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Title: Evaluation of An Integrated Communication Skills Training Program for nurses in cancer care in Beijing, China

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Corresponding Author: Associate Professor Jun E Liu, Ph.D.

Corresponding Author's Institution: Capital University of Medical Sciences

First Author: Jun E Liu, Ph.D.

Order of Authors: Jun E Liu, Ph.D.; Esther Mok, Ph.D; Thomas Wong, Ph.D.; Lan Xue, MSN; Bo Xu, BSN

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Results: There was a continued significant improvement in the overall basic communication skills, self-efficacy, outcome expectancy beliefs, and perceived support in the training group. In contrast, no significant improvement was found in the control group over the same period.

Discussion: Nurses' communication skills could be developed and consolidated under the integrated communication skills training model. Development of effective interventions to change nurses' negative outcome expectancies in communication with cancer patients is needed in further study.

This manuscript named “Evaluation of An Integrated Communication Skills Training Program for nurses in cancer care in Beijing, China” is submitted to Nursing Research.

Corresponding author:

Jun-E Liu, RN, Ph.D., Associate Professor and Associate Dean,
School of Nursing,
Capital University of Medical Sciences,
You An Men, Beijing 100069
P.R. China.
E-mail: liujune66@yahoo.com.cn
Tel: (8610) 83911644 (office)
Fax: (8610) 63037026 (office)

Title page

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Jun-E Liu, RN, Ph.D.; Esther Mok, RN, Ph.D.; Thomas Wong, RN, Ph.D.; Lan
Xue, RN, MSN; and Bo Xu, RN, BSN

Authors:

Jun-E Liu is an Associate Professor and Associate Dean, School of Nursing,
Capital University of Medical Sciences, Beijing, China.

Esther Mok is an Associate Professor, School of Nursing, the Hong Kong
Polytechnic University, Hong Kong, SAR, China.

Thomas Wong is a Professor and Dean, Faculty of Health and Social Sciences,
the Hong Kong Polytechnic University, Hong Kong, SAR, China.

Lan Xue is an Associate Professor and Deputy Director, Department of Nursing,
Cancer Hospital of Chinese Academy of Medical Sciences, Beijing, China.

Bo Xu is an Associate Professor and Director, Department of Nursing, Cancer
Hospital of Chinese Academy of Medical Sciences, Beijing, China.

Corresponding author:

Jun-E Liu, RN, Ph.D., Associate Professor and Associate Dean,
School of Nursing,
Capital University of Medical Sciences,
You An Men, Beijing 100069
P.R. China.
E-mail: liujune66@yahoo.com.cn
Tel: (8610) 83911644 (office) / Fax: (8610) 63037026 (office)

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Key Words: Communication skills, training program, evaluation

Introduction

Deficiencies in communication between health professionals and cancer patients have a direct effect on the psychosocial well-being of patients, as well as the psychological stress of health professionals. It is necessary for health professionals to receive communication skills training (Fallowfield & Jenkins, 1999; Maguire, 1999) and the training of communication skills has been viewed as a necessary and worthy investment (Perry & Burgess, 2002). In Mainland China, nurses have considerable needs for communication skills training because of the lack of education and training regarding Communication in Nursing and the shortage of related reference books, materials and research findings (Liu, 2005).

Literature review shows that recent studies on communication skill training programs were learner-centered, which incorporated cognitive, affective and behavioral components, as well as integrated multiple teaching strategies. The evaluation of training effect showed that those training programs improved participants' communication skills significantly following immediate evaluation, such as in eliciting patients' psychological concerns, asking open-ended and psychological focus questions, responding to patients' cues, and expressing empathy. However,

most of studies showed limited effects on nurses' behavioral changes in actual clinical practice following a long-term evaluation (Wilkinson, 1991; Jarrett & Payne, 1995; Parle, Maguire & Heaven, 1997; Fallowfield & Jenkins, 1999). The lack of consolidation had been explained by the lack of peer support for practising the learned skills (Razavi, Delvaux, Marchal, Bredart, Farvacques & Paesmans, 1993) because the training programs actually did not receive effective support from their organizations at the managerial level. Studies suggested that perceived support from organizations and peers was necessary for nurses to implement and develop these learned skills in clinical practice. For example, developing a managerial standard for nurses' communication skills and integrating it into professional competence development of nurses. Therefore, training programs need to pay more attention to factors, which facilitate or inhibit the translations of learned skills into clinical practice (Hulsman, Ros, Winnubst & Bensing, 1999). Although perceived support was necessary for nurses to implement and develop the learned skills in clinical practice, few studies manipulated this variable aimed to obtain effective support at the managerial level in the training programs. The purpose of the study was to implement an Integrated Communication Skills Training Program (ICSTP), which integrated communication knowledge, attitudes, skills, and managerial support, and to evaluate the training efficacy.

