TO STUDY THE EFFECT OF CHEMOTHERAPY ON HEALTHCARE PRACTITIONERS

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INTRODUCTION :

WHAT ARE CYTOTOXIC DRUGS?

- These are the drugs that are given to the body as part of chemotherapy to treat cancer cells. These medications work by influencing the cell division-related structures to inhibit the unchecked proliferation of bodily cells.
- These medications have mutagenic and carcinogenic properties, which are extremely detrimental to the body's natural cells.

CANCER :

Cancer is a disease in which DNA damage or genetic abnormalities cause uncontrolled cell proliferation. The ability of a normal cell to stop dividing when it comes into contact with another cell during division is known as contact inhibition. Cancer cells lack this ability due to genetic mutation, which can be caused by a variety of stimuli including radiation, toxins, tiny particulate matter, etc. Carcinogens are substances that cause cancer.
In the condition of cancer when uncontrolled cell growth occurs of any tissue it is called as tumor and these tumors are of two types benign and malignant.

- Because benign does not spread, whereas malignant grows and spreads into other parts of the body, the latter is lethal. This process is known as metastasis.
- There are a variety of ways to diagnose cancer, but the most reliable method is to examine a biopsy sample of the suspected tissue. This biopsy test determines the stage of the disease, its severity, and how far it has spread throughout the body. The treatment plan then begins in accordance with this information. Numerous methods, such as surgery, chemotherapy, and radiation therapy, are used in the treatment of cancer.

TYPES OF CANCER :

A. **Carcinoma** - It is a type of cancer that starts in the skin or the tissue thatcovers or line the other organs.

B. **Sarcoma** - It is the cancer of connective tissues like muscles cartilage bonesetc.

C. **Leukaemia** - It is a cancer of bone marrow.

D. **Lymphoma** - It is a cancer of immune system.

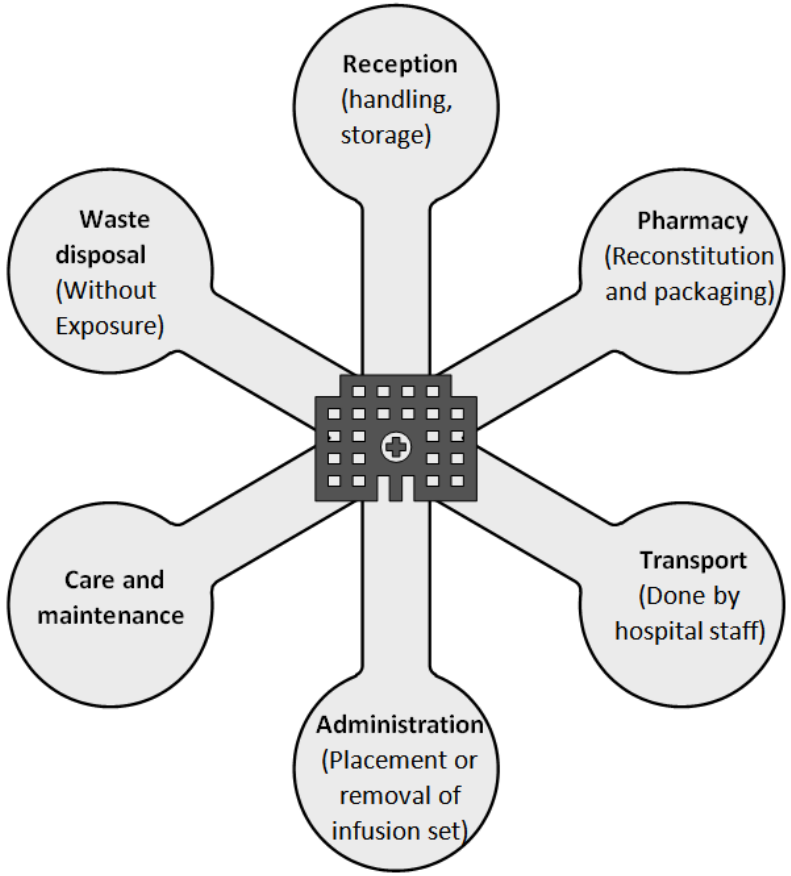
Despite the fact that chemotherapy is one of the most well-known cancer treatments, alternative treatments include surgery, radiation, bone marrow transplants, immunotherapy, and targeted medication therapy. Cytotoxic medicines, which are toxic to cells, are employed in chemotherapy to kill cancer cells.

In addition, these cytotoxic medications are extremely dangerous to healthy individuals. Therefore, it is imperative to practise caution and safety when dispensing, administering, handling, and disposing of these medications.

