



# Cosy Clothes For Nurse And Breast Cancer Patients Undergoing Chemotherapy-Review

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## Abstract

Chemotherapy is typically used in conjunction with surgery to treat cancer, particularly breast cancer, which is one of the most common cancers to affect women. The quality of life may be negatively impacted by radiation therapy due to a variety of side effects, including exhaustion, mucositis, and skin abnormalities. Personal protection equipment (PPE) is used by oncology nurses in the United States when handling and giving chemotherapy medications to cancer patients. The American Public Health Association (APHA), the Occupational Safety and Health Administration (OSHA), and the National Institute for Occupational Safety and Health (NIOSH) all have uniform recommendations for PPE gowns that are intended to protect individuals from potentially hazardous spills. Made of lint-free, low-permeability fabric, such as fabrics coated with polyethylene, each disposable garment is one size fits all. Long sleeves, a solid front, and ribbed cuffs with a back closure are features of gowns. The patient's reaction to the nurse's presence is equally essential as the staff workers' safety when handing out medicines. In an outpatient environment, patients receive chemotherapy while dressed for the street. The whole picture can be frightening when the nurse arrives dressed in garish, noisy attire. In addition, nurses who were surveyed regarding their experiences expressed dissatisfaction with the clothes' temperature and discomfort. This review paper hypothesizes that the comfort and ease of both nurses and cancer patients might be greatly enhanced through attractive, user-friendly garments made of breathable, washable textiles with a technician-safe, patient-friendly standard, faculty-led designers created a design challenge with customizable sizes. Our study, which was designed to be descriptive in nature, examined the relationship between radiation therapy comfort and quality of life in patients with breast cancer.

**Key Words:** Cancer, Chemotherapy, Comfort, Garments.

## Introduction

According to the World Health Organisation, the incidence of cancer is expected to increase by 70% over the course of the next 20 years, resulting in 14 million diagnoses and 8.2 million deaths in 2012<sup>1</sup>. Breast cancer accounts for 27% of newly diagnosed instances of cancer and is commonly detected in females. Breast cancer is a slowly progressing malignancy that is associated with lifestyle, genetic, hormonal, and environmental factors<sup>2,3</sup>. Despite advancements in early identification and treatment, breast cancer remains a significant cause of death and morbidity<sup>4,5</sup>. Breast cancer is treated with surgery, chemotherapy, radiation therapy, and hormone therapy<sup>2,6</sup>. Whenever given as an adjuvant therapy after surgery, radiation therapy raises the disease-free survival rate and lowers the chance of recurrence rate<sup>2,7-9</sup>. Since radiation therapy affects both cancer cells and healthy tissues, the ideal goal of this treatment is to totally eradicate the tumour without endangering the health or structure of the surrounding tissue<sup>4</sup>. Despite this goal, adverse effects such as skin changes, exhaustion, pneumonia, pericarditis, and lymphedema might be seen<sup>2,10</sup>.

More ambulatory care cancer treatment facilities, both in conventional hospital settings and in specialised cancer treatment facilities, have been created as a result of the rising number of cancer patients. The surge in the construction of new and upgraded healthcare facilities has benefited ambulatory care centres and hospitals providing cancer treatment. The architecture of healthcare facilities has shifted dramatically to focus more on the needs of the patient; this is known as "evidence-based design." Both patients and providers are benefiting from this strategy. There is still work to be done to enhance the connection between the nurse and patient, particularly with regard to the uniform, even if evidence-based design has improved patient and healthcare provider outcomes through the physical environment. Satisfying Patient and Healthcare Provider Needs There is a danger of exposure when administering chemotherapy or antineoplastic medications. Most frequently, oral, cutaneous, or inhalation routes of exposure are used. Usually, inhalation occurs when one is exposed to vapours, particles, and droplets. When workers handle contaminated surfaces when preparing, administering, or disposing of hazardous medications, their risk of skin exposure is at its highest<sup>11</sup>.

When giving chemotherapy medications, American cancer treatment nurses are mandated to wear personal protective equipment, or PPE. Numerous organisations, like the National Institute for Occupational Safety and Health (NIOSH), have similar standards. The American Public Health Association and the Occupational Safety and Health Administration (OSHA). PPE is used to shield patients from infection and medical staff from chemical spills and splashes that could be dangerous during chemotherapy treatments<sup>12</sup>. It is essential to safeguard the nurse from potentially harmful chemotherapy medications. Nevertheless, the most worn-out item of clothing is uncomfortable and lacks real utility and versatility. Standard clothing that fits all is either too tiny or too huge for a lot of people. The average woman now is taller, heavier, and of a different shape than she was in 2003, according to a Size USA poll<sup>13</sup>.

