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“A STUDY TO ASSESS THE KNOWLEDGE REGARDING CHEMOTHERAPY SIDE EFFECTS AND LEVEL OF CONFIDENCE IN MANAGING SIDE EFFECTS AMONG CARE GIVERS OF CANCER PATIENTS – A HOSPITAL BASED CORRELATIONAL STUDY IN TERTIARY CARE HOSPITAL IN ERNAKULAM DISTRICT, KERALA”

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Abstract: Caregivers have vital role in supporting cancer patients undergoing chemotherapy. It's really important for them to understand the side effects of treatment and feel confident in managing those side effects. This knowledge can make a huge difference not just for the patients, but also for the well-being of the caregivers themselves. A descriptive correlational survey was undertaken to assess the knowledge regarding chemotherapy side effects and level of confidence in managing them among caregivers of cancer patient in a tertiary care hospital in Ernakulam district, Kerala. The research question of this study was how knowledgeable are caregivers about chemotherapy side effects and how confident are they in managing them. The objectives of the study were to estimate the knowledge regarding side effects of chemotherapy among care givers of cancer patients receiving chemotherapy, to estimate the level of confidence among caregivers in managing side effects of chemotherapy, to determine the relationship between knowledge on chemotherapy side effects and level of confidence in managing them among caregivers and to determine the association of knowledge on chemotherapy side effects with selected demographic variables. After getting the IRB approval and informed consent the data was collected from 52 subjects attending oncology OPD in a tertiary care hospital in Ernakulam district, Kerala using non probability convenient sampling technique. A socio clinical questionnaire, Knowledge assessment questionnaire and Chemotherapy side effects management confidence scale were used to collect data. The study concluded that the caregivers have poor knowledge regarding chemotherapy side effects but are confident in managing side effects. Also there was no significant relationship between knowledge on chemotherapy side effects and level of confidence in managing them among caregivers (p value= 0.258). The study also find out a significant association between knowledge and educational status of caregivers (p value=0.046). To conclude, this study highlights that caregivers have poor knowledge regarding chemotherapy side effects and their confidence in managing the side effects varies, indicating a need for focused educational programs to enhance their knowledge and ability to support patients. Improving caregiver training could potentially lead to better outcomes for patients.

Keywords: Knowledge, Confidence, Chemotherapy, Caregivers, Side effects

Introduction

Cancer develops when body cells start growing excessively and may extend to other tissues or organs¹.

Cancer remains one of the major causes of illness and death across the world. It poses a serious global health challenge, with cases expected to rise sharply. In 2022, around 20 million new cases were diagnosed, and 10 million people died from the



disease. This situation is projected to deteriorate further, with new cancer cases anticipated to increase by 77% by 2050².

India, being the world's most populous country, faces the challenging reality of a rising cancer burden, with expected increases in both new cases and death rates. Several factors contribute to this surge, including rapid urbanization, an aging population, more sedentary lifestyles, and poor dietary habits. Moreover, growing exposure to indoor and outdoor air pollution adds to the concern³.

Chemotherapy is a treatment that uses drugs to halt the growth of cancer cells, either by destroying them or preventing them from dividing. Depending on the type and stage of cancer, chemotherapy can be administered orally, by injection, through infusion, or applied to the skin. It may be used on its own or combined with other treatments like surgery, radiation therapy, or biological therapy. Between 2018 and 2040, the number of patients needing first- course chemotherapy each year is expected to rise from 9.8 million to 15.0 million, representing a 53% increase⁴.

Family caregivers play a primary role in providing care and support for cancer patients and must be properly equipped for this responsibility. Being prepared for care giving means that

Care givers should possess the necessary skills and knowledge to meet the physical and emotional needs of patients and to help manage and coordinate their care plans⁵.

Self-efficacy refers to an individual's belief in their ability to plan and carry out actions needed to achieve a specific goal⁶.

In the context of care giving for a cancer patient, it describes the caregiver's confidence in their ability to meet their loved one's care needs and manage their symptoms at home. Self- efficacy plays a crucial role in care giving, as it serves as a foundation for successfully performing the necessary tasks and interventions⁷.

Caregiver's self-efficacy, or confidence in managing chemotherapy side effects, plays a crucial role in delivering effective home care. A pilot study took place to analyze how personalized, hands-on training affects caregivers confidence in managing symptoms. It found that this type of training made caregivers feel much more confident. The training included live demonstrations, chances to

practice, encouragement, and time to get better at the skills, all of which helped to increase their confidence⁸.

A caregiver's understanding of chemotherapy-related side effects is essential in helping manage them effectively at home. When caregivers are aware of common issues like nausea, fatigue, or infections, they can spot the early signs and take action quickly. With the right knowledge and confidence, caregivers can offer timely support, both physically and emotionally, while making sure the patient follows the necessary care steps. This not only eases the patient's discomfort but also helps reduce stress and the need for hospital visits, allowing the patient to focus on recovery in the comfort of their home.