Conceptual Framework

An Integrated Communication Skills Training Model developed by Parle, Maguire and Heaven in 1997 guided the development of the study. This integrated

model emphasizes that health professionals' communication behaviours with cancer patients are multi-determined; they are influenced by communication knowledge and skills, self-efficacy and outcome expectancies, as well as perceived support of health professionals. According to the model, health professionals who have adequate skills (communication skills), reasonable confidence in their abilities to perform communication tasks (self-efficacy), believe that they will have positive outcomes both for patients and themselves (outcome expectancies), and they perceived psychological and practical support from colleagues and supervisors (perceived support) will be more likely to facilitate discussion of patients psychological concerns. This, then, provides a positive feedback loop to aid skill development and motivating beliefs. On the other hand, the cumulative effect of deficits in skills, low estimates of self-efficacy, negative outcome expectancies and a perceived lack of support are all likely to increase the health professionals' anticipatory anxiety and use of self-protective behaviours such as distancing or avoidance (Parle, Maguire & Heaven, 1997).

Objectives

The purposes of this study were: (a) to describe levels of nurses' basic communication skills, self-efficacy in oncology specified communication tasks, communication outcome expectancy, and self-perceived support to communicate with cancer patients before training, one month, and six months after the training; and (b) to identify the effectiveness of communication skills training program for nurses in cancer care.

Methods

The Integrated Communication Skills Training Program

The Integrated Communication Skills Training Program was developed as a learner-centered program, incorporating cognitive, affective and behavioral components, as well as managerial support, based on the integrated communication skills training model (Parle, Maguire & Heaven, 1997). It consisted of two sections; one was an Intensive Learning in big group, which was a 3-day (21h) course over a 3-week period. It was designed to accomplish a number of pedagogic goals. The teaching methods included lecture, video demonstration, question and discussion, and VCD review. After having finished the Intensive Learning session, the following section was to empower the head nurses together with their clinical instructors to organize Clinical Unit-based Learning in small groups, which was designed to create a peer supportive ward atmosphere where the nurses could practice learned skills in their workplace, and obtain managerial support of head nurses. The methods of managerial support include giving nurses positive feedback, establishing peer supportive atmosphere, implementing teaching rounds, building up role models, and conducting role-playing within small groups in their workplace. This section was vital important for nurses to consolidate and develop their communication skills through repeated practice.

Design

A quasi-experimental research with a nonequivalent control group design was used in this study. The evaluation of the ICSTP consisted of three measures (Fig. 1):

(1) Pre-Training Evaluation was conducted before the training and used to obtain baseline data; (2) Formative Evaluation was conducted one month after the training, focusing on the process aimed to find out the extent of program implementation, and to determine improvement and adjustment needed to attain the training objectives; (3) Summative Evaluation was conducted six months after the training, which focused on the outcome aimed to find out the extent to which training objectives were achieved. The measures of Pre-Training Evaluation and Summative Evaluation were conducted in both training and control groups; however, the Formative Evaluation was conducted only in the training group.

Setting and Sample

This study was conducted in the Cancer Hospital of Chinese Academy of Medical Sciences because it was the largest specialized oncology hospital and was able to provide the largest number of nurse participants from different clinical wards, during November 2002 to July 2003 in Beijing, China. In this hospital, there were a total of 420 nurses, 300 of them working at wards and 120 working in the Outpatient Department. There were a total of 22 Standard Clinical Units, each of which had 37 patients and 10 to 16 nurses, depending on the general workload of the wards.

Based on the nonequivalent control group design, similar wards were selected and randomization at ward level was used. The matched factors included nurses' characteristics (number, age, educational level, job title, and years of working experience in nursing) and cancer patients' characteristics (number, type of cancer, and nursing requirement workload). After reviewing the types of wards at the hospital,

only 5-pairs of similar matched wards were found as listed below: 3-pair surgical wards (Gastric and colorectal vs. Esophageal, Esophageal vs. Lung, Gynecological vs. Breast cancer), 1-pair chemotherapy wards, and 1-pair radiotherapy wards. Consequently, the 5-pair wards (i.e., total 10 wards) were selected and randomly allocated into either training or control group with a sample size of nurses being 129.

Outcome Measures

This study employed a comprehensive method to evaluate the direct effectiveness produced by the training program, focusing on evaluating nurses' improvement in Basic Communication Skills, Self-efficacy, Outcome Expectancy, and Self-perceived Support.

