Implementing Nursing Standards in Care Maps for Breast Cancer Patients

I. Nagyova (Iveta Nagyova), L. Libova (Lubica Libova), J. Otrubova (Jana Otrubova), E. Grofova (Eva Grofova), M. Sebestyenova (Maria Sebestyenova), M. Bednarikova (Miroslava Bednarikova)

St. Elizabeth University of Health Care and Social Work, St. Ladislav Faculty of Health Care and Social Work, Nove Zamky, Slovakia.

Original Article

E-mail address:

nagyovaiveta@centrum.sk

Reprint address:

Iveta Nagyov
St. Elizabeth University of Health Care and Social Work
St. Ladislav Faculty of Health Care and Social Work, Nove Zamky
Slovenska 11
940 52 Nove Zamky
Slovakia

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Johnson Nzau Mavole
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Selvaraj Subramanian
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Abstract:

Nursing care that adheres to nursing standards is more comprehensive, detailed, and patient-centered. Care maps are an important multidisciplinary tool for managing and improving the quality of nursing care provided to patients.

Aim: We verified the usability of nursing standards in care maps while treating patients with breast cancer, and we compared the activities of nurses while providing nursing care in selected workplaces.

Methods: The research group included 205 patients from surgical and the obstetrics - gynecology (OB/GYN) clinics and 24 nurses working at these clinics. To carry out the research, we applied a modified care map in the experimental subgroups

to record nursing activities, and in the control subgroups the nurses used the standard nursing documentation of the selected workplace. Within the investigated quantitative variables, we presented their numerical characteristics, used a linear descriptive statistic (n) and relative position – the arithmetic mean (). Using multivariate fuzzy C-means cluster analysis, we compared the specific procedures performed within individual subgroups of patients. We used an interview to find out the views of nurses on the implementation of care maps in the nursing practice of patients with breast cancer.

Results: In the experimental groups, nursing activities were recorded in a modified care map where we observed their higher number and differences in the documentation of nursing activities in comparison with the control groups. The opinions of nurses on the implementation of care maps in the treatment of patients with breast cancer in selected workplaces were mostly positive.

Conclusion: Based on the research results, there is a need to deepen the theoretical knowledge of nurses about managed nursing care and care maps and to use nursing standards as tools to ensure that quality nursing care is provided.

Introduction

Breast cancer is the most common cancer in the female population. Every year, 1,700 new cases occur in Slovakia. It is a disease with repercussions that not only affect the lives of every patient, but also create a significant societal problem due to the disease's high incidence in the population and high mortality rate (Konečný *et al*., 2005). Early and correct diagnosis is important for successful treatment.

At present, quality nursing care is gaining more and more prominence (Farkašová *et al*., 2005). The nursing standard is one means of protecting the patient from mishandling (Dobiášová, 2003). Care maps are also one of the tools of managed care (Koňošová, 2005, Tomková *et al*., 2008, Škrla, Škrlová, 2003, Mesárošová *et al*., 2007). They are developed for a specific diagnosis, procedure or treatment (Škrla, Škrlová, 2003). They are used in cases where the diagnosis is clear, the process of care provided is routine, but the variability of the care provided is a problem. Based on these principles, we focused on the use of nursing standards in care maps for patients with breast cancer.

Aim

The aim of the study was to verify the usability of nursing standards in care maps in treating patients with breast cancer and to compare the activities of nurses in selected workplaces in providing nursing care. We assumed that there would be a higher number of documented independent nursing activities at selected workplaces in the care maps than in the documentation of patients without the use of care maps. We focused on identifying possible differences in the recorded activities of nurses in selected workplaces and examined the attitude of nurses to the introduction of care maps into nursing practice, with the assumption that there would be a more positive attitude if the documentation is less time consuming.

Sets and methods

We carried out the research at the University Hospital in Nitra at the Department of Surgery and the Obstetrics - Gynecology (OB/GYN) clinics for 8 months. The research samples consisted of patients with a medical diagnosis of malignant breast tumor hospitalized at the surgical and OB/GYN clinics by deliberate selection, divided into experimental and control groups, and nurses working at the – surgical and OB/GYN clinics. A total of N = 205 patients participated in the research, of which n1 = 106 patients were from the surgical clinic and n2 = 99 patients from the – OB/GYN clinic.

