

A Study to Assess the Incidence and Severity of Self-Reported Side Effects of Chemotherapy among the Patients in a Day Care Chemotherapy Unit in a Cancer Hospital Guwahati, Assam

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Abstract: ***Background of the study:** Cancer remains a leading cause of death worldwide, accounting for nearly 10 million deaths in 2020. Chemotherapy is one of the major treatment modalities for cancer, aimed at inhibiting cell proliferation and tumor metastasis. However, it also affects normal cells, causing adverse side effects such as fatigue, hair loss, nausea, and mucositis, which compromise patients' quality of life. **Methodology:** This descriptive study was conducted among 100 patients receiving chemotherapy at the Day Care Chemotherapy Unit of Dr. B. Borooah Cancer Institute, Guwahati, using convenient sampling. Data were collected through a socio-demographic proforma and the Memorial Symptom Assessment Scale–Short Form (MSAS-SF). **Results:** Results revealed that the most common self-reported side effects were lack of energy (88%), altered taste (78%), loss of appetite (77%), hair loss (65%), and numbness or tingling in hands and feet (53%). The mean severity score was 25.60; 81% experienced very mild and 19% mild side effects. **Conclusion:** A significant association was found between age and severity of side effects ($p < 0.05$), while gender showed no significant association. The study concludes that side effects vary across patients, emphasizing the essential role of nurses in symptom management, patient education, and psychological support to enhance quality of life during chemotherapy.*

Keywords: Chemotherapy, Side effects of chemotherapy, Cancer patients

1. Introduction

Cancer is a major public health concern worldwide and one of the leading causes of death. Globally, non-communicable diseases (NCDs) account for 71% of deaths, and in India, 63% of all deaths are due to NCDs, with cancer contributing about 9%. According to the National Cancer Registry 2020, cancer incidence in India was 6.79 lakh among males and 7.12 lakh among females. The most common cancers among men were lung, mouth, prostate, tongue, and stomach, while among women, breast, cervix uteri, ovary, corpus uteri, and lung cancers predominated.¹

The Northeastern region of India has one of the highest cancer incidences in the country. The ICMR Report (2021) projected a 13.5% rise in cancer cases by 2025, with Mizoram and Kamrup Urban (Assam) showing some of the highest rates.² Dr. B. Borooah Cancer Institute (BBCI), Guwahati, recorded over 14,000 new cancer cases and treated nearly 90,000 patients in 2019, highlighting the region's growing cancer burden.³

Chemotherapy remains a cornerstone in cancer management, either as adjuvant, neo-adjuvant, or palliative therapy. Although effective in destroying cancer cells, it also affects normal rapidly dividing cells, leading to side effects such as nausea, vomiting, fatigue, mucositis, alopecia, immunosuppression, and neuropathy. Platinum-based drugs like cisplatin, carboplatin, and oxaliplatin, though widely used, cause dose-limiting toxicities such as nephrotoxicity, myelosuppression, and neurotoxicity.⁴

The severity of chemotherapy side effects varies among patients and can lead to physical, emotional, and social distress, often causing treatment interruptions and reduced quality of life. Early identification and management of these effects are essential. Nurses and other healthcare professionals play a key role in patient education, monitoring symptoms, and providing timely interventions to minimize complications.

Assessing the incidence and severity of self-reported chemotherapy side effects in day care settings helps in understanding patient experiences, guiding supportive care measures, and improving overall treatment outcomes. Therefore, recognizing and managing these side effects is crucial for enhancing the quality of life of cancer patients receiving chemotherapy.

1.1. Statement of the Problem

“A study to assess the incidence and severity of self-reported side effects of chemotherapy among the patients in a day care chemotherapy unit in a cancer hospital Guwahati, Assam.”

1.2. Aim and objectives of the study

1.2.1. Aim of the study

The aim of the study is to find out the incidence and severity of self-reported side effects of chemotherapy experienced by

the patients after receiving chemotherapy in a day care chemotherapy unit at Dr.B. Borooah Cancer Institute, Guwahati, Assam.

1.2.2. Primary objectives of the study

- To assess the incidence of the various self reported side effects of chemotherapy experienced by the patients after receiving chemotherapy in a day care chemotherapy unit at Dr.B. Borooah Cancer Institute Guwahati, Assam.
- To assess the severity of self reported side effects of chemotherapy among the patients after receiving chemotherapy in a day care chemotherapy unit at Dr. B.Borooah Cancer Institute Guwahati, Assam.
- To assess the association between the severity of self reported side effects of chemotherapy among the patients with age and sex.

