

# Association of Knowledge on the Attitude and Practice of Registered Nurses Regarding Handling of Cytotoxic Drugs in a Tertiary Care Hospital in Karachi Pakistan

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**Abstract:** Detection of cancer at early stage is easy as the awareness among people is increasing; this results in increasing trend of occupational exposure to cytotoxic hazards among the healthcare workers as cancer patients receiving multiple chemotherapy regimens for a longer period of time. Nurses also exposed with many side effects of chemo drugs due to improper handling of these drugs. Among female nurses the possible reproductive side effects experienced by exposed nurses were infertility, abortion and abnormalities in fetus. The aim of this study was to identify association of knowledge on attitude and practice of registered nurses regarding handling of cytotoxic drugs in a tertiary care hospital in Karachi Pakistan. The study results revealed that registered nurses working in the oncology unit of a tertiary care hospital have limited knowledge about the handling of the cytotoxic drugs which affect their attitudes and practices of handling cytotoxic drugs in their daily practices.

**Keywords:** Cytotoxic hazards, cancer patients, chemotherapy regimen, side effects, handling, registered nurse.

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## 1. INTRODUCTION

Detection of cancer at early stage is easy as the awareness among people is increasing, this results in increasing trend of occupational exposure to cytotoxic hazards among the healthcare workers as cancer patients receiving multiple chemotherapy regimens for a longer period of time (Turk et al., 2004; Connor and McDiarmid, 2006; Verity et al., 2008; Kyprianou et al 2010; Elshamy et al., 2010; Khan et al., 2012). Cytotoxic drugs are therapeutic agents mainly used in chemotherapy for their actions on killing cancerous cells. However, their non-selective mechanism of action affects both cancerous and non-cancerous cells, resulting in well documented side effects (Ahmad, 2001; Connor and McDiarmid, 2006, Yuan et al., 2012).

## 2. BACKGROUND OF THE STUDY

Body Long-term occupational exposure to cytotoxic drugs is associated with various carcinogenic, teratogenic and mutagenic effects (Ahmad, 2001; Ben-Ami et al., 2001; Schreiber et al., 2002; Vollono et al., 2002; Zingler et al., 2002; Turk et al., 2004; Connor and McDiarmid, 2006; Elshamy et al., 2010; Kyprianou et al., 2010; Baraoui et al., 2011; Yuan et al., 2012). Among the possible reproductive side effects experienced by exposed nurses were infertility, abortion and abnormalities in fetus (Zingler et al., 2002; Dranitsaris et al., 2005; Connor and McDiarmid, 2006; Polovich and Clark, 2010; Lawson et al., 2012). Studies have also been reporting on the cancer risk among the nurses actively handling cytotoxic drugs. Some indicated the genotoxic damage in their peripheral lymphocytes. On top of that, cases of contact

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dermatitis, skin local reactions, abdominal pain, headaches, hair loss and liver damage related to cytotoxic drug exposure were reported (Ahmad, 2001; Kristev et al., 2003; Connor and McDiarmid, 2006; Ratner et al., 2010; Baraoui et al., 2011).

The main routes of cytotoxic drug exposure include the inhalation of aerosolized droplets, skin absorption, ingestion and needle stick injury during the process of handling (Zingler et al., 2002; Polovich, 2004; Turk et al., 2004; Connor and McDiarmid, 2006; Kyprianou et al., 2010). Among the possible risky activities in cytotoxic drug handling are drug transportation, preparation, administration, storage, cytotoxic spillage management, waste disposal and patient's excreta handling (Ahmad, 2001; Connor and McDiarmid, 2006). Of all, cytotoxic drug preparation and administration were consistently identified with the greatest risk (Ahmad, 2001; Kristev et al., 2003; Turk et al., 2004; Connor and McDiarmid, 2006).