The research sample was divided into four subgroups:

1st subgroup - patients from the surgical clinic included in the control group (hereafter SC) in the number of n = 48 patients. **2nd subgroup** - patients from the surgical clinic included in the experimental group (hereafter SE) in the number of n = 58 patients. **3rd subgroup** - patients from the OB/GYN clinic included in the control group (hereafter GC) in the number of n = 48 patients. **4th subgroup** - patients from the OB/GYN clinic included in the experimental group (hereafter GE) in the number of n = 51 patients.

The second research set consisted of N = 24 nurses (100%), of which n = 12 (50%) at the surgical clinic nurses, at the OB/GYN clinic n = 12 (50%) nurses. In this study we present a statistical evaluation of the first 5 days of hospitalization (day before the surgery, day of surgery and the first 3 days after surgery). To collect empirical data, we used an experimental method to compare two groups of patients - experimental and control, content analysis - medical documentation to obtain data in the control and experimental group and a standardized individual interview - an interview to find out the views of nurses on the implementation of care maps in nursing practice in patients with breast carcinoma. Subsequently, in experimental subgroups, we applied a modified care map for recording nursing activities using nursing standards - created according to Mesárošová, 2007 (In: Vörösová et al., 2007). In the control subgroups, the nurses implemented routine nursing practice and used the nursing documentation of the selected workplace.

Results and discussion

We present a statistical description of the investigated quantitative variables. We present their numerical characteristics; we use linear descriptive statistics (n) and relative positions - arithmetic mean ($\bar{x}$). For comparison, we present the mean values ($\bar{x}$) per n = 1 patient in each subgroup during the first 5 days of hospitalization. The order of individual items is reported as higher > and lower < value from the number $\bar{x}$ per 1 patient of documented activities in the relevant subgroups (we state the order by days of hospitalization, subgroup, $\bar{x}$, comparison, subgroup, $\bar{x}$).

As another statistical method, we will use multivariate fuzzy C-means cluster analysis to compare individual performances within all patient subgroups. We add all types of procedures within one patient and also within the monitored group. Using multivariate fuzzy C-means cluster analysis, we compare groups of procedures within groups of patients. We work with 80% similarity. If patients are at least 80% alike, the analysis declares them to be similar and puts them in one group. If the similarity is less than 20%, they are included in another cluster. The field in the range of 21% - 79% similarity is the so - called "fuzzy", where patients tend to resemble one of the clusters, but do not belong exactly anywhere. Clusters are formed on the basis of similar activities within individual items over a period of 5 days of hospitalization. In accordance with the Decree of the Ministry of Health of the Slovak Republic #364/2005 and No. 470/2006, we identified independent nursing activities that are used in the treatment of patients with breast cancer and we implemented them in a modified care map. Within the individual items of the modified care map, we focused on the description of consultations, examinations/laboratory tests, medications, monitoring, nursing diagnoses, assessment scales, physical activity, education training, nursing standards: structure and maintenance of nursing documentation (hereafter #2), preoperative nursing care (#3), blood pressure measurement (#5), body temperature measurement (hereafter #6), pulse measurement (#7), patient admission (#21), venous blood collection for examination (#24), oral administration of drugs (#35), subcutaneous injection (hereafter #37), morning and evening hygiene (#15), lower limb bandaging (#19), aseptic wound dressing (#29), introduction of a permanent urinary catheter in a woman (#32), application of intramuscular injection (#36), infusion administration (#43), peripheral cannula care (# 50), postoperative nursing care (#4), application of drugs for external use (#38), patient discharge (#23), cleansing enema (#30).

