Background: Effective communication is a major contributor to patient satisfaction, their compliance to therapeutic regimes, reducing anxiety in patients and effecting improvement to the quality of nursing care. This study is the first to explore the cue-responding behaviors to oncology patients of Hong Kong nurses in two oncology wards of a regional hospital.

Aim: The aim of this study was to describe patients' cues on their concerns and the cue-responding behavior adopted by oncology nurses during their interactions in routine nursing procedures.

Design: An observational study

Participants: 24 nurses and 53 oncology patients who received routine nursing procedures provided by these nurses.

Methods: Patients' concerns and nurses' cue-responding were audio-recorded during the routine care of admission, administration of medication, wound dressing and discharge. Medical Interview Aural Rating System is a coding system used in this study on health-related communication between oncology nurse and patients.

Results: Of the 184 cues in the 63 conversations, level 2 cue expression was the most common emotional cue used by patients (71.2%), followed by level 1 cue (28.8%). Among these 184 cues, 146 cues (79.35%) were positive nurses' cue-responding including acknowledgment and exploration (55.98%), followed by adequate acknowledgement but no exploration (23.37%). The remaining was reacted by nurses' negative cue-responding including inadequate acknowledgement but no exploration (4.35%), acknowledgement and distancing (8.15%) and distancing (8.15%). Nurses with palliative/oncology education adopted one times more positive cue-responding, meanwhile patients were willing to express more their concerns o the nurses

who had the palliative/oncology training. Male nurses were observed to use more negative cue-responding.

Conclusions: With the evidences obtained from this study, an emphasis is needed for undergraduate nursing curriculum and continuous nursing education to improve nurse-patient communication skills in order to address patients' emotional needs. Future research is crucial to examine gender difference and cultural influence on local nurse-patient communication.

Title: The cue-responding behavior of nurses to cancer patients: Implication to Oncology Nursing Education

BACKGROUND

Communication is one of the most important aspects of nursing care in an oncology setting (Kruijver et al., 2001; Tay et al., 2011; Uitterhoeve et al., 2009). Effective communication has a strong impact on various outcomes, such as the overall effectiveness of consultations, treatment decisions, levels of patient satisfaction, and patient compliance with medical advice and treatment (Coleman et al., 2013; Pun et al., 2018). Studies have reported that ineffective communication leaves patients feeling anxious and dissatisfied with the health services that have been provided (Wilkinson et al., 2008) and leads to a poorer quality of life for patients (Fukui et al., 2011).

An emotional cue is defined as a hint or a clear expression made by a patient, which something is or may be important or distressing or a cause of concern and cue-responding is the responses of nurses to those patient's emotional cue (Heaven and Green, 2001). Many factors may affect the emotional cues expressed by patients and the cue-responding of nurses in nurse-patient communication in an oncology unit. A study identified the characteristics of nurses, patients, and the hospital environment as general influences on nurse-patient communication (Tay et al., 2011). Attributes of the health profession (i.e. the interpersonal and technical skills of physicians and nurses, the information provided to the patient and the availability of health professionals) might affect the relations between nurses and oncology patients and patients' satisfaction on the health service provided (Hjörleifsdóttir et al., 2010; Lam et al., 2018; Lin et al., 2017). The skill of nurses in responding to the cues of patients during communication has been reported to be the item about which patients are least satisfied (Hjörleifsdóttir et al., 2010). A similar finding was made in a large local survey

involving 25 public hospitals conducted in 2015 (Hospital Authority, 2015). Such patient attributes as negative emotions, a lack of specific knowledge about their disease, participation in their own care, and inadequate skill in expressing emotional cues may undermine the confidence of patients in communicating with nurses (Chan et al., 2018; Tay et al., 2011).

The busy working environment and tight routines in cancer wards mean that interactions between nurses and patients tend to be short, and that it is relatively difficult for nurses to acknowledge the emotional distress of patients. Such emotional distress may hinder the patients from understanding the information that they are given. The nurse-patient ratio in a ward of a local public hospital is around 1:11, whereas the international standard is 1:4-6 (Hospital Authority, 2017). Under such circumstances, the communication of local nurses during interactions with cancer patients exhibits more negative or blocking features than positive facilitative ones (Chan et al., 2018; Kruijver et al., 2001). These blocking behaviors are characterized by the use of closed questions (Chan et al., 2018), the inability to get patients to disclose their feelings (Liu et al., 2005), spending less time and selective attention to patients concerns (Maguire, 1985). However, leaving the cues of patients undetected may prevent patients from getting the care that they require. If the emotional needs and concerns of patients are not acknowledged and dealt with, the patients may persist in trying to get the attention of the nurses or their functioning may be affected and their rehabilitation delayed (De Haes and Bensing, 2009).