2. Review of Literature

The review of literature is organized under the following headings:

Studies related to incidence and severity of self reported side effects of chemotherapy

Batra Akashdeep et al. [5] has done a research study in the year 2020 in the topic of Incidence and severity of self-reported chemotherapy side-effects in patients with hematolymphoid malignancies. In this study a total number of 100 patients were taken. It was found that the five most common severe symptoms reported by the patients after receiving the first cycle of chemotherapy were nausea, vomiting, constipation, pain, and shortness of breath. The five symptoms that caused the least problem in the patients were constipation, pain, change in temperature, problems with the skin, and problems with the mouth. In this research study it was found that the most common side effect experienced by the patient is nausea (93%). Planned health education for patients with cancer can help providing better evidenced based quality care to those receiving chemotherapy.

Studies related to prevalence of side effects of chemotherapy

Arunachalam S S et al. [6] had conducted a research study in the year of 2021 on the topic of a study on knowledge of chemotherapy's side effects and their self care abilities to manage-The cancer survivor's impact. In this study, participants informed the self-care practices to manage the adverse effects during chemo treatment. 77% reported that they wear a scarf to control hair loss, 59% of patients consume antiemetic to reduce nausea. 44% of them had experience of having myalgia during vomiting. 56% of cancer patients expressed their thoughts with their family members when they felt depressed after taking chemotherapy and having the side effects of chemotherapy. The study findings have showed that an increase in the level of knowledge on chemotherapy's adverse effects would improve the self care practices on managing the side effects of chemotherapy among cancer survivors. A nurse must support and encourage cancer survivors via

counselling services using current modalities for better self-care practices.

Studies related to quality of life of patients undergoing chemotherapy

Binotto M et al. [7] has conducted a study in the year 2020 on the topic Health related Quality of Life before and during chemotherapy in patients with early stage breast cancer. The study was conducted among 33 women diagnosed with clinical stages I–III BC and who underwent adjuvant chemotherapy. Health related Quality of Life (HRQoL) was assessed using the EORTC QLQ-C30 and EORTC QLQ-BR23 instruments 1 week before the start of chemotherapy and during the third month of chemotherapy. The study has found that the health related Quality of Life score was less among the patients and it was also noticed that there is a decrease in global health status/quality of life (QoL) and functional scales such as physical functioning, role functioning, emotional functioning, social functioning, body image, sexual function and sexual enjoyment. Researchers also observed an increase in side effects related to the systemic therapy, fatigue, nausea and vomiting, insomnia, appetite loss and diarrhea among the patients. The study has concluded that as the side effects of chemotherapy are underestimated evaluation of HRQoL parameters should be done for patients receiving chemotherapy as a treatment.

3. Methodology

A quantitative research approach and descriptive research design were adopted for the study. This study was conducted on 100 patients receiving chemotherapy at Dr. B. Borooah Cancer Institute, Guwahati, Assam using convenient sampling technique. The Socio-demographic proforma and Memorial Symptom Assessment Scale-Short Form [MSAS-SF] standardized tool was used, the tools were self-administered if the participants have sufficient ability otherwise interviewer assisted, or interview-administered methods were used. The reliability of the standardized tool was tested by Cronbach alpha coefficients method. The obtained data were analysed using descriptive and inferential statistics (SPSS). An Institutional ethical committee clearance was obtained before the commencement of the study and permission obtained from original author of the tool [MSAS-SF] (Victor T. Chang, MD). Verbal and written consent were obtained from all the participant prior to the data collection. The participants were assured of the confidentiality of the obtained data. The data was checked for normality using Kolmogorov-Smirnov and Shapiro-Wilk test and for non-normal data Mann Whitney test & Kushkar Wallis test was used for comparison of demographic and MSAS-SF scale. Chi-square test(χ^2) was used to find out the significance of association between severity of side effect with selected variables: age and sex.

3.1. Criteria for sample collection:

Inclusion criteria

- All types of cancer patients who have received two or more cycles of chemotherapy and who are willing to

participate in the study.

Exclusion criteria

- Patient's age below 18 years.
- Patients who are not able to comprehend the side effect.
- Patients taking radiation therapy with chemotherapy treatment.

3.2. Variables

Two types of variables are identified in this study. They are:

- Demographic variables: The demographic variables in this study are Age group, Gender, Religion, Marital status, Education status, Occupation status, socio-economic status, Area of residence, Type of family, Sites of cancer, Stage of cancer, Type of chemotherapy regimen.
- Research variables: The research variables in this study are Incidence and Severity.