Nurses' Basic Communication Skills Scale (NBCSS) is a 48-item rating scale to measure nurses' self-perceived basic communication skills in nurse-patient communication in Cancer Care. It is modified from the Simulated Client Interview Rating Scale developed by Arthur in 1999. It consists of 6 subparts: establishing rapport/trust relationship (9 items), understanding of cancer patients (9 items), active listening and making conversation with patients (9 items), expressing the understanding of patients' feelings and concerns (7 items), emotional support (4 items), and oncology professional knowledge and skills (10 items). Each item is a 7-point rating scale, i.e., "very poor", "poor", "lightly poor", "neutral", "lightly good", "good", and "very good", scoring from 1 to 7, respectively. Item scores were added to obtain the overall or subsection scores. The higher scores indicate higher self-perceived communication skills.

Nurses' Self-efficacy Ratings in Oncology Specified Communication Tasks is a 16-item rating scale to measure nurses' self-efficacy beliefs about how confident they feel in their ability to successfully manage 16 different communication tasks. It is modified from the Self-efficacy Ratings in Oncology Specified Communication Tasks developed by Parle, Maguire and Heaven in 1997. It consists of 2 subparts: (1) Conducting general communication tasks (7 items), e.g. assessing information needs, initiating a discussion, responding to patients' questions, being sensitive to communicate patients' conditions; and (2) Dealing with clinical difficult situations (9 items), mainly involved in distress management for anger, crying, anxiety, depression, or patients who are withdrawn. The ratings of strength of self-efficacy are made by using numerical scales from 0 (not at all confident) to 100 (totally confident). The total score is obtained by adding the scores of all items. The higher scores indicate higher self-efficacy in oncology specified communication tasks.

Communication Outcomes Questionnaire is a 23 item self-report questionnaire to assess nurses' outcome expectancy beliefs, developed by Parle, Maguire and Heaven in 1997. A 9-point scale is used for nurses to rate how likely they feel that a series of possible outcomes will occur as a result when they communicate with cancer patients. The 23 items include both positive and negative outcomes for both the patient and nurse. Examples of patient outcomes include "your patient will become uncontrollably upset if you ask about their feelings" or "asking a patient about their worries and fears of dying will let you identify concerns you can help with". Examples of nurse outcomes include "you will get too close to your patients if you

ask about their feelings and concerns" or "you feel you have been helpful when you have explored a patient's concerns." Responses are on a 9-point Likert scale, where 1= very likely and 9 = very unlikely. Seven items are negative items which need to be reverse-scored (for consistency) and an overall score will be calculated by adding each item's score (Parle, Maguire & Heaven, 1997; Baile, Lenzi, Kudelka, Maguire, Novack, Goldstein et al., 1997). The higher scores indicate higher positive outcome expectancy.

Nurses' Self-perceived Support Scale (NSSS) is a 14-item, 5-point Likert scale, modified from the Nurses' Communication with Cancer Patients Scale developed by Wong, Lau and Mok in 1996. It consists of 4 subparts of perceived support: education and training (3 items), peer supportive atmosphere (6 items), feedback from patients (2 items), and environmental limitation (3 items). Half of the items are positive and half are negative. Answers are assigned a value of 1 to 5, where 1 indicates strongly disagree and 5 indicates strongly agree for positive statement. Assigned value was inverted for negative statements. The overall score is obtained by adding all the scores. The higher scores indicate higher self-perceived support.

Reliability and Validity

The English version of the instruments was translated into Chinese version by the first author. Two experts in communication in nursing, who are bilinguals in English and Chinese, were invited independently to evaluate the translation for their clarity and conceptual equivalence. The instruments were modified and refined based on their feedback. Then, five experts in communication skills in Cancer Care were

then invited to rate the judgment of the contents using "agreement", "need revision", or "disagreement" for each item of the instruments, and to give their detailed suggestions when needed. The instruments were then revised to incorporate their suggestions. The content validity indices (CVIs) of the modified instruments were obtained. The instruments were tested among 20 nurses for internal reliability by using Cronbach's alpha in a similar population to the present study before the training (Table 1).

Ethical Consideration

Approval to conduct the study was obtained from the ethical committee of the Cancer Hospital. The written investigation instructions and aims of the study were given to the nurse participants. If they agreed to participate in the study, they were asked to complete the questionnaires anonymously.

