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RESEARCH ARTICLE

IMPACT OF NURSE INITIATED INTERVENTIONAL PACKAGE ON THE PREVALENCE OF SELECTED COMPLICATIONS AMONG PATIENTS UNDERGOING CHEMOTHERAPY AND THEIR CAREGIVERS

ABSTRACT

INTRODUCTION: Chemotherapy is a drug treatment that acts by destroying the aggressively growing cancer cells or by stopping them from growing hence curing or prolonging life or reducing the symptoms of cancer.

AIM: To assess the impact of Nurse Initiated Interventional package on selected complications of chemotherapy among patients undergoing chemotherapy and their caregivers.

MATERIAL AND METHODS: A quantitative approach and quasi-experimental design was employed, with 48 newly diagnosed cancer patients selected by purposive sampling technique from selected wards of PGIMER, Chandigarh. The study used standardized complication assessment scales and a practice questionnaire to assess prevalence of complications among patients and caregivers practices. A post-test was conducted on the 10th day after administering a Nurse initiated educational package to manage chemotherapy complications. The data was analyzed using SPSS version 20.0.

RESULTS: The study found significant reduction in severity of nausea & vomiting within 24 hours at p value of 0.000 and 0.006 respectively and after 24 hours of chemotherapy at p value 0.026 and 0.024 between both groups. There was significant reduction in severity of mucositis and fatigue at p value of 0.040and 0.008 respectively between both the groups. Knowledge of caregivers significantly improved in experimental group compared to control group after administration of Nurse Initiated Educational Package at p value of 0.043.

CONCLUSION: Providing pre-education to the caregivers helped in managing and reducing the severity of the selected complications of chemotherapy in the experimental group as compared to the control group.

KEY WORDS: Chemotherapy, Nurse Initiated Interventional package

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INTRODUCTION OF THE BACKGROUND OF THE STUDY

Nearly 10 million deaths, or nearly one in every six deaths, was caused by cancer in 2020, making it the top cause of death worldwide.[1] In India, there were 1.4 million cancer cases in

2020, and there were 0.85 million cancer-related deaths.[2]Chemotherapy involves the use of one or more anti-cancer medications to treat, lengthen life, or lessen the symptoms of cancer by eliminating or preventing the growth of the actively proliferating cells.[3]Chemotherapy medications disrupt the cell cycle's S and M phases, or DNA synthesis and mitosis, respectively either by harming a cell's genetic material or by preventing it from dividing hence killing the cancer cell.[4]Under the constant supervision of the medical staff, chemotherapy medications are typically administered in cycles that are planned depending on the stage or kind of cancer.[5]The normal cells that are most frequently attacked are the bone marrow's blood-forming cells, hair follicles, cells in the mouth, digestive tract, and reproductive system. These damages can cause anaemia, a disordered coagulation profile that results in bleeding and bruising, infection, hair loss, mouth sores, xerostomia, constipation, diarrhoea, changes in appetite and weight, neuropathy, and other symptoms.[4,6]Cancer patients can manage the side effects of chemotherapy both in the hospital and at home with the aid of a nurse-led intervention.[7]To assess the psychological impacts of receiving a cancer diagnosis and receiving treatment, a nurse needs to possess advanced abilities in history-taking, physical assessment, and holistic need assessment. A nurse should encourage patients to follow complex self-care routines at home, including self-evaluation and symptom triage, sticking to adjuvant medications, and altering their dietary, sleeping, exercising, and hygiene habits, among other things.[8]

OBJECTIVE OF THE STUDY: To develop, implement and assess the impact of Nurse initiated interventional package on the prevalence of selected complications among patients undergoing chemotherapy and level of practices to manage the selected complications among caregivers.

MATERIALS AND METHODS

Research approach & design: A quantitative research approach and quasi-experimental design was used to assess the impact of Nurse Initiated Interventional on prevalence of selected complications.

Sample and sampling technique: After day randomization, 48 participants were selected by purposive sampling technique and further grouped into control and experimental group.,

Tools of data collection:

Part A: The tool comprised of socio demographic profile of the subjects, current and past health profile, diagnosis, schedule of chemotherapy, history of blood transfusion and complete blood count profile.

Part B: It consists of Standardized complication assessment scales used to assess the presence and severity of five selected complications of chemotherapy. These were Fatigue severity scale, Victoria Bowel Performance Scale, MASCC Antiemesis Tool and WHO Mucositis grading scale.

Part C: It consisted of self administered questionnaire which contained 60 score multiple-choice questions to assess practice score of caregivers.

