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A REVIEW ON ROLE OF CLINICAL PHARMACIST IN ONCOLOGY DEPARTMENT

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ABSTRACT

In the ancient times, the role of pharmacist was restricted to compounding and dispensing. But, in recent times this role has been expanded till providing direct patient care in the hospitals. Hence, there emerged a specific branch of pharmacy called “clinical pharmacy” which mainly deals with providing patient care that optimizes the use of medication and promotes health, wellness, and disease prevention. The pharmacist who is involved directly in providing patient care is called clinical pharmacist yet there is no evidence of professional clinical pharmacy services provided in India. clinical pharmacist act as a main bridge between the patient and the physician. The goal of clinical pharmacy activities is to promote the correct and appropriate use of medicinal products ,maximizing the clinical effect of medicines, i.e., using the most effective treatment for each type of patient ; minimizing the risk of treatment-induced adverse events, i.e., monitoring the therapy course and the patient’s compliance with therapy ,minimizing the expenditures for pharmacological treatments trying to provide the best treatment alternative for the greatest number of patients. The oncological pharmacist is also a clinical pharmacist who is having specialized knowledge of medications and their role in cancer and essential interdisciplinary team members who maximize the benefits of drug therapy and minimize toxicities. Hence, this review focuses mainly on the need of oncological pharmacist in minimizing the iatrogenic drug related problems occurring in the oncology department of hospitals.

Key words: Therapy monitoring, Patient care, Effective medicines, Patient compliance.

INTRODUCTION

Pharmacy profession comprises the third largest among the health care professions in the world and in India it has been evolving steadily over the last decade [1]. In current scenario, the role of pharmacist is restricted to manufacturing, marketing, dispensing of the drugs but there is need of pharmacist in providing patient care. The pharmacist who is involved directly in providing patient care is called clinical pharmacist yet there is no evidence of professional clinical pharmacy services provided in India [2, 3]. In the near future clinical pharmacists are going to play a major role in the Indian health care system as they play a beneficial role to improve health care in many ways. Presently in India clinical pharmacists are not well exposed

to health care system [3]. According to ACCP, Clinical pharmacy is defined as that area of pharmacy concerned with the science and practice of rational medication use [4]. The areas where the clinical pharmacists play a major role in health care system include Provision of drug information, patient counseling, medication history interview, clinical review, ADR monitoring and reporting, ward round participation, research etc. There is a need of clinical pharmacist in oncological care as a checkpoint in oncological prescriptions [5]. The role of clinical pharmacist involved in the Oncological care is to screen the prescription orders in order to reduce the medication errors [6]

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The expanded role of oncological pharmacists (Ops) in medication management relies on seven factors like selection, procurement, storage, prescribing/dosing, preparation/dispensing, administration and monitoring. The OPs are known as front line care takers as they can aid in management of side effects resulting from chemotherapy and biological agents [7]. The clinical pharmacist can resolve the problems related to chemotherapy order, which reduces the interruption to the pharmacy leading to more efficient processing of drug orders. The American Society of Clinical Oncology describes oncology pharmacists as having specialized knowledge of medications and their role in cancer and essential interdisciplinary team members who maximize the benefits of drug therapy and minimize toxicities [8].

Indian cancer statistics-Need for oncological pharmacist:

Cancer is the leading cause of death in both developed and developing countries. In underdeveloped countries there is no properly developed cancer care system for population to get access to better cancer care. Cancer diagnosis has become the most disastrous health expenditure among the patient's health expenses. The International Agency for Research on cancer GLOBOCON project predicted that the cancer burden in India will be nearly doubled in next 20 years, which indicate the rise of cancer deaths in near future [9, 10].

The Indian council of medical research reported that in 2016 the total number of new cancer cases are around 14.5 lakhs and India is likely to have over 17.3 lakh new cases of cancer and over 8.8 lakh deaths are due to the disease by 2020 with cancers of breast, lung and cervix topping the list.

Data also revealed that only 12.5 per cent of patients come for treatment in early stages of the disease (Statistics, National institute of cancer prevention and research).