Statistic Analysis

Both descriptive and inferential statistics were used for data analysis by using SPSS 11.0 for Windows. Pearson's Correlation Coefficients were used to evaluate relationships between variables. The Kolmogorov-Smirnov test in the Explore procedure was used to check if each group data of the continuous variables followed normal distribution. The findings of tests of normality showed non-normality distributions for the untransformed data, manifested as skewed, non-normal, or non-continuous distributions of all continuous variable data in this study. Then, tests of normality with transformed data (including natural log, 1/square root, reciprocal, square root, square, and cube transformation) were performed, but the non-normality

distributions of the data of those variables were not changed. Therefore, Non-parametric Test procedures were selected to perform statistic analysis for the continuous variables. For comparison of the two groups, continuous variables were analyzed by the Mann-Whitney U test. For three or more groups, the Kruskal-Wallis test was used (Brown & Hettmansperger, 2002). Once overall significant differences were found on the Kruskal-Wallis test, the variables were ranked by Rank Cases in Transform procedure, then One-way ANOVA with SNK post-hoc test of these variables were further analyzed for pair-wise comparisons (Zhang, 2002). The statistical significance level was set at $p < .05$ with a two-tailed.

Results

A total of 129 questionnaires were distributed to every individual nurse who was working in the 5-pair matched wards by a research assistant who is working in the Cancer Hospital, and were collected ten days after the distribution. The return rates of three measures were 117(90.7%), 61(93.8%), and 115(90.6%), respectively. All 117 nurses were female, the baseline demographic data of nurse participants in Table 2.

Overall levels of communication skills of nurses before the study commenced

The overall levels of the nurses in terms of their nurse-patient communication skills in cancer care were displayed in Table 3. The relative scores refer to the mean scores divided by their possible highest scores, then multiplied by one hundred. This conversion of scores is used to easily distinguish the different levels of the nurses. The findings showed that nurses had general low scores in Outcome Expectancy (59.4)

and Self-perceived Support (65.7), and there was still room to improve the levels of Basic Communication Skills (84.8) and Self-efficacy (82.5) of nurses. All these findings indicated the needs and necessity of the communication skills training for nurses.

Relationships among the Basic Communication Skills, Self-efficacy, Outcome Expectancy, and Perceived Support

The relationships among the basic communication skills, self-efficacy, outcome expectancy, perceived support, age, and years in nursing are analyzed by Pearson correlation (Table 4). The results show that the basic communication skills, outcome expectancy, perceived support, and self-efficacy were correlated with each other significantly and positively. This finding supports the Integrated Communication Skills Training Model adopted in the present study. It also suggests that although the aim of the communication skills training was to promote nurses' basic and oncology specific communication skills, their perceived support and outcome expectancy also needed to be addressed and improved. However, no significant correlation is found among the four variables with nurses' age and years in nursing, which implies that the increased age and working experiences of the nurses are not significantly related to their increased communication skills.

Comparability test of the training group and control group before study commenced

For the demographic data of nurses, no significant difference was found at the level of each pair matched wards, and the level of training group and control group

(Table 5). The baseline scores of nurses' dependent variables had no significant differences in 3-pair matched wards, including chemotherapy, radiotherapy, and 1-pair surgical wards (Gastric and colorectal vs. Esophageal). However, significant differences in the baseline scores of 2-pair surgical wards (Esophageal vs. Lung, Gynecological vs. Breast cancer) were found on basic communication skills, self-efficacy, and self-perceived support. Thus, the significant differences at the level of the training and control group were also found on nurses' three dependent variables. Moreover, all of the three variables were significantly higher in the control group compared with the training group. Nevertheless, the effect of baseline differences in nurses' dependent variables could be effectively excluded by using Kruskal-Wallis test by Rank Cases procedure.

Consolidation of the training efficacy in the training group

For the nurses in the training group, their mean scores of the dependent variables are displayed in Table 6. Kruskal-Wallis test was used to analyze the significant differences among the three measurements. The findings show that there was a continued significant improvement in the overall basic communication skills, self-efficacy, outcome expectancy beliefs, and perceived support. All mean scores had significantly improved six months after the training when compared with pre-training. For the significant improved subparts one month after the intensive learning, their mean scores continued to improve six months after training. For almost all subparts, which were not significant changes one month after the intensive learning, significant improvements were also found six months after training, when compared with before

the training, even compared with one month after the intensive learning. However, although the mean scores of three subparts of the instruments had positive changes, i.e. oncology professional knowledge and skills, negative outcome expectancy, and feedback from patients, no significant improvement were found in the training group. The findings demonstrate that nurse-patient communication skills in cancer care continued to be improved, and their communication skills could be developed and consolidated under the Integrated Communication Skills Training Model.

