



## Capsule Course to Assess the Knowledge, Attitude and Practice of Paramedical Staff Towards Chemotherapy Drugs and their Administration in a Tertiary Cancer Care Center of India

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### Abstract

#### Background

The role of paramedical staff (PMS) in management of malignancies is paramount as it involves giving correct chemotherapy, envisaging and detection of adverse reactions to giving emotional and support to patients and their relatives. Hence this study was undertaken to ascertain the knowledge, attitude and practice (KAP) of these PMS to the chemotherapy drugs and the effect of capsule course on the same. PMS are the main set of health care worker who supplement and support the physicians or oncologists but are not specially trained or qualified as nurses.

**Methods:** A multiple-choice questionnaire, which included ten questions about knowledge, ten questions about practice and five questions about attitude, was prepared. Baseline KAP was determined by giving questionnaire to 100 PMS. Then a capsule course was conducted by medical, radiation and surgical oncologists of our institute. Re-evaluation was done to assess change in KAP every three months. All PMS were addressed in small groups of 25 each. The data gathering process continued till the required number of samples was achieved. The data collected was analyzed in terms of percentage.

**Results:** The result of knowledge questionnaire was 60%, which improved to 89%, attitude improved from 55% to 80.2% and practice improved from 61% to 87.5% after these capsule courses after 24 months. This improvement in the knowledge was due to 8 sessions of the 3 monthly courses which were conducted. This was an on-job training for the PMS. Each candidate underwent 8 such courses within a period of 24 months.

**Conclusions:** There was a definitive lack of awareness which was tested on the basis of KAP questionnaire and there was a definitive improvement in the knowledge and care for patients after the capsule course.

**Keywords:** Knowledge; Attitude; Practice; Capsule Course; Paramedical Staff; Chemotherapy Drugs

### Introduction

Cancer ranks third important health problem throughout the world. Unlike other illnesses the treatment of cancer is for long duration and it is interspersed with complications and frequent admissions to hospital [1,2]. The role of PMS in management of malignancies is paramount as it involves giving correct chemotherapy, envisaging and detection of adverse reactions to giving emotional and support to patients and their relatives [3,4]. Hence this study was undertaken to ascertain the knowledge, attitude and practice of PMS to the chemotherapy drugs and the effect of capsule course on the same. Attitude of the drug administering staff is also important towards its safe handling to prevent any personal hazard [5].

The need was felt to assess knowledge, practice and attitude of PMS who administer these chemotherapy drugs. With this idea in mind this study was undertaken first to detect the awareness among non-oncology trained PMS on various aspects of cancer management and then the outcome of a short capsule course on them. Hence it was thought that a capsule course would be of immense help and would change their attitude about chemotherapeutic drugs handling, their administration and ensure safe handling practices with better patient outcomes and biohazard safety.

### Materials and Methods

#### Methods

This study has been carried out on PMS working in the department of medical oncology, radiation oncology and surgical oncology at a tertiary cancer care center in India from July 2014 to July 2016. Since no prior international standardized questionnaire on KAP was available, a multiple-choice questionnaire based on general and basic knowledge and practice of chemotherapy was prepared by highly experienced and trained oncologists practicing in this center. The questionnaire included ten questions about knowledge, ten questions about practice and five questions about attitude. The questions were formulated according to the suggestions and decision of all oncologists and uniformity was maintained as all subjects were given the same questions. All the study subjects were kept fixed and no substitution was allowed. Baseline KAP was determined by conducting the capsule course and then making the PMS answer the questionnaire. Each capsule course lecture was taken for about 2 hours and candidates were given 60 minutes to answer the questions. Evaluation was done to assess change in KAP every three months. The data gathering process continued till the required number of samples was achieved. The data collected was analyzed in terms of percentage and was presented in the form of tables.

### Study population

The study population included the 100 PMS who were not specially trained in oncology and were working in various different specialties and wards. For the benefit of study population, the PMS were addressed in small groups of 25 based on their total service in the medical field.