Treatment results are about 20% less than what is observed for similar conditions in more developed countries, mostly due to late diagnosis and inappropriate treatment. Paediatric cancers are highly curable but this has not been achieved in India due to lack of access to quality care and lack of support systems [11].

Cancer statistics in India

- Estimated number of people living with the disease: around 2.5 million
 - Every year, new cancer patients registered: Over 7 lakh
 - Cancer-related deaths: 5,56,400
- Deaths in the age group between 30-69 years :
- Total: 3,95,400 (71% of all cancer related deaths)
 - Men: 2,00,100

- Women: 1,95,300 (Statistics, National institute of cancer prevention and research)

By the above all statistics one can make a conclusion that the mortality rate in India touched an all time high and is the highest by any disease in the country. This in itself denotes the seriousness and threat of the disease. Cancer hence is responsible for causing maximum mortality and leads to around 0.3 million deaths every year. Apart from unawareness, other reasons that have contributed in increasing the mortality rate due to cancer in India include poor ability to prevent, diagnose as well as treat the disease. Due to this high mortality and morbidity rates which are the consequences of poor diagnosis and treatment there is immense need of palliative care in India. The WHO defined palliative care as "an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial, and spiritual. There are many barriers for the growth of this palliative care in India and those include factors such as population density, illiteracy, lack of institutional interest, poverty and lack of patient knowledge and interest [12].

With this increasing mortality rate, there is an increase in number of well designed and equipped tertiary care hospitals along with the oncologists. But there is lack of oncology pharmacists who makes the system better and effective .so there is a need for oncological pharmacist, who helps in improving the quality of treatment as well as making the treatment as per standard regimens i.e., rational [13].

Role of oncological pharmacist

The American Society of Clinical Oncology describes oncology pharmacists as having specialized knowledge of medications and their role in cancer and essential interdisciplinary team members who maximize the benefits of drug therapy and minimize toxicities (Cancer.Net. ASCO expert corner).

The role of clinical pharmacists has been expanded to the area of cancer chemotherapy as there is a reasonable standardization in the prescription of supportive therapy such as antiemetics [14-17]. As all the chemotherapeutic agents have narrow therapeutic index, OPs also have a key role in therapeutic drug monitoring in cancer patients and their patient education helps them in strict medication adherence [18].

The first and foremost role of all Ops is to create and update the treatment protocols and guidelines [19].

Oncological pharmacists play multiple roles in cancer chemotherapy and those are as follows:

1. Maintaining an inventory of chemotherapeutic agents which reduces the wastage of drugs.

2. Protects from unnecessary exposure to chemotherapeutic agents
3. Compounding of chemotherapeutic agents
4. Dispensing and educating the patient

Apart from the above roles, the chief pharmacist who was provided with the assistant staff and technological support, the oncological pharmacist can be directly involved in patient care, patient education and can contribute his part in making clinical decisions, framing institutional guidelines along with other health care professionals which focuses on patient care.

As a member in other committees of the hospital oncology pharmacist can improve drug safety, efficacy as well as quality of oncological care among the patients. OPs can also be involved in training and educating the safety of staff during the manufacture, compounding and dispensing and monitoring of chemotherapeutic agents and patients during receiving those drugs.

As the pharmacists are well trained in the area of therapeutics and pharmacology they can be placed in providing supportive care to chemotherapy by treating the effects related to chemotherapy such as pain, nausea, diarrhea, anemia, vomiting, alopecia, muscle weakness etc., the pharmacist can also conduct clinical studies in cancer research and trials with regard to investigational drugs.

The American Society of Health-System Pharmacists (ASHP) published guidelines in 1990, 1993, 1996, and 2002 to describe a pharmacist's role not only in safe handling, preparation, and dispensing of drugs but also in pharmaceutical care as the health professional who is "... directly responsible for the provision out-lined for medication-related care for the purpose of achieving definite outcomes that improve a patient's quality of life. The responsibility of pharmacist is deemed to identify, resolve, and prevent medication-related problems such as untreated indications, improper drug selection, inadequate dosing, adverse drug reactions, interactions and medication use without indication [20].