Training efficacy based on nurses' dependent variables in both groups

Six months after the training, there was little change in staff, staff number and physical facilities in each ward during the training program. Thus, the comparability of 5-pair matched wards in the training group and the control group can be regarded as consistent.

Kruskal-Wallis test was used to analyze whether there was a significant difference in the mean scores of the four group measurements among the dependent variables of the nurses. The results revealed that all the four dependent variables were significantly different among the four groups. Thus, the post hoc test (SNK) was used to identify the difference of pair-wise comparisons for these variables (Table 7). The findings discovered that the nurses in the training group significantly increased in their mean scores for all the four dependent variables six months after training, compared with before training. In contrast, no significant difference was found for the mean scores of the nurses in the control group over the same period. Moreover, although nurses in the control group had generally significant higher mean scores than

the nurses in the training group in basic communication skills, self-efficacy, and self-perceived support before training, the nurses in the training group reported significantly higher mean scores in the outcome expectancy, and self-perceived support than the nurses in the control group six months after the training. This evidence demonstrates the efficacy of the training program in the present study, and excluded the effect of maturation of the nurses over time.

Discussion

Relationships between Nurses' Basic Communication Skills, Self-efficacy, Outcome Expectancy, and Perceived Support

This finding of the present study demonstrated the significant and positive relationship between nurses' four dependent variables. Self-efficacy was involved in implementing a series of oncology specified communication tasks, including general communication tasks and dealing with difficult clinical situations. The successful implementation of oncology specific communication tasks required nurses to have basic communication skills.

Perceived Support of nurses included the peer supportive atmosphere from head nurses and colleagues, education and training, feedback from cancer patients, as well as environmental limitations (such as, adequate time, task assignment, and a private setting for communicating psychological concerns in the workplace). The support was related to the perceived psychological and practical effectiveness of nurses in their communication behavior with cancer patients. For example, a shortage of time could make it impractical for nurses to effectively assess and respond to the psychological

concerns of patients. Task-focused work assignments could make nurses rate the psychological care of patients as a low priority compared with patient physical care. The lack of peer support for allowing a nurse additional time to deal with distressed patients could make nurses hesitate to offer needed informational, emotional, and practical support for patients. Thus, Perceived Support of nurses was associated with the application of communication skills of the nurses, and contributed to the improvement of their Basic Communication Skills and Self-efficacy.

The significant positive relationships between the Self-efficacy and Outcome Expectancy can be explained that both Self-efficacy and Outcome Expectancies are the individual's beliefs of a perceived ability or anticipated consequences of performing a specific task. Beliefs are learned from past experience, direct observation, information received from outside sources and by inferential processes (Fishbein & Ajzen, 1975). The past experience of nurses in successfully communicating with cancer patients about their psychological concerns contributed to the formation of higher self-efficacy, together with the observation of the positive outcome on patients, such as decreased psychological distress. Nurses were then further motivated to communicate with cancer patients and elicit their psychological concerns. Similarly, failure experiences or the observed negative outcomes contributed to the formation of nurses' lower self-efficacy or negative outcome expectancies. Thus, the actual experiences of nurses in communicating with cancer patients helped to formulate their self-efficacy and outcome expectancies, and also resulted in a positive correlation between the two variables.

Outcome Expectancy was also moderately correlated with Perceived Support of Nurses. According to Parle, Maguire and Heaven (1997), when nurses attempt to deal with the emotional concerns of patients, the more critical need for the nurses perhaps is the psychological support obtained from their colleagues in the workplace. The perceived psychological support contributes to the positive outcome expectancy of nurses and their application of communication skills.

The increased age and working experiences of the nurses did not significantly increased their Basic Communication Skills, Self-efficacy, Outcome Expectancy, and Perceived Support. These results suggest that nurses generally do not improve their communication skills through relying on their work experience. This result might be related to the general lack of appropriate communications skills education and training in Mainland China. Another reason for this maybe that nurses' communication with cancer patients tends to be superficial and focused on task-centered routine work and physical assessment (Wilkinson, Gambles & Roberts, 2002). Nurses thus have less opportunity to practice their communication skills in exploring the psychological concerns of patients. Furthermore, because of the socializing nature of clinical nursing practice, the most credible role models for junior nurses are their senior colleagues (Fallowfield, Jenkins, Farewell, Saul, Duffy & Eves, 2002). The general lack of suitable role models or clinically credible educators may partially account for this finding (Bowles, Mackintosh & Torn, 2001).