Patients of different cultural backgrounds may have different preferences in communicating with clinicians. In the Chinese culture, the nature of the relationship determines what is communicated and how information will be transmitted (Gu, 1990). With outsiders, Chinese patients commonly adopt the approach of implicit communication or social communication with superficial messages (Jung et al., 2003; Liu et al., 2005). Most will only express their emotional needs to close family members and do not expect healthcare

professionals to provide emotional support. They always keep passive in conversation or silent during procedures (Liu et al., 2005). Therefore, their communications with healthcare professionals tend to be relatively brief.

A literature review of health professionals' responses to patients' concerns has shown that nurses did not consistently acknowledge or adequately respond to the concerns and informational needs of patients (Yu and Kirk, 2008). Another study reported that nurses in video-simulated interviews responded to only half of the oncology patients' concerns, and distanced themselves from the remaining half (Uitterhoeve et al., 2008). Similarly, Sheldon et al.'s (2011) findings on the responses of nurses to oncology patients' concerns were that 57% of patients' concerns were acknowledged, but only 22% were explored. In Lin's study (2017), the majority of nurses'responses (83%) to patients' concerns were inadequate. Only 17% of patients' concerns got adequate acknowledged by nurses.

After a review of the literature, it was indicated that few studies have been conducted in the local context on the cue-responding behaviors of nurses and the expression of emotional cues by cancer patients, particularly in busy oncology wards with tight schedules. Therefore, it is worth turning our attention to this crucial subject, to determine how improvements can be made to nursing education with regard to nurse-patient communication in the oncology setting.

METHODS

Aim of the study

The aim of this study was to describe the emotional cues expressed by patients and the cue-responding behaviors of nurses in oncology settings.

Design

An observational study was conducted in an oncology unit consisting of one male ward and one female ward of a regional hospital. This method can provide an understanding on what are the nurse-patient communication in clinical practice without try to affect them (Gallin and Ognibene, 2012). The data were collected from June to September 2016.

Participants

A purposive sample of 27 nurses was recruited from the two oncology wards. Three nurses withdrew, one resigning and other two refusing to continue due to the heavy clinical workloads, thus 24 nurses participated. The criteria for selecting the nurses was that they needed to have at least one year of work experience in the current oncology wards. Both male and female patients admitted to one of the two oncology wards during the data collection period, who were taken care by these 24 nurses, were invited to take part in the study. To participate in the study, the patients had to be at least 19 years of age, able to communicate in Cantonese, cognitively functioning, and in reasonable health. Patients with tracheotomy or those were receiving end-of-life care were excluded. A total of 53 patients were successfully recruited.

Data Collection

Instrument

The Medical Interview Aural Rating System (MIARS) was the coding system used in this study on communication between oncology nurses and patients. The MIARS provides a method of coding information about a patient's cues on their concerns and the responses of nurses to those cues (Heaven and Green, 2001). In the MIARS, each turn of speech is used as a unit of observation. A turn is everything that a current speaker says prior to the next one

taking over (Sandvik et al., 2002). The turns of speech of nurses and patients were studied to determine whether they contained a cue to each other.

Patients' cues on their concerns can be categorized into three levels based on their psychological depth. A level 1 cue contains indirect hints of worries or concerns; a level 2 cue is a direct expression of an emotional state or concern; and a level 3 cue is a clear expression of a strong emotion. Nurses' turns of speech were separated into positive and negative responses to patients' cues. Positive responses included (i) acknowledgment and exploration (adequate response through further exploration i.e. checking, clarification and education provided), and (ii) adequate acknowledgment but no exploration (adequate responses and no need to have exploration as the completeness of meaning in nurse-patient conversation); while negative responses included (i) inadequate acknowledgment but no exploration (inadequate responses and without exploration), (ii) acknowledgment and distancing (acknowledgement of concern but shifting focus), and (iii) distancing (moving away from responding to concern) (Chan, 2014).