Patients are regularly exposed to these medications in an oncology department where medical professionals strive to treat cancer. And as a result of their exposure with these drugs, medical personnel are at risk for getting conditions like skin and throat irritations, allergic reactions, headaches, hair loss, nausea, vomiting, and diarrhoea, birth malformations, infertility, and in some cases, cancer.

Who are involved in chemotherapy process ?

- **Oncologist** - Receive the patient analyse blood and prescribe chemotherapy.
- **Nurse** - Administer the medication into the patient.
- **Pharmacist** - Make sure the availability of the prescribed medication forchemotherapy.
- **Laboratory technician** - Prepare the drugs.



There are mainly three times when the chances of exposure of drugs are more :

1. **Preparation -** At the time of preparation of medication in the pharmacy.
2. **Administration -** When treatment is being delivered to the patient.
3. **Disposal -** At the time of disposal of used infusion set.

Mechanism of contamination :

•When cytotoxic drugs exposed in the environment there are mainly three ways by which drug can enter in the body to show its negative effects:

A. Cutaneous contacts

B. Inhalation

C. Ingestion

CONSEQUENCES :

- Skin irritation, throat irritation
- Allergic reactions, Hairloss
- Headaches, Nausea, Vomiting and Diarrhoea
- Congenital defects
- Increased risk of spontaneous abortions
- Infertility
- Increased risk of developing a cancer.

The effects of exposure to these cytotoxic medications on healthcare workers have been demonstrated in numerous studies to range from a minor hair loss issue to a more serious miscarriage issue, making it imperative to take measures when handling these drugs. And in this study, we'll find out how prevalent these problems are among healthcare professionals in India and what steps hospital administration is taking to protect its employees from them.

OBJECTIVES :

- To study the effects of chemotherapy on healthcare practitioners. (Q.3, Q.4,Q.5)
- To observe and understand their awareness and precautions taken duringchemotherapy. (Q.6, Q.7)
- To learn and understand the approach used by healthcare practitioners inoncology department during chemotherapy. (Q.8, Q.9, Q.10)

RESEARCH METHODOLOGY :

Type Of Research :

• Research is the systematic collection and analysis of data for the purpose of achieving research goals using a design strategy that best supports those goals. The research methodology and sample techniques are chosen based on the research design.

There are two types of research designs:

1. **Exploratory research**
2. **Descriptive research**

Exploratory research :

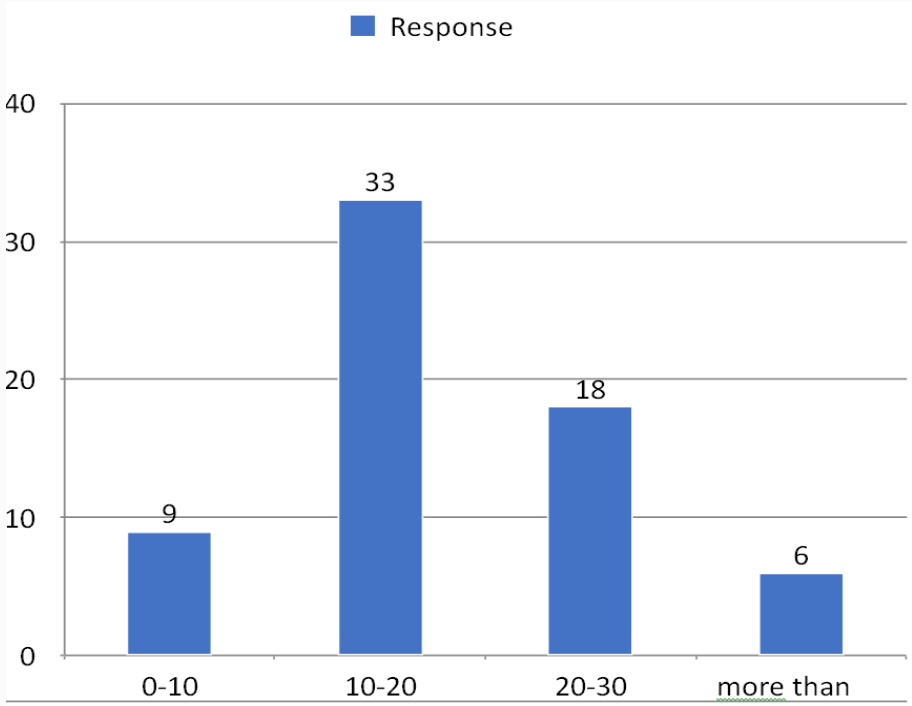
- The goal is to examine, research, and plan for a more focused investigation, as the name suggests. The primary goal is to learn more about the thoughts and ideas, and the structure is ad hoc. The design is adaptable and focuses on clarifying a murky issue in order to get a clearer picture for a thorough inquiry. The creation of hypotheses to explain any phenomenon is aided by this type of study strategy.