Consolidation of the training efficacy in the training group

Nurses needed time to absorb the knowledge, and needed opportunities to practice their learned skills in order to transfer into their clinical skills. This process is necessary for the nurses to reflect, practice, observe, and finally implement the learned knowledge and skills. The Formative Evaluation as a follow-up strategy provided opportunities to give feedback for the temporal training efficacy and clarify whether there was any question and difficulty in the clinical-based learning in small group. For example, the head nurses presented some perceived administrative difficulties, such as the change of nurses' negative attitudes toward cancer patients, they were then facilitated by the researcher to share experiences and discuss problem-solving methods. The head nurses in the training group perceived support as a team and enhanced their confidence to implement the communication skills training in their clinical units.

A prominent feature of the present communication skills training program was to employ a Clinical-based Learning approach designed to create a peer supportive ward atmosphere where nurses could implement learned skills into their workplace. The head nurses integrated the regular learning plan into their routine work schedule. For example, the chemotherapy ward set up a regular seminar on communication skills and oncology knowledge every Tuesday afternoon. As well, one of the surgical wards set up at least one formal teaching round each week in the afternoon, and frequent informal small group education or discussions related to clinical situations, in order to reinforce the learning and practice of learned knowledge and skills. They also held a five-minute weekly meeting to give nurses feedback on their recent

performances, particularly for the head nurses to praise and encourage nurses' achievements in improving their caring behavior towards the patients.

The analysis of the quantitative data revealed an improvement in perceived peer support following the clinical-based education in small groups. For example, six months after the training, 71.0% of nurses perceived that the time they spent communicating with cancer patients was supported by their nursing colleagues, whereas only 41.9% of nurses reported this type of support before the training; 90.3% of nurses perceived that they could receive understanding and support from their nursing colleagues when they suffered from frustration, whereas only 75.8% of nurses felt that they could receive this peer support before the training; 71.0% of nurses perceived that there were good role models for communication with cancer patients in their workplace, as compared with 46.8% feeling this way before training. According to literatures, the attributes and clinical performance behavior of the role models influenced the behavior of their nurse colleagues through observational learning. The most effective role models were those nurses who were most similar, yet more competent, at the modeled behavior (Perry & Furukawa, 1986). In particular, nurses more readily assimilated the new knowledge when it was presented by their peers in a context where there was the promotion of mutual identification and shared common experiences (Stewart, 1990). The supportive environment thus facilitated the observational learning from their colleagues who served as role models.

The findings of this study show that the involvement of the head nurses and clinical instructors as facilitators in their clinical workplace were a very important

factor for the translation of learned communication skills into clinical behaviors. The findings also support the argument that training efficacy was dependent upon peer interaction and support to produce change, and through continued peer support nurses' communication skills could be sustained and enhanced (De Schepper and colleagues, 1997).

The significant improved scores of overall Outcome Expectancy and the Positive Outcome Expectancy are perhaps the combined result of: (a) increased knowledge of nurse-patient communication skills, (b) increased understanding of cancer patients, (c) improved perceived managerial support, as well as (d) increased direct experiences of communicating with cancer patients in their routine clinical practice (Table 6). However, there was no significant difference in the Negative Outcome Expectancy, although change in a positive direction was found. The limited improvement in the Negative Outcome Expectancies of the nurses might be explained by the fact that their outcome expectancy beliefs were accumulated through past experience. It was not easy to change the beliefs of the nurses, unless more powerful evidence could be shown to them. However, few studies are available regarding how to improve the Outcome Expectancy of nurses, especially how to change the negative attitudes of nurses toward communication with cancer patients (Parle, Maguire & Heaven, 1997). Attention to this issue is only in the past several years and it is commonly believed to be one of the factors affecting the training effect. It is largely unknown as to what should be the appropriate teaching contents or strategies for

addressing the negative beliefs or attitudes of nurses. Therefore, more attention should be paid to this subject in future.

Conclusion The Integrated Communication Skills Training Program is an effective intervention to improve nurses' communication skills in cancer care. The training strategy, which combined the Intensive Learning with the Clinical-unit based practice, provided the best environment and opportunity for nurses to practise the learned skills. The gained experience in implementing the training program provides evidence and valuable information for continued nursing education in communication skills in cancer care in Chinese Mainland.

Limitation

This study was conducted in only one oncology hospital, which limited the generalization of the findings. Replication of this study in other oncology hospitals and general hospitals is needed. Development of effective interventions to change nurses' Negative Outcome Expectancies in communication with cancer patients is also needed.

