



A Survey on Preferable Fabrics for Patients During Cancer Therapy

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Globally Cancer is a common health problem in recent times. The second top deadliest disease of cancer treatment is painful. Pain is one of the most common symptoms in inflammation for any type of cancer treatment. The side effects of cancer treatment depend on its type and on the stages of cancer. After diagnosing cancer, patient is categorized to zero to four stages based on the level of cancer spread in the body. According to “ASCO American society of clinical oncology-2021[1]”. Stage 0 is cancer spotted in the place where its started, Stage I-Cancer spread into tissues but not into the lymph nodes and other areas, Stage II-Cancer possibly spread into other areas of lymph nodes, Stage III-Cancer spread deeply into the lymph nodes than the previous stage, Stage IV-Cancer has spread into other parts of the body and this stage is metastatic cancer.

A) Therapy for Cancer Treatment:

After cancer is diagnosed, based on the 0-5 stages of cancer the treatments will be given to patients. The treatment varies on the dosages and time according to the types of cancer. Also, some method of treatment is common for some types of cancer. The various method of treatment for cancer is Chemotherapy, Radiation therapy, Immunotherapy, surgery, Targeted therapy, and Hormonal therapy [2]

B) side effects of therapies/ treatment:

The treatments or therapies were given to the patients to cure the cancer cells by

destroying it and in case if it is not possible, it will control the growth or spreading the cancer cells in the body. During the therapy many of the good cells are also damaged or weakened while treating the cancer cells. Hence the immune in the body reduces and other side effects occurs [3]. And the patients who are undergoing treatment are much more prone to infections which is a threat to the patient's life. Some of the common side effects in skin during chemotherapy, radiation therapy, targeted therapy or stem cell transplant are dryness, pruritus (Itching), rashes, swelling, color changes in fingernails and toenails, pressure Sores,

skin color changes (Hyperpigmentation of skin).

Cancer and cancer treatment also causes side effects that impacts nutrients such as malnutrition, anorexia, cachexia, nausea or vomiting, dry Mouth, mouth sores, taste change, sore throat, trouble swallowing, lactose intolerance, weight gain, pain, fatigue, weakness, and body image disturbances. The therapies bring losses to the good cells, it makes weak and affects in cells changes in the blood and causes anemia, thrombocytopenia, bleeding & neutropenia. Apparently, it causes neuropathy, extravasation. Patients endures severe trauma mentally and physically such as mood swing, depression, delirium, anxiety and suicidal ideation.

The infections related to cancer itself or cancer treatment is bacterial infections like MRSA (Methicillin Resistant Staphylococcus aureus is the predominant), pseudomonas aeruginosa, Klebsiella, E.coli, Enterobacteria and MDR (Multi drug resistant) are the most common infections. Patients who have sustained surgery will be affected with infections due to catheter-CAUTI (Catheter related urinary tract infection), CLABSI (catheter or central line related blood stream infection), SSI (Surgical site infection) and VAP (Ventilator associated pneumonia).

C) Treatments for the side effects :

Treatment for the side effects in patients, depends on the sensitivity of the drug. It will be given step by step based on the intensity of infection in the 1st line, 2nd line or 3rd line antibiotics. After the 1st line the dosage will be started empirically and escalated with culture report. Some of the common infections will be Mycobacterial infection and Tuberculosis and they are treated with anti TB drugs. Due to prolonged neutropenia and corticosteroid therapy, GVHD (Graft Vs Host disease) is common for transplant patients. At times this will lead to threat

for patient's life. Other infections that affect due to neutropenia were Candidiasis and Aspergillosis fungal infection and they are treated with antifungal drug. Besides Viral infections also incite with Herpes Simplex virus, varicella zoster, cytomegalovirus, influenza. Eventually patients will be affected with end organ infection known as Septicemia. It is mostly the internal infections in the major organs and the endurances will be doubtful on such cases. On this a part of common treatment for these infections are multiple antibiotics, strict infection control practices like isolating patients, strict hand hygiene measures, personal protective equipment's, fumigation, and regular surveillance monitoring, using HEPA filter in room entrance, Providing Neutropenic diet and administering G-CSF injection to stimulate the T-cell count.

D) Fabric Properties that are supportive for patients:

As the patients undergoes many side effects during the cancer treatment or cancer therapy, they were instructed to wear specific clothes to protect them from heat and avoid synthetic fabrics. Due to their sensitive skin the synthetic fabrics can cause more irritations, rashes, skin infections and produce more heat which patients won't be able to withstand for a long time. Cotton the king of the fiber is also a friendly fiber as it keeps cool and comfortable says Ajay K Sarkar from fashion institute of fashion Technology, New York. Also, he mentioned Linen, cashmere, silk, hemp and those made with wood pulp are also friendly fibers. Any fiber that has good conductive and wicking properties are good for people who have different skin conditions [7]. Bamboo is one other suggested fiber which contains anions helps more in cleansing blood, soothing the nervous system and relieving allergy symptoms, because of this the bamboo fiber is one of the recommended fabrics as it is good for human body and skin. Additionally it has antimicrobial

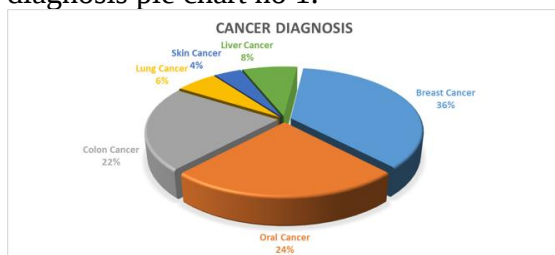
properties naturally, keeps cool and absorbs moisture quickly [8].