Descriptive research :

- This kind of study is more organised and outlines the features and functions Descriptive research collects statistical data that is used to determine the solution to the study problem and is more pictorial in nature.
- While descriptive research provides the final judgement, exploratory research provides a picture of what, why, where, when, who, and how. Simply put, descriptive research fills in the gaps left by exploratory research.
- Both an exploratory and a descriptive research strategy were used for this investigation.

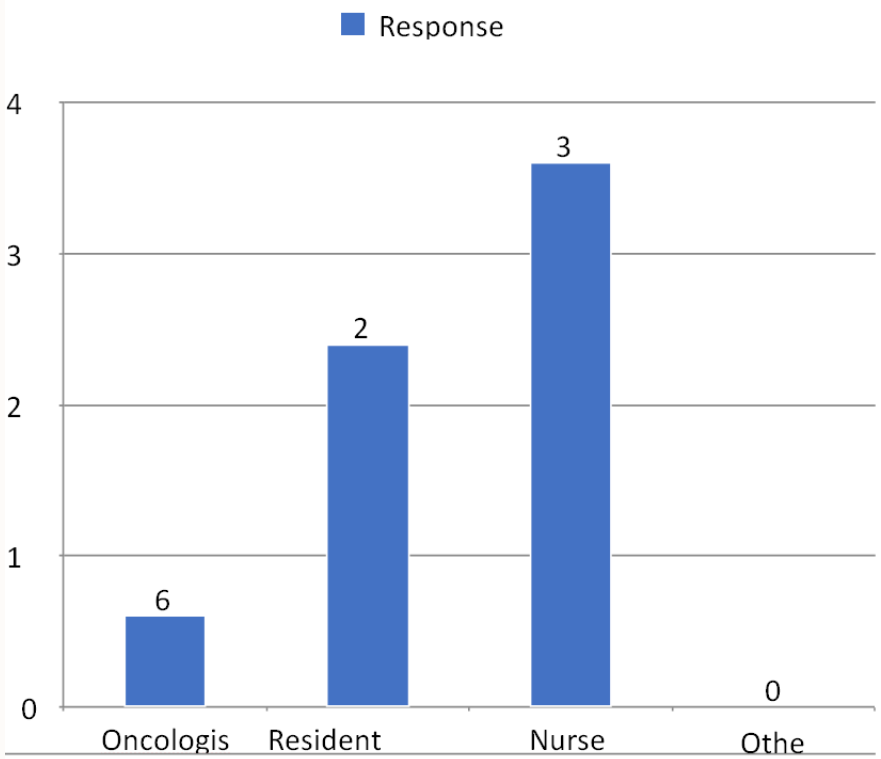
How many chemotherapy sessions are usually done in your hospital in a month?

- **Result & Interpretation-** 33 out of 66 healthcare practitioners told that around 10 to 20 chemotherapy sessions are usually done in a month in their hospital. 18 said 20 to 30 are usually done, 9 said 0 to 10 sessions has done only 6 has told that more than 30 chemotherapy sessions has been done in their hospital in a month. This data shows that normally in a hospital 10 to 20chemotherapy sessions are usually done.



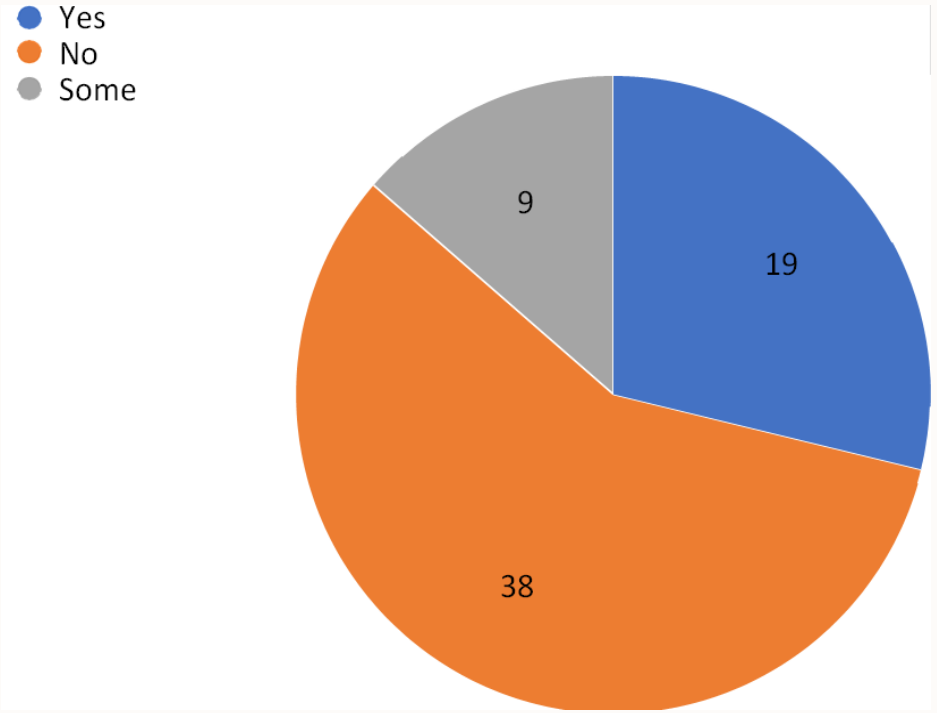
Who handles the responsibility of drug administration in patient forchemotherapy?