Table 1 Comparison of average number of used nursing standards in subgroups n = 205

The average number of used nursing standards in the subgroups				
subgroups /	SC	SE	GC	GE
days of hospitalization	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
1st day	5.15	8.16	7.17	8.00
2nd day	10.04	13.02	11.10	14.00
3rd day	7.73	11.20	6.06	11.76
4th day	3.82	6.71	3.73	6.69
5th day	4.65	7.74	3.71	5.76

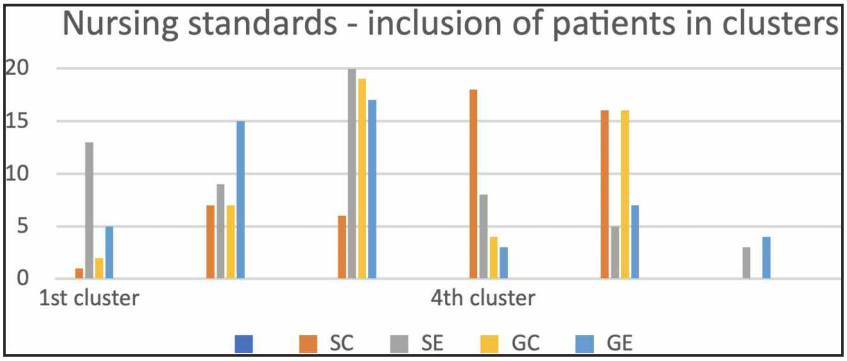
Statistical indicators from multivariate fuzzy C-means cluster analysis:

A patient belongs to 1st, 2nd, 3rd, 4th or 5th cluster if their affiliation function of C1, C2 & C3 is in the range of 0.800–1.000. A patient is rather 2 fuzzy, unclear, if the affiliation function of C2 is more than 0.5000 and at the same time less than 0.8000 and other affiliation functions are less than 0.5000. Clusters are formed based on similar activities within five days of hospitalization.

Table 1 Nursing standards - inclusion of patients in clusters n = 205

Sub-group	1st clusterC =0.9876		2nd clusterC =0.8979		3rd clusterC =0.9999		4th clusterC =0.8845		5th clusterC =0.9915		rather 2nd cluster C2 =0.7674		n	%
	n	%	n	%	n	%	n	%	n	%	n	%		
SC	1	0.49	7	3.41	6	2.93	18	8.78	16	7.80	0	0.00	48	23.41
SE	13	6.34	9	4.39	20	9.76	8	3.90	5	2.44	3	1.46	58	28.29
GC	2	0.98	7	3.41	19	9.27	4	1.95	16	7.80	0	0.00	48	23.41
GE	5	2.44	15	7.32	17	8.29	3	1.46	7	3.41	4	1.95	51	24.87
total	21	10.25	38	18.53	62	30.25	33	16.09	44	21.45	7	3.41	205	100

Graph 1 Nursing standards - inclusion of patients in clusters

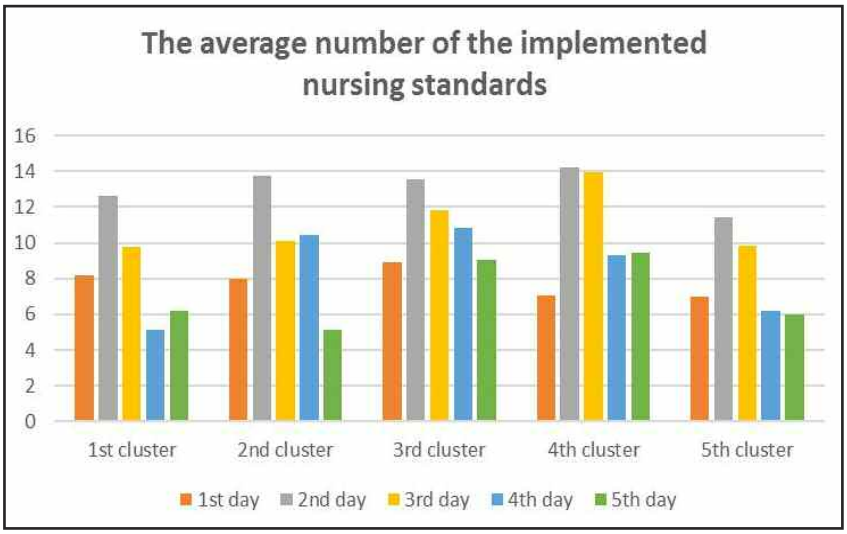


Significant findings in the percentage of patients in the clusters: SC – 8.78% patients in the 4th cluster > vs. 0.00% patients rather in the 2nd cluster. SE – 9.76% patients in the 3rd cluster > vs. 1.46% patients rather in the 2nd cluster. GC – 9.27% patients in the 3rd cluster > vs. 0.00% patients rather in the 2nd cluster. GE – 8.29% patients in the 3rd cluster > vs. 1.46% patients rather in the 4th cluster.