4. Results

The collected data were tabulated, analyzed and interpreted by using descriptive and inferential statistics. The data are organized and presented under the following headings:

Section I: Sample characteristics in relation to demographic variables

A total of 100 patients receiving chemotherapy at Dr. B. Borooah Cancer Institute, Guwahati, Assam were included in the study, the collected data shows that maximum age group of the patients were more than or equal to 51 years of age (44%) Most of the patients receiving chemotherapy were Hindu (73%). Majority of the patients receiving chemotherapy were married (92%) Most of the patients were having below primary education (29%). Majority of the patients were unemployed (58%). Around 71% of the subjects had a monthly income of less than Rs 10,001. 84% of them came from Rural area and 16% of them belonged to Urban area. Around 68% of the patients came from nuclear family and 32% came from joint family. When it comes to sites of cancer of the patients, the sites of cancer of 32% of the patients were having head and neck cancer, 33% of the patients were having breast cancer, followed by 13% of the patients having gynecological cancer, then 9% of the patients having hematological cancer, followed by 7% of them having lung cancer, 1% of the patients having head and neck cancer and 5% of them were having other types of cancers. Most of the patients were in stage IV (44%) at the time of cancer diagnosis. When it comes to type of chemotherapy regimen received by patients, 12% of the patients were receiving Inj. Paclitaxel + Carboplatin, 9% of

them were receiving Inj. Docetaxel, 5% of them were receiving Inj. Docetaxel+Trastuzumab, followed by 5% receiving Combination of capecitabine and oxaliplatin (CAPOX) as a chemotherapy protocol, 5% of them were receiving Inj. Trastuzumab, 4% of them were receiving capecitabine and irinotecan (CAPIRI) as a chemotherapy regimen, then 3 % of them were receiving Adriamycin and cyclophosphamide (AC), followed by 3% of them receiving Combination of folinic acid, fluorouracil, and oxaliplatin (mFOLFOX7), followed by 2% of them receiving AC4, followed by 2% of them receiving Paclitaxel, then combination of docetaxel (Taxotere), cisplatin (Platinol), and fluorouracil (DCF), Pem- Carbo-Za, combination of Docetaxel, oxaliplatin, leucovorin, and 5-fluorouracil (FLOT), Inj. Gemcitabine+Cisplatin were received by 2% of the patients each. Patient received chemotherapy protocol Inj. Doce+ Prednisolone, Inj. Docetaxel+ Zolendronic acid, Inj. Decitabine, Inj. Trastuzumab+ Paclitaxel, Inj. Pemetrexed+ Carboplatin, Inj. Pemetrexed, Salvage-OGS, Combination of Docetaxel, Oxaliplatin, and 5-Fluorouracil (DOF), Weekly carfilzomib, lenalidomide and dexamethasone (KRD), bendamustine plus rituximab (Benda+R), Inj. Capiri+Bevacizumab, Inj. Gemcitabine+ Doxorubicin, Epirubicin and Cyclophosphamide (EC), Inj. Lipodox+ Bevacizumab, Inj. Docetaxel+ Cyclophosphamide, Combination of Paclitaxel and Trastuzumab (TH), DAE20X5, TRAYANE, Inj. Trastuzumab+ Zolendronic Acid, Inj. Gemcitabine+Oxaliplatin, SA Gemcitabine, Combination of gemcitabine and docetaxel (GEM-DOCE), Inj. Ifosfamide+Doxorubicin, Inj. Cisplatin+Etoposide, BFM-2002, Combination of paclitaxel (Taxol) and trastuzumab (Herceptin) (TH), DOSE DENSE, Inj. Doce+ZA+Prednisolone, Combination of bleomycin, etoposide, platinum (cisplatin) (BEP), Inj. Doxorubicin ide, Inj. aclitaxel, Inj. Paclitaxel+Carboplatin+ Bevacizumab, Inj. Decitabine, Combination of rituximab, cyclophosphamide, hydroxydaunorubicin hydrochloride (doxorubicin hydrochloride), vincristine (Oncovin) and prednisone (R-CHOP), Inj. RCT Concurrent+ Carboplatin, Inj. Trastuzumab+HT, EAR PROTOCOL, Combination of docetaxel and cisplatin (DOCE-CIS), GEFITINIB+ZA, Combination of fluorouracil, epirubicin and cyclophosphamide (FEC), Inj. gemcitabine, Inj. Etoposide + Cisplatin were 1% each. 100% of the patients received Pre chemotherapy related treatment before starting the chemotherapy treatment.