### 3. AIM OF THE STUDY

The aim of this study was to identify association of knowledge on attitude and practice of registered nurses regarding handling of cytotoxic drugs in a tertiary care hospital in Karachi Pakistan. It was observed that nursing staff did not follow the guideline of safe practice of administrating cytotoxic drug. Bedside nurses are vigorously involved in every step of handling cytotoxic drugs such as in transportation of cytotoxic drugs from pharmacy, drug preparation, administration, drug storage, cytotoxic spillage management, waste disposal and patient's excreta handling as well. At every stage mishandling was observed due to which sessions were conducted for registered nurses involved in the whole process of handling cytotoxic drugs.

### 4. METHODOLOGY

For pre evaluate the staff and knowing their knowledge about their handling of cytotoxic drugs a questionnaire was developed which was based on knowledge practice and attitude. The Sample size was 30 Registered Nurses involved in the handling of cytotoxic drugs. Ethical approval was also taken from the head of nursing department of the hospital. Furthermore, nursing staff fulfilling the inclusion criteria has signed the Informed consent to ensure their voluntarily participation. The data was analyzed by using statistical package for social sciences version 17.

### 5. RESULT AND DISCUSSION

A single group of 30 nurses were enrolled in a survey for their knowledge and attitude assessment. They were the permanent nurses in these wards who actively provided chemotherapy for a variety of malignant diseases. The response rates were increased with the assistance of head of department and senior nurses. All nurses completed and returned the self-administered questionnaires. It was designed using simple English; the first part included demographic information such as name, gender, age, year of work experience as a nurse and designation. The second part contained 20 closed-ended questions to evaluate their knowledge on the safe handling of cytotoxic drug each question was given options of "yes", "no" and "do not know".

The analysis of the data reveals that 76.67% registered nurses were willing to administer chemo medicine to the patient. The second question was based on their self analyses of practices; 36.67% registered nurse agreed that they don't handle chemo appropriately while 56.67% were saying no. On the other hand 6.67% were saying do not know about this. The third question analyses reveals that 66.67% registered nurses were agreeing that as a health care provider we are at a risk of developing cancer in future whereas, 23.33% were not agreeing, and 10.00% registered nurses marked do not know about this. 40% registered nurses wanted to learn about the role of nurse in administrating chemotherapy and its appropriate handling. 83.33% registered nurses were satisfied with the teachings they were receiving. On further inquiring it was found that 80% of the registered nurses have completed the formal education in any chemo related topic while 20% were not trained. Few questions assessed nurse's knowledge regarding chemotherapy and its handling. 93.33% registered nurses know about the harmful effects of the chemotherapy from them 76.67% were competent to faced emergency situations caused by chemotherapy. This was an indication of competency among nurses handling of chemotherapy drugs.

Furthermore, 93.33% registered nurses were prepare chemo drug under a hood while 6.67% were saying no. 90% registered nurses were aware about the effects of chemo drugs on pregnant woman. 76.67% registered nurses were aware about the inhalation as the mode of exposure to chemo drug while 20.00% were not aware. It was alarming that 43.33% registered nurses know that PPE is not necessary while handling chemo drugs. Some of the questions from survey asked about the attitude of nurses regarding handing of chemo drugs revealed that 96.67% were of the registered nurses agreed that training is important for handling of cytotoxic drug. From them only 43.33% registered nurses answered that sufficient education and training and hospital policy are effective to improve cytotoxic drug handling while 56.67% were saying no.

## 6. CONCLUSION

In conclusion registered nurses working in the oncology unit of a tertiary care hospital have limited knowledge about the handling of the cytotoxic drugs. Due to which there are chances of occurring error, not only harming the patients but to them as well. It is important that continuous education sessions or in-service sessions should arrange for nurses to educate about the harmful effects of improper handling of cytotoxic drugs. Hospital policies should be firm in appropriate handling of cytotoxic drugs in order to ensure safe practices.

