Original Research Article

Improvement of Nurses' Skills Following a Hybrid Model Educational Intervention on Cancer Palliative Care

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ABSTRACT

Hybrid delivery model is an evolving method in nursing education used to achieve the maximum learning outcomes among practicing nurses. This study aimed to evaluate the effectiveness of the hybrid educational intervention in improving skills of nurses on cancer palliative care (CPC).

A quasi-experimental study was conducted on nurses selected from two tertiary care hospitals in Sri Lanka. Hybrid Delivery Model (HDM) on CPC was delivered over eight weeks to a systematically selected nurses in the intervention (N=38). Self-reported palliative care skills (SRPCS) of both groups were measured as overall and 6 sub-variables of PC with a validated questionnaire and compared. Observed PC skills were received from nursing managers of the wards to verify the self-reported PC skills of the participants. Data were analyzed using SPSS version 16.

Mean age of participants in intervention group was 32 ± 6.3 years and that of control group was 31 ± 4.8 years. Mean duration of working in an oncology unit of intervention group and control group was 29 ± 24.7 months and 26 (±16.6) months respectively. Pre-intervention overall SRPCS between intervention ($\bar{x}$ 10.95 ±7.51) and control group ($\bar{x}$ 18.62 ± 6.03) (P≤0.001) were showed that the control group was better at the baseline. However both groups were similar in the context of required level of knowledge. Post intervention (at 12th weeks), a significant improvement of overall SRPCS ($\bar{x}$ 62.58 ± 9.83) vs ($\bar{x}$ 25.16 ± 4.89) (P≤0.0001) with a 7.9-fold difference in improvement over control and in all sub-variables except pain management and ethical issues in PC was seen in intervention group when compared to the control group. The observation of nursing managers of respective wards was similar as PC skills performance of the intervention group ($\bar{x}$=78.63±10.36) was greater than that of control group ($\bar{x}$=32.28±9.38) at the 12th week follow-up (P≤0.0001). The educational intervention on cancer PC delivered through HDM has improved the nurses' skills on CPC.

Key words: Cancer Palliative Care, Hybrid delivery model

INTRODUCTION

The incidence of cancer has increased worldwide from 12.7 million in 2008 to 14.1 million in 2012. [1] The cancer burden is predicted to rise in the future. This increase in the burden of cancer places massive stress on the health-care systems of low and middle income countries. [1] Similarly, in Sri Lanka, there is a rapid increase in adult cancers of all types and neoplasms are ranked as the second leading cause of death since 2010. [2] According to

the World Health Organization, [3] Sri Lanka ranks the highest in non-communicable diseases (NCDs) in Southeast Asia. The cancer trend in Sri Lanka is similar to that of Western countries. [4]

Palliative care (PC) is defined as care given to a terminally ill person with a holistic approach to meet the physical, psychological, emotional and spiritual needs. [5] The basic philosophy of palliative care is to achieve the best quality of life for patients even when their illness cannot be cured. [6] With the increase incidence of cancer in Sri Lanka, the limitations in availability of palliative care services within or outside the hospitals pose problems to patients and their families. This is further compounded by scarcity of health professionals trained to deliver palliative and end-of-life care.

However, nurses play a key role in delivering palliative care to the terminally ill. Thus education and training of nurses is vital. Efforts to reduce the gap between the theoretical knowledge and practice in the work environment are required to improve the training of qualified nurses. [7] As nurses are working professionals an opportunity to reduce their time in attending classes need to be available with an effective amount of contact with educators and peers. [8] Few studies have reported the effects of training programmes for nurses specifically aimed at improving skills. [9] Distance education refers to a form of study that is not under the continuous and immediate supervision. [10] It is a teaching and learning experience in which the instructor and the learner are geographically separated and therefore, rely on electronic devises and printed materials for instructional delivery. [10] Distance education is one of the most effective, economical and productive ways of delivering education [8,10] thus many universities have adopted distance learning as one of the solutions for problems with face to face teaching. [11] Distance learning with HDM has been gaining in popularity due to capable of blending both face-to-face and electronic learning environment. [12]

This study aimed to assess the skills of nurses following an educational intervention on cancer palliative care (CPC) implemented through hybrid delivery model (HDM). The specific objectives were to implement a distance learning module on CPC to improve skills of nurses and to compare the PC skills of nurses in the intervention group with that of a control group in order to assess the effectiveness of educational intervention.