Section II: Description of incidence of the various self reported side effects of chemotherapy experienced by the patients after receiving chemotherapy in a day care chemotherapy unit.

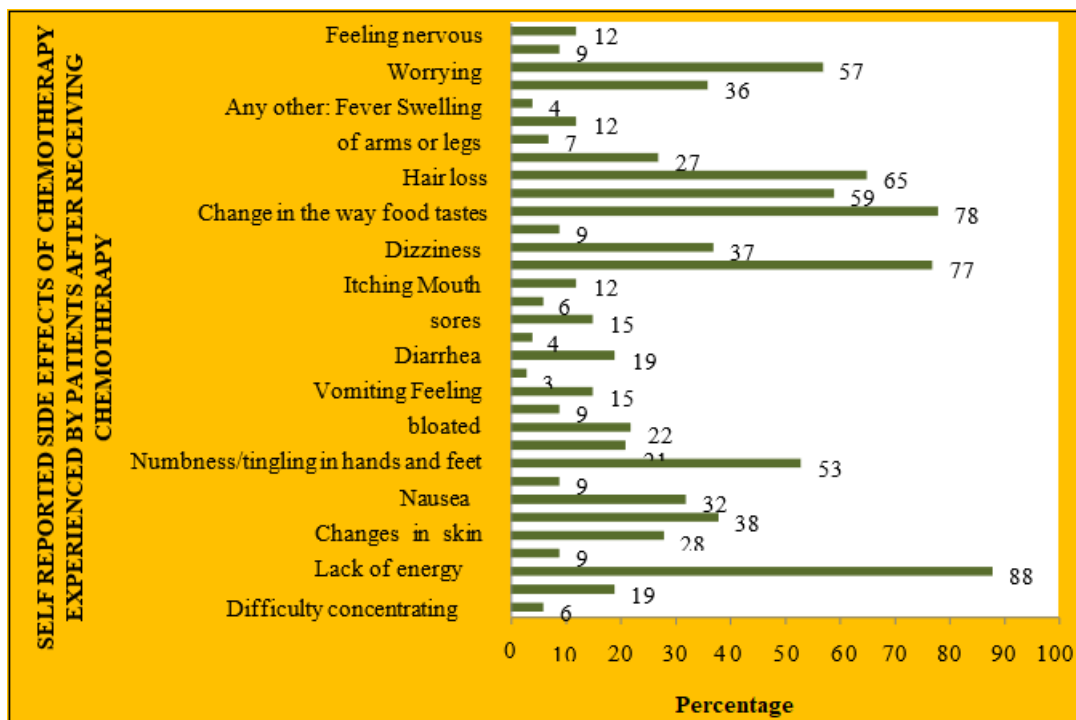


Figure 1: Incidence of various self reported side effects of chemotherapy experienced by patients after receiving chemotherapy in a day care chemotherapy unit

SECTION III: Description of the severity of self reported side effects of chemotherapy among the patients after receiving chemotherapy in a day care chemotherapy unit.