- **Result & Interpretation -** 36 nurses out of 66 healthcare practitioners handled the responsibility of drug administration where 24 resident doctors handle this responsibility and in 6 cases oncologists handle this responsibilitybut no other staff allowed to perform this activity. This Shows that mainly nursing staff and resident doctors are at the high risk of getting exposure and harmful effects of cytotoxic drugs.



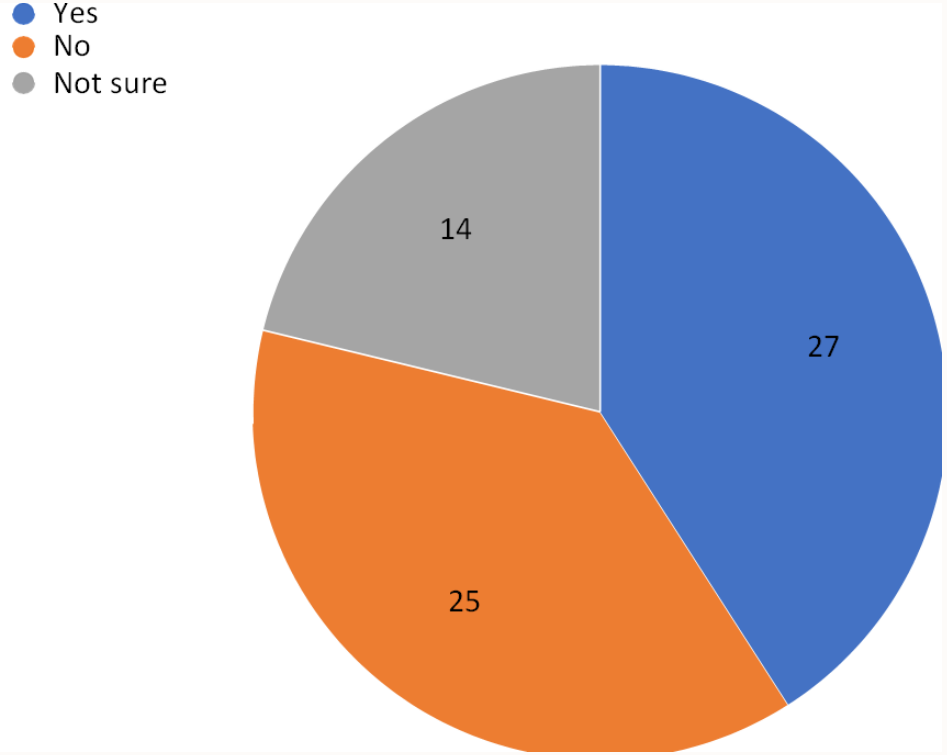
Are you aware of the harmful effects of cytotoxic drugs that are beingused in chemotherapy to the healthcare providers?

- **Result & Interpretation** - 38 out of 66 healthcare practitioners are not awareabout the harmful effects of cytotoxic drugs in which all of the HCP's are nursing and other staff and 19 out of 66 healthcare practitioners know about the harmful effects of these drugs and these all 19 HCP's are either oncologists or senior nursing staff. Rest of 9 out of 66 are not fully aware about the effects of cytotoxic drugs on the health. This shows that only oncologists and senior nursing staff are aware of the harmful effects of the cytotoxic drugs but junior nursing staff as well as other technicians lack this knowledge and so they are at the high-risk. So they need to get the knowledgeabout the handling of these cytotoxic drugs and what harm they can do to their body.