METHODOLOGY

Using a quasi-experimental design, the study was conducted in National Institute of Cancer Maharagama (NICM) and in the Oncology Unit of Teaching Hospital, Karapitiya (THK) which is the tertiary care hospital situated about 118 Km away from the NICM and has a separate oncology unit. Nurses for the intervention group (N=38) were selected from the adult medical and surgical care units of NICM. Nurses (N=37) from adult medical and surgical care units at the THK were selected as the control group.

HDM comprising printed material for distant learning, multimedia enhancement, face-to-face interactive sessions together with telephone and online communications on CPC was delivered over eight weeks to the systematically selected nurses in the intervention group (n=38). The control group (n=37) followed routine clinical work. Overall self-reported palliative care skills (SRPCS) of both groups were measured with validated questionnaire and compared. In addition involvement of family, communication, psychosocial and spiritual support, pain assessment and pain management, ethical issues and bereavement in CPC were measured as sub-variables and compared. Data were analyzed using SPSS version 16.

Implementation of the distance learning module

An educational intervention was developed on the recommendations of the key informants [13] and the needs of the patients, nurses and DCP's identified with a

structured questionnaire. [14] The DVD consisted of scenarios to elaborate the skills essential for palliative care nurses. Over a period of 8 weeks the educational intervention was implemented and was closely monitored.
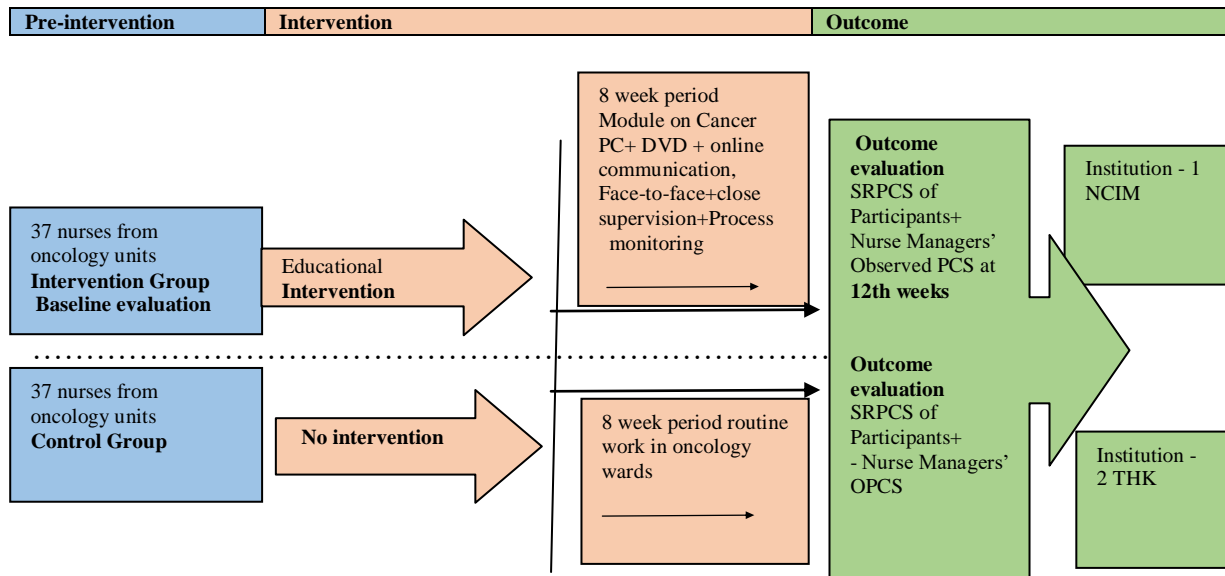
Outline of the study design

Self-Reported Palliative Care (SRPC) skills of the participants were measured under six sub-domains of PC. These included extending care to the family of the patient needing PC, level of communication involved in optimizing care provided, psychosocial support offered during PC, management of pain and other symptoms, applying ethical standards during PC and caring for the dying and preparing family members for bereavement. The rating of nurses' skills by the ward nursing managers was used to verify the self-reported practices of the participants. These were measured on a 5 point rating scale and presented as means, standard error of means (SE) and standard deviations (SD). Comparisons were made between intervention group and control group at baseline and at 12th week post intervention. Study period was September to December 2014. Quantitative data from nurses were analyzed by using SPSS (Statistical package for Social Sciences), version 16.