MATERIALS AND METHODS

Data were collected using 3 tools. Tool 1 was a self-structured socio clinical questionnaire which consists of two sections. Section A is socio-demographic questionnaire which consist of 8 questions such as: relationship of the caregivers with the patient, age, gender, education status, occupation, monthly income, religion and whether the caregiver is a health professional or not. Section B consist of 5 clinical variables questionnaire which includes stage at which the cancer was detected , total number of chemotherapy cycles the patient undergone , method of administration of chemotherapy drug, most frequently occurring side effects experienced by the patient and type of cancer the patient had. Tool 2 is a structured knowledge assessment checklist consisting of 25 questions and tool 3 is a structured chemotherapy side effect management confidence scale. The tool was developed by the researcher and validated by five experts from the medical and nursing field.

METHODS

Research approach: Non Experimental Quantitative approach was adopted for the study. Research design: Descriptive correlation survey

Variables:

Outcome variables: Knowledge and Confidence



Socio demographic variables: Relationship with patient, Age, Gender, Education status, Employment, Monthly income, Religion and whether caregiver is a health professional or not.

Socio clinical variables: Stage at which the cancer was detected, number of cycles of chemotherapy the patient undergone, most frequently occurring side effects and type of cancer the patient had.

Research setting: The setting of study was at the Oncology department of M.O.S.C Medical College Hospital, Kolenchery.

Population: The target population of present study was the caregivers of patients undergoing chemotherapy attending the Oncology department of M.O.S.C Medical College Hospital, Kolenchery.

Sample: 52 caregivers of patients undergoing chemotherapy attending the Oncology department of M.O.S.C Medical College Hospital, Kolenchery.

Sample size: The following formulae was used to calculate sample size.

$$n = \frac{Z^2 \frac{p(1-p)}{d^2}}{1 + \frac{Z^2 \frac{p(1-p)}{d^2}}$$

Where,

$$Z_{1-\alpha/2}=1.96$$

$$d=10\%$$

$$n=52$$

Sampling technique: Non probability Convenience sampling technique Sampling criteria:

Inclusion criteria: Care givers who are able to read, understand and write Malayalam and Individuals who provide care and stay along with patients receiving chemotherapy

Exclusion criteria: Caregivers of seriously ill cancer patients

RESULT

Table 1: To estimate the knowledge regarding side effects of chemotherapy among care givers of cancer patients receiving chemotherapy

LEVEL OF KNOWLEDGE	FREQUENCY	PERCENTAGE
No Knowledge	17	32.7%
Poor Knowledge	25	48.1%
Average Knowledge	10	19.2%
Good knowledge	0	0%
TOTAL	52	100.0%

The results showed majority of the samples have poor knowledge regarding chemotherapy side effects 32.7% had no knowledge, while majority of 48.1% demonstrated poor knowledge. Only a smaller proportion, 19.2% had average knowledge. Notably, none of the subjects had a good knowledge.

Table 2: Analysis of confidence among caregivers of cancer patient to manage chemotherapy side effects at home

LEVEL OF CONFIDENCE	SCORING	FREQUENCY	PERCENTAGE
No confidence	0	0	0%
Very little confidence	1-3	0	0%
Little confidence	4-6	1	1.9%
Confident	7-9	47	90.4%
High confidence	10	4	7.7%
TOTAL		52	100.0%



The results showed majority of the samples are confident in managing chemotherapy side effects at home. 0% had no confidence, 0% had very little confidence, 1.9% had little confidence, 90.4% were confident and 7.7% had high confidence to manage the chemotherapy side effects at home.

Table 3: Association between knowledge among caregivers regarding chemotherapy side effects and level of confidence in managing side effects.

Knowledge	Level of confidence			Chi-Square value	P value
	4-6	7-9	10		
No Knowledge	0(0.0%)	15(88.2)	2(11.8%)	5.294	0.258
Poor	0(0.0%)	24(96%)	1(4%)		
Average	1(10%)	8(80%)	1(10%)		

The level of significance is 0.05. So there is no significant association between knowledge and level of confidence among caregivers.