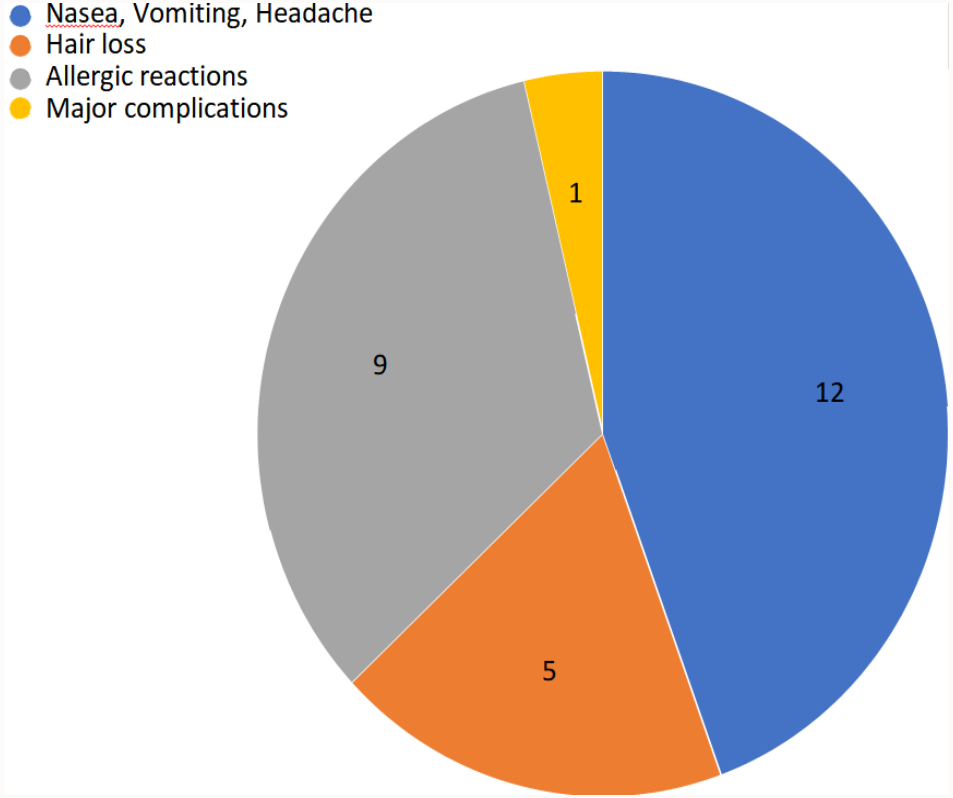
Have you faced any kind of such issues related to these drugs before?

- **Result & Interpretation** - 27 out of 66 at HCP’s have faced some issues ontheir health related to these drugs, 25 never have faced any issues on their health and 14 were not sure about the impact of these drugs on their health.



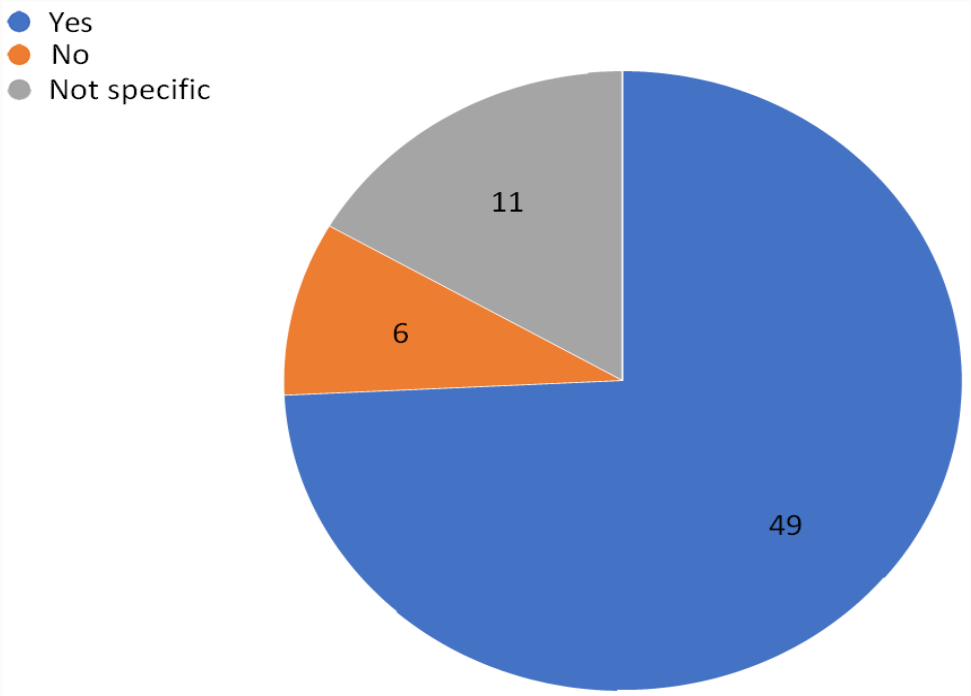
What issues have you faced?