Procedures

Nurses in the two oncology wards were approached by two trained nurse research assistants (RAs). The purpose and procedures of the study were explained to the nurses. Those who agreed to participate signed an informed consent form and completed a short questionnaire on their socio-demographic characteristics. The participating nurses informed the nurse RAs about the patients for whom they were responsible, as well as about those patients in poor health who were not eligible to participate. Similarly, the nurse RAs approached the patients who had been admitted to the two oncology wards. The purpose and procedures of the study were explained to them before they were given an informed consent

form to sign. A questionnaire interview was also conducted on their socio-demographic characteristics, cancer status, and admission status.

The patients' emotional cue expressions and the nurses' cue-responding behaviors in nurse-patient communication were audio-recoded only during the routine care of admission, administration of medications (AOM), dressing of wounds, and discharge. The reason for choosing these procedures to be included in this study was that most nurse-patient communications happen during these routine procedures. Nursing care involving the physical privacy of the patients was excluded. The trained nurse RAs used a digital audio recorder to record the conversations at the time that the nurse approached the patient until s/he left. The nurse RAs also made observations on the nurse-patient interaction, their facial expressions, gestures, and some relevant non-verbal behavior during their conversations and jotted down in field note to avoid data missing.

Data Analysis

The transcripts of the conversations developed from the audio recordings were coded using the MIARS (Heaven and Green, 2001). The audio clips were transcribed verbatim by the trained nurse research assistants. To code the conversations using the MIARS, two RAs were trained by one of the research investigators. The two RAs carefully read each turn to determine whether a patient had expressed an emotional cue and, if so, categorized the cue as belonging to level 1, 2, or 3. Then, the nurse's turn of speech that followed was studied to identify whether the nurse acknowledged, explored, or distanced himself/herself from the patient's cue. Acknowledgments were further examined to determine whether the patients had been adequately or inadequately acknowledged. The two RAs performed the coding independently. Any discrepancies were further discussed until a consensus was reached. The accuracy of the coding was examined by one of the research investigators.

Field note writing such as nurse's and patient's facial expressions and their gestures were recorded down to supplement the data obtained from audio recordings. Non-verbal data from individual field note was reviewed and analyzed together with the verbal data obtained from nurse-patient communication during the routine procedures.

Statistical analyses were conducted using SPSS (version 24). The socio-demographic characteristics of the nurses and patients, and the disease conditions and admission status of the patients were reported using descriptive statistics. The patients' emotional cues and the nurses' response behaviors were calculated for each turn of conversation. Frequencies, percentages, and the mean of the different levels of patients' emotional cues and nurses' response behaviors in each conversation were reported. Non-parametric tests, including the Mann-Whitney U test and the Kruskal-Wallis test, were performed to study differences in the use of cues by the patients and in the nurses' responses among different types of routine care, the socio-demographic characteristics of the patients and nurses, and admission status and cancer status. A P value of <0.05 was considered statistically significant.

ETHICAL CONSIDERATIONS

This study was approved by the respective Human Research and Ethics Committees of the XXX University. All of the nurses and patients gave their informed written consent to participate in the study and provided their demographic data before the interviews were conducted. Information sheets with a verbal explanation of the study were handed out upon recruitment. Both nurses and patients were given assurances of confidentiality and anonymity. They were informed of their right to withdraw from the study at any time, and assured that their refusal to participate would not affect their care (patients) or employment (nurses) in the hospital.

RESULTS

Social demographic characteristics of the nurses

Twenty-four nurses working in two oncology wards participated in this study (Table 1). Around 46% of them were aged 30-40 years. The majority were female (83.4%) and only four male nurses (16.6%) participated in this study. Two female nurses (8.4%) had attained a high diploma in Nursing and the other nurses had attained a bachelor's degree in nursing (66.6%) or above (25%). Around 46% had been working in oncology for more than 5 years.

Socio-demographic characteristics and cancer condition of the patients

A total of 53 patients participated in this study (Table 2). Twenty-five (47.2%) were male. Most of them were aged 51-60 years (32.1%) with a mean age of 61.06 years ± 11.20. Around one-third of them had been diagnosed with lung cancer (32.1%) and more than half were at stage 4 (56.6%). Around 36% had received chemotherapy only but approximately 19% had received more than one treatment. The majority of the patients (71.7%) had been admitted to the same hospital before and approximately half (49.1%) had been admitted to the same oncology ward.