Selection:

Selection refers to choosing an appropriate drug for a particular indication [21]. OP'S can contribute their role in appropriate selection and provision of drug information regarding their pharmacology, dosage adjustments in special population, contraindications, drug interactions and adverse reactions. OPs provide this information with their specific drug information skills and knowledge in clinical research [21].

Prescribing

Prescribing which is also called ordering is defined as recommending the patients to take medications appropriately with clear dose, dosage, route and time of administration. Prescribing chemotherapeutic drugs is a complex process as it should comply with standardized anti

cancer regimen based on specific diagnosis of cancer and in some instances these treatment regimens should be referred from published articles, studies and clinical trials. In India, the physicians will not have sufficient time to deal with the patient and hence during prescribing process there might be lots of chances for errors. Mistakes in the prescription may lead to significant medication errors and these medication errors in turn may lead to many adverse effects in the patients. General medication errors in hospitals range from 2% to 5%. Chemotherapy error rates have been reported at 3%–16% [23, 24].

One source of prescribing error stems from the unique practice in oncology of calculating doses on the basis of the patient's body surface area Dosing calculations should be verified by a multidisciplinary system of double checking [25-27].

Due to all these above medication errors, in recent days the written prescription order was completely replaced by the electronic order entry in all the developed countries and many large hospitals in India. Electronic order entry provides many safety measures and helps in minimizing medication errors. The key players are OPSs that are intended in creating standardized electronic order sets and also linked to clinical laboratory tests and program for medication alerts for interactions and doses that exceed maximum allowable limit. standardized forms simplify and hasten chemotherapy prescribing because well designed form aid prescribers to meet clear, rational prescriptions which reduce medication errors. standardized form contains the following:

1. Patient name, identity number.
2. Date of prescribing
3. Diagnosis, regimen and cycle number
4. Allergies
5. Dose calculations
6. Height, weight and other parameters used for calculating dose
7. Dosage
8. Route and time of administration
9. Supportive care treatments [28]

The other role of Ops in the prescribing process is to deal with dosing considerations. This is due to the fact that all the population cannot be prescribed by the single dose and the dose of the chemotherapeutic agents will be varied based on the age, gender, body weight, body surface area etc., The Ops must be expertised in calculating the Doses for special population such as pediatrics, geriatrics, hepatic and renal impairment patients, pregnancy and lactation etc.[22].

Procurement

Procurement is an act of obtaining drugs from the manufacturer. Due to manufacturer's shortage issues op's need to spend more time in procurement of anticancer drugs. Manufacturing shortages are due to manufacturing delays, quality issues, contamination, insufficient supply of

raw materials to the manufacturer, plant closures, increasing demand for antineoplastics, discontinuation of existing drugs etc [18]

Preparation and dispensing

Preparation of anticancer drugs is a complicated process. Ops here have the role in preparing the standardized charts for dilution quantities of drugs, infusion rates, vehicles to be used, and specific containers to be used. The role of pharmacist in dispensing is mainly to assure that the final drug product is legally labeled and contains all ancillary notification either on the label or stickers for administration, storage, and use [18].

Administration

For the patient to receive chemotherapy properly, Ops should work together with other health care protocols should be prepared by Ops [29]. To establish prophylaxis protocol ops collaborate with physicians [18]. The first parameter to check in the administration of drugs is 'patient medication adherence'. This can be achieved by adopting various methods such as maintaining an individual patient diary, and cross verifying with the pill counts etc [30].

Monitoring

During chemotherapeutic administration by the monitoring of vitals and patient interview ops can assess the ability of patients in tolerating electrolyte abnormalities, controlling of nausea and vomiting, tolerating hydration regimen and other possible side effects. Ops should be very active in managing all the adverse effects [18].

CONCLUSION

The clinical pharmacist can assist a physician by carrying out above mentioned roles and there by creates a platform for patient oriented pharmacy services. Ensuring patient safety is the responsibility of the entire health care team at distinct levels and pharmacist in coordination with other health care professionals form the nucleus of this task. The responsibility of pharmacist is deemed to identify, resolve, and prevent medication-related problems such as untreated indications, improper drug selection, inadequate dosing, adverse drug reactions, interactions and medication use without indication.

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