- **Result & Interpretation** - 12 Out of 27 HCP's Who answered yes in previous question said that they have faced some common issues like nausea,vomiting, headache sometimes after getting exposure of these drugs. 5 said that they have faced problem of hair loss after entering in this profession, 9 said that they have experienced some sort of allergic reactions after getting contact of these drugs allergies like skin problems, throat irritations etc. And in all these 27 HCP's only one case found where a nurse said that she had a miscarriage in past but she is not sure that is it because of this exposure of cytotoxic drugs or any other problem.



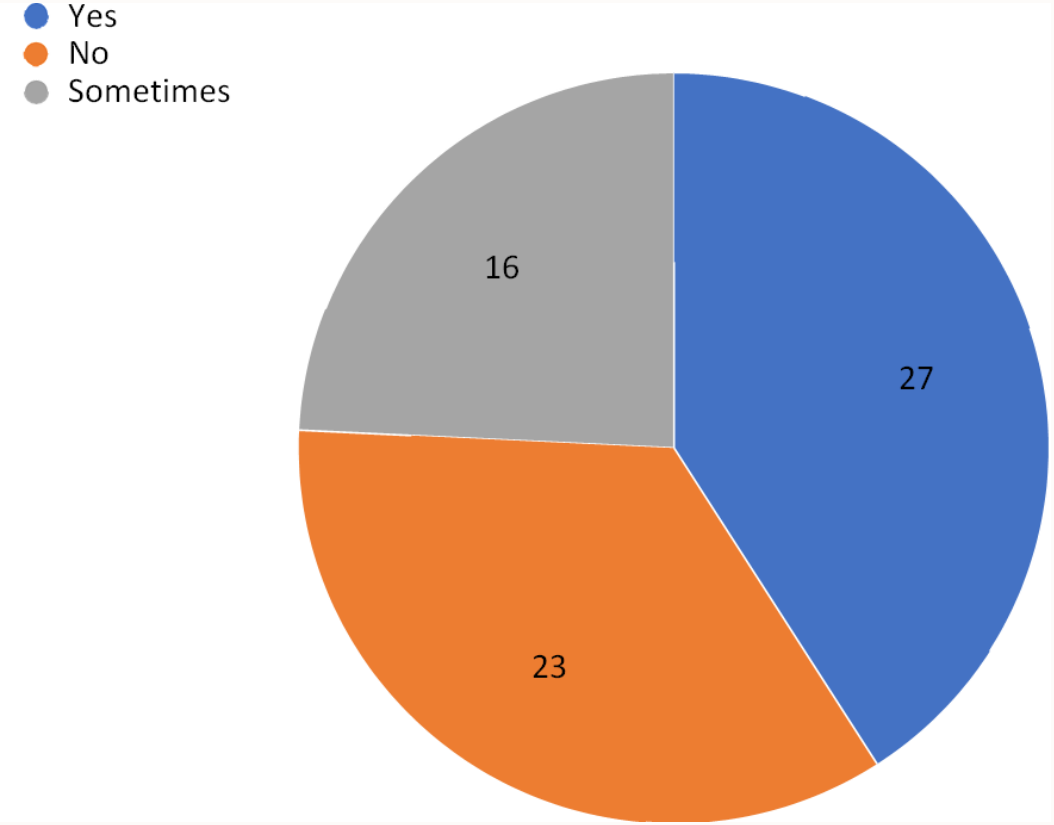
Do you have any guidelines related to cytotoxic drug handling in yourhospital?

- **Result & Interpretation** - 49 out of 66 healthcare practitioners said that they have guidelines related to handling of cytotoxic drugs, 6 said that they don’t have any guidelines related to cytotoxic drugs and 11 said that they don’t havespecific guidelines related to cytotoxic drugs. This shows that maximum number of hospitals have their own guidelines on handling cytotoxic drugs carefully.