Cue expression of the oncology patients

A total of 63 conversations recorded during the carrying out of admission (n=6), AOM (n=46), wound dressing (n=6), and discharge (n=5) procedures were studied. The mean number of patients' cues per conversation was 2.92 ±2.41, with a range of 1-10 (Table 3). The most common emotional cue used by the patients was a level 2 cue that explicitly mentioned worry or concern (mean per conversation = 2.08 ± 1.95), followed by a level 1 cue that hinted at a worry or concern (mean per conversation = 0.84 ± 1.13). Level 3 cues that clearly expressed an emotion were not observed in the conversations.

Cue-responding behavior of the nurses

The oncology nurses used positive or good cue-responding behaviors (mean per conversation = 2.32 ± 2.03) more often than negative or bad cue-responding behaviors (mean per conversation = 0.60 ± 1.23) (Table 3). Among the 184 instances of cue-responding behaviors that were observed, more than half consisted of acknowledgment and exploration (55.98%), followed by adequate acknowledgment but no exploration (23.37%). The remaining consisted of negative cue-responding behaviors (20.65%). Using MIARS coding, examples are given in Table 4 of the different cue responses of nurses to the level 1 and level 2 cue expressions of patients.

Variables contributing to cue expression and responding behaviors

Table 5a shows the potential grouping variables that contributed to significant differences in the use of expression cues by patients and response cues by nurses. Among the four different types of routine care, patients used level 1 cues significantly more frequently during wound dressing than during the other types of routine care, namely admission, AOM, and discharge procedures (U=74.50, p=0.014).

Nurses with a bachelor's or master's degree in nursing as well as a certificate in palliative / oncology nursing care used acknowledgment and exploration response cues more frequently than those who had not received training in palliative / oncology nursing care (U=96.50, p=0.024). Similarly, the former also used positive response cues during routine care significantly more often than did the latter (U=87.50, p=0.014).

The overall use of negative response cues was significantly more common among nurses who had been working in the oncology ward for at least 3 years (U=364.00, p=0.039). Male nurses were found to use negative response cues more often than their female counterparts. Negative response cues such as inadequate acknowledgment but no exploration

(U=264.50, p=0.017), and acknowledgment and distancing (U=250.50, p=0.012) were significantly more common among male nurses during routine care. The total number of negative response cues by nurses, therefore, was significantly higher among male nurses (U=231.50, p=0.025).

The sex of patients also played a role in the nurses' response cues. Positive cues of acknowledgment and exploration were significantly more frequent when nurses communicated with female patients (U=348.00, p=0.038), while negative cues of inadequate acknowledgment but no exploration were significantly more frequent when nurses communicated with male patients (U=405.00, p=0.026). The total number of positive cues, therefore, was also significantly higher when nurses communicated with female patients (U=321.50, p=0.014). On the other hand, nurses responded significantly more negatively when communicating with patients who had no formal education or who had only attained a primary education (U=368.50, p=0.034)

Patients were significantly more likely to disclose their worries and concerns to nurses who had received palliative and oncology nursing training (U=81.50, p=0.009), as well as to directly express an emotional state or concern (1evel 2 cue) (U=105.00, p=0.035) to such nurses.

Table 5b shows that during routine care that involved ≥ 301 seconds (i.e., more than 5 minutes) of contact time there was significantly more direct expression of emotions and concerns from patients (level 2 cues) (X^2=14.05, p=0.001) than when contact time was more limited. Patients would also disclose their worries and concerns significantly more frequently to nurses (X^2=21.23, p<0.001). With contact times of longer than 5 minutes, nurses tended to respond to patients significantly more positively. More acknowledgment and exploration response cues (X^2=19.04, p<0.001), adequate acknowledgment but no exploration response cues (X^2=6.05, p=0.049), and also a higher total number of positive cue-responding behaviors

(X^2=23.23, p<0.001) were observed from nurses. With contact times of 61-300 seconds, patients were found to hint significantly more often to nurses about their worries or concerns (level 1) (X^2=12.05, p=0.002).

With regard to the age of the nurses, those aged 41-50 years tended to respond with acknowledging and distancing behaviors more often (X^2=13.45, p=0.001). Their overall use of negative response cues was also significantly higher (X^2=9.85, p=0.007). Other socio-demographic characteristics of the patients and nurses, and the cancer conditions of the patients had no significant relationship with the patients' use of cue expressions and the nurses' cue-responding behaviors.

