

## Review Article

### To study the effect of structured information module on knowledge regarding safe handling practices of antineoplastic drugs among nurses working: A review study

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#### ABSTRACT:

The safe and standard handling of antineoplastic drugs can reduce the effects of occupational exposure and promote safe behaviors in nurses. Cancer is a group of diseases involving abnormal cell growth with the potential to invade or spread to other parts of the body. Many treatment options exist for cancer and treatment with chemotherapy started in early 20th century. It involves one or more cytotoxic drugs. Nurses are the main groups that are exposed to these drugs in hospital setting. The aim of this study to review the effect of structured information module on knowledge regarding safe handling practices of antineoplastic drugs among nurses working in the hospital. Study is in progress and after the empirical evaluation; knowledge regarding safe handling practices of antineoplastic drugs will be helpful for nurses working in hospitals. It is necessary to increase the awareness of the oncology nurses so planning and policy-making of health care institute is very important. The knowledge regarding safe handling practices of antineoplastic drugs needs to be empirically evaluation for their efficacy in the clinical practices of the nurses, so there is a need to conduct this study.

**Keywords:** Antineoplastic drugs, nurses

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#### INTRODUCTION

According to Global Cancer Incidence Mortality and Prevalence (GLOBOCAN) estimates, about 14.1 million new cancer cases, and 8.2 million deaths occurred in 2012 worldwide.<sup>1</sup> However, there are an estimated 18.1 million new cases and 9.6 million deaths in 2018;<sup>2</sup> new cases are expected to rise to 16 million by 2020.<sup>3</sup>

Cancer is expected to rank as the leading cause of death and the single most important barrier to increasing life expectancy in every country of the world in the 21st century.<sup>2</sup> Cancer constitutes an enormous burden worldwide that is expected to increase due to different factors known to cause cancer.<sup>1</sup> Cancer is an emerging public health problem in Africa and about 715,000 new cancer cases and 542,000 deaths occurred in 2008, with these numbers expected to double in the next 20 years.<sup>4</sup> In Ethiopia, annual incidence and mortality of all cancer were reported 51,700 and 41,600 respectively.<sup>5</sup> Besides,

cancer is responsible for 5.8% of total national deaths.<sup>6,7</sup> According to GLOBOCAN 2012 estimates, about 40% of cancers are preventable.<sup>1</sup>

Antineoplastic drugs are cytotoxic agents which are widely used in healthcare centers to treat patients with cancer. Researchers have confirmed that the adverse drug reactions (ADRs) associated with antineoplastic agents may occur in both patients and individuals involved in the treatment chain. The US National Institute of Occupational Safety and Health (NIOSH) classified these drugs as high risk since they are mutagenic, teratogenic, and carcinogenic.<sup>8</sup>

Chemotherapy is based on the use of antineoplastic drugs with strong anti-cytotoxic effects. In order to reduce the exposure of antineoplastic cytotoxic drugs, special door and equipment structures, protective and safety measures are required performing all procedures involving the use of these agents, such as transporting, maintaining, preparing, rehabilitating law, managing and caring for patients.

**According to ICMR (2020),** The National Cancer Registry Programme Report 2020, released by The Indian Council of Medical Research (ICMR) and National Centre for Disease Informatics & Research (NCDIR), Bengaluru, estimates that in 2020 cancer cases in the country will be at 13.9 lakhs and likely to increase to 15.7 lakhs by 2025, based on current trends. These estimates are based on information related to cancer collected from 28 Population Based Cancer Registries (PBCRs). Additionally, 58 Hospital Based Cancer Registries (HBCRs) provided cancer data. In 2020, tobacco related cancers are estimated to contribute 3.7 lakhs (27.1%) of the total cancer burden. Among women, breast cancers are estimated to contribute 2.0 lakhs (14.8%) and cervix cancers are estimated to contribute 0.75 lakhs (5.4%), whereas for both men and women, cancers of the gastrointestinal tract is estimated to contribute 2.7 lakhs (19.7%) of the total cancer burden. The cancer incidence rate for male population ranges from 269.4 in Aizawl district (highest in India) to 39.5 in Osmanabad & Beed district per 1,00,000 population. Similarly, the cancer incidence rate for women population ranges from 219.8 (Papumpare district) to 49.4 (Osmanabad & Beed district) per 100,000 population. Cancers related to use of any form of tobacco were highest in the North-eastern region of the country and in higher proportions in men. Cancer of lung, mouth, stomach and oesophagus were the most common cancers among men. Cancer of breast and cervix uteri were the most common cancers among women. A significant increase in the incidence rates of breast cancers in women, and lung and head & neck cancers in both men and women was observed in most of the registries, however, a declining trend was seen in most of the registries for cancer of the cervix.<sup>10</sup>

## STUDY AREA

This study was done in the Department of nursing, Malwanchal university, Indor, Madhya Pradesh.