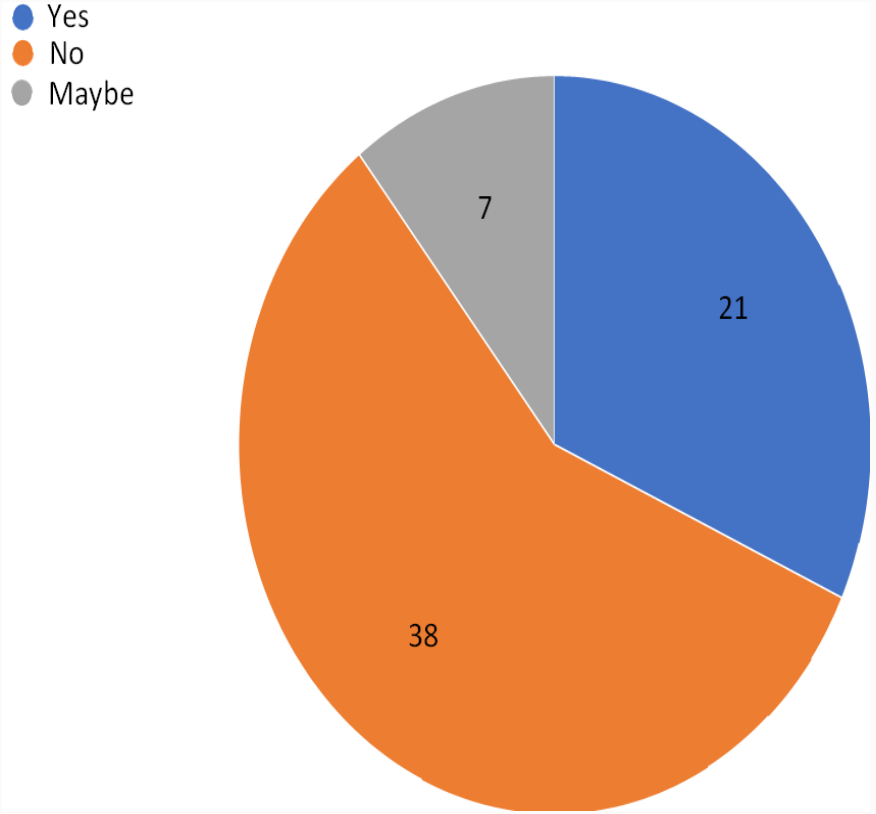
Do you consider that every time when you start giving the medication to the patient exposure of drug occurs in the environment?

- **Result & Interpretation** - 27 out of 66 HCP's said that maximum time when they start giving medication or remove the infusion set exposure of few drops of cytotoxic drug occurs commonly while 23 said that they do their work with full safety and precaution and do not let these drugs expose to the environment and 16 said that it happens sometimes not always.



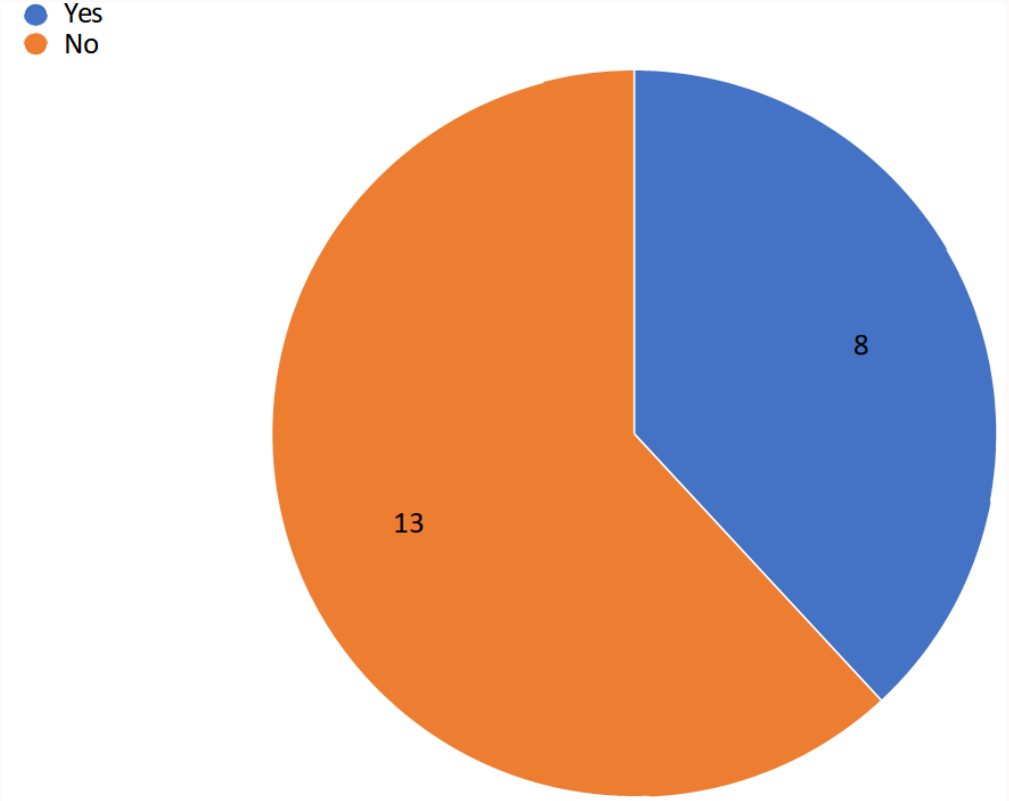
Are you aware about the closed system transfer devices available in the market which prevent the exposure of such drugs to the environment?