The PMS were divided into four study groups of 25 each:

- Study group 1: PMS with more than 18 years of service.
- Study group 2: PMS with 12 -18 years of service.
- Study group 3: PMS and PMSs with more than 5 years of service.
- Study group 4: PMS with 5 years or less service.

### Exclusion criteria

Those staffs that were already trained in oncology and administration of chemotherapy drugs were not included in study population.

### Data collection technique

A questionnaire which included questions based upon knowledge, practice and attitude towards the chemotherapy drugs and their administration was given. Questions pertaining to knowledge and practice, about the different aspects of chemotherapy were asked. Each area was covered with ten questions each while to assess the attitude only five questions were asked. Total of 25 questions were prepared. Baseline KAP towards dispensing of chemotherapy drugs was determined by giving questionnaire to 100 PMS and then capsule course was conducted. Re-evaluation was done to assess any change in their KAP. The same exercise was carried out every 3 months and the difference of KAP scores was noted at the end of each course. Each correct answer was given 4 marks with no negative markings.

### Questionnaire Knowledge

1. Common side effects of chemotherapy.

- a) Nausea and vomiting
- b) Constipation or loose motion
- c) Weakness
- d) All the above

2. Pre-chemo investigations include

- a) Complete blood count
- b) Renal and liver function test
- c) Blood sugar F and PP
- d) a and b both

3. Chemotherapy is given to the pts if

- a) Hb > 8gm, TLC >4000/cumm, Plt > 1 lakh
- b) Hb < 8gm, TLC < 4000/cumm, Plt < 1 lakh
- c) Hb > 10gm, TLC > 6000/cumm, Plt > 2lakh
- d) None of the above

4. PICC and Hickman's dressing and flushing is must

- a) Every week
- b) Every fortnight
- c) Every month
- d) Does not need dressing

5. SDP and PRP is transfused when

- a) Hb is low
- b) Platelets are low
- c) TLC is low
- d) None of the above

6. Chemotherapy drugs causes

- a) Fall in Hb
- b) Fall in TLC
- c) Fall in platelets
- d) Fall in all three cell lines

7. Fentanyl patch is applied for

- a) Nausea and vomiting
- b) Pain
- c) Increase in TLC count
- d) None of the above

8. Growth factor GCSF and peg GCSF is given to increase

- a) Immunity
- b) Hb
- c) TLC
- d) Platelets

9. WHO step ladder for pain management

- a) NSAIDS > tramadol > opioids > morphine
- b) Tramadol > opioids > NSAIDS > morphine
- c) Morphine > opioids > NSAIDS
- d) None of the above

10. The aim of chemotherapy can be

- a) Curative
- b) Palliative
- c) a and b both
- d) None of the above

### Practice

1. Preferable sites for starting IV lines for chemotherapy

- a) Anticubital fossa
- b) Dorsal site of hand
- c) Peripheral veins of hand and feet
- d) None of the above

2. Close observation of IV lines

- a) Free flow of IV fluids
- b) Redness
- c) Extravessesion
- d) Swelling

3. Anti-cancer drugs are given

- a) IV
- b) Oral
- c) IM and subcutaneous
- d) All the above

4. Precautions to be taken while preparing chemo drugs

- a) Use of gloves
- b) Use of mask
- c) Use of gown and goggles
- d) All the above

5. Chemotherapy drugs can be administered

- a) OPD patient
- b) Need hospitalization
- c) Need intensive cared
- d) None of the above

6. Central lines, PICC and Hickman's musts be handled

- a) In the clean way
- b) In the sterile way

7. For flushing of PICC, PORT and Hickman's heparin concentration is

- a) 100 units/ml
- b) 500 units/ml
- c) 1000 ml/ml
- d) None of the above

8. Extravasations of chemotherapy is managed as per the

- a) Drug extravasseted
- b) Cold compression
- c) Hot compression
- d) All of the above