DISCUSSION

Research to investigate the pattern of male nurse-patient communication

There is continuous evidence of the need for nurses to improve their communication skills. In this study, we similarly observed that nurses used 20.65% negative cues (out of 63 conversations) to acknowledge the emotional cues expressed by cancer patients. This may be due to the understaffing of nurses in Hong Kong (Hospital Authority, 2015, 2017). Time constraints force nurses to engage in only very brief verbal communication with patients in their daily interactions (Zamanzadeh et al., 2014). Male nurses use more negative cue-responding behaviors when delivering routine care to cancer patients. They might use distancing behaviors to discourage patients from expressing their concerns or physical symptoms, perhaps because of a lack of confidence in their ability to handle their concerns (Sheldon et al., 2011).

An increasing number of international studies have indicated that nurse-patient communication is critical to helping patients express their concerns and report their needs, and adhere to cancer treatment (Song et al., 2016). Exploring how male nurses respond to

patients' cues of emotional distress has implications for research in nursing education. Such research could focus on patterns of communication in male nurse-patient communication. The findings could contribute to efforts to plan and develop tailor-made education and strategies to improve the skills of male nurses in communicating with patients, which could directly affect the patients' health outcomes.

Integration of palliative / oncology education in undergraduate and continuing nursing education

The finding of this study is similar as the result of the study done by Wilkinson that nurses receiving palliative or oncology training were twice as likely to use positive response cues (adequate acknowledgment but no exploration) when delivering routine nursing care to cancer patients (Wilkinson et al., 1999). Meanwhile, patients were willing to express more emotional cues to nurses who had received such training. This may be because integrating training in nurse-patient communication skills in an existing palliative / oncology program causes oncology nurses to become more aware of the importance of using positive cue-responding behaviors when questioning cancer patients and responding to their questions.

In this study, only 8.4% (2 female nurses) of participating nurses had received palliative or oncology education. With the continuous evidences of the need for nurses to improve their communication skill (McCarthy et al., 2008) , nurses, whether new graduates or experienced nurses, require some preparation to deal with patient responses as well as their own emotional responses to often intense and stressful situations in oncology care. Unlike in Western countries, education in communication skills has yet to be incorporated as a core component in local nursing education (Kruijver et al., 2001). Therefore, more emphasis could be placed on providing palliative and oncology education in the undergraduate nursing curriculum to ensure that future nurses are adequately prepared to address the concerns of

oncology patients. Continuing education should also be provided to practicing nurses to reinforce the importance of positive nurse-patient communication in helping to identify the physical and psychological needs and concerns of oncology patients (Sheldon et al., 2011).

Use of the time during routine care and cultural-based approach to support emotional care for cancer patients

In our study, the patterns in Chinese patients' expression of emotional cues to nurses seemed to be shaped by their understanding of how busy the nurses were. The percentage of cancer patients who adopted level 1 cue expressions (hinted at a worry or concern) was 28.8%, while 71.2% used level 2 cue expressions (explicitly mentioned a worry or concern). No patients used level 3 cue expressions (clearly expressed an emotion).

It may be that the pressure of time, which is closely tied to the heavy workloads of nurses, prevents patients from clearly disclosing their needs and concerns (Finset et al., 2013; Song et al., 2016). Studies have consistently indicated that poor nurse staffing has negative effects on clinical outcomes, such as the quality of patient care and meeting the emotional needs of patients (Hong et al., 2014; Lemonde & Payman, 2015). In our previous study, longer contact time between nurses and patients were shown to have more patients' satisfaction on nurse-patient communication (Lam et al., 2018). It could be that longer contact time provides patients with the opportunity to express more of their needs and concerns. Meanwhile, nurses can use the interactions to obtain a better understanding of the health needs and condition of the patients. Similar result was found in this study that when longer contact times were involved in routine nursing care, cancer patients would express more emotional cues and nurses would use more positive cue-responding behaviors with patients. Thus, to better utilize their time within a very tight schedule, nurses should learn

how to integrate emotional care into their daily routines, as this would provide them with opportunities to interact and communicate with cancer patients.