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Overall outcome expectancy	123.09 \pm 17.21	79-162	23-207	59.4
Positive outcome	46.39 \pm 7.41	23-63	7-63	74.6
Negative outcome	76.69 \pm 14.99	32-110	16-144	53.5
Overall self-perceived support	45.63 \pm 5.63	29-61	14-70	65.7
Environmental limitation	6.95 \pm 1.92	3-12	3-15	46.7
Peer supportive atmosphere	23.03 \pm 3.05	14-30	6-30	76.7
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Table 4. Pearson correlation among nurses' variables (n=117)

Variables	Basic skills	Self-efficacy	Outcome expectancy	Perceived support	Age
Self-efficacy	.702** p=.000				
Outcome expectancy	.267** p=.004	.364** p=.000			
Perceived support	.420** p=.000	.441** p=.000	.385** p=.000		
Age	.130 p=.162	.022 p=.817	.047 p=.614	.092 p=.325	
Years in nursing	.133 p=.153	.034 p=.717	.039 p=.675	.069 p=.457	.972** p=.000

** . Correlation is significant at the 0.01 level.

Table 5. Comparison of nurses' variables between training group and control group

Variables	Training group	Control group	U	P value
No. of nurses	65	64		
Age (years)	29.77 ± 5.52	31.07 ± 7.23	-.807	0.420
Years in nursing	9.90 ± 5.45	11.40 ± 7.09	-.916	0.360
Basic communication skills	268.87 ± 29.90	291.42 ± 40.07	-3.499	.000**
Self-efficacy	1247.45 ± 244.10	1355.53 ± 210.90	-2.594	.009**
Outcome expectancy	123.24 ± 17.56	122.91 ± 16.97	-.298	.766
Perceived support	44.16 ± 5.78	47.29 ± 4.99	-2.985	.003**

Table 6. Kruskal-Wallis test of nurses' scores before and after the training in the training group

	T1: Before training (n=62)	T2: One month after training (n=61)	T3: Six months after training (n=62)	H	P value	Post hoc test (SNK) P < 0.05
Basic communication skills	268.87 ± 29.90	280.43 ± 29.19	287.69 ± 33.85	9.755	.008**	T2 and T1; T3 and T1
Understanding of cancer patients	46.03 ± 7.18	50.13 ± 6.38	51.92 ± 6.97	19.688	.000**	T2 and T1; T3 and T1
Professional knowledge & skills	58.32 ± 6.71	60.11 ± 6.26	60.81 ± 7.46	4.716	.095	
Establish trust relationship	51.65 ± 6.62	54.10 ± 6.08	54.69 ± 6.75	6.822	.033*	T2 and T1; T3 and T1
Active listening/conversation	51.66 ± 6.39	53.30 ± 5.92	54.55 ± 6.60	5.904	.052	T3 and T1
Receive patient's perception	38.40 ± 4.84	39.77 ± 4.67	41.74 ± 5.70	10.919	.004**	T3 and T1; T3 and T2
Emotional support	22.50 ± 3.04	23.02 ± 3.00	23.98 ± 3.09	6.798	.033*	T3 and T1
Outcome expectancy	123.24 ± 17.56	123.79 ± 16.22	132.32 ± 17.82	3.961	.021*	T3 and T1; T3 and T2
Positive outcome	46.21 ± 0.99	45.75 ± 1.04	50.06 ± 1.06	8.491	.000**	T3 and T1; T3 and T2
Negative outcome	77.03 ± 1.98	78.03 ± 1.99	82.26 ± 2.17	1.167	.314	
Perceived support	44.16 ± 5.78	45.80 ± 5.03	50.16 ± 5.14	23.699	.000**	T3 and T1; T3 and T2
Environmental limitation	6.98 ± 2.04	7.11 ± 1.85	7.80 ± 2.28	23.865	.000**	T3 and T1; T3 and T2
Peer supportive atmosphere	22.13 ± 3.48	23.05 ± 3.00	24.16 ± 3.03	16.999	.000**	T3 and T1; T3 and T2
Education and training	8.40 ± 2.06	9.31 ± 1.67	9.47 ± 2.03	23.818	.000**	T2 and T1; T3 and T1; T3 and T2
Feedback from patients	6.55 ± 1.15	6.33 ± 0.93	6.73 ± 1.14	3.6227	.163	
Self-efficacy	1247.45 ± 244.10	1319.18 ± 217.56	1430.39 ± 125.68	13.505	.000**	T3 and T1; T3 and T2
General communication tasks	585.06 ± 93.67	598.58 ± 79.76	633.59 ± 52.99	14.560	.001**	T3 and T1; T3 and T2
Deal with difficult situations	662.39 ± 170.24	720.62 ± 141.87	773.57 ± 105.81	23.796	.000**	T3 and T1; T3 and T2