9. Prechemo anti emetic protocol includes

- a) 16 mg dexta +16 mg emeset
- b) 16 mg dexta only
- c) 16 mg emeset only
- d) All of the above

10. Post chemo anti emetic medicines are

- a) Must for the patients
- b) Optional
- c) One third of the patients
- d) None of the patients

### Attitude

1. When a patient is on chemotherapy comes to you, you feel with chemotherapy

- a) Patient's disease is going to be cured.
- b) Any way patient is going to die.
- c) Not concerned about outcome
- d) None of the above

2. While handling cytotoxic drugs person needs

- a) Self protection
- b) Does not need any protection
- c) Not aware
- d) None of the above

3. Along with patients other family members also must be counseled regarding the disease and treatment

- a) Yes
- b) No

c) Not sure

d) None of the above

4. Administration of analgesic to the patient for pain relieve must be

- a) Liberal as per the requirement of the pt.
- b) Not important, its part of disease and should be told to patient
- c) As per prescribed schedule only.
- d) None of the above

5. Explanation of the Diagnosis to the patient and his relatives.

- a) Must be explained in detail.
- b) Need not necessary to explain.
- c) It's not my duty.
- d) None of the above

### Topics of capsule course:

1. Chemotherapy
2. Pre-chemotherapy and post- chemotherapy preparation of the patient.
3. Care of the patient on chemotherapy.
4. Main side effects of chemotherapy and their management.
5. Care of the intra-venous lines and central lines.
6. Main chemotherapy drugs.
7. Pain management.
8. Health education to the patient on chemotherapy.
9. Importance of personal protective equipment.
10. Personal protective equipment and their use with chemotherapy.

### Results

There were 10 questions in the questionnaire (1 - 10) which were covered under the topic of knowledge. Mean result value of knowledge questionnaire at zero months was 60% which increased to 75% by 12 months and 89% by the end of 24 months. The result of knowledge questionnaire was 60%, which improved to 89% with capsule courses after 24 months (Table 1). Number 1 - 5 of the questionnaire were covered under the topic of attitude. At the beginning 55% participants answered correct. After 12 months this percentage increased to 65% and reached up to 80.2% after 24 months (Table 2). Number 1 - 10 is the questionnaire, which were covered under the topic of practice, the mean value of 10 questions shows that at the beginning 61% participants answered correctly. After 12 months this percentage increased to 73% and reached up to 87.5% after 24 months (Table 3).

### Discussion

This study was conducted with an objective of observing and describing nursing practice of chemotherapy administration, to reduce the number of cases for avoidable medication errors and serious adverse events during administration of chemotherapy drugs by the personnel who have not been formally trained [6]. Effect of the capsule course on oncology practice of handling toxic chemotherapy drugs was deciphered. Their knowledge was evaluated by a questionnaire. On evaluating the questionnaire,

Period (Month)	Questions										Mean (%)
	1	2	3	4	5	6	7	8	9	10	
	Questions answered correctly (%)										
0	60	65	50	55	60	70	65	60	50	65	60.0
3	55	70	60	60	70	70	65	65	60	60	63.5
6	65	70	55	60	75	75	70	75	65	70	68.0
9	60	75	70	75	70	65	80	75	70	75	71.5
12	70	80	65	70	75	75	80	80	75	80	75.0
15	70	75	75	80	80	85	85	75	75	80	78.0
18	75	85	85	85	85	75	85	85	80	80	82.0
21	80	85	90	85	85	80	90	90	85	85	85.5
24	80	90	95	90	85	80	90	95	90	95	89.0

Table 1: Depiction of questionnaire on knowledge.

Period (Month)	Questions					Mean (%)
	1	2	3	4	5	
	Questions answered correctly (%)					
0	60	50	50	55	60	55.0
3	60	55	50	60	60	56.0
6	65	55	55	65	65	61.0
9	65	60	60	65	65	63.0
12	70	60	65	60	70	65.0
15	65	65	65	70	70	67.0
18	70	70	70	75	75	72.0
21	75	70	75	80	75	75.0
24	80	75	80	86	80	80.2

Table 2: Depiction of questionnaire on attitude.