Previous studies have also shown that the Chinese culture can inhibit patients from disclosing their needs. This can be explained by the Chinese perception that emotions must be contained and controlled (Pun et al., 2018). Similar result as this study, Lin's study (2017) also reported that most emotional cues expressed by Chinese patients with cancer in Taiwan were level 1 (46%), followed by level 2 (38%) and level 3 (16%). This may be why Chinese cancer patients may be reticent about communicating their needs to nurses. Chinese patients may also think that psychological concerns are their private problems and that family members, not health professionals, are their sources of emotional support (Liu et al., 2005). A culture-based approach to supportive nurse-patient communication that is specific to the local context is needed in local health service and nursing education.

Limitations

The socio-demographic characteristics of the patients and nurses from one male and one female ward of a regional hospital who volunteered to participate in this study might differ from those of patients and nurses in other hospitals. This study did not control for the length of the patients' hospitalization, which could have affected their level of cue expression. Finally, this study was not a randomized, double-blinded, controlled trial.

CONCLUSION

To our knowledge, this is the first study conducted to investigate the emotional cues expressed by cancer patients and the responses of nurses to these cues while carrying out their daily routine nursing procedures. This study revealed that nurses who had received palliative or oncology training responded more positively to the patients' cues. Meanwhile,

patients were willing to express more emotional cues to such nurses. Male nurses used more negative response cues when delivering routine care to cancer patients. The percentage of cancer patients who only adopted level 1 cue expressions was 28.8%, while 71.2% of patients used level 2 cue expressions.

The result of this study suggested that longer contact times are beneficial to nurse-patient communication, as patients might then have adequate time to express emotional cues during daily routine care, and nurses would have more opportunities to ask patients about their concerns and answer their questions. The pattern of the expression of the concerns by patients and the responses of nurses to those concerns can perhaps be improved by conducting further research on the subject, and by educational preparation at the undergraduate level, as well as by providing relevant continuing education to practicing nurses.

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Table 1. Socio-demographic characteristics of nurses

	N=24
Sex	
Male	4 (16.6%)
Female	20 (83.4%)
Age (years)	
29 or below	10 (41.7%)
30-40	11 (45.8%)
41-50	3 (12.5%)
Education	
BSc in Nursing only	16 (66.6%) (13 female:3male)
Master of Nursing only	4 (16.6%) (3 female:1male)
BSc Nursing and Cert[a]	1 (4.2%) (female)
Master of Nursing and Cert[a]	1 (4.2%) (female)
Others[b]	2 (8.4%) (female)
Years of work experience in nursing	
<1	1 (4.2%)
1-2	2 (8.4%)
3-5	10 (41.6%)
>5	11 (45.8%)
Years of work experience in oncology	
<1	3 (12.5%)
1-2	7 (29.2%)
3-5	3 (12.5%)
>5	11 (45.8%)

[a] Certificate in palliative or oncology nursing

[b] High Diploma in Nursing; BSc in Nursing, Certificate and High Diploma in Nursing

Table 2. Socio-demographic characteristics of patients

	N=53
Sex	
Male	25 (47.2%)
Female	28 (52.8%)
Age (years)	
35-40	3 (5.7%)
41-50	6 (11.3%)
51-60	17 (32.1%)
61-70	14 (26.4%)
>70	13 (24.5%)
Marital status	
Single	3 (5.7%)
Married / Lives with partner	39 (73.6%)
Divorced	11 (20.8%)
Education	
No formal education / primary school	27 (50.9%)
Secondary school	23 (43.4%)
University or above	3 (5.7%)
Types of cancer	
Lung	17 (32.1%)
Breast	6 (11.3%)
Stomach	5 (9.4%)
Liver / Bile duct	4 (7.5%)
Colorectal	9 (17.0%)
Ovary	4 (7.5%)
Others	8 (15.1%)
Stage of cancer	
Stage 2	4 (7.5%)
Stage 3	12 (22.6%)
Stage 4	30 (56.6%)
Undefined	7 (13.2%)
Types of treatment	
Surgery	1 (1.9%)
Chemotherapy	19 (35.8%)
Electrotherapy	9 (17.0%)
Others[a]	9 (17.0%)
Combination	10 (18.9%)
None	5 (9.4%)
Types of admission	
First admission	15 (28.3%)
Planned readmission	20 (37.7%)
Unplanned readmission	18 (34.0%)
Number of times admitted to the same ward	
1	26 (49.1%)
2-3	20 (37.7%)
>3	7 (13.2%)

[a] Including target therapy, chest tapping, Chinese medicine, hormonal therapy, and immunotherapy

Table 3. Number of cue expressions by patients and cue responses by nurses during conversations (N=63)