## REFERENCES

- [1] Ahmad A (2001). Managing cytotoxic drugs. *Malaysian J Pharm*, 1, 63-8.
- [2] Bouraoui S, Brahem A, Tabka F, et al (2011). Assessment of chromosomal aberrations, micronuclei and proliferation rate index in peripheral lymphocytes from Tunisian nurses handling cytotoxic drugs. *Environ Toxicol Pharmacol*, 31, 250-7.
- [3] Ben-Ami S, Shaham J, Rabin S, et al (2001). The influence of nurses' knowledge, attitudes, and health beliefs on their safe behaviour with cytotoxic drugs in Israel. *Cancer Nursing*, 24, 192-200.
- [4] Connor TH, McDiarmid MA (2006). Preventing occupational exposures to antineoplastic drugs in health care settings. *CA: A Cancer J Clinicians*, 56, 354-65.
- [5] Dranitsaris G, Johnston M, Poirier S, et al (2005). Are health care providers who work with cancer drugs at an increased risk for toxic events? A systematic review and meta-analysis of the literature. *J Oncol Pharm Pract*, 11, 69-78.
- [6] Elshamy K, El-Hadidi M, El-Roby M, et al (2010). Health hazards among oncology nurses exposed to chemotherapy drugs. *African J Heamato and Oncol*, 1, 70-8.
- [7] Khan N, Khowaja KZA, Ali TS (2012). Assessment of knowledge, skill and attitude of nurses in chemotherapy administration in tertiary hospital Pakistan. *Open J Nursing*, 2, 97-103.
- [8] Krstev S, Perunicic B, Vitakovic A (2003). Work-practice and some adverse effects in nurses handling antineoplastic drugs. *La Medicina del Lavoro*, 94, 432-9.
- [9] Kyprianou M, Kapsou M, Raftopoulos V, et al (2010). Knowledge, attitudes and beliefs of Cypriot nurses on the handling of antineoplastic agents. *Eur J Oncol Nur*, 14, 278-82.
- [10] Lawson CC, Rocheleau CM, Whelan EA, et al (2012). Occupational exposure among nurses and risk of spontaneous abortion. *Am J Obs Gyne*, 206, 327.
- [11] Polovich M, Clark PC (2010). Nurses' Use of Hazardous Drug Safe Handling Precautions. Unpublished study. Georgia State University.
- [12] Polovich M (2004). Safe handling of hazardous drugs. *Online J Issues Nursing*, 9.

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- [13] Ratner PA, Spinelli JJ, Beking K, et al (2010). Cancer incidence and adverse pregnancy outcome in registered nurses potentially exposed to antineoplastic drugs. *BMC Nursing*, 9, 15.
- [14] Schreiber C, Rodon K, Pethran A, et al (2002). Uptake of antineoplastic agents in pharmacy personnel. Part II: study of work related risk factors. *Int Arch Occup Environ Health*, 76, 11.
- [15] Turk M, Davas A, Ciceklioglu M, et al (2004). Knowledge, attitude and safety behaviour of nurses in handling cytotoxic anticancer drugs in Ege University Hospital. *Asian Pac J Cancer Prev*, 5, 164-8.
- [16] Verity R, Wiseman T, Ream E, et al (2008). Exploring the work of nurses who administer chemotherapy. *Euro J Oncol Nursing*, 123, 244-52.
- [17] Vollono C, Badoni G, Petrelli G, et al (2002). Risk perceptions and self-assessment of exposure to antineoplastic agents in a group of nurses and pharmacists. *Giornale Italiano di Medicina del Lavoro ed Ergonomia*, 24, 49-55.
- [18] Yuan Y, Xu D, Wang B, et al (2012). An investigation into the occupational protection status of clinical nursing staff exposed to antitumor drugs. *J Med Colleges PLA*, 27, 113-9.
- [19] Zingler E, Mason HJ, Baxter PJ (2002). Occupational exposure to cytotoxic drugs in two UK oncology wards. *Occup Environ Med*, 59, 608-12.