-----------------|--------|----------------|----------------------|---------------------|------------------|------------------|-------------------|------------------|
| Gender        |                 |        |                |                      |                     |                  |                  |                   |                  |
|               | Male            | 73     | 7.12           | 0.209               | 0.834               | -1.620           | 0.105            | -1.328            | 0.184            |
|               | Female          | 953    | 92.88          |                      |                     |                  |                  |                   |                  |
| Age (yr)      | $\leq$ 25       | 170    | 16.57          | 0.099               | 0.992               | 9.473            | 0.024            | 10.570            | 0.014            |
|               | 26~35           | 692    | 67.45          |                      |                     |                  |                  |                   |                  |
|               | 36~45           | 126    | 12.28          |                      |                     |                  |                  |                   |                  |
|               | $\geq$ 46       | 38     | 3.70           |                      |                     |                  |                  |                   |                  |
| Department    | Cardiovascular department | 447 | 43.57 | 17.495 | 0.004 | 16.706 | 0.033 | 7.964 | 0.158 |
|               | Emergency department | 126 | 12.28 | | | | | | |
|               | Respiration department | 99 | 9.65 | | | | | | |
|               | Intensive care unit | 188 | 18.32 | | | | | | |
|               | Oncology depart- | 101 | 9.84 | | | | | | |
|               | ment | | | | | | | | |
| Hospital Class | Second-class | 178 | 17.35 | 4.408 | 0.036 | 0.191 | 0.662 | 1.103 | 0.294 |
|               | Third-class | 848 | 82.65 | | | | | | |
| Nursing age (years) | $\leq$ 2 | 178 | 17.35 | 3.928 | 0.416 | 9.374 | 0.052 | 12.830 | 0.012 |
|               | 3~5 | 274 | 26.71 | | | | | | |
|               | 6~10 | 328 | 31.97 | | | | | | |
|               | 11~20 | 155 | 15.11 | | | | | | |
|               | $\geq$ 21 | 91 | 8.87 | | | | | | |
| Staffing system | On the payroll | 214 | 20.86 | 1.093 | 0.579 | 7.803 | 0.020 | 5.446 | 0.064 |
|               | Personnel agency | 172 | 16.76 | | | | | | |

Available at: http://ijph.tums.ac.ir
Table 2: Distributions of nurses’ general cognitive to palliative care (N=1026)

| No | Questions                                                                 | Response | Frequency (N) | Percentage (%) |
|----|---------------------------------------------------------------------------|----------|---------------|----------------|
| 1  | Do you know the definition of palliative care?                            | Yes      | 492           | 47.95          |
|    |                                                                           | No       | 534           | 52.05          |
| 2  | Do you know the difference between palliative care and terminal care?     | Yes      | 314           | 30.60          |
|    |                                                                           | No       | 712           | 69.40          |
| 3  | Do you understand the service philosophy of palliative care?              | No       | 712           | 69.40          |
|    |                                                                           | Yes      | 276           | 26.90          |
| 4  | Do you know how to communicate with middle-late period patients or bereaved families effectively? | No       | 406           | 39.57          |
|    |                                                                           | Yes      | 620           | 60.43          |
| 5  | Do you understand the common psychological problems of patients in the middle-late stages? | No       | 334           | 32.55          |
|    |                                                                           | Yes      | 665           | 64.81          |
| 6  | Have you ever had psychological care for patients or their families in the middle and late stages? | No       | 361           | 35.19          |
|    |                                                                           | Yes      | 334           | 32.55          |
| 7  | Have you discussed death openly with patients or family members?          | No       | 692           | 67.45          |
|    |                                                                           | Yes      | 328           | 31.97          |
| 8  | Do you know the ethical and religious issues involved in palliative care?  | No       | 698           | 68.03          |
Table 3: Sources of palliative care knowledge among hospital nurses in Shandong Province (N=1026)

| Source of Knowledge       | Frequency (n) | Proportion (%) |
|---------------------------|---------------|----------------|
| Lecture                   | 91            | 8.87           |
| Internet                  | 273           | 26.61          |
| Conference                | 37            | 3.61           |
| Textbook                  | 54            | 5.26           |
| Education or training     | 151           | 14.72          |
| Professional magazine     | 36            | 3.51           |
| Audio-visual resource     | 54            | 5.26           |
| Others                    | 330           | 32.16          |

Table 4 shows the score of each question of PC knowledge. Accuracy of question lower than 10% was Q3, Q7, and Q13. On the contrary, the top three questions, accuracy of 13 questions was lower than 50%.