- **Result & Interpretation** - 38 out of 66 healthcare practitioners said that they are not aware about the close system transfer devices available in the market majority of them are the nursing and other staff, 21 were aware about the close system transfer devices and seven were not sure about these devices. This shows that majority of healthcare practitioners are not aware about these devices available in the market to prevent the exposure of cytotoxic drugs to the environment which ultimately protect them from the bad effects of such drugs.



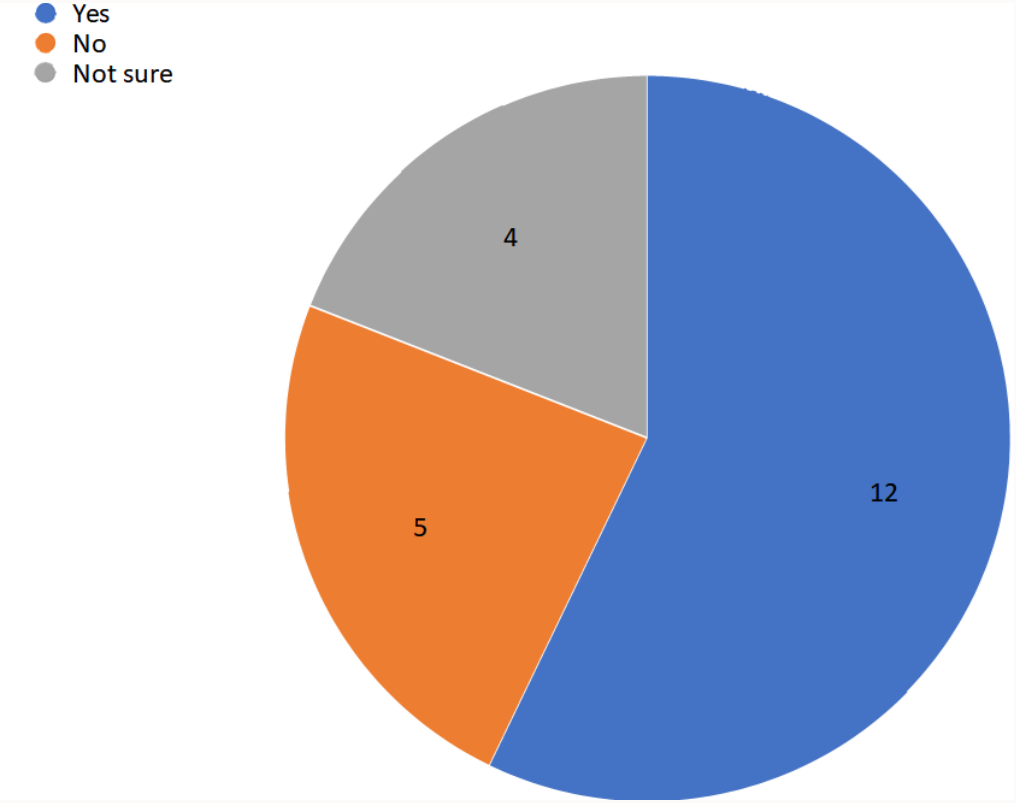
Are you currently using any CSTD devices ?

- **Result & Interpretation** - only 13 out of aware healthcare practitioners currently using CSTD devices and rest eight were not using because theyprefer safety and precaution over these devices.



Do you think that CSTD devices prevent the exposure of the cytotoxic drugs to the environment and thus minimises the health related hazards to the HCP's ?

- **Result & Interpretation** - 12 out of 21 aware HCP's think that CSTD devices prevent the exposure of cytotoxic drugs to the environment 5 do not consider this fact and four are not sure about this. This shows that most of the HCP's who are using CSTD devices are convinced that using these devices they can prevent the exposure of cytotoxic drugs to the environment and prevent themselves from their harmful effect.



CONCLUSION :

- It is evident from the comments of medical professionals that cytotoxic medications have many detrimental consequences on the health of normal human bodies. The most typical health symptoms include headaches, allergic reactions, nausea, and vomiting. Although there may be other, higher dangers, HCPs are most likely to encounter these.

- The majority of healthcare professionals, including nursing staff and other staff, are not aware of the negative effects of the cytotoxic drugs they are handling to provide chemotherapy, but oncologists and senior nursing staff are. This observation relates to their awareness and precautions taken during chemotherapy. Additionally, they have specific instructions on how to handle and dispose of the drugs in order to prevent exposure to these deadly substances.

- When it comes to the method used by HCPs to prevent the release of these cytotoxic drugs into the environment and to lessen their side effects, they either take safety measures and precautions when handling the drugs or, in some cases, use close-system medical devices. Only a small percentage of healthcare professionals use this method, but it is an effective one. More than 50% of HCPs who use such devices are happy with the outcomes, although some of them think that only by exercising prudence and safety measures can they completely eliminate any negative effects by preventing the pharmaceuticals from being exposed to the environment..

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