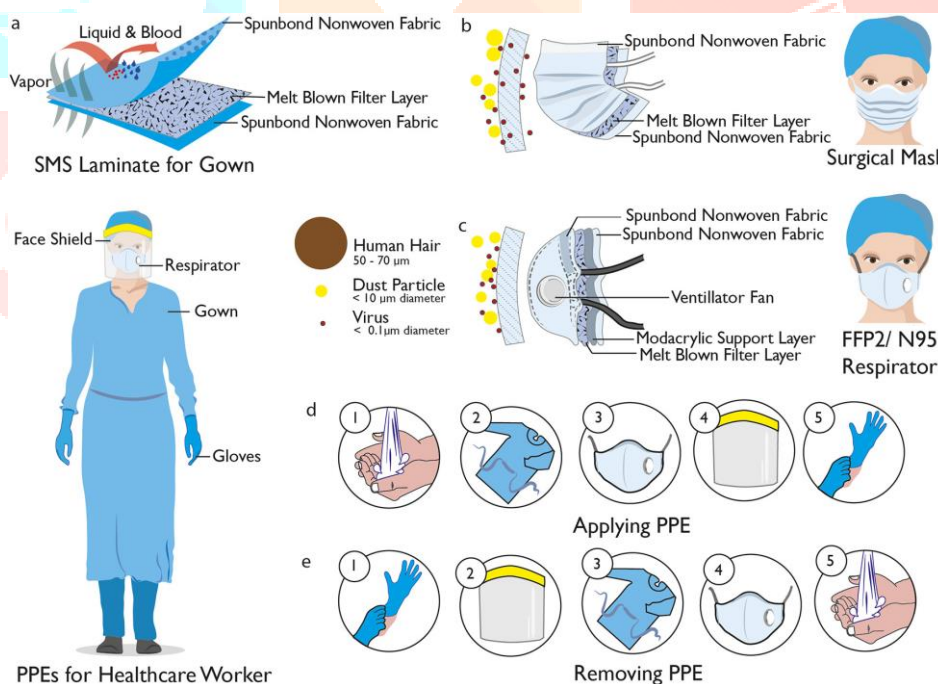
Too-small or too-large uniforms may prompt carers to take off the ill-fitting clothing too soon, increasing the danger of exposure. A garment that is too small can be challenging to fit, and it frequently tears at the seams, negating its intended protective function and generating waste. The oversize clothing makes the nurse's movements difficult because it is heavy and thick. Another important consideration is function. Nurses may require a number of extra items, including a stethoscope, bandages, scissors, alcohol wipes, gauze, medical tape, a phone, and patient identity labels, when giving chemotherapy medications. These tools are frequently used in every patient encounter. A well-made outfit satisfies the wearer's utilitarian and comfort needs, enabling them to work effectively and efficiently. Functional pockets make it possible to move around effectively and store necessities. The actual "fabric" or textile used in the creation of uniforms is just as important as the fit and functionality of the item.

One of Kolcaba's moderate level nursing ideas is the comfort theory (1994) <sup>14</sup>. Comfort is a desirable and acceptable outcome that one aims to achieve with effective nursing care, despite the fact that it is a complex and challenging notion to describe. The core of nursing and nursing tasks is achieving and maintaining patient comfort together with providing therapeutic nursing interventions <sup>15</sup>. Female patients with early-stage breast cancer have stress and anxiety in addition to treatment side effects that negatively impact their comfort <sup>16</sup>. The rising propensity of more comfortable patients, either consciously or unconsciously, to seek medical attention provides support for the use of comfort-enhancing therapies. Among the primary duties of nurses are determining the appropriate degree of radiation therapy for the patient, implementing measures to raise their comfort level, and ensuring the patient's continuity <sup>17</sup>.

When wearing PPE, surgeons are less inclined to put up with inadequate fit and thermal comfort. Thermal comfort requires a balance between the body's heat input and dissipation. The amount of exposure, duration of the treatment, and surgical atmosphere all affect how comfortable a medical gown can be during a surgical procedure <sup>18</sup>. An operating room's typical temperature and relative humidity are between 15 and 26.6-25.6 °C and 30 and 60%, respectively. However, because of the radiant heat from the overhead lighting, the temperature in the operating room may rise during the surgery. Furthermore, the production of body heat in a high-stress setting with bright illumination exacerbates pain for doctors and nurses <sup>19</sup>, perhaps leading to a rise in errors, decreased performance, and inefficient labour. Thus, while being used, protective medical apparel should give HCWs (Health Wellness Centres) an isothermal atmosphere. More materials are frequently added to protective garments, such as coatings, reinforcements, laminates, or plastic film, to enhance barrier resistance, absorbency, and non-slippage performance <sup>20</sup>. However, because there will be reduced heat transfer and increased perspiration in the regions of the gown that are covered in a plastic or additional layer of fabric, these membranes or reinforcements may make the reinforced gowns less comfortable to wear. Several cutting-edge technology-based techniques have been introduced to boost the permeability and flexibility of the fabric in order to produce improved protective medical garments without sacrificing comfort or breathability. Phase change materials, for instance, have been utilised to enhance the control of treated fabrics' temperature within the typical comfort range <sup>21</sup>.