In general more than woven fabrics knitted fabrics will be more comfortable, stretchable, breathable and keeps cool or warm accordingly. Comparatively knitted fabrics will be wrinkle resistant than woven whereas woven fabrics will hold creases well. Patients will have fatigue as one of the side effects after cancer therapies, so they often rest. On that case knitted fabrics will be more preferable [9]

E) Survey on preferable fabric ideas during therapies from patients:

A survey was conducted among the cancer patients who are under cancer therapy to analyze and understand the treatment, symptoms, side effects of the treatments and the fabrics that the patients would like to use and to feel comfortable on them with few questionnaires. The sample size taken was 50 Nos within Chennai. The age category was open from 3 years to 70 years. In them 27 samples were men from 32-65 age category and 22 women from the age group of 30-55.

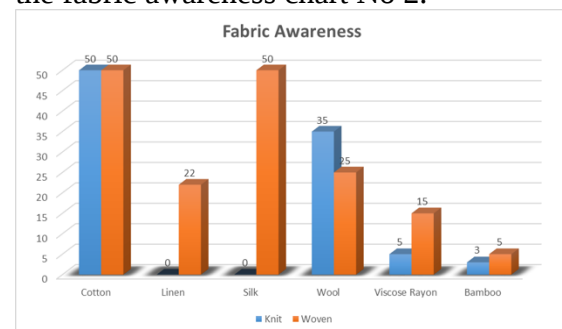
Based on the questions about what types of cancer was diagnosed, 18 samples were diagnosed with Breast cancer, 12 with oral cancer, 11 with colon cancer, 2 skin cancer, 4 liver cancer and 3 lung cancer. In more detail it has been explained in the cancer diagnosis pie chart no 1.



1.Cancer diagnosis Pie Chart

To understand the treatment given to patients, in which stage of cancer they were diagnosed and what treatment/therapy was asked. In common most of the samples mentioned the cancer treatment side effects were pain, inflammations, swelling, rashes, bacterial and fungal

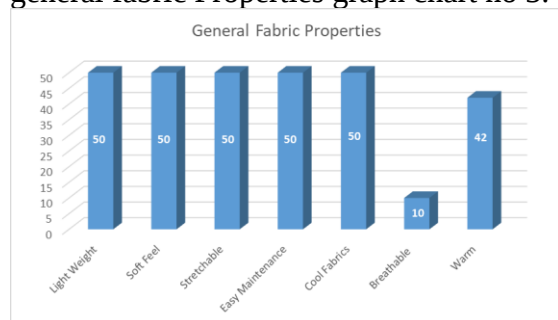
infections, tiredness, itching, difficulties to withstand in sun, weakness, diarrhea, UTI. And the patients were in stage 2 & 3 level. The treatment given to them was Chemotherapy, Radio therapy and 1 patient have undergone surgery. Patients who have undergone chemotherapy and surgery had been prone to more infections. To identify their idea on understanding about types of fabrics, few common fabric choices were given such as Cotton, Linen, silk, wool, Bamboo, and Viscose rayon. All the samples were shown in knits and woven. Out of 50 samples all were familiar with Cotton knits & woven, 50 Nos are aware of silk woven fabric but not silk knitted fabric. 22 Nos were familiar with Linen woven fabric but not knits in Linen. In wool 35 Nos are aware of woolen knitted fabrics and 25 Nos were about woolen woven fabric. With viscose rayon 5 Nos were aware of Viscose Rayon Knitted fabric and 15 Nos were known to Viscose Rayon woven fabric. And 3 no's knows about Bamboo Knits and 5 no's alone familiar with Bamboo cotton blended woven Fabric. The above mentioned has been explained clearly in the fabric awareness chart No 2.



2.Fabric awareness chart

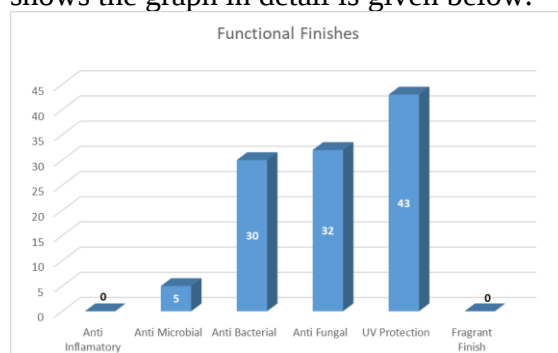
In common what type of fabrics properties, they would prefer was questioned. The common answers from all the 50 samples were preferably light weight fabric, soft feel fabric, stretchable fabric, easy maintenance, cool fabrics. Only 10 Nos were aware of breathable fabrics and other 40 was not aware of it, and 42 Nos were in option of warm fabrics preferably in the night or during winter season. The

same has been explained clearly in the general fabric Properties graph chart no 3.



3. General fabric properties

Apart from the general properties of the fabric, questions on the additional functional fabric finishes which can perform on additional qualities in preventing and controlling the infections was asked to know about their awareness and understanding. The additional functional qualities have certain additional properties such as Anti inflammation, anti-microbial, anti-Fungal, Uv protection & Fragrant finish fabric. When they were asked about the functional finishes of fabrics, samples were not much aware of it. None of the samples had no idea about fragrant finish and anti-inflammatory, whereas 43 no's were known about UV protection, 32 no's known to anti-fungal and 30 no's about anti-bacterial. The functional fabric finishes chart in picture 4 shows the graph in detail is given below.



4. Functional fabric finishes chart

F) Conclusion:

Cancer therapy or treatment is one of the most painful process and patients struggles a lot to overcome. The fabric as a second skin will support patients in many ways to keep them comfortable and protect them

from many hazards. More development on fabrics structure and functional finishes will benefit patients a lot. This could help to improve the quality of life on their most needed difficult times.

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