Table 4: Association of knowledge and socio demographic variables

Knowledge	Knowledge			Chi-square value	P value	Significant/ Not significant
	No knowledge	Poor knowledge	Average knowledge			
1)RELATIONSHIP WITH PATIENT				6.500	0.772	Not significant
Father/Mother	1(16.7%)	5(83.3%)	0(0.0%)			
Husband/Wife	9(39.1%)	10(43.5%)	4(17.4%)			
Son/Daughter In laws	4(28.6%)	6(42.9)	4(28.6%)			
Aunt/Uncle	1(25%)	2(50%)	1(25%)			
Others	0(0.0%)	1(100%)	0(0.0%)			
2)AGE				8.465	0.206	Not significant
<25 years	2(50%)	1(25%)	1(25%)			
25-45 years	1(100%)	0(0.0%)	0(0.0)			
46-60 years	1(7.7%)	7(53.8%)	5(38.5%)			
61-85 years	10(40%)	12(48%)	3(12%)			
	5(38.5%)	6(46.2%)	2(15.4%)			



3)GENDER Male Female	6(35.3%) 11(31.4%)	9(52.9%) 16(45.7%)	2(11.8%) 8(22.9%)	0.909	0.635	Not significant
4)EDUCATIONAL STATUS No formal education Class 1-12 Graduate level Post graduate level	1(100%) 12(42.9%) 3(17.6%) 1(16.7%)	0(0.0%) 13(46.4%) 7(41.2%) 5(83.3%)	0(0.0%) 3(10.7%) 7(41.2%) 0(0.0%)	12.79 5	0.046	Significant
5)OCCUPATION Unemployed Employed	9(34.6%) 8(30.8%)	12(46.2%) 13(50%)	5(19.2%) 5(19.2%)	0.099	0.952	Not significant
6)MONTHLY INCOME <5000/- 50001-10000/- 10001-20000/- >20000/-	11(42.3%) 2(22.2%) 1(25%) 3(23.1%)	11(42.3%) 7(77.8%) 1(25%) 6(46.2%)	4(15.4%) 0(0.0%) 2(50%) 4(30.8%)	8.562	0.200	Not significant
7)RELIGION Hindu Christian Muslim	4(25%) 10(32.3%) 3(60%)	9(56.3%) 14(45.2%) 2(40%)	3(18.8%) 7(22.6%) 0(0.0%)	2.921	0.571	Not significant
8)HEALTH PROFESSIONAL Yes No	1(16.7%) 16(34.8%)	3(50%) 22(47.8%)	2(33.3%) 8(17.4%)	1.239	0.538	Not significant
9)STAGE OF CANCER Stage 1 Stage 2 Stage 3 Stage 4	0(0.0%) 3(37.5%) 6(31.6%) 8(34.8%)	2(100%) 4(50%) 10(52.6%) 9(39.1%)	0(0.0%) 1(12.5%) 3(15.8%) 6(26.1%)	3.593	0.732	Not significant



10)CYCLES 1-15 16-30 31-45	15(32.6%) 2(40%) 0(0.0%)	22(47.8%) 2(40%) 1(100%)	9(19.6%) 1(20%) 0(0.0%)	1.234	0.873	Not significant
11)ROUTE Oral Iv	2(40%) 15(31.9%)	3(60%) 22(46.8%)	0(0.0%) 10(21.3%)	1.318	0.517	Not significant
12)MOST COMMON SIDE EFFECTS Fatigue Vomiting Loss of appetite Hair loss Mouth sores Constipation Skin & Nail changes	10(35.7%) 4(57.1%) 1(33.3%) 1(20%) 1(25%) 0(0.0%) 0(0.0%)	14(50%) 1(14.3%) 1(33.3%) 4(80%) 2(50%) 1(50%) 1(50%)	4(14.3%) 2(28.6%) 1(33.3%) 0(0.0%) 1(25%) 1(50%) 1(50%)	10.935	0.691	Not significant
13)TYPE OF CANCER Breast cancer Colorectal cancer Lung cancer Myeloma Blood cancer Uterine cancer Others	7(50%) 1(33.3%) 2(22.2%) 2(100%) 0(0.0%) 0(0.0%) 5(26.3%)	6(42.9%) 1(33.3%) 3(33.3%) 0(0.0%) 1(50%) 2(66.7%) 12(63.2%)	1(7.1%) 1(33.3%) 4(44.4%) 0(0.0%) 1(50%) 1(33.3%) 2(10.5%)	15.704	0.205	Not significant

The results showed a significant association between knowledge regarding chemotherapy side effects among care givers of cancer patient and a socio demographic variable, “**Educational status**” among caregivers of cancer patient at a significant level of $p < 0.05$ (p value = 0.046).

No any significant association was found between knowledge and other socio clinical variables.

DISCUSSION

The present study aimed to assess the knowledge regarding chemotherapy side effects and level of confidence in managing side effects among care givers of cancer patients and to explore

the relationship between these two variables. The findings of the study were discussed under the following headings

Section A : Finding related to knowledge regarding side effects of chemotherapy among care givers of cancer patients receiving chemotherapy.

Section B : Findings related to level of confidence among caregivers in managing side effects of chemotherapy .

Section C : Findings related to relationship between knowledge on chemotherapy side effects and level of confidence in managing them among caregivers.



Section D: Findings related to association of knowledge on chemotherapy side effects with selected socio-demographic variables.