## CHEMOTHERAPY AND ANTINEOPLASTIC

The word chemotherapy means the use of any drug (such as aspirin or penicillin) to treat any disease, but to most people chemotherapy refers to drugs used for cancer treatment. It's often shortened to "chemo." Two other medical terms used to describe cancer chemotherapy are antineoplastic (meaning anti-cancer) therapy and cytotoxic (cellkilling) therapy. Treatments like radiation and surgery are considered local treatments. They act only in one area of the body such as the breast, lung, or prostate and usually target the cancer directly. Chemotherapy differs from surgery or radiation in that it's almost always used as a systemic treatment. This means the drugs travel throughout the body to reach cancer cells wherever they are. Chemotherapy is used to treat many cancers. More than 100 chemotherapy drugs are used today — either alone or in combination with

other drugs or treatments. As research continues, more drugs are expected to become available. These drugs vary widely in their chemical composition, how they are taken, their usefulness in treating specific forms of cancer, and their side effects.<sup>11</sup>

## TOXIC EFFECTS OF ANTINEOPLASTIC DRUGS

The toxic effects of antineoplastic drugs used in the treatment of cancer have been well-known since their introduction in the 1940's. Cancer treatment with chemotherapy or antineoplastic drugs began in the early 20th century. Since then, these drugs have begun to be used to treat many types of cancer. However, in addition to patient safety concerns arising from the necessary therapeutic use of these drugs, occupational hazards for health care workers who administer these drugs while performing their duties still need to be fully addressed.<sup>9</sup>

## EFFECTS OF ANTI NEOPLASTIC ON NURSES

Nurses are at risk for the harmful effects of antineoplastic drugs due to long-term occupational exposure.<sup>12</sup> They play the most important role in providing care for cancer patients, and have the following roles: safe treatment and management of ADRs, training patients and their families on the potential ADRs, and providing emotional support to patients during the treatment process. In addition, nurses may be occupationally exposed to the drugs during drug preparation, intravenous administration, specialized stages in administration (e.g., intraperitoneal, pleural, pericardial, and cerebrospinal fluid), drug delivery, or waste disposal, as well as cleaning drug leaks.<sup>13</sup> The significant amounts of antineoplastic drugs can lead to contamination through eating, drinking, and inhaling airborne powders and particles, as well as hand-mouth contact, unprotected skin and mucous membranes, or needle sticking.<sup>14</sup> Based on the results of hospital studies, the level of antineoplastic drugs is significant in the air, surfaces, gloves, and various parts of the treatment team.<sup>15</sup> Organizations such as NIOSH and Oncology Nurses Society (ONS) have recommended safety guidelines for antineoplastic drugs. Some of the guidelines include modifying the physical structure of the workplace in terms of isolating the drug preparation space, minimizing nurses' contact with the drug, applying standard work methods, and utilizing personal protective equipment to achieve the minimum contact of antineoplastic drugs with the skin or respiratory system of nurses.<sup>16,17</sup>

## SAFE HANDLING OF ANTINEOPLASTIC

Nurses should be aware of the risks and safe handling of antineoplastic drugs to enhance the safety of both patients and themselves. The use of biological safety cabinets (BSCs) against inhalation exposure during drug preparation and non permeable gowns and double gloves are among the methods

recommended for reducing exposure to antineoplastic drugs. Other approaches include wearing two pairs of powder-free latex gloves, and face shields or goggles, protecting the face from drug splashes, as well as utilizing surveillance systems and precise procedures to reduce exposure opportunities. The occupational exposure to antineoplastic drugs can decrease if all precautions are taken consistently.<sup>18</sup> Recent studies have shown the contamination of the workplace and healthcare workers, especially nurses, and in developing countries, although the guidelines for the safe use of antineoplastic drugs have been in place for the past 20 years.<sup>19</sup>

## CONCLUSION

Study is in progress and after the empirical evaluation; knowledge regarding safe handling practices of antineoplastic drugs will be helpful for nurses working in hospitals. It is necessary to increase the awareness of the oncology nurses so planning and policy-making of health care institute is very important. The knowledge regarding safe handling practices of antineoplastic drugs needs to be empirically evaluated for their efficacy in the clinical practices of the nurses, so there is a need to conduct this study.

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