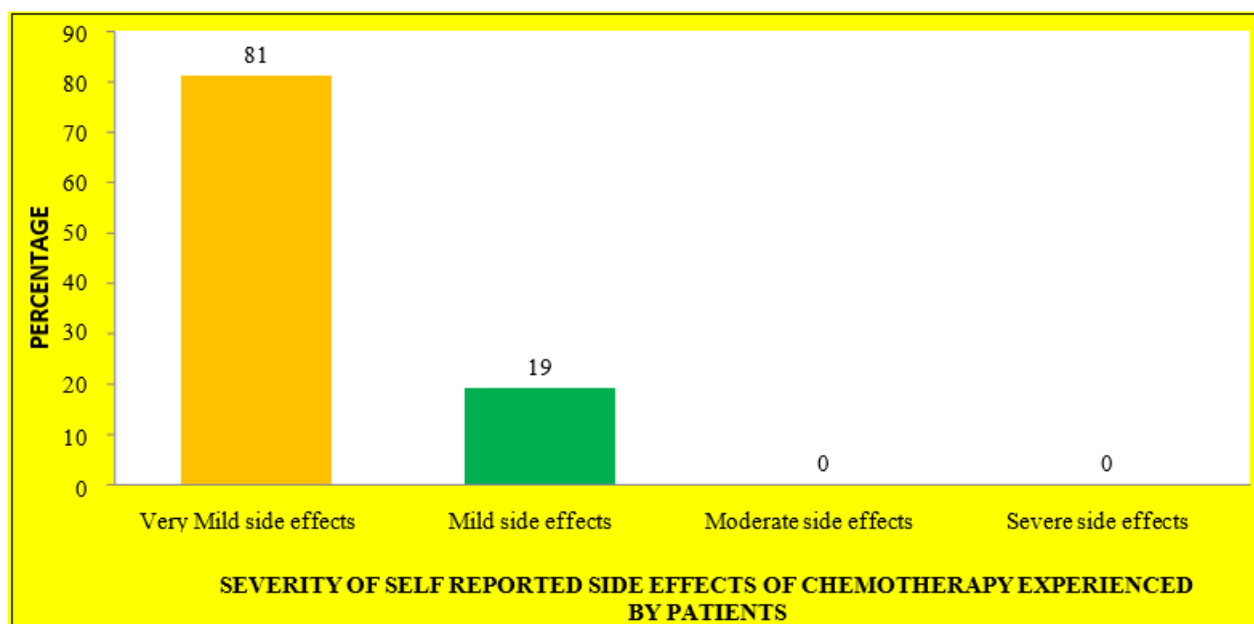


Figure 2: Percentage distribution of severity of self reported side effects of chemotherapy experienced by patients after receiving chemotherapy in a day care chemotherapy unit

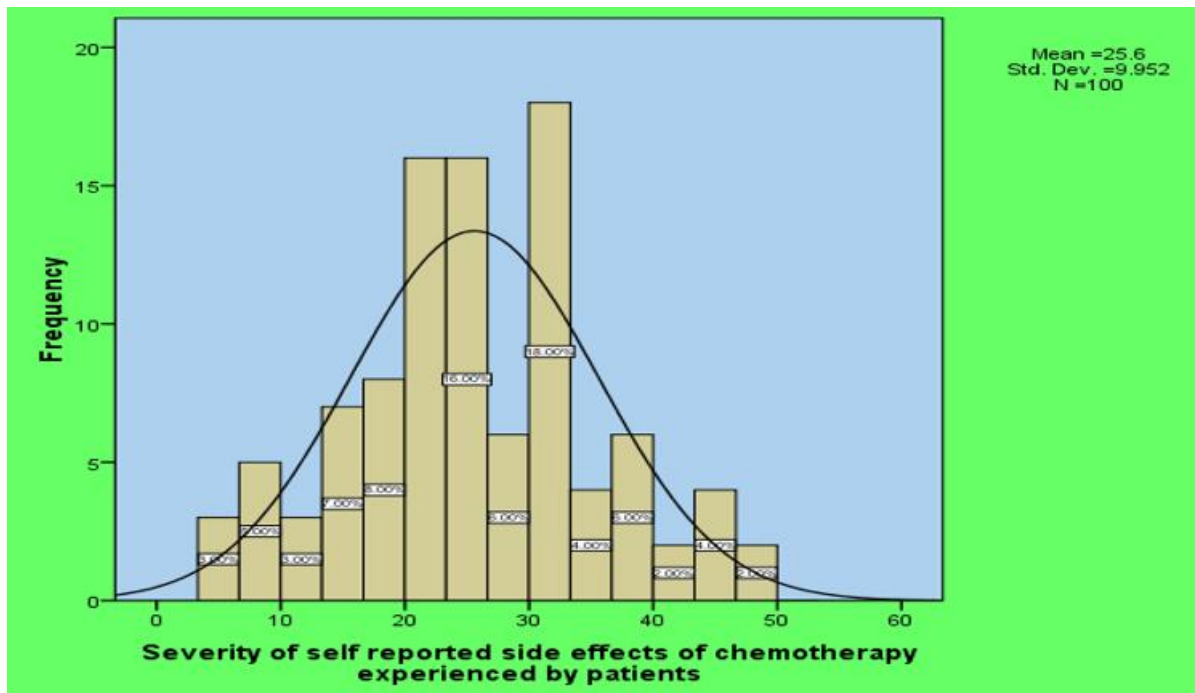


Figure 3: Histogram with normal distribution curve of severity of self reported side effects of chemotherapy experienced by patients after receiving chemotherapy in a day care chemotherapy unit

Section IV: Association between the severity of self reported side effects of chemotherapy among the patients with age and sex.