| No | Question                                                                 | Accuracy (%) |
|----|--------------------------------------------------------------------------|--------------|
| 1  | Palliative care is only suitable for patients whose condition is getting worse or worsening. | 34.7         |
| 2  | Morphine is the reference standard for the analgesic effect of other opioids | 50.1         |
| 3  | The course of the disease determines the method of pain treatment         | 3.2          |
| 4  | Adjuvant therapy is important for pain control                            | 90.9         |
| 5  | It is vital that family members accompany the patients besides their beds until death | 27.9         |
| 6  | At the last stage of the patients’ life, sleepiness associated with electrolyte imbalance reduces their need for sedation | 74.4         |
| 7  | The main problem brought by long-term use of morphine is drug addiction  | 4.6          |
| 8  | Patients taking opioids should also be given enteral therapy (ie, precautions and treatment for gastrointestinal symptoms) | 24.9         |
| 9  | Palliative care requires emotional separation                              | 28.5         |
| 10 | At the end of the disease, drugs that cause respiratory depression are appropriate for the treatment of severe dyspnea. | 42.4         |
| 11 | Men generally relieve their sadness faster than women                     | 19.4         |
| 12 | The concept of palliative care is consistent with the concept of active treatment. | 81.5         |
| 13 | The use of placebo is appropriate when treating certain types of pain    | 7.8          |
| 14 | Large doses of codeine are more likely to cause nausea and vomiting than morphine | 14.6         |
| 15 | Pain and physical pain are synonymous                                     | 16.9         |
| 16 | Dolantin is not an effective analgesic to control chronic pain            | 70.1         |
| 17 | The accumulation of the sense of loss caused by nursing dying patients inevitably makes palliative care workers exhausted physically and mentally | 83.9         |
| 18 | The clinical manifestations of chronic pain are different from that of acute pain | 62.7         |
| 19 | Losing a distant relative or an estranged relative is easier than losing a loved one or a close one. | 31.2         |
| 20 | Fatigue or anxiety can cause a decrease in pain threshold                 | 24.3         |

Table 5 shows that the scoring rating of cognitive PC was 63.4%, which was at the medium level. The scores of knowledge and attitude were 40.2% and 59.5%, which were at the lower level. Overall score of cognitive on PC Scoring rate separately was 40.2%, 59.9%, 80.2%.

Table 5: Score of each question of palliative care knowledge (N=1026)
Table 5: Overall Score of cognition on palliative care among nurses in Shandong Province (point) (N=1026)

| Dimension     | Minimum | Maximum | Scoring Rate (%) | X±S  |
|---------------|---------|---------|-----------------|------|
| Knowledge     | 0       | 14      | 40.2            | 8.04±2.49 |
| Attitude      | 25      | 48      | 59.9            | 35.94±2.84 |
| Practice      | 8       | 40      | 80.2            | 32.09±5.54 |
| Total         | 42      | 97      | 63.4            | 76.07±7.17 |

Remarks: scoring rate = average score / total score × 100%

**Crude analysis**

In Table 1 statistically significant (P<0.05), the knowledge part was whether to receive training and department category; attitude part included age, initial education, compilation, post and department; The behavior part was enriched age, nursing age, health status, training, intensity of work satisfaction, department and religious belief.

**Multi-factor logistic regression analysis**

Table 6: Multi-factor Logistic Regression Analysis of cognition on palliative care among Nurses in Shandong Province (N=1026)

| Questionnaire | Characteristics | Department        | OR-value | 95%CI        | P-value |
|---------------|-----------------|-------------------|----------|--------------|---------|
| Knowledge Part| Hospital depart- | Cardiovascular    | 1        | -            | -       |
|               | ment            | Emergency         | 1.89     | 1.27-2.83    | 0.002   |
|               |                 | Oncology          | 0.61     | 0.38-1.96    | 0.033   |
| Practice Part | Physical status | Very good         | 1        | -            | -       |
|               |                 | Good              | 0.63     | 0.43-0.93    | 0.019   |
|               |                 | Common            | 0.40     | 0.27-0.59    | 0.001   |
|               | Whether has re- | Yes               | 1        | -            | -       |
|               | ligious belief or | No                | 1.76     | 1.17-2.65    | 0.007   |

Note: The significant variables of crude analysis were included in the multi-factor logistic regression analysis. We deleted the variables which not in significance instead of those one only.