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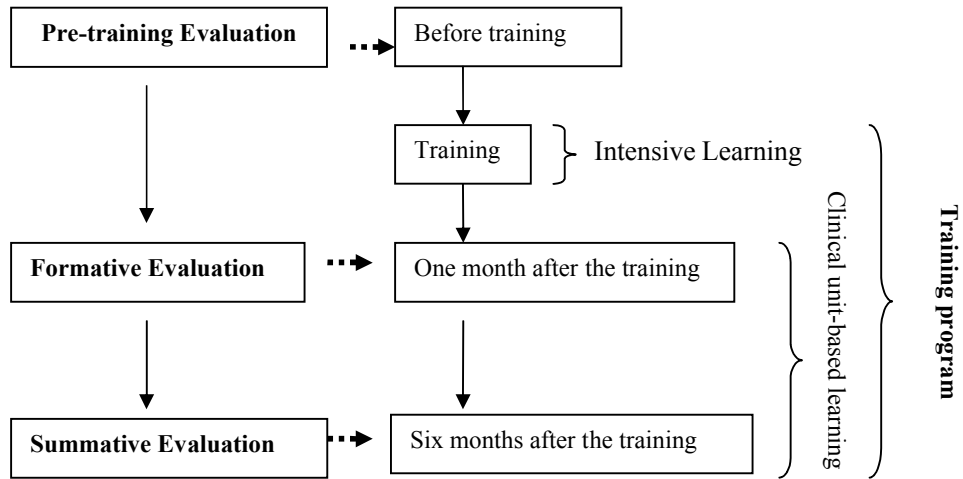


Fig. 1 Evaluation and its three time points of measures of the training program

Title page

**Evaluation of An Integrated Communication Skills Training Program for nurses in cancer care
in Beijing, China**

Jun-E Liu, RN, Ph.D.; Esther Mok, RN, Ph.D.; Thomas Wong, RN, Ph.D.; Lan Xue, RN, MSN;
and Bo Xu, RN, BSN

Authors:

Jun-E Liu is an Associate Professor and Associate Dean, School of Nursing, Capital University of Medical Sciences, Beijing, China.

Esther Mok is an Associate Professor, School of Nursing, the Hong Kong Polytechnic University, Hong Kong, SAR, China.

Thomas Wong is a Professor and Dean, Faculty of Health and Social Sciences, the Hong Kong Polytechnic University, Hong Kong, SAR, China.

Lan Xue is an Associate Professor and Deputy Director, Department of Nursing, Cancer Hospital of Chinese Academy of Medical Sciences, Beijing, China.

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Corresponding author:

Jun-E Liu, RN, Ph.D., Associate Professor and Associate Dean,
School of Nursing,
Capital University of Medical Sciences,
You An Men, Beijing 100069
P.R. China.
E-mail: liujune66@yahoo.com.cn
Tel: (8610) 83911644 (office)
Fax: (8610) 63037026 (office)

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Figure

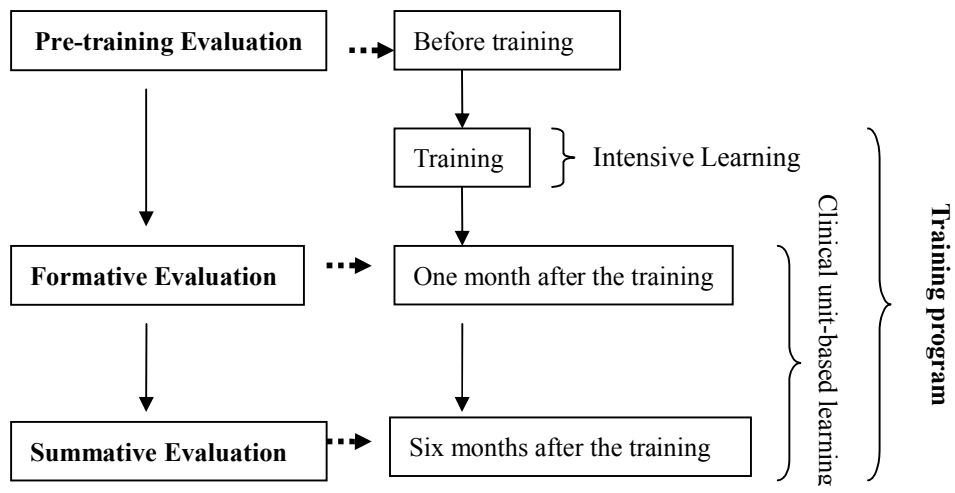


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