Table 2: Association between severity of self reported side effects of chemotherapy experienced among patients unit with selected demographic variables, n=100

Demographic variables	Severity of self reported side effects		c ² value	df	p value
	Very Mild	Mild			
Age in years			10.15	3	0.017*
a. 18-30 years	2	2			
b. 31-40 years	17	2			
c. 41-50 years	31	2			
d. ≥ 51 years	31	13	1.433	1	0.231 ^{NS}
Gender					
a. Male	19	7			
b. Female	62	12			

*p<0.05 level of significance

NS-Non significant

Table 5 depicts the association between severity of self reported side effects of chemotherapy experienced among patients with selected demographic variables which was tested by using chi-square test. Result showed that age of patients was found significant association at p<0.05 level but gender of patients was found non significant with severity of self reported side effects of chemotherapy.

5. Discussion

In this study, the incidence of various self reported side effects of chemotherapy experienced by 100 number of patients after receiving chemotherapy in a day care chemotherapy unit was assessed by using a validated scale, Memorial Symptom Assessment Scale –Short Form[MSAS-SF]consisting of 33 items with a total score of 120.It was found that the five most common side effects experienced

by the patients were lack of energy (88%), Change in the way food tastes(78%),Lack of appetite(77%), Hair loss(65%), and Worrying(57%).

The study was supported by the study conducted by Batra Akashdeep⁵ et al in the topic of incidence and severity of self-reported chemotherapy side-effects in patients with hematolymphoid malignancies which revealed that the incidence of side effects chemotherapy is higher among the patients receiving chemotherapy in a day care chemotherapy unit.

The study shows that 81% of the patients experienced very mild side effects of chemotherapy and 19% of the patients experienced mild side effects of chemotherapy. None of the patients experienced moderate to severe side effects.

The study was supported by the study conducted by Batra Akashdeep⁵ et al in the topic of incidence and severity of self-reported chemotherapy side-effects in patients with hematolymphoid malignancies which revealed that the severity of self reported side effects chemotherapy is higher among the patients receiving chemotherapy in a day care chemotherapy unit.

The study shows that age of patients was found significant association at p<0.05 level (χ^2 Value =10.15) but gender of patients was found non significant with severity of self reported side effects of chemotherapy. (χ^2 Value =1.433)

This study was supported by the research study conducted by Arunachalam S S et al⁶ in the year of 2021 on the topic of a study on knowledge of chemotherapy's side effects and their self care abilities to manage. The study indicated that the demographic variables were independent of the participant's level of knowledge regarding self care abilities to manage the side effects of chemotherapy. [22]

6. Conclusion

H Roe and Lennan (2014)⁸ concluded in a study on the topic "Role of nurses in the assessment and management of chemotherapy-related side effects in cancer patients" that chemotherapy nurses have much respected for their technical, information-giving, and communication skills. Most recently, chemotherapy nurses have developed an assessment and management skills for supporting patients through their chemotherapeutic pathway. This trend will continue as we future-proof chemotherapy services, and using assessment tools and common toxicity criteria is important for consistency. Nurses have a real opportunity to add value to the patient pathway by undertaking this exciting new role, but not before they are deemed competent to do so and never in isolation from the multidisciplinary team. At the present study the finding illustrated in two groups upon the items of monitoring patient receiving chemotherapy, assessing the incidence and severity of side effects of chemotherapy which will help in managing the chemotherapy related side effects.

This paper adds to the literature an estimate of the incidence and severity of self reported side effects experienced by patients undergoing chemotherapy in a day care setting, rather than in the context of a clinical trial. It has the additional advantage over previous studies of looking across a range of multiple cancers, rather than looking at specific chemotherapy regimens as done in the many literature. The findings reveal that every person doesn't get every type of side effects of chemotherapy, and some people get few, if any. The severity of side effects varies greatly from patient to patient. Nurses have a responsibility to teach patients about which side effects are most common, how long they might last and how to manage those side effects. Patients also must be given a reassurance and psychological support to improve their quality of life after receiving chemotherapy.

7. Recommendations

- A qualitative study can take up to assess the lived in experience of chemotherapy patients.
- The study can be replicated in different setting elsewhere with different socio demographic variables.
- An experimental study can be done by incorporating an awareness program as an intervention into the study so as to benefit the patients.
- To allow more generalization to my study, further studies on larger sample/ or more settings.
- The developed nursing care standards for patients receiving chemotherapy should be available and communicated in all oncology units.
- Certification in oncology nursing is highly recommended to promote continuing education and keep nurses updated with new regimens of advanced chemotherapy and its management.

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