Procedure of data collection: The patients were enrolled from Day care centre and from private wards of Nehru Hospital, PGIMER according to day randomization. After enrolment, written consent was taken from the participants. Tool was used to assess the presence and severity of selected complications in the patients and practices of caregivers in managing the selected complications of chemotherapy. Interventional package was provided to experimental group only while routine care was provided to control group on management of selected complications of chemotherapy. Post test was taken on 10^{th} day after implementation of the interventional package.

Practice score of caregiver: Criterion measures used for the study were practice score obtained by the caregivers regarding management of selected complications of chemotherapy.

Poor	0-15	Each correct response was given 1 score and the incorrect was given 0.
Good	16-30	
Very good	31-45	
Excellent	45-60	

ETHICAL CONSIDERATIONS

Ethical clearance was taken from Institute Ethics Committee, PGIMER; Chandigarh with Reference No.EC/NINE/2023/17 to carry out the study. Written permission was taken from Head, Department of Oncology and Principal NINE, PFIMER; Chandigarh. Prior to administration of tools, an informed written consent was taken from each subject.

RESULT

Table 1

Frequency and Percentage distribution of subjects as per Socio demographic profile characteristics

N=100

Variables	**Experimental Group n_e (%) N=24**	**Control Group n_c(%) N=24**	**χ^2 df p value**
Gender (patient)			0.00
Male	13(54.2)	13(54.2)	1
Female	11(45.8)	11(45.8)	0.228^{NS}
Age (in year)(patient)			
13-28 years	07(29.2)	02(08.3)	5.044
29-45 years	07(29.2)	05(20.8)	3
46-62 years	04(16.7)	08(33.3)	0.169^{NS}
63-79years	06(25.0)	09(37.5)	
Education (patient)			
No formal	04(16.7)	04(16.7)	3.817
Primary	11(45.8)	08(33.3)	4
Secondary	02(08.3)	03(12.5)	0.090^{NS}
Graduate	05(20.8)	09(37.5)	
Post graduate	02(08.3)	00(00.0)	
Age (caregiver)			0.751
≤40 years	11(45.8)	14(58.3)	1
≥41 years	13(54.2)	10(41.7)	0.38^{NS}
Gender (caregiver)			1.371

Male	12(50.0)	16(66.7)	1
Female	12(50.0)	08(33.3)	0.24^{NS}
Education (caregiver)			
No formal education			
Primary	06(25.0)	02(8.30)	3.703
Secondary	04(16.7)	06(25.0)	4
Graduate	05(20.8)	08(33.3)	0.44^{NS}
Post- Graduate	04(16.7)	05(20.8)	
	05(20.8)	03(12.5)	

Table 1 depicts that equal number of patients (54.2 %) in both groups were male while (45.8%) were female. In the experimental group, (29.2%) of participants were in the age group of 13-28 and 29-45 ,(16.7%) were in 46-62 and (25%) in age group of 63-79. In control group about (8.3%) were in age group 13-28years, (20.8%) in 29-45, (33.3%) in 46-62 and (37.5%) in 63-79. In experimental group majority (45.8%) had primary education, (20.8%) were graduate, (16.7%) with no formal education, (8.3%) had secondary education and (12.5%) were post graduates. The Mean±SD of age of caregivers in experimental and control group was 41.25±12.10 and 36.46±11.53 respectively. The caregivers in experimental group were equal in terms of gender while in the control group majority of caregivers were male 66.7%. In the experimental group 25% of the caregivers have no formal education whereas 33.3% of the caregivers in the control group had secondary education

Table 2

Frequency and percentage distribution of subjects as per Clinical profile of patients undergoing chemotherapy **N=48**

Variables	**Experimental Group n(%)**	**Control Group n(%)**	χ^2 **df p value**
Diagnosis			
ALL	13(54.2)	04(16.7)	7.416
AML	03(12.5)	05(20.8)	3

HL NHL	04(16.7) 04(16.7)	07(29.2) 08(33.3)	0.006*****
Duration of present illness			
1-6 months	16(66.7)	19(79.2)	3.543
7-12 months	05(20.8)	02(08.3)	4
13-18 months	00(00.0)	01(04.2)	0.085^{NS}
19-24 months	01(04.2)	00(00.0)	
>24 moths	02(08.3)	02(08.3)	
Chemo cycle			
First	10(41.7)	10(41.7)	3.773
Second	03(12.5)	05(20.8)	3
Third	03(12.5)	06(25.0)	0.067^{NS}
Fourth	08(33.3)	03(12.5)	