Table 2 Average number of nursing standards implemented on each day of hospitalization

cluster	1st cluster n = 21	2nd cluster n = 38	3rd cluster n = 62	4th cluster n = 33	5th cluster n = 44
day	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
1st day	8.16	8.00	8.89	7.05	7.00
2nd day	12.63	13.76	13.57	14.21	11.46
3rd day	9.74	10.12	11.80	13.98	9.87
4th day	5.13	10.42	10.82	9.32	6.17
5th day	6.22	5.14	9.04	9.44	6.00
total	41.88	47.44	54.12	54.00	40.50

Graph 2 The average number of the implemented nursing standards



Significant differences in clusters: 1st cluster – 1st day $\bar{x}$ 8 nursing standards (2,3,5,6,7,21,35, 15), 2nd day $\bar{x}$ 13 nursing standards (2,3,5,6,7,35, 37,15,19,36,43,50,4), 3rd day $\bar{x}$ 10 nursing standards (2,5,6,7,37,15,19,43,50,4), 4th day $\bar{x}$ 5 nursing standards (2,6,37,15,4), 5th day $\bar{x}$ 6 nursing standards (2,6,37,15,29,4). 2nd cluster - 1st day $\bar{x}$ 8 nursing standards (2,3,5,6,7,21,35,30), 2nd day $\bar{x}$ 13 nursing standards (2,3,5,6,7,35,37,15,19, 36,43,50,4), 3rd day $\bar{x}$ 10 nursing standards (2,6,7, 37,15,19,43,32,50,4), 4th day $\bar{x}$ 10 nursing standards (2,6,37,15,19,29,32,43,50,4), 5th day $\bar{x}$ 5 nursing standards (2,6,37,15,4). 3rd cluster – 1st day $\bar{x}$ 9 nursing standards (2,3,5,6,7,21,24,35,15), 2nd day $\bar{x}$ 14 nursing standards (2,3,5,6,7,35, 37,15,19,29,36,43,50,4), 3rd day $\bar{x}$ 12 nursing standards (2,5,6,7,35,15,19,29,36,43, 50,4), 4th day $\bar{x}$ 11 nursing standards (2,5,6,7,35,37,15,29, 36,4,38), 5th day $\bar{x}$ 9 nursing standards (2,5,6,7, 35,37,15,29,4). 4th cluster - 1st day $\bar{x}$ 7 nursing standards (2,3,5,6,7,35,30), 2nd day $\bar{x}$ 14 nursing standards (2,3,5,6,7,51,37,15,19,32,36,43,50,4), 3rd day $\bar{x}$ 14 nursing standards (2,5,6,7,35, 37,15,19,29,32,36,43,50,4), 4th day $\bar{x}$ 9 nursing standards (2,5,6,7,35,37,15,29,4), 5th day $\bar{x}$ 9 nursing standards (2,5,6,7,35,37,15,29,4). 5th cluster - 1st day $\bar{x}$ 7 nursing standards (5,6,7, 21,24,35,37), 2nd day $\bar{x}$ 11 nursing standards (5,6,7,24,35,37,19,29,36,43,50), 3rd day $\bar{x}$ 10 nursing standards (5,6,7,35,37,29,36,43,50,4), 4th day $\bar{x}$ 6 nursing standards (5,6,7,35,37,29), 5th day $\bar{x}$ 6 nursing standards (5,6,7,35,29,37).