RESULTS

Table 1. Frequency distribution of demographic characteristics for the intervention and control group

Variables	Group			
	Intervention (n=38)		Control (n=37)	
	Frequency n (%)		Frequency n (%)	Total
Sex:				
Males	3	(7.9)	6	(16.2)	9
Females	35	(92.1)	31	(83.8)	66
Educational qualifications				
Diploma	36	(94.7))	35	(94.6))	71
Bachelor Degree	2	(5.26)	2	(5.41)	4
Category of Designation:				
Nursing Officer Grade 3	9	(23.68)	7	(18.92)	16
Nursing Officer Grade 2	18	(47.37)	28	(75.68)	46
Supernumerary	11	(28.9)	2	(5.41)	13
Work experience				
No. of years of experience		1-20 yrs		1-20 yrs	
Nurse: Patients ratio		1;10		1:12	

Mean age (±SD) of the intervention group was 32±6.3 years and that of the control group was 31 (±4.8) years. All the participants were nurses working in adult oncology units. The mean duration (±SD) of working in an oncology unit for intervention group was 29 (±24.7) and for control group was 26 (±16.6) months.

Pre intervention self-reported palliative care skills

Before the educational intervention the overall SRPC skills for intervention group was significantly lower than the control group (p=0.001) as shown in Table 2. Sub-variables of SRPC skills on providing psychosocial support for the patient during situations that are challenging to the patient and skills measuring preparing families of dying patients and managing bereavement however was better in the control group at baseline.

Table 2. Comparison of Self-Reported PC skills and its sub-variables -pre intervention (Baseline)

Variables	Maximum Points on Scale of Measure	Intervention (N=38)		Control (N=37)		p-value
		x̄ (SE)	±SD	x̄ (SE)	± SD	
Overall SRPC skills.	**92**	**10.95 (1.22)**	**7.51**	**18.62 (1.00)**	**6.03**	**0.001**
Level of SRPC skills involving family.	12	2.74 (0.34)	2.10	2.30 (0.22)	1.35	0.032
Level of SRPC skills and communication	24	6.74 (0.56)	3.58	5.24 (0.31)	1.86	0.000
Level of SRPC and psychosocial support	12	2.63 (0.33)	2.01	2.92 (0.41)	2.49	0.693
SRPC skills in pain management	16	3.11 (0.37)	2.28	2.49 (0.23)	1.41	0.012
Knowledge about ethical issues in PC	12	3.50 (0.38)	2.32	2.62 (0.25)	1.52	0.057
SRPC in managing bereavement in PC	16	3.00 (0.37)	2.29	3.05 (0.32)	1.94	0.913

The nurse managers observation on the overall palliative care mean score (±SD) participants in the intervention and control group were 24.25±7.83 and 30.86±9.48 respectively. (p=0.163). (Table 3).

Table 3. Comparison of observed* PC skills and its sub-variables – Pre-intervention (Baseline)

Variables	Maximum Rating on Scale of Measure	Intervention N=8		Control N=7		p-value
		x̄ (SE)	±SD	x̄ (SE)	±SD	
Overall PC skills Performance.	**112**	**24.25(2.77)**	**7.83**	**30.86(3.58)**	**9.48**	**0.163**
Listening & communication.	56	13.38(1.22)	3.46	17.43(1.45)	3.82	0.500
Level of PC skills involved in Pain assessment.	24	6.88(0.90)	2.53	7.14(0.99)	2.61	0.843
Level of PC skills pain management.	32	6.50(0.50)	1.41	10.29(0.68)	1.80	0.001
Family care skills.	32	6.38(1.05)	2.97	7.71(2.06)	5.44	0.557
Confidence in carrying out care	12	2.13(0.58)	1.64	3.00(0.54)	1.41	0.293
Application of PC principles & ethics.	20	4.25(0.62)	1.75	4.71(1.63)	4.31	0.783
Quality of care demonstrated	24	4.50(0.63)	1.77	5.71(0.99)	2.63	0.307

* Observations made by ward sisters

Post intervention self-reported palliative care skills (12th week follow up)
The post intervention SRPCS for intervention and control groups at 12th week follow-up are shown in Table 4.