Table 2 depicts that about 54.2% of subjects from experimental group diagnosed with ALL and 12.5% with AML. In control group, 33.3% subjects diagnosed with NHL and 16.7% with ALL. In experimental and control group66.7% and 79.2% of subjects had duration of 1-6months of duration of present illness. Majority (41.7%) of the subjects in both the groups were undergoing first cycle of chemotherapy

Table 3

Complication severity Score of patients undergoing chemotherapy among experimental and control grou **N=48**

Complications	**Experimental Group n_e(%) N=24**		**MC-Nemar Test**	**Control Group n_c(%) N=24**		**MC-Nemar Test**	**χ^2 df p value**
	Pre test	**Post test**		**Pre test**	**Post test**		

Level of Fatigue							
No fatigue	06(25.0)	05(20.8)		06(25.0)	02(08.3)		6.063
Mild	10(41.7)	13(54.2)	0.008*****	08(33.3)	11(45.8)	0.406	3
Moderate	07(29.2)	01(04.2)		07(29.2)	07(29.2)		0.070^{NS}
Severe	01(04.2)	05(20.8)		03(12.5)	04(16.7)		
Level of Constipation							
No constipation	15(62.5)	22(91.7)		18(75.0)	17(70.8)		4.308
Minimal	02(08.3)	01(04.2)	0.046*****	02(08.3)	04(16.7)	0.406	3
Moderate	07(29.2)	01(04.2)		02(08.3)	02(08.3)		0.230^{NS}
Major	-	-		02(08.3)	01(04.2)		
Level of Diarrhoea							
No diarrhoea	20(83.3)	24(100)		20(83.3)	19(79.2)		5.581
Minimal	01(04.2)	-	___	01(04.2)	03(12.5)	0.368	2
Moderate	03(12.5)	-		03(12.5)	02(08.3)		0.061^{NS}
Major	-	-		-	-		
Level of Mucositis							
No mucositis	19(79.2)	21(87.5)		13(54.2)	13(54.2)		6.460
Mild	03(12.5)	02(08.3)	0.223	07(29.2)	07(29.2)	1.000	2
Moderate	02(08.3)	01(04.2)		04(16.7)	04(16.7)		0.040^{**}

*****Significant $p<0.05$

Table 3 depicts that in experimental group, majority of participants had no fatigue (20.8%),(4.2%) moderate fatigue while (54.2%) had mild fatigue with significant reduction in fatigue at p value 0.008 ($p \leq 0.05$). In control group (45.8%) of participants had mild fatigue and (8.3%) had no fatigue. In experimental group, majority of participants had no constipation (91.7%) while (4.2%) had minimal and moderate constipation at p value of 0.046. In experimental group, majority of participants had no diarrhea (83.3%),(4.2%) minimal and(12.5%) had moderate diarrhea but in post test no diarrhea was observed. In experimental group, majority of participants had no mucositis (87.5%),08.3% mild and 04.2% had moderate mucositis. Severity of mucositis decreased between both groups in post-test at p value of 0.04.

Table 4

Nausea and Vomiting severity score of the patients between experimental and control group

N=48

Complications	**Experimental Group n_e(%)**	**Control Group n_c(%)**	χ^2
Level of Vomiting and Nausea	**Post test**	**Post test**	
Episode of vomiting within 24 hrs of chemotherapy			
Yes	01(04.2)	12(50.0)	
No	23(95.8)	12(50.0)	0.000*
If yes, then the number of episodes			
None	3(95.8)	12(50.0)	
1	01(04.2)	02(08.3)	
2	-	08(33.3)	0.003*
3	-	02(08.3)	
4	-	-	
Episodes of Nausea within 24 hrs of chemotherapy			
Yes	03(12.5)	12(50.0)	
No	21(87.5)	12(50.0)	0.006****
If yes, then rating of nausea			
No nausea	21(87.5)	12(50.0)	
Mild	01(04.2)	04(16.7)	0.045****
Moderate	02(08.3)	07(29.2)	
Severe	-	01(04.2)	
Episodes of Vomiting after 24 hrs of chemotherapy			
Yes	01(04.2)	07(29.2)	0.026****
No	23(95.8)	17(70.8)	
If yes, then the Number of episodes			