Period (Month)	Questions										Mean (%)
	1	2	3	4	5	6	7	8	9	10	
	Questions answered correctly (%)										
0	60	55	65	70	50	60	60	70	60	60	61.0
3	65	60	65	75	60	60	60	70	65	70	65.0
6	70	75	65	70	70	65	65	70	70	75	69.5
9	75	70	75	70	70	60	70	80	65	70	70.5
12	80	70	75	75	70	65	70	85	70	70	73.0
15	85	75	80	80	75	70	75	85	70	75	77.0
18	80	80	80	85	80	75	80	80	75	80	79.5
21	80	80	85	85	85	75	85	90	80	90	83.5
24	80	85	90	95	90	85	90	85	85	90	87.5

Table 3: Depiction of questionnaire on practice.

it was found that people in study group 1 i.e. PMS with more than 18 years of service were possessing good knowledge of methodology of administration of chemotherapeutic drugs. The study suggested that most of the PMS had positive attitude about handling and administration of chemotherapeutic drug but were hampered by inadequate knowledge, hands on training and work experience [7,8]. Other factors found in the study which could facilitate the attitude included staffing pattern, mixing of skilled experienced PMS with fresher's and provision of pin ups in the working environment [9,10].

Initially most of the PMS had neutral attitude towards chemotherapy drugs as their exposure to chemotherapy drugs and cancer patients as such were very minimal. A reason may be that most of the PMS working in other wards are not exposed to the kind of prac-

tice in chemotherapy center where outcome of the cancer patient falls far behind in comparative to the patients who are suffering from other diseases [10]. After repeated capsule courses, there was significant change in knowledge, practice and as well as attitude. Many similar studies conducted in other parts of the world as in Israel which used questionnaires like the Health Belief Model (HBM) and its extensive form, the Protection Motivation Theory (PMT) had similar out comes [1]. Even these studies showed lot of gap in KAP among the staff who administer chemotherapy drugs [3,5-10].

Overall, PMS appear to have a positive attitude towards chemotherapy. They realize that chemotherapy is a more involved process than just administering intravenous drugs and have an awareness of the safety issues and consequences of administra-

tion [11,12]. At the beginning 55% participants answered correct. After 12 months this percentage increased to 65% and reached up to 80.2% after 24 months. It is evident that PMS must have formal education and support in clinical practice before taking on this role [13,14]. Experience in this process has positively influenced not only nurse's attitudes towards chemotherapy but also their interactions with patients [15].

A number of factors were identified as key to facilitating nurse's work in chemotherapy administration. These factors were:

1. Organization of work.
2. Staffing levels and skill mix.
3. Educational preparation and supervised practice.
4. Pressure of time and workload

The challenge therefore is to provide the educational underpinnings, positive physical environment and effective working practices [16], which PMS need in order to achieve optimal KAP of chemotherapy drug administration and patient care.

## Conclusion

Apart from being a life saver in cancer patients, chemotherapeutic drugs harbor the potential to be carcinogenic, teratogenic and mutagenic to humans. There is thus a potential risk due to occupational exposure to cytotoxic drugs. Hence PMS should not have a casual attitude while handling these dangerous drugs [17]. A thorough knowledge of chemotherapy drugs, their methods of administration and also a basic awareness about their potential side-effects is of utmost importance for the PMS to deliver a healing touch to the ailing people. On the basis of the above findings, following recommendations are given:

1. A short and basic introductory course to be made mandatory to those PMS who has never worked in cancer ward with cancer patients.
2. Short capsule course in the form of in-service training, for hands on training in preparation and administration of chemotherapy drugs.
3. Supervision by senior PMS trained in oncology and mixing of staff so as facilitate the new and untrained paramedics to provide better health services to cancer patients.
4. A comparative study to be conducted for further exploration of effectiveness of, on the job training program and results displayed as a motivational point.

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