Comparison of the average number of nursing standards by clusters:

We state the data in this order: day of hospitalization, cluster, number of patients in the cluster, higher > and lower < value from the number $\bar{x}$ per 1 patient. 1st day of hospitalization – 3rd cluster n = 62 ($\bar{x}$ = 8.89) > 5th cluster n = 44 ($\bar{x}$ = 7.00); 2nd day of hospitalization – 4th cluster n = 33 ($\bar{x}$ = 14.21) > 5th cluster n = 44 ($\bar{x}$ = 11.46); 3rd day of hospitalization – 4th cluster n = 33 ($\bar{x}$ = 13.98) > 1st cluster n = 21 ($\bar{x}$ = 9.74); 4th day of hospitalization – 3rd cluster n = 62 ($\bar{x}$ = 10.82) > 1st cluster n = 21 ($\bar{x}$ = 5.13); 5th day of hospitalization – 4th cluster n = 33 ($\bar{x}$ = 9.44) > 2nd cluster n = 38 ($\bar{x}$ = 5.14).

Table 3 Comparison of average number of independent nursing activities in subgroups n = 205

Average number of independent nursing activitiesin subgroups				
subgroups	SC	SE	GC	GE
Days of hospitalization	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
1st day	14.50	25.77	18.77	24.59
2nd day	23.05	46.09	29.77	43.23
3rd day	20.78	40.02	23.73	38.55
4th day	14.68	25.36	17.18	29.82
5th day	15.27	29.36	15.00	26.82

It follows from the above that the number of independent nursing activities in the experimental groups is higher compared to the number of independent nursing activities in the control groups. Subsequently, we assumed that in the treatment of patients with breast cancer, there would be differences in the recorded activities of nurses at selected workplaces. Based on our experience from the implementation of the experiment, we can state that the modified care map presented by us unified the activities of nurses at the workplaces.

Table 4 Average number of recorded nursing activities

subgroups	SC	SE	GC	GE
	$\bar{x}$	$\bar{x}$	$\bar{x}$	$\bar{x}$
consultation	7.00	8.79	7.00	9.01
monitoring	22.50	22.86	20.00	21.94
nursing diagnosis	12.25	25.95	5.00	27.22
assessment scales	0.00	9.44	0.00	10.47
nursing standards	31.38	46.83	31.77	46.22
independent nursing activities	40.46	63.50	47.88	70.31
total	113.59	177.37	111.65	185.17

It is clear from the statistical analysis that nurses do not document all their activities in their routine practice. In the experimental groups, there were minimal differences in the method of documenting nursing activities due to the doctor's prescription, or due to a change in the health status of patients.

The last area of our research was the assumption that the attitude of nurses to the implementation of care maps into nursing practice will be more positive if the documentation is less time consuming. We conducted individual standardized interviews with the nurses. First, we asked them what their personal experience of how to keep nursing records through care maps was. We asked whether nurses feel more confident in their performance when working with nursing standards. Finally, we asked if it is currently possible in the conditions of their department, to keep nursing documentation through care maps. According to 87% of nurses, even at the present time and in the current conditions of individual clinics, it would be possible to keep nursing documentation through care maps. Based on this fact, we can confirm that the attitude of nurses to the implementation of care maps is positive.

Conclusion

The topic of the work was created in an effort to focus on improving the work of nurses at both surgical and OB/GYN Clinics using nursing standards in care maps which represent a rational approach to the problem. The experimental groups recorded independent nursing activities compared to the control groups. The care map modified by us met all the attributes of quality nursing care. 83% of nurses expressed a positive attitude towards maintaining nursing documentation in the form of care maps. We are convinced that there are differences in the nursing care provided for breast cancer patients between clinics. The first significant difference is the length of hospital stay - at the surgical clinic on average 6.6 days, at the OB/GYN clinic 11.5 days. Other important findings include the application of a cleansing enema before breast surgery at the OB/GYN clinic, the introduction of a permanent urinary catheter perioperative at the OB/GYN clinic and the frequency of the surgical wound dressing (at the surgical clinic, the first dressing was performed on the third postoperative day, at the OB/GYN clinic on the first day after the operation). In our opinion, these identified differences show a need for clinic managements to work in unison. One suitable option would be to develop care maps for specific diagnoses and to ensure consistency and quality through them.

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