Using permeable, layered textiles with an active cooling mechanism is an additional strategy. Surgeons typically indicate a preference for comfortable items with moisture management capabilities and high levels of protection due to the nature of their jobs and the locations in which they operate. In order to create such clothes, two layers of spun-bonded nonwoven are layered between an impermeable "breathable" plastic film, which permits moisture vapour from the inside of the garment to travel through the fabric while blocking the entry of fluids or pathogens from the outside<sup>22</sup>.

Additionally, the PPE is made to shield healthcare professionals and patients from infectious diseases that endanger everyone's health within the facility<sup>23</sup>. stated that better suits and uniforms were required in order to prevent illness, offer comfort and functionality, and take patient response into account. As a healthcare professional approaches the patient in the loud, ill-fitting garment, fear, worry, and discomfort may take over. The 2014 NIOSH (National Institute for Occupational Safety and Health) update "contains recommendations for the use of personal protective equipment (PPE) in specific situations," but no universal standard has yet been created<sup>24</sup>.



PPE for Healthcare Professionals <sup>25</sup>

Each governing authority should adhere to a single standard to guarantee that PPE generated satisfies policies and is safe and functional. Wide-ranging research on evidence-based facility design has led to the development of 21st-century design strategies that are both aesthetically beautiful and cosy for personnel and patients<sup>26</sup>. Researchers from Georgia Institute of Technology and Texas A&M (Agricultural & Mechanical) found 600 papers that supported the idea that better hospital facility design can result in "safer, more healing, and better places to work<sup>27</sup>."

They list four key areas where patients and staff can benefit from evidence-based facility design:

1. Improve patient safety
  2. Lessen staff stress and fatigue and boost effectiveness in providing care
  3. Lessen tension and enhance results
  4. Boost the standard of healthcare overall
- Bad uniform design poses a risk of undoing these beneficial effects.

It's critical to guarantee patient-centered nursing care, optimal adaptation, and maintenance of the state of well-being at every turn following a breast cancer diagnosis, up until recovery or death. Finding out how comfortable and how happy patients with breast cancer were after radiation treatment was the aim of our study.

## Methods

This study used a mixed-methods methodology, incorporating both quantitative and qualitative data. A descriptive survey was used as the research methodology, and 50 respondents' opinions were sampled. Dressmakers must have worked continuously for at least five years in order to meet the selection criteria. The descriptive survey was employed to ascertain the present status of dressmaking. With this approach, the researchers were able to obtain data from a suitable sample of participants in a comparatively expeditious and cost-effective manner. The questionnaire and interview were the data collection instruments, and the basic random sample approach was applied. Through the use of structured interview questionnaires, the formal and informal interview schedules were implemented.

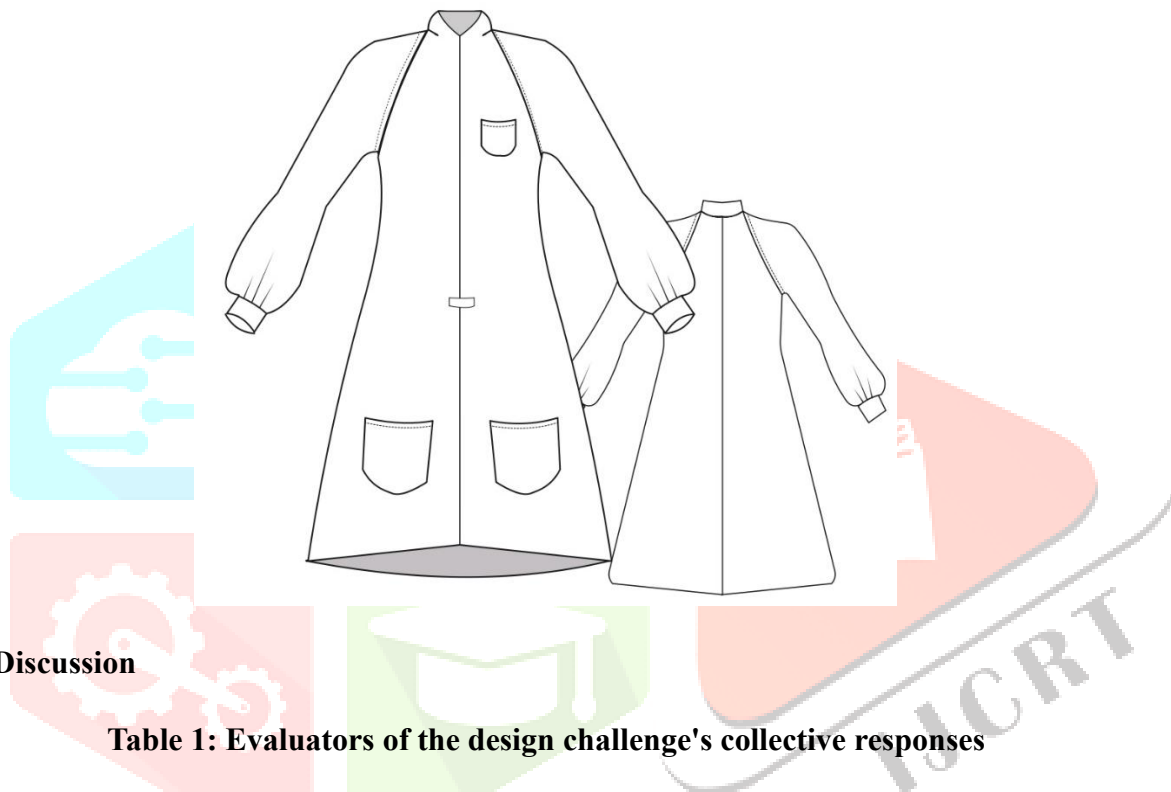
## The problem statement:

It is recommended that nurses who are giving intravenous chemotherapy wear protective garments to prevent the medicines from penetrating their clothing and coming into touch with their skin. When giving these infusions, the nurse puts the bags into the machine that dispenses the medication at a predetermined pace by raising their arms over their heads. Although it is uncommon, the installation of the bags may cause the medications to leak and splash over the body or down the arm, hence nurses are advised to wear protective gowns.

- These features of the present disposable design include its non-breathable material, universal fit, self-tie around the waist and neck, knit wrist cuff, Raglan sleeves. A perfect design would take into account the following:
- Breathability is a major problem; are there any alternative textile choices?
- It's like wearing a plastic bag with the stiffness of a paper bag;
- It's too bulky;
- The wearer needs to be protected from the chemotherapy seeping through the gown to their skin;

- Pockets to hold pens, alcohol wipes, and other items;
- Variable sizing as the current model fits many but all; it's very large for some and small for others.

Figure 1 Tech Pack of PPE Garment Designs



## Results & Discussion

**Table 1: Evaluators of the design challenge's collective responses**

Oncology nurse responses: n = 5; scale: 1 = least successful, 5 = most successful		
Question	Average Score	Remarks
Does this design seem cosy to you?	4.5	
Will breathability be enhanced by this design?	4	Would require to view samples of fabric.
Is it possible to wear this design on/off during the day?	4.25	Disposable is advised by regulations.
Is there an example pocket location and size provided by this design?	4.5	Bigger pocket with a flap added.
Does the patient find this design appealing?	3.75	From the standpoint of the patient
Would you like to wear this design overall?	4.5	
Is it possible for this design to comply with health regulations overall?	4.75	

Fig 1, Students concentrated on all the nurses in the area who were identified as in need of development. There was a pocket in every design, however in some it was too tiny. Clothing was available in a range of sizes, and fabrics enhanced ventilation. The selection of fabrics in the competition was restricted and necessitates more research. Nonetheless, students did take into account changes in pattern, colour, and design in favour of a more stylish textile. Nurses were sent a quick survey to complete, which asked them to

score the designs and answer six questions. Their combined answers are shown in Table 1. The overall outcome of the design challenge was favourable, with the winning design receiving an average effectiveness score of 4.75 out of 5. With a score of 3.75, the pocket size and functionality category needed the most work.

## Conclusion

Through the use of evidence-based uniform design, the design challenge brought attention to the issue of PPE in healthcare, particularly in oncology, where it can enhance provider and patient satisfaction. The use of this PPE uniform highlights the necessity for increased safety while also taking patient perceptions of illness and care quality into account. By suggesting a uniform that is not only practical but also well-fitting and has some flair, healthcare professionals can have an impact on clothing design. Well-crafted surveys for nurses at various facilities with different sizes and structures should be part of future research projects. Such a review ought to investigate the discrepancies in the consistent protocol for PPE in facilities. Surveys of patients are also essential for their general responsiveness to care and well-being.

## Limitations of the study

Enhance future textile's breathability and permeability. Enhance healthcare personnel uniforms by incorporating patient-friendly designs into the textiles while still adhering to the facility's and the provider's professional requirements. The results of this study are restricted to the hospital cancer center's experiences, with little involvement from medical professionals. The cancer center's participants formed a single unit and lacked thorough analysis and feedback. Because the students' point of view was from a functional fashion aesthetic, background knowledge also plays a significant part in the limitations of the design difficulties.

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