	Total no. of cues used in 63 conversations (%)	Mean per conversation (SD)	Range per conversation
Patients' cue expressions			
Level 1	53 (28.80%)	0.84 (1.13)	0-5
Level 2	131 (71.20%)	2.08 (1.95)	0-9
Level 3	0	0	0
Total	184 (100%)	2.92 (2.41)	1-10
Nurses' positive cue responses			
Acknowledgment & exploration	103 (55.98%)	1.63 (1.81)	0-10
Adequate acknowledgment but no exploration	43 (23.37%)	0.68 (0.82)	0-4
Total	146 (79.35%)	2.32 (2.03)	0-10
Nurses' negative cue responses			
Inadequate acknowledgment but no exploration	8 (4.35%)	0.13 (0.38)	0-2
Acknowledgment & distancing	15 (8.15%)	0.24 (0.71)	0-4
Distancing	15 (8.15%)	0.24 (0.59)	0-2
Total	38 (20.65%)	0.60 (1.23)	0-7

Table 4. Examples of nurses' responses to the level 1 and level 2 cues of patients, using MIARS coding

	Patients' cues and nurses' responses	MIARS coding
Patient (PN32)	(The nurse told the patient that the medication must be taken through the nasal-gastric tube.) I should not take the medication through the tube?	***Cue-level 1:*** The patient hinted that he/she did not understand the nurse's instruction.
Nurse (NNF03)	The medication should be taken through the tube because the speech therapist has not yet assessed your condition. I will give you the medication through the tube later. Do not take it by mouth, okay?	***Positive response:*** Acknowledgment and exploration.
Patient (PS04)	You clean my wound very well.	***Cue-level 1:*** The patient hinted that the nurse should clean her wound after the patient is discharged.
Nurse (NSF03)	Then I need to arrange for a community nurse to clean the wound for you.	***Positive response:*** Adequate acknowledgment but no exploration.
Patient (PN37)	It has been a long time ago. I have been admitted for a week.	***Cue-level 1:*** The patient hinted that he was worried about his long stay in hospital/
Nurse (NNF11)	Yes, almost a week.	***Negative response:*** Inadequate acknowledgment but no exploration.
Patient (PN07)	Another nurse did not give me Panadol. She only told me to take morphine.	***Cue-level 1:*** The patient hinted that he/she wanted to take Panadol for pain relief instead of morphine.
Nurse (NNM07)	Do you want to take morphine?	***Negative response:*** Acknowledgment and distancing.
Patient (PS20)	In Hospital XXX, there is a woman….	***Cue-level 1:*** The patient hinted that there was something that he/she wanted to share with the nurse.
Nurse (NSF03)	You take the medication first…. Take the medication first.	***Negative response:*** Distancing.
Patient (PS40)	My appetite is not good … and I am getting thinner and thinner.	***Cue-level 2:*** The patient directly expressed concern about her weight loss.
Nurse (NSF13)	Um ... let's see. our dietary intake is not good but other indicators seem okay. I will talk to the doctor and refer you to a dietitian for milk supplements. Even if you are unable to regain your body weight, at least you won't lose weight continuously. Okay?	***Positive response:*** Acknowledgment and exploration.
Patient (PN31)	I just need to put this liquid (Thymol gargle) into my mouth, right?	***Cue-level 2:*** The patient made a direct query about how to take the medication.
Nurse (NNM08)	This is for gargling in your mouth. After gargling, you have to spit the liquid out.	***Positive response:*** Adequate acknowledgment but no exploration.
Patient (PN40)	May I have morphine?	***Cue-level 2:*** The patient directly expressed his need for morphine.
Nurse (NNM08)	It will be given to you later today	***Negative response:*** Inadequate acknowledgment but no exploration.
Patient (PS01)	I am always scared of injections.	***Cue-level 2:*** The patient directly expressed a fear of injections.
Nurse (NSF01)	Don't be scared…. Don't rub the injection site. It will bruise the site.	***Negative response:*** Acknowledgment and distancing.
Patient (PS04)	I can't move. When I move, I feel a lot of pain.	***Cue-level 2:*** The patient directly expresses suffering pain during movement.
Nurse (NSF03)	Who helped you to clean the wound? If you don't move or turn your body, the wound cannot heal.	***Negative response:*** Distancing.