None			
1	23(95.8)	17(70.8)	
2	01(04.2)	01(04.2)	0.141^{NS}
3	-	04(16.7)	
4	-	01(04.2)	
	-	01(04.2)	
Nausea			
Yes	01(04.2)	07(29.2)	0.024*
No	23(95.8)	17(70.8)	
Rating of nausea			
No nausea	23(95.8)	17(70.8)	0.032*****
Mild	01(04.2)	01(04.2)	
Moderate	-	06(25.0)	
Severe	-	-	

*****Significant p<0.05

Table 4 depicts, within 24 hrs of chemotherapy, in experimental group,(95.8%) had no episode of vomiting while (4.2%) had one episode whereas in control group, 50% had vomiting episodes , (8.3%) had 1, (33.3%) had 2 and remaining (8.3%) had 3 episodes of vomiting .In experimental group,87.5% had no episode of nausea, (4.2%) had mild and (8.3%) had moderate nausea while in control group, 50% participants had nausea, (16.7%) had mild, (29.2%) moderate and (4.2%)had severe nausea. After 24 hrs of chemotherapy, in experimental group, (95.8%) had no episode of vomiting and (4.2%) had vomiting 1 episode, (95.8%) had no nausea and (4.2%) had mild nausea where as in control group, (70.8%)had no vomiting and (29.2%) had vomiting (4.2%) had one, (16.7%) had 2,(4.2%) had 3 and (4.2%) had 4 episodes. (70.8%) had no nausea and (29.2%) had nausea, (4.2%) had mild and (25%) had moderate nausea.

Table 5

Comparison of pre and post test practice scores of caregiver between experimental and control group

N=48

Test	Group	Mean ± SD	Unpaired t test
Pre-test	Experimental group (N_e=24)	22.29±6.314	0.510^{NS}
	Control group (N_c=24)	23.58±7.126	
Post-test	Experimental group (N_e=24)	30.00±6.413	0.043*
	Control group (N_c=24)	25.96±7.006	

*Significant p<0.05

Table 5 depicts that significant difference was found in the practice score of caregiver in the management of selected complications of chemotherapy in patients undergoing chemotherapy.

DISCUSSION

In present study, a quasi-experimental design was used in which 48 subjects were enrolled which were divided into experimental and control each having 24 subjects. In the analysis of socio-demographic profile of patients, the Mean ± SD of age of the subjects in experimental and control group was 41.25±12.10 and 36.46±11.53 respectively.

The results were supported by study conducted by Amina etal on use of a self care education program for reducing chemotherapy related side effects on 80 mastectomized women. The results of this study reveals the mean age of 50.63± 10.93 in the control group and 48.45 ±12.84 in the intervention group[9] According to present study after using WHO oral mucositis grading scale and fatigue severity scale it was found that there was significant decrease in severity of mucositis and fatigue and the difference was statistically significant at p< 0.05 level of significance.

These findings are supported by another study conducted by Yurtsever etal which was on randomized control trial among 60 patients to assess the impact of education on severity of oral mucositis. The frequency of oral mucositis in the education group was less than the control group ($p < 0.05$) after implementation of educational package.[10] Another study conducted by Yesilbalkan etal using a quasi experimental design on 35 patients. The objective of study was to check the efficacy of nursing interventional on fatigue management with help of educational program and the results shows significant reduction in severity of fatigue ($p \leq 0.05$) level of significance.[11]

The findings of present study shows that after implementation of nurse initiated interventional package there was significant decrease in nausea and vomiting at the level of p value is ≤0.05. This findings is supported by another study conducted by Karimi on 52 patients to check the effectiveness of education program to relieve nausea and vomiting in patients having colorectal cancer showed that there was decrease in severity of nausea and vomiting.[12] In the current study after intervention it was observed that less percentage of participants had constipation and diarrhoea. Another study that supported these findings done by Abdollahi etal using randomized control design on 150 patients with questionnaire based on ROM III questionnaire with significant p value ≤0.001 for constipation and diarrhoea to check the impact of nutritional education on reducing gastro-intestinal symptoms caused by chemotherapy.[13] The Nurse Initiated Interventional Package has significant impact on caregiver's practice score with Mean±SD 30.00±6.413 in experimental and 25.96±7.006 in control group. These findings suggest that hypothesis is accepted which states that there was a significant effect of nurse initiated interventional package on the prevalence of selected complications among patients undergoing chemotherapy and their caregivers at <0.05 level of significance.

CONCLUSION

Through our study it has been seen that Nurse initiated Interventional package had impact on reducing the frequency and severity of selected complications of chemotherapy and enhanced preventive practices of caregivers.

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