Section A: Finding related to knowledge regarding side effects of chemotherapy among care givers of cancer patients receiving chemotherapy.

Out of 52 samples the study revealed that 32.7% had no knowledge, while 48.1% demonstrated poor knowledge, while a smaller proportion of 19.2% had average knowledge. Notably, none of the subjects attained a good knowledge score.

The findings of the present study are contrast with findings of another study carried out by Ms.Christina Ramdinsangi and Ms. Seema Singh on assessing the knowledge regarding side effects of chemotherapy among caregivers of patients receiving chemotherapy in 2018 at Acharya Vinoba Bhave Rural Hospital in Maharashtra in which the result of the study revealed that 33.33% of caregivers had poor knowledge about the side effects of chemotherapy while 16.67% of caregivers had average knowledge, while a majority of 50% of caregivers had a good level of knowledge. These contradictory findings suggest that difference may be due to variations in study settings, caregiver education levels, sample size, or the tools used to assess knowledge. These findings highlight the need for standardized caregiver education and further research to explore influencing factors.

Section B: Finding related to level of confidence among caregivers in managing side effects of chemotherapy.

Out of the 52 samples, the present study revealed that neither of caregiver had no confidence or very little confidence, a very small proportion of 1.9% had little confidence, while a majority of 90.4% caregivers were confident and only 7.7% caregivers had high confidence to manage the chemotherapy side effects at home.

The findings of the present study are consistent with those of another study conducted in 2023 at a teaching hospital in Northern Taiwan which aimed to assess the self-efficacy of caregivers of family member with oral cancer, which found that the majority of caregivers had a moderate overall self-efficacy level (mean score 6.87)

Both studies reported that caregivers are confident in managing side effects of chemotherapy. It reinforces the view that caregivers are becoming more self assured in their roles. This increase in the level of confidence is closely linked to caregiver performance and patient outcomes. It also suggests that continued support and

empowerment of caregivers through education and resources may further strengthen their confidence and effectiveness.

Section C: Finding related to relationship between knowledge on chemotherapy side effects and level of confidence in managing them among caregivers.

In the present study, in the group with no knowledge, no subjects had little confidence, while 88.2% were confident and 11.8% were highly confident .In the group with poor knowledge, no subjects had little confidence , while 96% were confident and 4% highly confident. In the group of caregivers with average knowledge, 10% had little confidence, 80% were confident and 10 % were highly confident. There was no any significant association between knowledge on chemotherapy side effects and level of confidence in managing them among caregivers.

There are no much studies as evident regarding relationship between knowledge on chemotherapy side effects and level of confidence in managing them among caregivers. The present study findings suggest that confidence may be influenced by other factors beyond knowledge alone, such as personal experience, emotional resilience, or support systems. Notably, no prior studies were identified that directly examined this specific relationship, highlighting a gap in the existing literature and the need for further research in this area.

Section D: Finding related to association of knowledge on chemotherapy side effects with selected socio-demographic variables.

The present study showed a significant association between knowledge regarding chemotherapy side effects among care givers of cancer patient and a socio demographic variable, "Educational status "among caregivers of cancer patient at a significant level of $p < 0.05$ (p value =0.046). No any significant association was found between knowledge and other socio demographic variables such as relationship of caregiver with patient, age, gender, occupation, monthly income, religion and whether the caregiver is a health professional or not.

In contrast ,another study titled 'An exploratory study to assess the knowledge on side effects of chemotherapy among caregivers of cancer patient' in selected hospitals in Pune city, Maharashtra showed no significant association between the level of knowledge and demographic variables such as age, gender ,education or income. The present study indicates that individuals with higher educational status tend to have better understanding and



awareness of chemotherapy related side effects. This suggests that while general background characteristics may not influence awareness, education plays a key role in shaping caregivers' understanding. . In present study, no significant association was found between caregivers' knowledge regarding chemotherapy side effects and socio-demographic variables such as age, gender, monthly income, religion, occupation, or even whether the caregiver had a healthcare background This lack of association with other demographic variables could be due to differences in the educational background, distribution of the sample, regional variations, or the content and structure of the knowledge assessment tools used in each study .The findings of our study underscore the importance of considering educational background when designing health education interventions. Tailoring educational programs to the literacy level of caregivers may enhance their understanding and improve patient outcomes.

CONCLUSION

The present study assessed the knowledge regarding chemotherapy side effects and level of confidence in managing side effects among care givers of cancer patients – A hospital based correlational study in tertiary care hospital in Ernakulam district, Kerala. The findings revealed that the caregivers have poor knowledge regarding chemotherapy side effects but are confident in managing side effects. There is significant association between knowledge and educational status of caregivers (p value=0.046).

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CONFLICT OF INTEREST

The authors declare no conflict of interest in the study

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