**Discussion**

**Key results**

In Table 2, distributions of nurses’ general cognitive to PC, the scores of Q1-Q3 and Q6, Q7 were not optimistic. 52.05% of the respondents did not know PC, and 69.4% of those did not know the differences between PC and hospice care; 67.45% of those had not discussed the topic of death with the patients or their family members publicly, 68.03% of those did not know the ethical and religious issues involved in PC. This indicates their general cognitive status on PC was not optimistic.
Table 3 shows that the respondents had fewer opportunities to obtain PC, which also suggested that the majority of nursing management should focus on broadening the access to knowledge and enriching palliative care training methods. Table 5 illustrates that the average score on knowledge was 8.04±2.49, and the average scoring rate was 40.2%, which was lower than that of Canada (61%) (8), New Zealand (58.2%) (9) and France (54.6%) (10), similar to the result of 44.38% concluded by Zou Min (6), a domestic scholar.

In Table 4, the question “the course of the disease determines the method of pain treatment” was of the lowest correctness, only 3.2%, and the second lowest one was “the main problem caused by long-term use of morphine is drug addiction”, only 4.6%. The question “adjuvant therapy is important for pain control” was of the highest correctness, at 90.9%. Most of the others were not good, indicating that PC knowledge was more difficult for clinical nurses. There were 6 questions with the correctness of higher than 60% in another study (6) in China.

In the multi-factor logistic regression analysis of knowledge, some departments were of statistical significance possibly because the clinical nurses had different focuses. Under the background of the whole people paying attention to “quality of life”, the majority of nursing management should guide and encourage to promote PC.

Univariate analysis shows that the knowledge level of nurses with training history was higher. This was consistent with the actual situation, and the knowledge level of nurses who received professional training was relatively high. However, in the multi-factor logistic regression analysis of knowledge, “whether has received training or not” was of no statistical significance. Although some hospitals have carried out training and publicity on PC knowledge, the effects were influenced, which cannot highlight its statistical significance.

Table 5 shows that the full mark of the attitude part of this questionnaire was 60 points, with an average score of (35.94±2.84) points; the full mark of the practice part was 40 points, with an average score of (32.09±5.54) points; the total score was 120 points, with the average score of (76.07±7.17) points. The score of attitude on PC among nurses in Shandong Province was at a low level (59.9%), and it still needs further improve. The scores of knowledge and attitude were 40.2% and 59.5% respectively, at a low level, the practice part was 80.2%. The total score of cognitive on PC was 63.4%, which was at a medium level. The analysis results of multivariate unconditional logistic regression model showed that the variables of statistical significance in the total score of cognition were: sex, professional title, physical status and whether religious belief had.

**Interpretation and Generalisability**

The quality of service depends on the quality of the practitioner (11), while the education or training on PC can improve the nurses’ knowledge and attitude (12,13). It was recommended to strengthen the training from the following aspects:

A survey in 40 hospitals across the country (14) pointed out that pain training was few, most hospitals had no pain specialist nurses. The scores of pain care questions of the table 4 were not optimistic.

39.57% of the respondents did not understand the methods of effective communication with patients with intermediate and advanced diseases due to the lack of communication skills. Such as “ASK-TELL-ASK” “SPIKES” mode (15) and “COMFORT (16)”, was worth learning.

In this study, 32.55% of the respondents did not understand the common psychological problems of patients, 35.19% of the respondents had not offered psychological care to patients with intermediate and advanced diseases or their families. 67.45% of the respondents had not discussed the topic of death with patients or their families publicly, possibly because they did not know how to cope with death and post-mortem matters. We call for the implementation of advance care planning (17) which is a trend of the times (18). It is also feasible in China, but it requires a long period of time to consider many obstacles.

68.03% of the respondents did not understand the ethical and religious issues involved in PC.
The nurses should be familiar with relevant ethics and laws, strictly implement the principle of confidentiality.

At present, PC has been defined as a compulsory course for nursing students in the United States (19,20), however, higher education in PC have not been popularized yet in China (21-23). Therefore, Colleges and universities are encouraged to develop professional hospice care materials (24). The income of PC nurses was far lower than other, they were more likely to be transferred or resigned, and then affected the outcome indicators (24). Therefore, medical institutions should increase the manpower and salary income of nurses, to improve relevant rules, systems and responsibilities (25).

The National Health Commission issued a practical guide for hospice care (26). However, facing the huge demand, the government should further increase policy support. It was recommended to eliminate the lack of awareness (27, 28).

**Limitations**

The nurses in the heal centers in counties, towns, communities and pediatrics were not covered in this study. There was a certain bias in the sample representation, and there was no horizontal and vertical comprehensive comparison. In the next stage, we will conduct further research on the above issues.

**Conclusion**

Nursing knowledge is lacking and attitude remains to be improved as soon as possible. It is vital to improve the cognition of PC by developing relevant rules and regulations, strengthening the supervision of relevant departments, and enhancing training.

**Ethical considerations**

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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**Conflict of interest**

The authors declare that there is no conflict of interest.

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