Table 5a. Comparisons of patients' cues and nurses' responding behaviors using a Mann-Whitney U test

Variables	Groups (no. of conversations)	Mean Rank	Sum of Rank	U	P
Patients' cues: Level 1	Routine Care				
	Wound dressing (6)	48.08	288.50	74.50	0.014
	Others (57)	30.31	1727.50		
Patients' cues: Level 2	Nurse education				
	With oncology/palliative cert. (7)	45.00	315.00	105.00	0.035
	No cert. (56)	30.38	1701.00		
Nurses' positive cues: Ack. and exploration	Nurse education				
	With oncology/palliative cert. (7)	46.21	323.50	96.50	0.024
	No cert. (56)	30.22	1692.50		
	Sex of patients				
	Male (29)	27.00	783.00	348.00	0.038
	Female (34)	36.26	1233.00		
Nurses' negative cues: Inadequate ack. but no exploration	Sex of nurses				
	Male (14)	37.61	526.50	264.50	0.017
	Female (49)	30.40	1489.50		
	Sex of patients				
	Male (29)	35.03	1016.00	405.00	0.026
	Female (34)	29.41	1000.00		
Nurses' negative cues: Ack. and distancing	Sex of nurses				
	Male (14)	38.61	540.50	250.50	0.012
	Female (49)	30.11	1475.50		
Total no. of cues expressed by patients	Nurse education				
	With oncology/palliative cert. (7)	48.36	338.50	81.50	0.009
	No cert. (56)	29.96	1677.50		
Total no. of positive cue responses by nurses	Nurse education				
	With oncology/palliative cert. (7)	47.50	332.50	87.50	0.014
	No cert. (56)	30.06	1683.50		
	Sex of patients				
	Male (29)	26.09	756.50	321.50	0.014
	Female (34)	37.04	1259.50		
Total no. of negative cue responses by nurses	Sex of nurses				
	Male (14)	39.96	559.50	231.50	0.025
	Female (49)	29.72	1466.50		
	No. of years that the nurses have been working in the ward	27.48	742.00	364.00	0.039
	≤ 2 yrs. (27)	35.39	1274.00		
	≥3 yrs. (36)				
	Patient education				
	No formal education / Primary (33)	35.83	1182.50	368.50	0.034
	Secondary / University (30)	27.78	833.50		

Table 5b. Comparisons of patients' cues and nurses' responding behaviors using a Kruskal-Wallis test

Variables	Groups (nos. of conversations)	Mean Rank	Sum of Rank	X^2	P
Patients' cues: Level 1	Care contact time				
	1-60 sec. (25)	21.76	544.00	12.05	0.002
	61-300 sec. (26)	36.23	941.98		
	≥ 301 sec. (8)	35.50	284.00		
Patients' cues: Level 2	Care contact time				
	1-60 sec. (25)	21.02	525.50	14.05	0.001
	61-300 sec. (26)	35.75	929.50		
	≥ 301 se.c (8)	39.38	315.04		
Nurses' positive cues: Ack. and exploration	Care contact time				
	1-60 sec. (25)	19.20	480.00	19.04	<0.001
	61-300 sec. (26)	37.00	962.00		
	≥ 301 sec. (8)	41.00	328.00		
Nurses' positive cues: Adequate ack. but no exploration	Care contact time				
	1-60 sec. (25)	25.40	635.00	6.05	0.049
	61-300 sec. (26)	31.17	810.42		
	≥ 301 sec. (8)	40.56	324.48		
Nurses' negative cues: Ack. and distancing	Nurses' age				
	<30 yrs. (25)	29.90	747.50	13.45	0.001
	30-40 yrs. (28)	29.64	829.92		
	41-50 yrs. (10)	43.85	438.50		
Total no. of cues expressed by patients	Care contact time				
	1-60 sec. (25)	18.74	468.50	21.23	<0.001
	61-300 sec. (26)	37.12	965.12		
	≥ 301 sec. (8)	42.06	336.48		
Total no. of positive cue responses by nurses	Care contact time				
	1-60 sec. (25)	18.16	454.00	23.23	<0.001
	61-300 sec. (26)	37.38	971.88		
	≥ 301 sec. (8)	43.00	344.00		
Total no. of negative cue responses by nurses	Nurses' age				
	<30 yrs. (25)	27.92	698.00	9.85	0.007
	30-40 yrs. (28)	30.88	864.64		
	41-50 yrs. (10)	45.35	453.50		