There was a highly significant improvement in the overall skills of intervention group (62.58+/-9.83) when compared to the control group (25.16+/-4.89) (p=0.000). In addition, all sub variables assessed showed a significant improvement in the intervention group at 12th week follow up

Table 4. Comparison of SRPC skills and its sub-variables between two groups – Post intervention (12th week follow up)

Variables	Maximum points on scale of Measure	Intervention (N=31)		Control (N=31)		p-value
		x̄ (SE)	±SD	x̄ (SE)	±SD	
Overall SRPC skills.	**92**	**62.58 (1.77)**	**9.83**	**25.16 (0.88)**	**4.89**	**0.000**
Level of SRPC skills involving family.	12	9.07 (0.42)	2.31	2.48 (0.27)	1.53	0.000
Level of SRPC skills and communication	24	15.94 (0.51)	2.86	7.32 (0.33)	1.83	0.000
Level of SRPC and psychosocial support	12	7.61 (0.36)	2.00	4.94 (0.23)	1.26	0.000
SRPC skills involved in pain management	16	10.00 (0.49)	2.71	2.58 (0.28)	1.54	0.000
Knowledge about ethical issues in PC	12	9.10 (0.46)	2.55	2.87 (0.27)	1.52	0.000
SRPC in managing bereavement in PC	16	10.87 (0.41)	2.31	4.97 (0.32)	1.76	0.000

For the intervention group, the SRPCS recorded at 12th week follow-up (62.58±9.83) were significantly higher (p=0.000) than the baseline (10.95±7.51). The magnitude of the improvement in skills from baseline to outcome assessment was greater for the intervention group when compared to control group.

The nursing managers' observation was parallel to this finding. The overall PC skills performance of the intervention group ($\overline{X}$=78.63±10.36) was significantly better (p=0.000) than the control group ($\overline{X}$=32.28±9.38) at the 12th week follow-up and a similar observation was made for all the sub-variables tested between intervention and control group (Table 5).

Table 5. Comparison of Observed PC skills and sub-variables – post intervention (12th week)

Variables	Maximum rating on scale of Measure	Control N=7		Intervention N=8		p-value
		x̄ (SE)	±SD	x̄ (SE)	±SD	
Overall PC skills performance.	**112**	**32.28(3.54)**	**9.38**	**78.63(3.66)**	**10.36**	**0.000**
Listening & communication.	56	18.14(1.35)	3.58	40.38(2.01)	5.71	0.000
Level of PC skills involved in pain assessment	24	7.57(0.92)	2.44	19.00(1.18)	3.34	0.000
Level of PC skills in pain management.	32	10.57(0.65)	1.72	21.38(1.08)	3.07	0.000
Family care skills.	32	8.43(1.97)	5.22	24.63(1.19)	3.38	0.000
Confidence in carrying out care	12	3.14(0.51)	1.35	9.13(0.48)	1.36	0.000
Application of PC principles & ethics.	20	5.29(01.55)	4.11	15.50(0.78)	2.20	0.000
Quality of care demonstrated	24	5.72(0.98)	2.63	13.63(0.80)	2.26	0.000

DISCUSSION

This study was conducted to assess the skills of nurses providing palliative care to adult cancer patients in two major hospitals in Sri Lanka. The self-reported and observed palliative care skills of nurses following a hybrid educational intervention were the main means of verification.

Before the intervention, overall self-reported practices on palliative care between control group and intervention group were significantly different with the control group having a higher score (18.62) compared to the intervention group (10.95). The observed palliative care skills had the same pattern although not statistically significant. Further except communication skills all other measurements of sub-variables among the two groups were similar. During the study period there were no in-service education programmes on cancer palliative care for nurses in both institutions which was similar to the results found by the institution of Cancer Care in Nova Scotia, Canada. [15] The number of patients per nurse was higher in THK than the NICM. As the numbers of patients were more when compared to number of wards in oncology unit in THK, the nurses in THK may have more experience. It may be a reason for the perception of better skills on palliative care by the nurses in control group at base line.

In the current study the mean score of self- reported skills of the intervention group significantly improved from baseline to outcome assessments. Although a similar improvement was observed in the control group the magnitude of the increase was less than the intervention group. Similarly the measurements of all the sub-variables significantly improved in the intervention group. Wallace, et al. [16] have reported similar results among nursing students on partner violence. McHugh and Lake [17] too have reported an improvement of nurses' confidence in palliative care competency after participation in an educational intervention.

In the current study, the significant improvement in the PC skills observed after the intervention would have been due to several factors. The content and the HDM with audiovisual materials would have been a major contribution. Constant motivation and close supervision may have given the added confidence displayed by the nurses. Time and opportunity to practice under supervision seems effective in developing

skills especially the opportunities given for clarification. The advantages of using audio visuals effectively have been shown by previous authors. Cisco [18] reported that adding visuals to verbal (text or auditory) leads to significant gains in learning. Video combines images, motion, sounds and text in a complementary fashion. This provides an additional opportunity for deeper learning by being able to stop, rewind, fast-forward and replay content as many times as needed. [18] Although Cisco has pointed out draw backs of using multimedia such as lack of access to technology, equipment failure and poor proficiency of teachers, in the current study such problems were not encountered. Rowe and Rafferty [19] in a systematic review on effects of self-directed learning intervention in e-learning environments showed that support for self-directed learning fosters significantly higher learning outcomes.

There was a significant improvement of PC skills among nurses in the intervention group from baseline to post intervention assessment at 12th week follow-up, which was not observed in the control group.

Considering the self-reported practices of participants and the observations of nursing managers in the oncology wards, it can be concluded that all variables of palliative care skills significantly improved following the distance educational intervention. Similar results were found by Wallace, et al. [16] in their quasi-experimental study conducted in Nebraska, United States to measure changes in skills of undergraduate nursing students after receiving an educational intervention on Intimate Partner Violence. In the current study there was a significant improvement of self-reported practices among control group as well however, the intervention group achieved an improvement with considerable high magnitude. Kumar, et al. [20] have reported similar findings with significant improvements for all four subscales, knowledge, attitudes, beliefs and experiences following their intervention on

palliative care. Although the study of Kumar, et al. was conducted among final year physiotherapy students, it was similar to the current study in many aspects. Their training program was an elective educational intervention comprising lectures, case studies and active demonstrations. The topics covered in the intervention were similar to the current study and the direct contact training was given on palliative care and end of life care which were emphasized in the DVD of the current study. It is also assumed that the socio cultural background of the participants were similar to the current as the study of Kumar, et al was conducted in Kerala India. [20]

Observation by the immediate supervisors with the check-list for clinical practice conducted at 12th week follow-up evaluation, were significantly higher (p<0.0001) for the intervention group (78.63±10.36) when compared to the control group (32.28±9.38). When baseline PC scores were compared with 12thweek follow-up scores the intervention group, was significantly higher (p<0.0001). There was no significant difference between baseline PC scores and 12th week follow-up scores. In this respect it could be assumed that similar favorable improvements in practices could be achieved with educational interventions tailor made for a specific group of health care professionals. Hybrid delivery blended with traditional face-to-face format with online communication and telephone communication in the current study has given an additional support to the intervention group to show the significantly higher improvement of palliative care skills. Similar results found in the study of Potter in 2015.

CONCLUSION

The intervention was effective in improving skills of the nurses providing palliative care to adult cancer patients at NICM as evident by the comparisons with a control group whose baseline characters were similar to the intervention group.

Further in the group of nurses exposed to the intervention, there were marked improvements in skills from baseline to post intervention outcomes. As the baseline parameters were similar in the intervention and the control group, and resources used were available from local settings, it can be concluded that similar interventions can be implemented and successful outcomes could be achieved at national level in developing countries with resource poor settings. The cancer patients and their families will be the final beneficiaries.

Recommendations

Educational interventions similar to that in the current study can be used to improve the quality of care and services provided by the oncology units in the public and private sector institutions in Sri Lanka. If interventions similar to that in the current study are to be extended to more institutions or at a national level providing time and mechanisms for effective supervision must be in place. This certainly will require administrative and managerial support.

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